



CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN

PROJECT	THE BREWERY YARD
ADDRESS	5 CENTRAL PARK Ave. CHIPPENDALE
REVISION	1
ISSUE DATE	18/11/2021

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1. REGISTER OF DOCUMENT REVIEW

REVISION	DATE	SECTION	DESCRIPTION OF AMENDMENTS
1	22/10/21	ALL	Development of Construction Environmental Management Plan
Authorisation		Name	Position
Author		Bella Doyle	Cadet
Reviewer		Brianna Beuzen	Design Coordinator
Owner/Approver		Blake Greenaway	Project Manager

A copy of each superseded plan is to be retained.

2. REVIEW AND APPROVAL

Revision 1 of this plan must be approved by the Construction Manager, Project Manager and the Site Manager.

This plan must be reviewed by all Icon project personnel on this project.

4. ABBREVIATIONS AND DEFINITIONS

CA	Contract Administrator
CM	Construction Manager
Competent Person	A person who has acquired through training, qualification, or experience, or a combination of these, the knowledge and skills enabling that person to perform the required task.
Critical Incident	A critical incident is any incident in the work place that results in death; major structural damage, serious/permanent disability or injury or major impact on a client's operations
DIR	Directors
Env.MP	Environmental Management Plan
EMP	Emergency Management Plan
EPA	Environment Protection Authority or relevant state based environmental regulatory body
FAI	First Aid Injury
GM	General Manager
Icon	Icon Co (Aust) Pty Ltd, Icon Co (NSW) Pty Ltd, Icon Co (QLD) Pty Ltd, Icon SI (Aust) Pty Ltd, Cockram Construction Ltd, Cockram Construction QLD Pty Ltd
KPI	Key Performance Indicator
MFB	Metropolitan Fire and Emergency Services Board
NZ	New Zealand Operations
OM	Operations Manager
HIRAC	Hazard Identification, Risk Assessment & Controls
HSEM	Health, Safety and Environment Manager
HSEC	Work Health and Safety Coordinator or equivalent (site based safety personnel)
HSR	Health & Safety Representative
PPE	Personal Protection Equipment
PM	Project Manager
Precast Panel	Includes concrete precast panels and tilt up concrete panels
SDS	Safety Data Sheet
SSC	Site Safety Committee
SM	Site Manager
SWMS/JSEA	Safe Work Method Statement or JSEA in New Zealand (also sometimes referred to as a TA – Task Analysis)
TWA	Trade Waste Agreement

5. SYSTEM UPDATES

Any system updates are to be filed behind this page. Such updates will supersede the relevant content in the plan.

6. PLAN REVIEW AND UPDATE

This plan will be updated specifically for this project. This plan details the minimum Icon requirements across the project. Unless specifically requested by the client information within this plan will be retained as it provides valuable guidance material to our project teams.

7. PURPOSE & OBJECTIVES

7.1 PURPOSE

A site-specific Construction Environmental Management Plan has been developed for this project prior to works commencing and is maintained for the duration of each project.

This Construction Environmental Management Plan sets out the framework for construction environmental planning inclusive of details of the control of the project and the plans/ measures that will be put in place to manage the environmental impact the construction of this project has.

The site management team will be inducted into this plan and all workers are made aware of its location during the site induction should they wish to refer to it at any time. Revisions of the plan are notified to relevant personnel. The Plan is authorised by the Construction Manager, or their delegated representative.

7.2 OBJECTIVE

This document is considered to be an operational CEMP which provides the framework necessary to implement the required management measures associated with the proposed construction works. Once implemented the objective of the management measures will be to ensure that there is no significant adverse impact on the environment or the health of the site workers and neighbouring residences.

The management shows the responsibilities, information and plans surrounding:

- Outline the scope of works to take place and the relevant working hours
- Provide 24hr contact details.
- Provide a site specific plan of dust and odour control for minimal impact to surrounding neighbours.
- Provide an outline of the controls that will be put in place for stormwater control and discharge.
- Provide an outline of the measures in place to control sediment and other materials from being tracked onto roadways.
- Outline the ground water management plan including the measures put in place to prevent groundwater contamination.
- Compliance in external lighting as per AS4282-1997 control of the obtrusive effects of outdoor lighting.
- Outline the managing of stakeholders, community consultation and complains handling.
- Construction traffic and pedestrian management sub-plan.
- Construction noise and vibration management sub-plan.
- Construction waste management sub-plan.
- Construction soil and water management sub-plan.
- Procedure for unexpected finds inclusive of contamination, aboriginal and non-aboriginal heritage and associated communications.
- Management and tracking of waste to understand classification and confirmation of contamination status of materials from the site.

7.3 REPORTS RELIED UPON IN PREPARING THE CEMP

Geotechnical report prepared by Stantec (Wood & Grieve Engineers). Dated: 05/08/2019

Detailed dilapidation report prepared by Tyrrells Property Inspections Pty Limited. Date: 10/08/2021

Hazmat (Asbestos) register periodic review report prepared by Pickford & Rhyder consulting Pty Ltd. Dated: 17/08/2018

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SSD9374 Environmental impact statement report prepared by Ethos Urban. Dated 29/03/2019.

Ecologically sustainable development report prepared by Stantec (Wood & Grieve). Dated 11/12/2018

7.4 INTEGRATED MANAGEMENT SYSTEM

This Plan has been developed in conjunction with relevant project specifications, drawings, Head and Subcontract conditions for all activities to be undertaken on the project; and has been developed to comply with the requirements of:

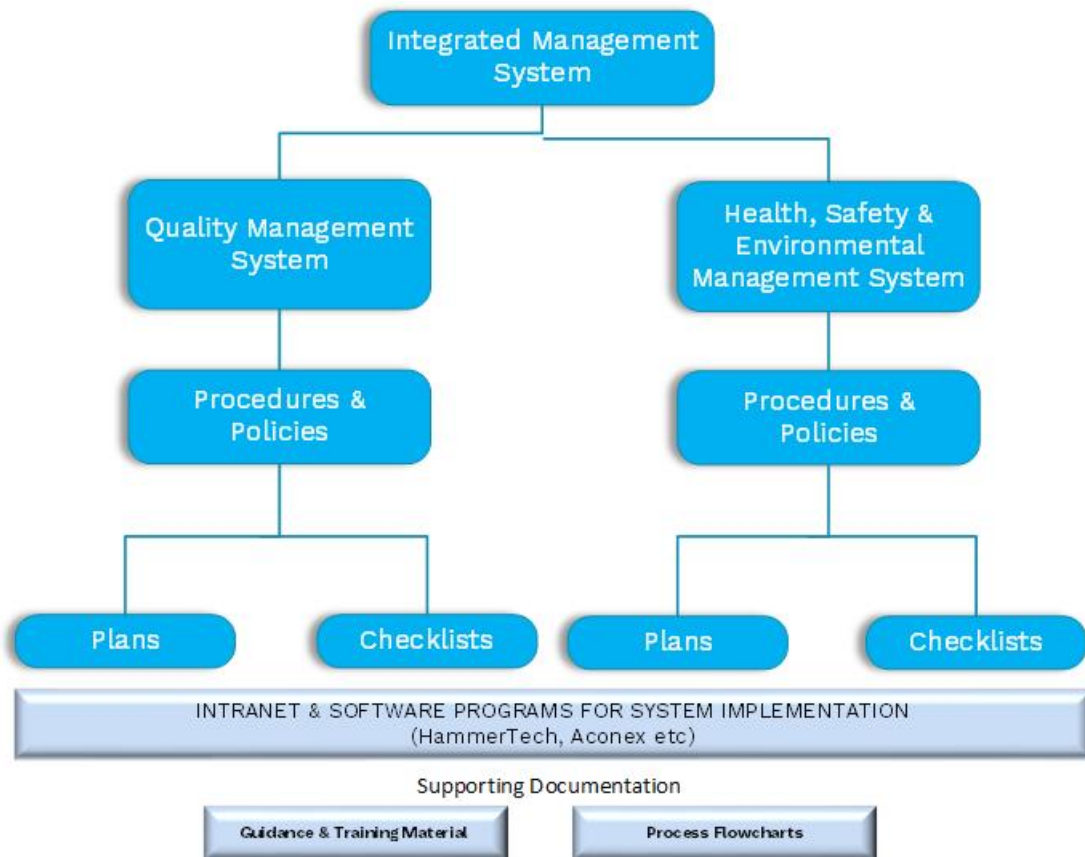
- AS/NZS 4801:2001 - Safety Management Systems
- ISO 14001:2015 – Environmental Management Systems
- ISO 9001:2015 - Quality Management Systems
- Icon Policies and Procedures
- Additional requirements as specified by the client

This plan shall be reviewed for suitability and effectiveness on a six monthly basis as a minimum, or when there are significant changes to the environmental aspects and impacts at the project site.

7.5 HAMMERTECH SOFTWARE SYSTEM

Icon use the HammerTech software system where possible on projects to assist manage day to day HSEQ operations. All forms referred to in this document are duplicated within the HammerTech environment and are interchangeable.

7.6 SYSTEM OVERVIEW



8. ENVIRONMENTAL POLICY



ICON
MANAGEMENT SYSTEM DOCUMENT
Environmental Policy

ENVIRONMENTAL POLICY

Icon is committed to the protection of the environment, prevention of pollution and effective environmental management in all related activities.

Icon will ensure, as far as practicable, that it will:

- Implement an ISO 14001:2015 accredited environmental management system to ensure all contractual and statutory obligations are met;
- Ensure specific Project Environmental Management Plans are developed and implemented for each individual project;
- Communicate this policy to all workers and other interested parties, as appropriate, to ensure they are aware of and agree to comply with their obligations with respect to company operations;
- Identify any activities carried out by or on the behalf of the company that might have an impact on the environment;
- Identify and address both positive and negative environmental aspects and impacts (risk) associated with our operations through the environmental assessment process;
- Implement appropriate control measures that will mitigate negative effects to the environment;
- Provide management, workers and service providers with appropriate information, instruction and training to ensure that they are aware of any potential issues in the workplace that may impact on the environment;
- Continually monitor and assess the needs of stakeholders and other interested parties;
- Monitor and audit our environmental processes and systems with a view to continuous improvement;
- Establish measurable objectives and targets to improve our environmental performance;
- Comply with legal, regulatory and other guidelines for environmental management and protection;
- Ensure our Environmental Policy and management systems are regularly reviewed to ensure they remain relevant to the purpose and context of the organisation, including the nature and scale of its activities, products and services;
- Ensure that employees and/or subcontractors are aware of their environmental responsibilities.

This commitment will be achieved by the combined efforts of our employees and workers at Icon workplaces.



Evan Byrne
Managing Director
Date: 30/04/20

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9. PROJECT SCOPE AND RELEVANT PROJECT REQUIREMENTS

9.1 SCOPE

Icon has been engaged by Johnstaff Projects Pty Ltd under IP Generation as the builders for the delivery of the Brewery Yard Redevelopment. The Brewery Yard Redevelopment is a heritage listed former brewery that is being redeveloped into a new internal retail and commercial building using the footprint and façade of the original building. The main works comprise of the following

- Heritage façade refurbishment
- New windows and glazing
- Internal structural modifications
- Cold shell internal ready for tenancy fitout works
- Additional stairs and lifts
- Hard & soft landscaping

9.2 CONSTRUCTION HOURS

Construction, including the delivery of materials to and from the site will be carried out between the following hours as per the approved DA.

- 7am to 6pm Monday to Friday
- 8am to 1pm Saturdays
- No works will be carried out on Sundays

Works that do not exceed the existing background noise can work the following additional hours

- 6pm to 7pm Monday to Fridays
- 1pm to 4pm Saturdays

9.3 24 HOUR CONTACT DETAILS

Site Manager: Chris Walters
Contact Email: Chris.walters@icon.co
Contact Mobile: 0407 215 534

9.4 CLIENT INCIDENT REPORTING PROTOCOL

Name:	Matt Inch
Position:	PROJECT DIRECTOR
Types of incidents to be reported:	Significant
Timeframe for reporting incidents:	24 hours
Incident report format:	HammerTech Incident Report
Summary incident reporting requirements:	Monthly Reports

9.5 KNOWN INDIGENOUS/HERITAGE SITES

There are known heritage sites at this project location.

THE BREWERY YARD – HERITAGE SITE

9.6 COMMUNICATION

Communication regarding environmental issues will be in accordance, but not limited to, the table below.

WHO	WHEN	HOW/WHO
Client	Unexpected finds that may impact works Incidents	PM/SM as per client requirements
Local Council	Permitting requirements Compliance issues Complaints Road cleaning	PM/SM as required
EPA	Incident reporting Asking for Advice Response to notices	PM/SM as required
Neighbours/Interested stakeholders	Site conditions that may impact neighbouring operations i.e. noisy works	Site team as required Letter drops Door Knocks
Heritage Authority	Unexpected finds during construction activities	PM/SM as required
Indigenous Authority	Any issue related to the indigenous community	PM/SM as required

10. GENERAL SITE MANAGEMENT

Icon shall ensure there is minimal impact to the environment from general activities at the site and provides all practical resources for the implementation of relevant State Environment Protection Policies (SEPPs).

10.1 KEY ENVIRONMENTAL ASPECTS

The following environmental aspects have been identified as relevant to this project. Aspects and impacts are covered in detail in the Project Risk Assessment.

ASPECT	RELEVANT ✓
1. Waterway contamination	X
2. Ground contamination	X
3. Hazardous Substances	✓
4. Dust	✓
5. Excavation work	✓
6. Stockpiles	X
7. Noise/Vibration	✓
8. Waste Management	✓
9. Other: (List below)	NIL

10.2 DUST AND ODOUR MANAGEMENT

Potential impacts to air quality resulting from the works include emissions from exposed soils, asbestos dust, ground water, plant and equipment and dust generated during

demolition. Throughout the construction process, there are many various vehicles tracking materials or the residue of dust through out the street and causing odours beyond the site boundary. This will be managed throughout the construction life in order to minimise impact on the surrounding neighbours, general public and environment. Dust and odours are common on a construction site and therefore require routine management to control and minimise any impacts. Common occurrences include:

Common disturbance	Management Strategy
Dust caused during demolition of the building	Control of dust during demolition phase will be through wet saw cutting, dust suppression equipment, hosing the area, and all works to be within an area protected by shade-cloth.
Dust caused during façade restoration	Control of dust during façade restoration phase will be through wet saw cutting, dust suppression equipment, hosing the area, and all works to be within an area protected by shade-cloth.
Dust caused from cleaning floors and or façade	The perimeter scaffold around the building is to be wrapped in shade-cloth to minimise dust particles penetrating outside the site and polluting the air quality.
Dust caused during bin drop and swap over	The dust will always be suppressed by a pull over shade-cloth that covers the open area of the bin from when the truck leaves the site until it arrives at the sorting facility.
Odour from the skip bin	The odour coming from the rubbish thrown into the skip bin is minimal however as a precaution, the bins are changed over regularly.
Odour from use of strong chemicals	All use of strong chemicals will only be used by qualified personnel with a pre-approved procedure for spills management and odour management. Use of strong chemicals will be within a well ventilated space. The risk of the odours affecting the general public is very low, however it will be monitored onsite during the tasks.

Asbestos dust procedure.

The objective of this management measure is to ensure there is no asbestos dust generated into the air and adopt the necessary PPE if presented with the occurrence of asbestos dust and impact to the air quality.

The use of appropriate PPE with filters within the work zone will be mandatory. There will also be done with the use of water spray during demolition works and appropriate dust suppression methods will be implemented during material collection and removal off site. Soils and demolition materials are to remain moist during demolition works.

There is to be an evaluation of the weather conditions prior to works commencing and monitoring of strong winds and heavy rain. There will be an immediate cease of works if dust generation is excessive.

All dust control measures will be kept in good operating condition and functional at all times, with regular maintenance. There will be covering of any stock piles and loads are to be covered and appropriately fitted with tarpaulins to contain the dust during transport.

The Air quality will be evaluated by the project manager and assessed by a suitably qualified environmental consultant. Continuous exclusion zone boundary monitoring during demolition works using asbestos air monitoring equipment

10.3 STORMWATER AND DISCHARGE MANAGEMENT

A construction soil and water management sub-plan has been prepared to discuss the procedures surrounding the stormwater and discharge management in detail.

Assessment will be made of the site area ground water catchments. Temporary dish drains may be established to direct water runoff. The drains will have straw bales and gravel to retain silt at intermittent points.

At any discharge point to the site stormwater system the pit lids are to be covered with shade cloth, filter fabric or silt socks.

The downhill sides of the site fence may have shade cloth filter fabric to a height of 300mm if the directional flow of water travels through the fence enclosure.

The new stormwater system will be installed and commissioned as early as possible to minimise the period of uncontrolled roof and road water. The fence and drainage controls will be maintained on a regular basis to ensure effectiveness.

10.4 MANAGEMENT OF MATERIALS AND SEDIMENT LEAVING SITE

A construction soil and water management sub-plan has been prepared to discuss the procedures surrounding the stormwater and discharge management in detail.

Prior to the start of the works, a stormwater and sediment control plan will be prepared by the contractor. This plan will be in accordance with councils regulations. Site contractors will be required to observe any increases in sediment load in storm water drains during the construction works.

An evaluation of the weather conditions will take place prior to works commencing and regular observations will be made by the site manager and mitigation measures put into place if sediment loaded runoff is likely to occur or a rainfall event is predicted.

The project manager is responsible for ensuring that the control plans are properly maintained and checked regularly.

The management of materials and sediment leaving site

Sediment barriers

Sediment barriers, traps and basins that will be used include, as appropriate:

- have temporary drains directing runoff into them
- have geotextile-lined spillways
- be maintained regularly after rain
- have water tested and treated, if necessary, before discharge to the stormwater system.

10.5 GROUND WATER MANAGEMENT PLAN

A construction soil and water management sub-plan has been prepared to discuss the procedures surrounding the stormwater and discharge management in detail.

The groundwater management throughout the construction lifetime addresses the following objectives.

- Reduce pollution of groundwater through appropriate controls
- Reduce the impacts of ground water to the existing ecosystem

An analysis into the water table and the height and testing of the groundwater will be assessed and skilled personnel will determine the appropriate course of actions to manage the groundwater.

In order to understand the contamination and level of groundwater that needs to be managed, visual checks will be made continuously by the site team, testing of surface water

that arises and testing of water within the ground that is located during in detailed in ground works.

Ground water management will be in coordination with sediment control and stormwater management to ensure that there is little to no contamination due to construction works.

10.6 EXTERNAL LIGHTING

In accordance with item D3 and D4 of SSD 9374 development consent, the operating hours of the site will be

- 7am to 6pm Monday to Friday
- 8am to 1pm Saturdays
- No works will be carried out by Saturdays

Works that do not exceed the existing background noise can work the following additional hours

- 6pm to 7pm Monday to Fridays
- 1pm to 4pm Saturdays

Works taking place during these times will be within daytime with significant amount of natural lighting. If there is a requirement for works to be completed outside of these times in the dark, the head contractor will seek the relevant approvals and lighting compliance will be provided.

10.7 COMMUNITY CONSULTATION AND COMPLAINTS HANDLING

A construction noise and vibration management sub-plan has been prepared which discusses the management of community/ stakeholder consultation management in detail.

The site emergency contact details are accessible to all the public via the notice board posted to the front entrance. This can be used for any complaints the neighbouring residents have or general public. There will also be site team based fulltime onsite as per the DA working hours for anyone members with complaints and queries.

Works planned that are likely to impact the surrounding neighbours will be notified via a letterbox drop. This will also be notified to Frasers Property where they can pass on the information to the relevant stakeholders directly impacted.

Any complaints will be accommodated where possible, however if it is unavoidable, then the task will be carefully continued in a way that is less disruptive.

11. CONSTRUCTION TRAFFIC AND PEDESTRIAN MANAGEMENT SUB-PLAN

Refer to Appendix 1

12. CONSTRUCTION NOISE AND VIBRATION MANAGEMENT SUB-PLAN

Refer to Appendix 2

13. CONSTRUCTION WASTE MANAGEMENT SUB-PLAN

Refer to Appendix 3

14. CONSTRUCTION SOIL AND WASTE MANAGEMENT SUB-PLAN

Refer to Appendix 4

15. UNEXPECTED FINDS PROTOCOL

15.1 CONTAMINATION

All materials generated on site during either demolition or excavations are to be fully evaluated for potential contamination. This process is to be scheduled with the Project Manager and/or Site Manager on an as needs basis.

Should contaminated wastes be evident (e.g. asbestos, hydrocarbons, etc.), the client will be advised so that arrangements can be made for the engagement of appropriately qualified specialists in hazardous materials handling.

Any contaminated waste will be managed in accordance with the Site WHS Plan requirements.

Australian Operations

- Disposal of prescribed waste/contaminated materials, including contaminated spoil shall be under the following controls:
- Use of licensed prescribed waste contractors and vehicles;
- Advising waste contractors of waste composition and any special hazards associated with the waste;
- Retention of waste transport certificates.

Asbestos.

If asbestos is identified on this site a qualified hygienist may be engaged to provide advice on the management procedures required to effectively manage asbestos onsite. The client will be asked to provide a report showing all known locations for existing asbestos within the site boundary. The following controls will be implemented:

- Areas already identified as containing asbestos will be identifiable on site via appropriate signage. All employees working on site will be briefed of the presence of asbestos in these areas via a toolbox meeting and/or in the site induction.
- Where required an Asbestos Management Plan may be developed as a subsidiary document to this Environmental Management Plan.
- Any grey fibrous cement materials observed on site, and not previously identified as an asbestos contaminated area, must be treated as asbestos-cement materials, or sampled for asbestos fibres.
- Any pipe or other lagging or insulation identified on site that cannot be positively identified as synthetic mineral fibre (SMF) material, polystyrene foam or brown hessian organic fabric should be treated as asbestos lagging.
- If asbestos is suspected of being found during construction activities, works in the immediate vicinity are to cease immediately. Works are not to recommence in that area until confirmation by the way of a hygienist report that has confirmed the type of material.

15.2 MATERIAL ABORIGINAL AND NON-ABORIGINAL HERITAGE

A Heritage impact statement has been prepared to address the heritage extent within the existing building and the protocols to follow in detail for all materials, items and areas of significance.

Refer to appendix 5 for this report

Aboriginal and Historic Archaeological potential has been assessed as low to nil and with consideration for the highly disturbed nature of the site as well as the minimal nature of the proposed excavation, the proposed works are unlikely to impact on the archaeological resource.

The protocols will be run through a heritage consultant who will provide the recommendation and course of action due to the unknown heritage finds.

16. WASTE CLASSIFICATION OF MATERIALS ONSITE.

A Waste management plan has been prepared to address the management of waste and the classifications of waste.

Refer to Appendix 6 for this report.

17. APPENDIX 1

17.1 CONSTRUCTION TRAFFIC MANAGEMENT PLAN



**Construction Traffic Management Plan
Brewery Yard Building Block 4B
5 Central Park Avenue, Chippendale
ICON Constructions**

***Contact for Further Information
KPI CONSTRUCTION SERVICES***

Craig Reeves

Level 1, 11-13 Bronte Rd,
Bondi Junction NSW 2022
Mobile: 0491 278 904

PHONE: 1800 574 574

FAX: 03 9326 5778

Email: craig@kpiconstruction.com.au

Head Office

Unit 22, 74 Thomsons Road,
Keilor Park VIC 3042

PHONE: 03 9326 7795

FAX: 03 9326 5778

Email: finance@kpiconstruction.com.au

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1.0 Document Control

Version	Approved	Qualification Number	Signature	Date
1.0	Craig Reeves	TCT0015996	Craig Reeves	27/07 /2021
Issued to Client				
Version No	Date	Position	Client	Person
1.0	27/07/2021	Site Manager	ICON Constructions	Chris Walters
1.0	27/07/2021	General Managers	KPI Constructions	Steven Daniels
1.0	27/07/2021	Traffic Planner	KPI Constructions	Craig Reeves

2.0 References and Publications

AS/NZS ISO 31000 2009	Risk Management – Principles and Guidelines
AS/NZS 1158	Lighting for roads and public spaces
AS1742.3	Manual of Uniform Traffic Control Devices Part 3: Traffic Control works on Roads
Aust roads AP-R403-12	Aust roads Report – Implementation of National best practice for traffic control at road sites
TC@WS v5	Traffic Control At Work Sites Version 5. July 2018 & Version 6, November 2020 – Roads and Maritime Services
	Traffic engineering and management – Monash University 2018
	Austrorads report - Austrorads Design Vehicles and Turning Paths 2013
	CTMP – Standard requirements – The Hills Council - Appendix A

3.0 List of acronyms used in this plan and their definition

Anti-gawking screen	An opaque screen attached to TRSB to shield the construction worker from the view of passing motorists
Dynamic deflection	The largest transverse deflection of a TRSB system recorded during an actual crash or during a full-scale impact test
End Treatment	The collective term for devices and features at the leading and trailing ends of TRSB systems, which are selected on the basis of traffic speed and composition, the type of TRSB system and the particular site constraints
Nominated Traffic Officer	A person responsible in accordance with clause 5.1 for preparation and implementation of the TMP and TGS
On-Site Traffic Coordinator	A person responsible in accordance with clause 5.1 for the implementation of the prepared TMP and TGS
Traffic Controller	A person authorised in accordance with Clause 6.2.2 to control traffic at roadwork's
Traffic Guidance Scheme (TGS) / Traffic Control Plan (TCP)	A Traffic Guidance Scheme or Traffic Control Plan prepared by the Contractor in accordance with the requirements of the Contract as a means of planning and communicating individual traffic changes. The Traffic Guidance Scheme shows all proposed traffic control devices and their layouts on a plan
Traffic Management Plan (TMP)	The Traffic Management Plan prepared by the Contractor in accordance with the requirements of the Contract. It outlines how the works are integrated into the operation of the road network.
TRSB	Temporary Road Safety Barrier
RMS	Roads and Maritime Services NSW
TMP	Traffic Management Plan
TGS	Traffic Guidance Scheme
TMC	Transport Management Centre
TC@WS	Traffic Control at Work Sites V5 2018 & Traffic Control at Work Sites V6 2020
The Code	Traffic Management for Construction or Maintenance Work Code of Practice 2008
SWMS	Safe Work Method Statements
TCAS	Traffic Control Accreditation Scheme
VMS	Variable Message Signs

4.0 Hold Points

The Hold Points applicable to this CTMP are as follows:

- 4.1 Approval of Traffic Management Plan
- 4.2 Approval of Traffic Guidance Scheme

5.0 Purpose and Scope

This Construction Traffic Management Plan (CTMP) specifies the traffic control measures and devices to be used warn, instruct and guide road users in the safe negotiation of work sites on roads, and the methodology of managing the following around the construction sites including footpaths, shared paths and bicycle paths adjacent to the roadway.

This CTMP formulates the basis of the Traffic Guidance Schemes (TGS) required for this project which cause interference or obstruction to the normal use of a road by any road user. The CTMP also provides guidance for the planning design, installation and operation of the applicable traffic guidance schemes together with requirements for maintaining a safe workplace for both the general public and workers on site.

This CTMP also provides organizations carrying out works on roads with a set of uniform practices for the signage locations and delineation devices of construction which will promote the safety of both workers and road users at the construction site. The CTMP has been prepared in accordance with the TC@WS Manual V5, 2018 and TC@WS Manual V6, 2020 specifies the traffic control measures and devices to be used to warn, instruct and guide road users around the work site or in the vicinity of the construction site. This includes safely guiding pedestrians and cyclists and motorists around the road works.

Operating under this CTMP it is deemed necessary to implement the use of site-specific Traffic Guidance Scheme (TGS) for all the road works/stages applicable to this construction site. Any recommendations outside the TC@WS will have a Local Government approval (Permit) to undertake works. Any works being performed in the vicinity of this construction site that are not related to the construction site are not covered under this site-specific CTMP.

Preparation of this detailed CTMP and proper implementation of measures identified in the approved plan is essential to ensuring the safety of all road users as well as the workers on site. The primary objective of this TMP is to ensure all works performed from, near or on the road are executed in accordance with the TC@WS / AS1742.3 safely, and not without a risk assessment deeming the proposed work safe.

While the secondary objective is to balance:

- (a) The Safe and convenient movement of traffic with minimal disruption; and
- (b) Construction and traffic management costs
- (c) In selection of the appropriate traffic control modes, consideration has been given to:
 - Minimising the hazards and risks to the community and personnel on site.
 - Minimising interaction between the community and personnel on site.
 - Minimising the opportunity of vehicular and plant collision.
 - Optimizing traffic flow entering and exiting the site without impeding the general public.

6.0 Risk Management

Risk management on this construction site entails the identification and analysis of all safety risks likely to arise during works on around the road including the setting up, operating, changing and ultimate dismantling of a traffic guidance scheme, followed by the determination of appropriate measures to mitigate those risks.

The process is appropriate at all levels of planning and operation including the following:

- (a) When preparing the required site-specific traffic guidance schemes and safe work method statements for the road works.
- (b) When preparing traffic guidance schemes for more extensive or complex works where site specific risks will assume importance.
- (c) The use of Qualified Traffic Controllers, AS1742.3 approved signage / traffic control devices

In each case the process should be carried out by first identifying all the hazards likely to arise, evaluating them in terms of likelihood of occurrence and adverse consequences using historical data, experience or other means. The proposed procedural statement or traffic guidance scheme should then be checked in detail to ensure that adequate means of controlling or reducing those risks found to be significant, are in place.

Icon Construction and any sub-contractors on site must comply with the relevant legislation, government Approval or authority to work (permits) and provisions in accordance with the following legislation:

- Manual of Uniforms Traffic Control Devices – Part 3 Works on Roads, AS 1742.3
- New South Wales Workplace Health and Safety Act and Regulation 2011.
- Traffic Control at Worksites V.5 2018 & Traffic Control on Worksite V.6 2020 (TC@WS)
- Code of Practice 2008 Manual Tasks – Code of Practice 2000 – Traffic Management for Construction or Maintenance Work.
- RMS Transport Management Centre (TMC *if applicable*)
- City of Sydney Council
- Department of Roads and Maritime Services
- New South Wales Police Force
- Austroads Design Vehicles and Turning Path 2013
- City of Sydney Council – CTMP Standard Requirements – Appendix A

7.0 Traffic Control Principles

- 7.1 The purpose of traffic control at roadworks is to clearly communicate to all road users, including pedestrians and cyclists, the path and speed at which they should travel through, past, or around the roadwork site. The TC@WS provides detailed guidance on the most appropriate forms of traffic control for roadwork sites and should be applied as the optimal treatment at most sites.
- 7.2 The credibility and effectiveness of these TGSs will be reduced when the scheme and its relevance/relation to the roadwork site is not clear. This can lead to situations where drivers disregard traffic control devices, most notably speed limit signs. It is in both the Contractor's and Principal's interest that speed limit choices in the TGS are realistic, and enforceable.
- 7.3 Roadwork signage must be in accordance with the TGS and installed and maintained to the required standards.
- 7.4 Reduced speed zones must be kept to minimum lengths. This requires 'END ROADWORK' and speed signs to be in place as close to the end of the works as practicable.
- 7.5 Reduced speed zones must be adept to minimum durations. This requires speed signs to be changed as soon as they are no longer appropriate.

- 7.6 If a speed zone is in place for road worker safety, then there must be road workers present.
- 7.7 A reduced speed zone in place for road safety (as a result of changes to the road environment) must be justified and the danger must be evident or made evident to the road user.
- 7.8 A reduced speed zone in place to protect works must be justified and the reason must be evident or made evident to the road user.
- 7.9 Speed zones should be implemented just prior to the commencement of works requiring the speed zone and should be removed immediately following the completion of the works requiring the speed zone.
- 7.10 All Long-Term Signage erected must be covered up on termination of each shift, or removed from The roadway when no longer required.

8.0 Description of Works

PROJECT ADDRESS:	Central Park Avenue, Chippendale, NSW 2008
COUNCIL MUNICIPALITY:	City of Sydney Council
APPLICATION NUMBER:	SSD 9374
CONSTRUCTION COMPANY:	ICON Construction
SITE CONTACT NAME:	Chris Walters
POSITION:	Site Manager
SITE CONTACT NUMBER:	0407 215 534
SITE CONTACT EMAIL:	chris.walters@icon.co

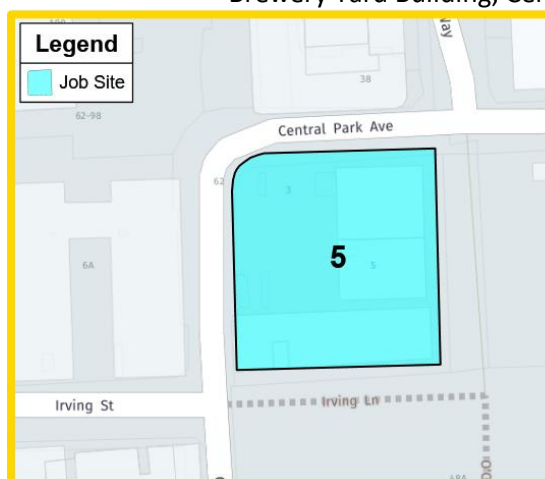
ICON Constructions have contracted for the re-development of the Brewery Yard Building located on Central Park Avenue, Chippendale in the heart of the Central Park Precinct framed by the DUO and the Steps buildings. This work involves the adaptive reuse of the Brewery Yards Buildings and forecourt for commercial premises,

- ✚ including the internal demolition and removal of one coal hopper
- ✚ addition of two storeys above Building 22 and 23 and a new roof, new external fire stairs, new floors in building 30 and a glazed façade on the northern elevation of Building 30.
- ✚ A maximum gross floor area of 6,266m squared
- ✚ Heritage interpretation/display area
- ✚ Public domain work

The works are anticipated to commence in September 2021 with completion set for September 2022, approximately 12 months.

9.0 Location of Works

Brewery Yard Building, Central Park Avenue, Chippendale



SOURCE: NEARMAP



SOURCE: NEARMAP

10.0 Delivery of plant and machinery and general goods

All vehicles making material delivery, demolition deliveries of plant and equipment will Ingress Site into Gate 1 from Central Park Avenue in a forward direction under traffic control direction. All exiting vehicles will egress through gate 2 on Central Park Avenue under the direction of traffic control in a forward direction.

For all vehicles over 8 meters, to ensure clear site ingress access, a temporary intermittent traffic stop may be required for delivery drivers, or for works undertaken during adverse weather to ensure Roads, Building and Safety standards are maintained (RMS- TC@WS 9.1.2 Intermittent work) (AS1742.3 Cl 4.3.2 and 4.4.6). It is foreseen that assisted entry and exit will need to be done for the duration of this work to ensure other road users' safety and pedestrian safety. However, under safety regulations should these stops need to occur they will be done so in suitable gaps in traffic, before or after peak traffic times. So other road users remain unaffected by the site's vehicular movements. AS1742.3, CL 4.3.2 and 4.4.6 and Council's regulations are to be complied with at all times during these works. It is the responsibility of the project manager to also compile onsite toolboxes with all site personnel and complete risk assessments for all vehicular movements for this site.

Traffic control may be utilised to assist vehicular movements in and around the site, during Loading and un-loading of materials, or while Vehicular Ingress or Egress to the site, Traffic Control will intermittently hold any Pedestrians until the vehicle safely passes and enters the roadway or site, once the vehicle is no longer a hazard, or has cleared the footpath area pedestrians will be allowed to continue.

On exit, all egress movements onto the roadway are to be undertaken in suitable gaps in traffic, to ensure traffic congestion is kept to a minimum, vehicles currently on the roadway have right- of- way. All delivery drivers are to have a CB radio fitted to ensure seamless ingress and egress of site and to prevent site loading area overcrowding.

Icon Construction and KPI Services are also conscious of the light traffic and heavy to moderate pedestrian volumes in the vicinity of their construction site and intend to ensure equipment, material loading, and unloading are conducted inside the site and do not cause an unnecessary impact on the area.

Vehicle Access Plans:

A vehicle access plan has been designed for site vehicles and deliveries to successfully ingress and egress from site and the surrounding road network with minimal disruption to other road users. Any oversize or over mass vehicle required for site will have informed all governing bodies (RMS, Police and Council) and will have all approvals prior to arrival on site. Due to site constraints no queuing or marshalling will be undertaken on local roads anytime during this project. At no time site vehicles are to reverse in or out of the site.

At all times, Site vehicles are to follow NSW road rules (where applicable) while entering and exiting site and adjust driving attitude to road conditions (i.e inclement / adverse weather)

11.0 Ingress Routes

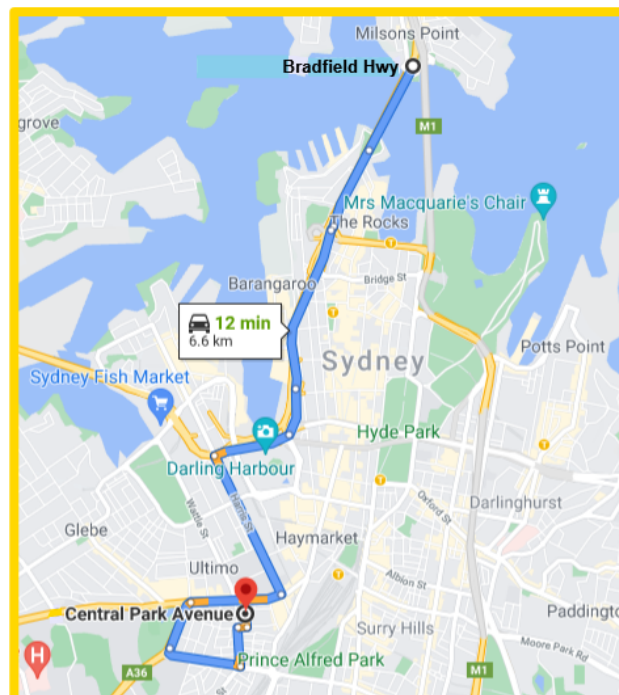
11.1 Ingress Route 1 Medium Rigid 8.80MTRS

BradfieldHwy
Milsons Point NSW 2061

- ✓ Take Western Distributor, Harris St and Broadway to Abercrombie St in Chippendale
12min(6.1km)
- ↑ Head south towards Cahill Expy/Sydney Harbour Bridge
700m
- ↑ Continue onto Cahill Expy/Sydney Harbour Bridge
Continue to follow Cahill Expy
Toll road
600m
- ↘ Slight right towards Western Distributor
Toll road
31m
- ↘ Use any lane to turn slightly left onto Western Distributor
Toll road
1.2km
- ↘ Slight left onto Western Distributor /A4 (signs for Anzac Bridge/Western Suburbs)
Toll road
350m

- ↘ Use the right 2 lanes to take the exit towards Harris St
550m
- ↙ Use the left 2 lanes to turn left onto Harris St
1.1km
- ↘ Use the right 2 lanes to turn right onto Broadway
650m
- ↙ Turn left onto City Rd/Princes Hwy/A36
350m
- ↙ Turn left onto Cleveland St
550m
- Continue on Abercrombie St. Drive to Central Park Ave
2min(450m)
- ↙ Turn left onto Abercrombie St
280m
- ↘ Turn right onto O'Connor St
68m
- ↙ Turn left onto Central Park Ave
99m

5 Central Park Ave
Chippendale NSW 2008



Source Googlemaps

11.2 Ingress Route 2 Medium Rigid 8.80MTRS

Great Western Hwy
Camperdown NSW 2050

↑ Head east on Great Western Hwy/Parramatta Rd/A22 towards University Ave
Continue to follow Great Western Hwy/A22

450m

➡ Use the right 2 lanes to turn right onto City Rd/Princes Hwy /A36

400m

⬅ Turn left onto Cleveland St

550m

⬅ Turn left onto Abercrombie St

280m

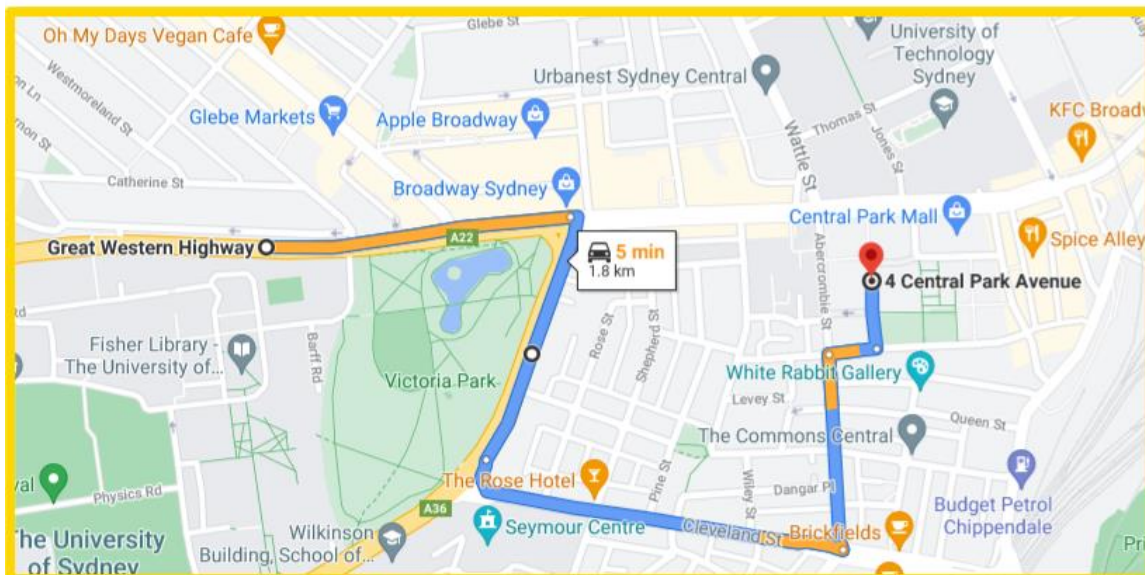
➡ Turn right onto O'Connor St

68m

⬅ Turn left onto Central Park Ave

96m

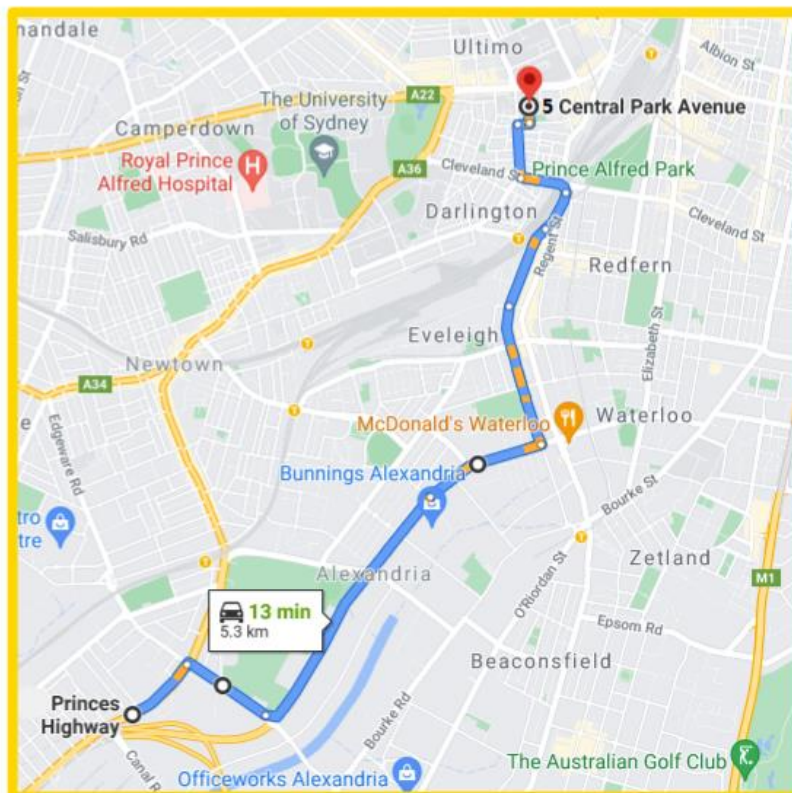
5 Central Park Ave
Chippendale NSW 2008



Source Googlemaps

11.3 Ingress Route 3 Medium Rigid 8.80MTRS

Princes Hwy St Peters NSW 2044 ↑ Head north-east on Princes Hwy/A36 towards Silver St 53s (400m) ➡ Use the right 2 lanes to turn right onto Campbell St 1 min(500m) ✓ Continue on Euston Rd to Alexandria 5 min(2.2km) ↙ Use the left 2 lanes to turn left onto Euston Rd 1.5km ↑ Continue onto McEvoy St 700m ↙ Turn left onto Wyndham St 3 min(800m) ✓ Continue on Gibbons St to Abercrombie St 3 min(1.0km)	↑ Continue onto Gibbons St 450m ↑ Continue straight onto Regent St 230m ↙ Turn left onto Cleveland St 270m ✓ Continue on Abercrombie St. Drive to Central Park Ave in Chippendale 2min(500m) ➡ Use the right 2 lanes to turn right onto Abercrombie St 290m ➡ Turn right onto O'Connor St 68m ↙ Turn left onto Central Park Ave 97m 5 Central Park Ave Chippendale NSW 2008
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Source Googlemaps

11.4 Ingress Route 4 Medium Rigid 8.80MTRS

S Dowling St
 Waterloo NSW 2017

↑ Head north on S Dowling St towards Danks St
 850m

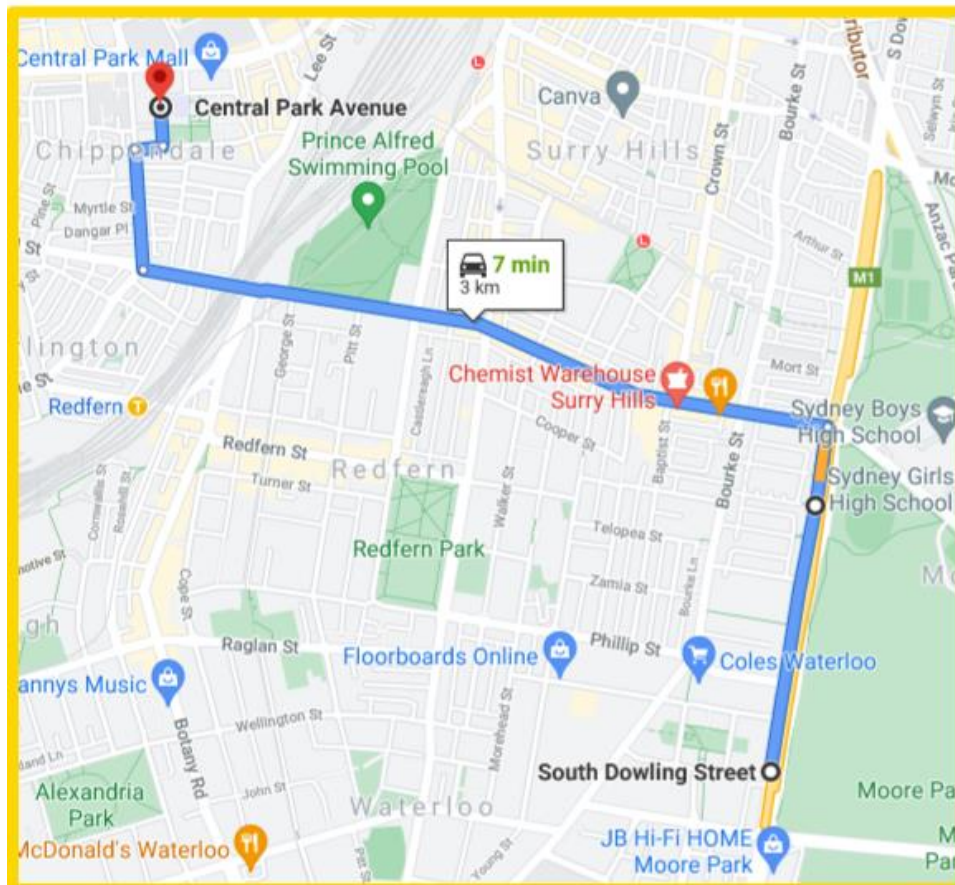
↙ Turn left onto Cleveland St
 1.7km

↘ Use the right 2 lanes to turn right onto Abercrombie St
 290m

↘ Turn right onto O'Connor St
 68m

↙ Turn left onto Central Park Ave
 97m

5 Central Park Ave
 Chippendale NSW 2008



Source Googlemaps

11.5 Ingress Route 5 Heavy Rigid 12.50MTRS

BradfieldHwy

Milsons Point NSW 2061

- Take Cahill Expy and Western Distributor to Harris St in Ultimo. Take the exit from Western Distributor/A4

4 min(3.4km)

- Head south towards Cahill Expy/Sydney Harbour Bridge

700m

- Continue onto Cahill Expy/Sydney Harbour Bridge

Continue to follow Cahill Expy

Toll road

600m

- Slight right towards Western Distributor

Toll road

31m

- Use any lane to turn slightly left onto Western Distributor

Toll road

1.2km

- Slight left onto Western Distributor/A4 (signs for Anzac Bridge (Western Suburbs))

Toll road

350m

- Use the right 2 lanes to take the exit towards Harris St

550m

- Continue on Harris St. Take Regent St to Central Park Ave in Chippendale

6min(1.8km)

- Use the left 2 lanes to turn left onto Harris St

1.1km

- Continue straight onto Regent St

180m

- Use the right lane to turn right to stay on Regent St

140m

- Turn right onto Kensington St

84m

- Continue onto Carlton St

120m

- Turn left onto Central Park Ave

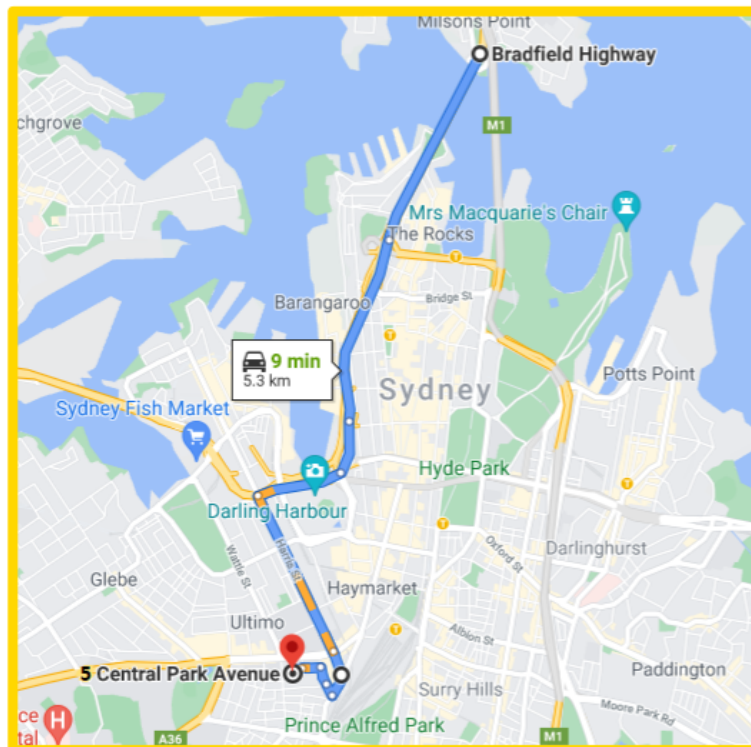
120m

- Keep left to stay on Central Park Ave

97m

5 Central Park Ave

Chippendale NSW 2008



Source Googlemaps

11.6 Ingress Route 6 Heavy Rigid 12.50MTRS

Great Western Hwy

Glebe NSW 2037

↑ Head east on Broadway/Great Western Hwy/A22 towards Glebe Point Rd

[Continue to follow Broadway](#)

700m

➡ Turn right onto Chippendale Way

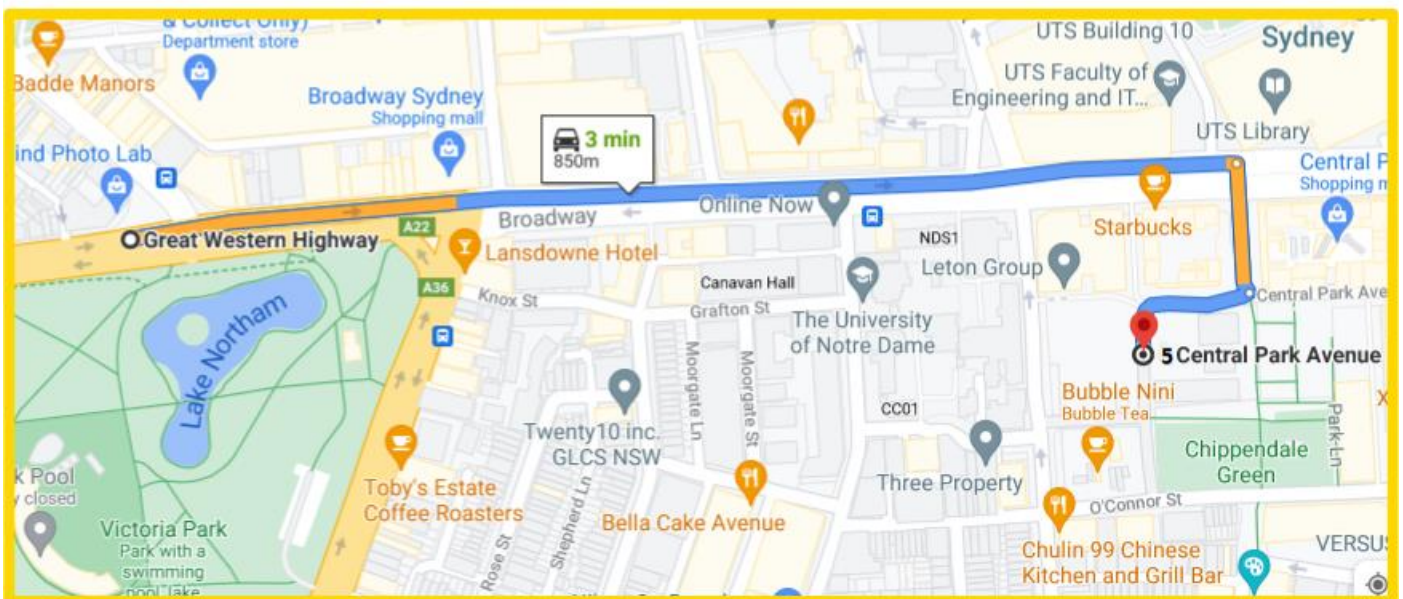
81m

➡ Turn right onto Central Park Ave

94m

5 Central Park Ave

Chippendale NSW 2008



Source Googlemaps

11.7 Ingress Route 7 Heavy Rigid 12.50MTRS

Princes Hwy

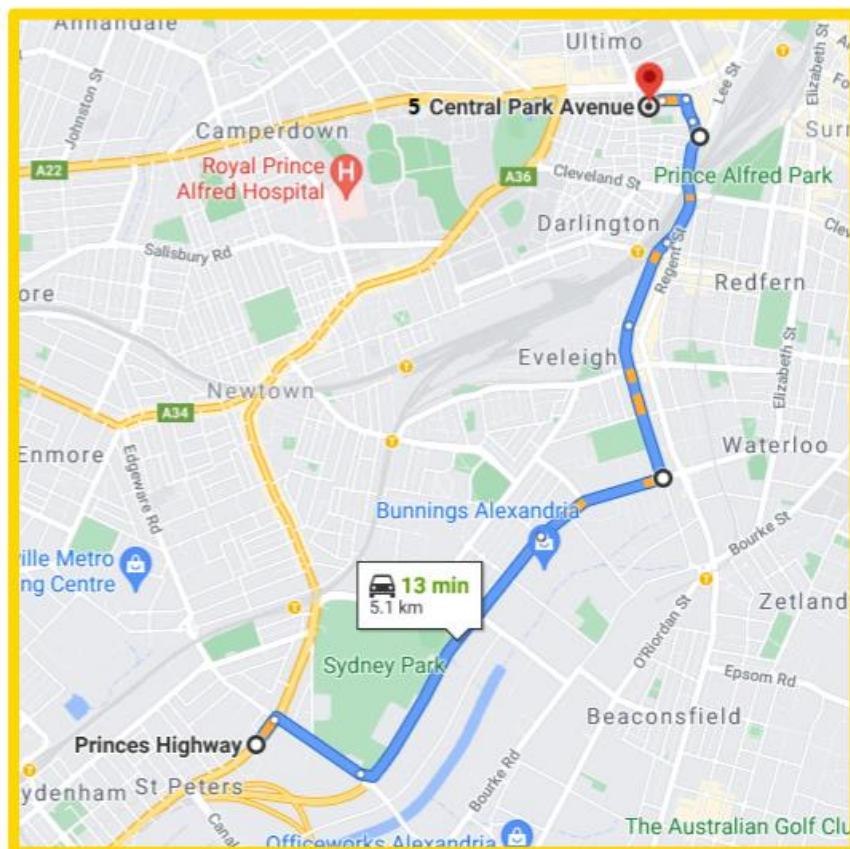
St Peters NSW 2044

- ↑ Head north-east on Princes Hwy/A36 towards Victoria St
29s (150m)
- ➡ Use the right 2 lanes to turn right onto Campbell St
1 min(500m)
- ✓ Continue on Euston Rd to Alexandria
5 min(2.2km)
- ↙ Use the left 2 lanes to turn left onto Euston Rd
1.5km
- ↑ Continue onto McEvoy St
700m
- ↙ Turn left onto Wyndham St
3 min(800m)
- ✓ Take Regent St to Kensington St in Chippendale
3 min(1.0km)

- ↑ Continue onto Gibbons St
450m
- ↑ Continue straight onto Regent St
600m
- ✓ Take Carlton St to Central Park Ave
2 min(400m)
- ↙ Turn left onto Kensington St
84m
- ↑ Continue onto Carlton St
120m
- ↙ Turn left onto Central Park Ave
120m
- ↙ Keep left to stay on Central Park Ave
89m

5 Central Park Ave

Chippendale NSW 2008



Source Googlemaps

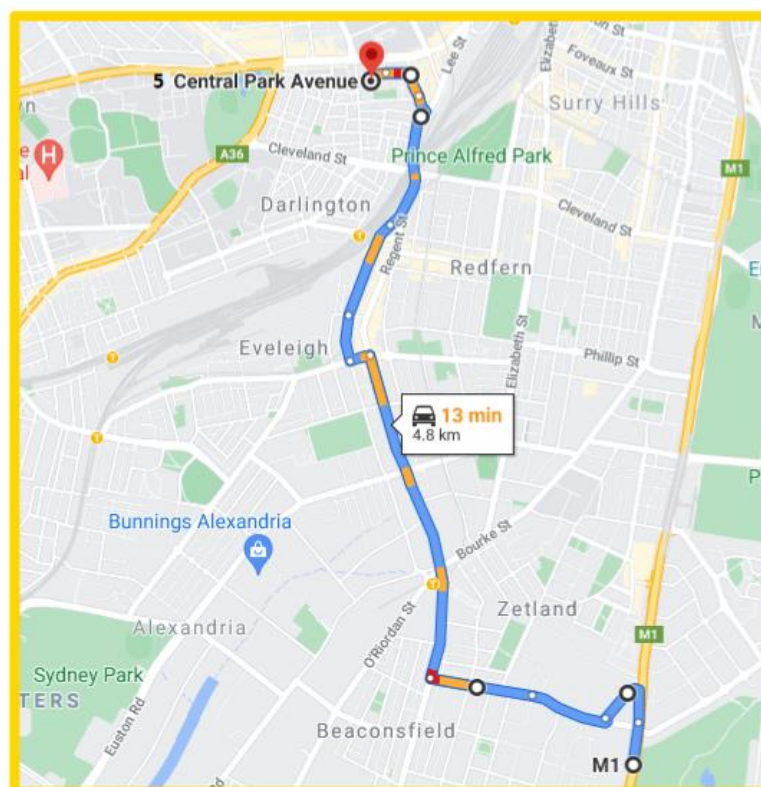
11.8 Ingress Route 8 Heavy Rigid 12.50MTRS

M1
Zetland NSW 2017

- ✓ Take Epsom Rd, Botany Rd, Gibbons St and Regent St to Kensington St in Chippendale
12min(4.4km)
- ↑ Head north on M1
200m
- ↙ Take the Link Rd exit towards Rosebery
240m
- ↑ Continue onto Link Rd
140m
- 📍 At the roundabout, take the 2nd exit onto Epsom Rd
400m
- ↑ Continue straight to stay on Epsom Rd
500m
- ↘ Turn right onto Botany Rd
1.6km
- ↙ Botany Rd turns left and becomes Henderson Rd
94m

- ↘ Use the right 2 lanes to turn right onto Wyndham St
220m
- ↑ Continue onto Gibbons St
450m
- ↑ Continue straight onto Regent St
600m
- ✓ Take Carlton St to Central Park Ave
2min (400m)
- ↙ Turn left onto Kensington St
84m
- ↑ Continue onto Carlton St
120m
- ↙ Turn left onto Central Park Ave
120m
- ↙ Keep left to stay on Central Park Ave
94m

5 Central Park Ave
Chippendale NSW 2008



Source Googlemap

12.0 EGRESS ROUTES

12.1 Egress Route 1

5 Central Park Ave

Chippendale NSW 2008

- ✓ Get on Western Distributor/A4 in Sydney from Wattle St

5min(2.1km)

- ↑ Head west on Central Park Ave towards Irving St

83m

- Turn right onto Irving St

65m

- Turn right onto Abercrombie St

140m

- ↑ Continue onto Wattle St

1.0km

- Turn right onto Fig St

290m

- ⤴ Use the 2nd from the right lane to take the Harbour Bridge slip road

450m

- ✓ Follow Western Distributor /A4 to Bradfield Hwy/Sydney Harbour Bridge in Milsons Point

3min(2.9km)

- ⤴ Use the right lane to merge onto Western Distributor /A4

200m

- Keep right to stay on Western Distributor/A4

1.6km

- Western Distributor/A4 turns slightly left and becomes Bradfield Hwy/ Sydney Harbour Bridge

1.1km

BradfieldHwy

Milsons Point NSW 2061



Source Googlemaps

12.2 Egress Route 2

5 Central Park Ave

Chippendale NSW 2008

↑ Head east on Central Park Ave

50m

↙ Turn left onto Chippendale Way

66m

↙ Turn left onto Broadway

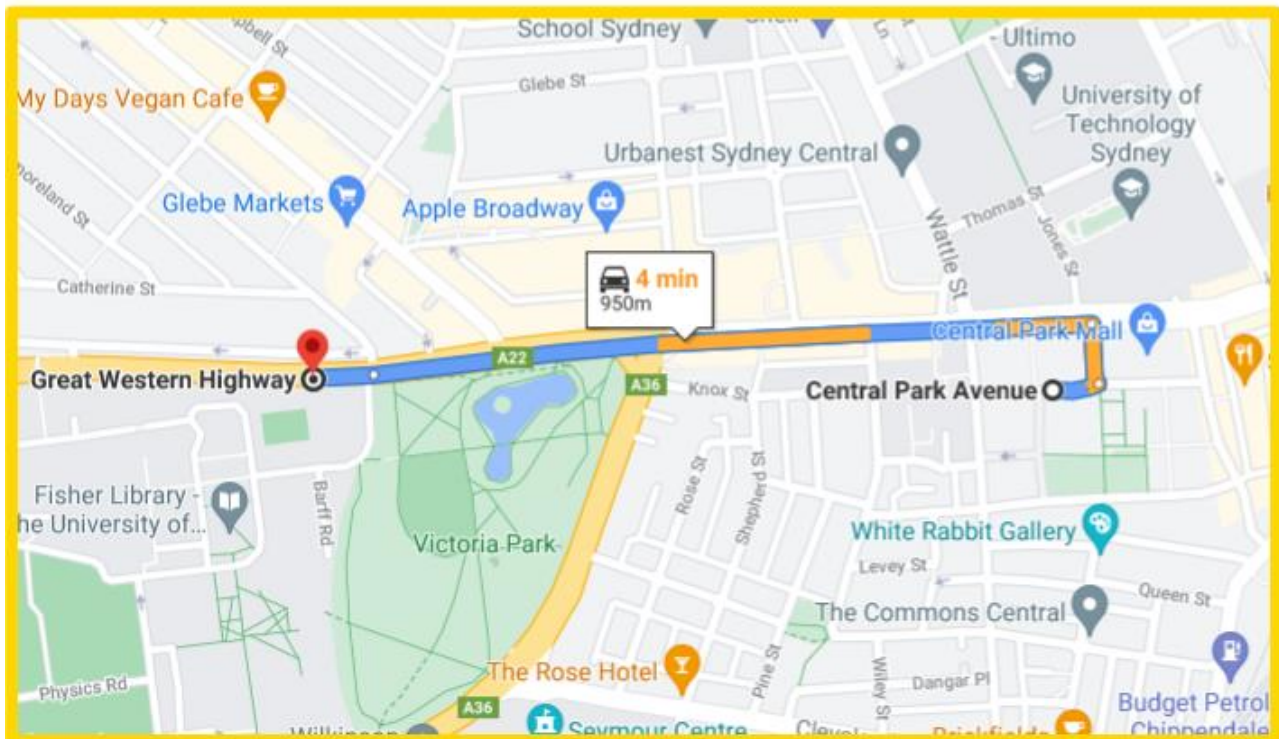
800m

↑ Continue onto Great Western Hwy/Parramatta Rd/A22

66m

Great Western Hwy

Camperdown NSW 2050



Source Googlemaps

12.3 Egress Route 3

5 Central Park Ave

Chippendale NSW 2008

- ✓ Take Central Park Ave and Carlton St to Regent St

2min(350m)

- ↑ Head east on Central Park Ave

51m

- ↘ Slight right to stay on Central Park Ave

120m

- ↘ Turn right onto Carlton St

120m

- ↑ Continue onto Kensington St

84m

- ✓ Continue on Regent St. Take Mitchell Rd to Princes Hwy/A36 in St Peters

13min(4.9km)

- ↘ Turn right onto Regent St

1.1km

- ↑ Continue onto Botany Rd

120m

- ↘ Use the right 2 lanes to turn right onto Henderson Rd

350m

- ↙ Turn left onto Mitchell Rd

Go through 2 roundabouts

1.4km

- ↘ Use any lane to turn right onto Sydney Park Rd

500m

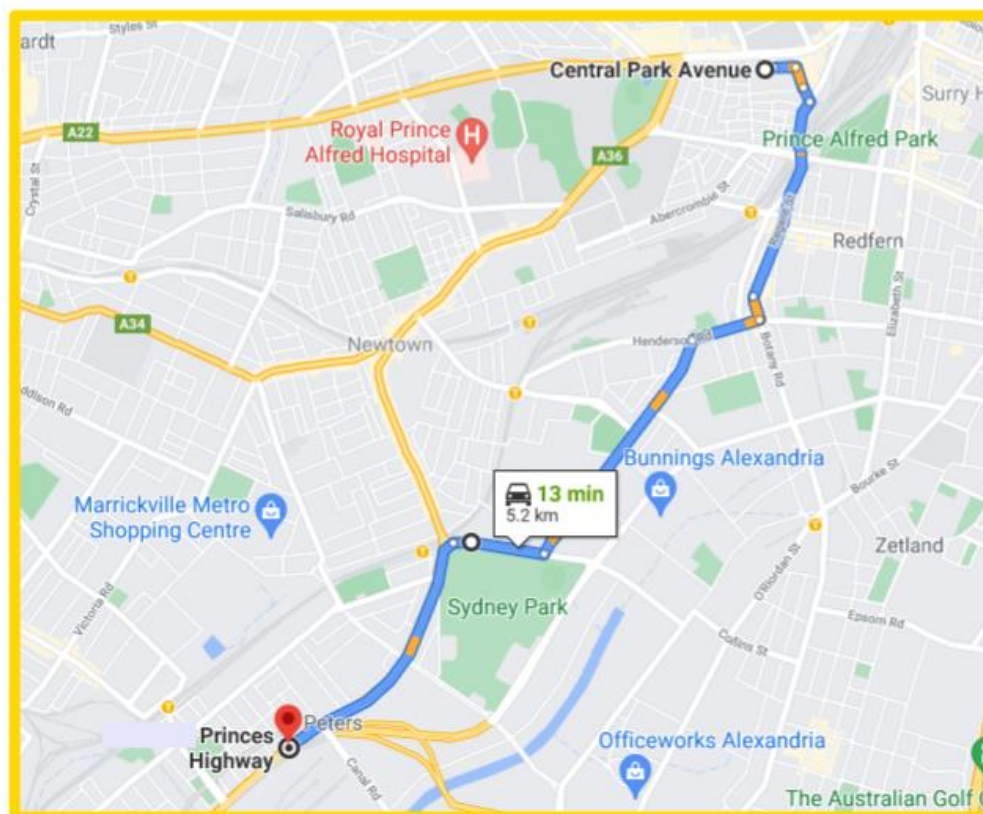
- ↙ Use the left 2 lanes to turn left onto King St/Princes Hwy/A36

Continue to follow Princes Hwy/A36

1.4km

Princes Hwy

St Peters NSW 2044



Source Googlemaps

12.4 Egress Route 4

5 Central Park Ave
Chippendale NSW 2008

↑ Head east on Central Park Ave
48m

↗ Slight right to stay on Central Park Ave
120m

➡ Turn right onto Carlton St
120m

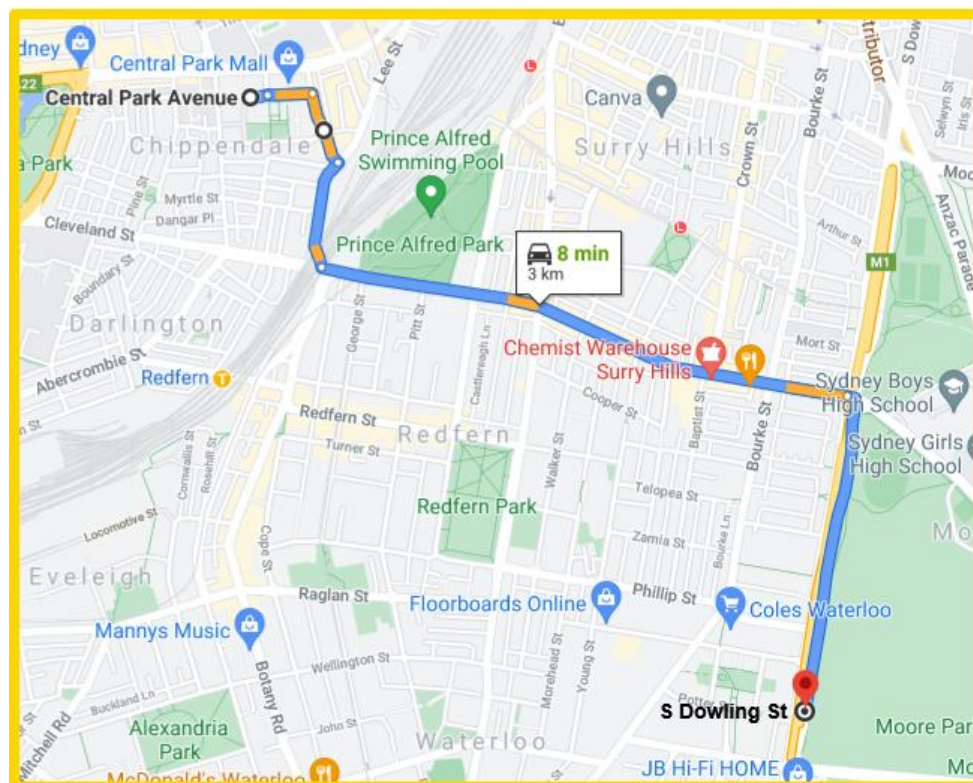
↑ Continue onto Kensington St
84m

➡ Turn right onto Regent St
300m

↙ Turn left onto Cleveland St
1.4km

➡ Turn right onto S Dowling St
850m

S Dowling St
Waterloo NSW 2017



Source Googlemaps

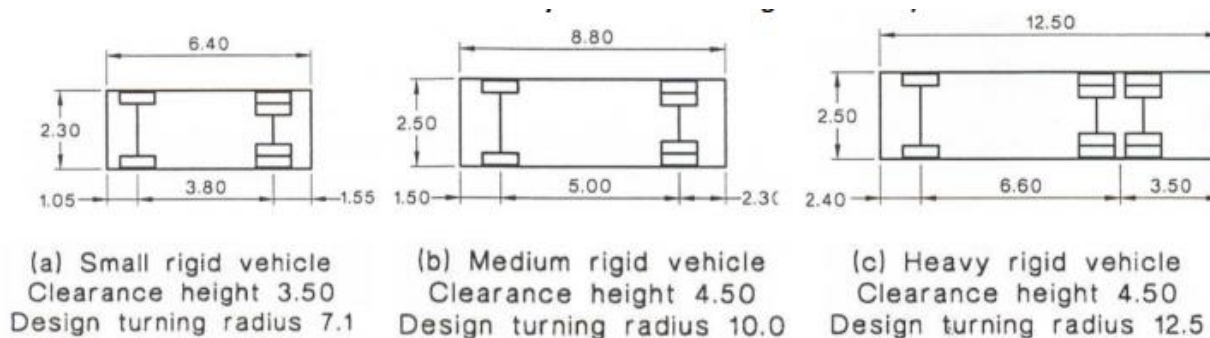
13.0 Staging of Works

Building Re-Development	Start	Finish
HERITAGE REMOVAL	September 2021	September 2021 (2 weeks)
HOARDINGS, SHEDS AND ENTRIES	September 2021	October 2021 (6 Weeks)
SCAFFOLD	October 2021	November 2021 (6 Weeks)
DEMOLITION	October 2021	January 2022 (16 Weeks)
STRUCTURE	December 2021	June 2022 (30 Weeks)
FINISHES	March 2022	September 2022 (30 Weeks)
EXTERNAL	August 2022	September 2022 (6 Weeks)

14.0 Transport Vehicles

ICON Construction will have an active and ongoing involvement in the management and monitoring of works during the demolition and construction phase. They will ensure as previously mentioned. That no vehicle will make deliveries outside Council's approved DA times, as well as that all delivery vehicles will arrive at pre-arranged times to site. All vehicles approaching the work site will adhere to the road rules and observe any signage in place.

All loading and unloading shall be done so from on site as shown on the TGS's in the end of this document.



STAGE	MOVEMENTS AT PEAK	RANGE OF VEHICLES DURING STAGE	LARGEST VEHICLES
HERITAGE REMOVAL	1-3 per day	SRV, MRV, HRV	HRV
HOARDINGS, SHEDS AND ENTRIES	1-4 per day	SRV, MRV, HRV	HRV
SCAFFOLD	1-3 per day	SRV, MRV, HRV	HRV
DEMOLITION	3-6 per day	SRV, MRV, HRV	HRV

STRUCTURE	3-6 per day	SRV, MRV, HRV	HRV
FINISHES	3-6 per day	SRV, MRV, HRV	HRV
EXTERNAL	1-3 per day	SRV, MRV, HRV	HRV

The largest vehicle expected to site will be a Heavy Rigid Vehicle (HRV) which will be 12.5MTRS long delivering building materials. The estimate of movement of vehicles during peak times may vary during concrete pours.

15.0 Traffic Management Plan Arrangements

15.1 Stage 1 – Heritage Removal

This stage involves the removal, storage and protection of Heritage materials from site in order to commence establishing the site compound (staff offices and employee's amenities). It is foreseen that, small rigid vehicles, medium rigid vehicles & heavy rigid vehicles will be required for a portion of the Day-to-Day operations of this site. Trucks will enter and exit site in a forward motion only, all ingress / egress movements are to be undertaken in suitable gaps in traffic flow to minimize impact to other road users during the day-to-day operations during this stage, pedestrians may be temporary held during this movement to allow clear access for all site deliveries. Site Vehicles are to be loaded/unloaded inside the site perimeter on Central Park Avenue. While Stage 1 comprises of heritage removal and storage works. These works are anticipated to run for approximately 2 weeks, with approximately up to 1-3 Trucks per day.

Vehicular traffic management options considered:

Option		Features	Comment
Traffic past the worksite	Past site (Unaffected)	As the site has made arrangements where the works can be conducted internally allowing passing traffic to remain unaffected on Central Park Avenue.	Preferable
	Lane	A Lane Closure May be required in the instance an oversize or over mass vehicle is required for the Site,	Occasionally By Council Approval

Pedestrian traffic management options considered:

Pedestrian access will be maintained along all boundaries of the site during this stage with A class hoarding installed along the perimeter of the site and the footpath open. Pedestrian site awareness, "Footpath Watch Your Step" signage will be installed on Central Park Avenue to ensure pedestrian safety and awareness at all times.

Option		Features	Comment
Traffic around the worksite	Detour	Would allow closure of the entire footpath along Central Park Avenue. Not practicable.	Not feasible
Traffic through the worksite		The works at times may impact on the footpath. Traffic control will be on site to escort pedestrians through work area.	Not feasible
Traffic past the worksite	Intermittent stoppages	Pedestrians will be controlled by intermittent stoppages while Construction Vehicles Ingress / Egress site. Pedestrians are to be escorted past works if required	Preferable

- Property access options considered:
- No property access is impacted by these works

15.2 Stage 2 – Hoardings, Sheds and Entries

This stage involves the preparation of the site in order to commence construction, including establishing the site compound (staff offices and employee's amenities), Site Establishment including installation of concrete pathways, sediment and erosion controls, Disconnection of existing services, Site remediation and hoarding installation. It is foreseen that, small rigid vehicles, medium rigid vehicles & heavy rigid vehicles will be required for a portion of the Day-to-Day operations of this site. Trucks will enter and exit site in a forward motion only, all ingress / egress movements are to be undertaken in suitable gaps in traffic flow to minimize impact to other road users during the day-to-day operations during this stage, pedestrians may be temporary held during this movement to allow clear access for all site deliveries. Site Vehicles are to be loaded/unloaded inside the site perimeter on Central Park Avenue. While Stage 2 comprises of mainly civil works and Preconstruction works. Early works are anticipated to run for approximately 6 weeks, with approximately up to 1-4 Trucks per day.

Vehicular traffic management options considered:

Option		Features	Comment
Traffic past the worksite	Past site (Unaffected)	As the site has made arrangements where the works can be conducted internally allowing passing traffic to remain unaffected on Central Park Avenue.	Preferable
	Lane	A Lane Closure May be required in the instance an oversize or over mass vehicle is required for the Site,	Occasionally By Council Approval

Pedestrian traffic management options considered:

Pedestrian access will be maintained along all boundaries of the site during this stage with A class hoarding installed along the perimeter of the site and the footpath open. Pedestrian site awareness, "Footpath Watch Your Step" signage will be installed on Central Park Avenue to ensure pedestrian safety and awareness at all times.

Option		Features	Comment
Traffic around the worksite	Detour	Would allow closure of the entire footpath along Central Park Avenue. Not practicable.	Not feasible
Traffic through the worksite		The works at times may impact on the footpath. Traffic control will be on site to escort pedestrians through work area.	Not feasible
Traffic past the worksite	Intermittent stoppages	Pedestrians will be controlled by intermittent stoppages while Construction Vehicles Ingress / Egress site. Pedestrians are to be escorted past works if required	Preferable

- Property access options considered:
- No property access is impacted by these works

15.3 Stage 3 – Scaffold

This stage involves the delivery and installation of scaffold around the façade of the building for preparation of some demolition works that need to be completed. It is foreseen that, small rigid vehicles, medium rigid vehicles & heavy rigid vehicles will be required for a portion of the Day-to-Day operations of this site. Trucks will enter and exit site in a forward motion only, all ingress / egress movements are to be undertaken in suitable

gaps in traffic flow to minimize impact to other road users during the day-to-day operations during this stage, pedestrians may be temporary held during this movement to allow clear access for all site deliveries. Site Vehicles are to be loaded/unloaded inside the site perimeter on Central Park Avenue. While Stage 3 comprises of mainly scaffolding and preconstruction works. Early works are anticipated to run for approximately 6 weeks, with approximately up to 1-3 Trucks per day.

Vehicular traffic management options considered:

Option		Features	Comment
Traffic past the worksite	Past site (Unaffected)	As the site has made arrangements where the works can be conducted internally allowing passing traffic to remain unaffected on Central Park Avenue.	Preferable
	Lane	A Lane Closure May be required in the instance an oversize or over mass vehicle is required for the Site,	Occasionally By Council Approval

Pedestrian traffic management options considered:

Pedestrian access will be maintained along all boundaries of the site during this stage with A class hoarding installed along the perimeter of the site and the footpath open. Pedestrian site awareness, "Footpath Watch Your Step" signage will be installed on Central Park Avenue to ensure pedestrian safety and awareness at all times.

Option		Features	Comment
Traffic around the worksite	Detour	Would allow closure of the entire footpath along Central Park Avenue. Not practicable.	Not feasible
Traffic through the worksite		The works at times may impact on the footpath. Traffic control will be on site to escort pedestrians through work area.	Not feasible
Traffic past the worksite	Intermittent stoppages	Pedestrians will be controlled by intermittent stoppages while Construction Vehicles Ingress / Egress site. Pedestrians are to be escorted past works if required	Preferable

- Property access options considered:
- No property access is impacted by these works

15.4 Stage 4 – Demolition

This stage involves the demolition of certain sections of the existing structure and the removal of all spoil from site. It is foreseen that, small rigid vehicles, medium rigid vehicles & heavy rigid vehicles will be required for a portion of the Day-to-Day operations of this site. Trucks will enter and exit site in a forward motion only, all ingress / egress movements are to be undertaken in suitable gaps in traffic flow to minimize impact to other road users during the day-to-day operations during this stage, pedestrians may be temporary held during this movement to allow clear access for all site deliveries. Site Vehicles are to be loaded/unloaded inside the site perimeter on Central Park Avenue. While Stage 4 comprises of mainly of demolition works. This stage is anticipated to run for approximately 16 weeks, with approximately up to 3-6 Trucks per day.

Vehicular traffic management options considered:

Option		Features	Comment
Traffic past the worksite	Past site (Unaffected)	As the site has made arrangements where the works can be conducted internally allowing passing traffic to remain unaffected on Central Park Avenue.	Preferable
	Lane	A Lane Closure May be required in the instance an oversize or over mass vehicle is required for the Site,	Occasionally By Council Approval

Pedestrian traffic management options considered:

Pedestrian access will be maintained along all boundaries of the site during this stage with A class hoarding installed along the perimeter of the site and the footpath open. Pedestrian site awareness, "Footpath Watch Your Step" signage will be installed on Central Park Avenue to ensure pedestrian safety and awareness at all times.

Option		Features	Comment
Traffic around the worksite	Detour	Would allow closure of the entire footpath along Central Park Avenue. Not practicable.	Not feasible
Traffic through the worksite		The works at times may impact on the footpath. Traffic control will be on site to escort pedestrians through work area.	Not feasible
Traffic past the worksite	Intermittent stoppages	Pedestrians will be controlled by intermittent stoppages while Construction Vehicles Ingress / Egress site. Pedestrians are to be escorted past works if required	Preferable

- Property access options considered:
- No property access is impacted by these works

15.5 Stage 5 – Structure, Finishes and External Works

This stage involves all construction, externally and internally to the building plus all public domain work and landscaping for the site. Deliveries and removal of all materials will be made on Central Park Avenue, Chippendale. It is foreseen that, small rigid vehicles, medium rigid vehicles & heavy rigid vehicles will be required for a portion of the Day-to-Day operations of this site. Trucks will enter and exit site in a forward motion only, all ingress / egress movements are to be undertaken in suitable gaps in traffic flow to minimize impact to other road users during the day-to-day operations during this stage, pedestrians may be temporary held during this movement to allow clear access for all site deliveries. Site Vehicles are to be loaded/unloaded inside the site perimeter on Central Park Avenue. This stage is anticipated to run for approximately 8 months, with approximately up to 3-6 Trucks per day.

Option		Features	Comment
Traffic past the worksite	Past site (Unaffected)	As the site has made arrangements where the works can be conducted internally allowing passing traffic to remain unaffected on Central Park Avenue.	Preferable
	Lane	A Lane Closure May be required in the instance an oversize or over mass vehicle is required for the Site,	Occasionally By Council Approval

Pedestrian traffic management options considered:

Pedestrian access will be maintained along all boundaries of the site during this stage with A class hoarding installed along the perimeter of the site and the footpath open. Pedestrian site awareness, "Footpath Watch Your Step" signage will be installed on Central Park Avenue to ensure pedestrian safety and awareness at all times.

Option		Features	Comment
Traffic around the worksite	Detour	Would allow closure of the entire footpath along Central Park Avenue. Not practicable.	Not feasible
Traffic through the worksite		The works at times may impact on the footpath. Traffic control will be on site to escort pedestrians through work area.	Not feasible
Traffic past the worksite	Intermittent stoppages	Pedestrians will be controlled by intermittent stoppages while Construction Vehicles Ingress / Egress site. Pedestrians are to be escorted past works if required	Preferable

- Property access options considered
- No property access is impacted by these works

15.6 Central Park Avenue, Chippendale

Central Park Avenue is currently a Council owned and maintained roadway, the Roadway is currently configured as a Two Lane - Two Way undivided road with a Shared footpath and no dedicated parallel parking on the Western side of the roadway. Central Park Avenue is deemed as a secondary roadway with an ADT of approximately >250 vehicles per day. In the instance of conflicting roadwork or civil works that interfere with the Project, all parties are required to discuss work scopes, site safety and hazards, and to mitigate a solution to minimize disruption to both developments once an agreement has been made, Permit applications will be applied to the relevant Government Departments for work approvals. Site Work Zone applications will be applied separately to City of Sydney Council for street loading and unloading of material (*if applicable*), All entry and exiting is to be undertaken in suitable gaps in traffic flow and in a forward direction, at no time reversing in or out of site will be permitted at any time.

15.7 Worksite Hours

Construction, including the delivery of materials to and from the site, may only be carried out between the following hours;

- Between 7:00AM and 6:00PM, Mondays to Fridays inclusive; and
- Between 8:00AM and 1:00PM, Saturdays
- No works may be carried out on Sundays or public holidays

The following noise restriction will be in place during all times of demolition and construction. Providing noise levels do not exceed the existing background noise level plus 5dB works may also be undertaken during the following hours;

- between 6:00PM and 7:00PM, Mondays to Fridays inclusive; and
- between 1:00PM and 4:00PM, Saturdays

Construction activities may be undertaken outside of normal construction hours under the following conditions

- by the Police or a public authority for the delivery of vehicles, plant or materials; or
- in an emergency to avoid the loss of life, damage of property or to prevent environment harm; or
- where the works are inaudible at the nearest sensitive receivers.

Rock breaking, rock hammering, sheet piling, pile driving and similar activities may only be carried out in Accordance with the CNVMSP and must have regard surrounding sensitive receivers.

15.8 Work Zone

The builder ICON do not propose to have any work zone along Central Park Avenue, Chippendale and have made arrangements for all material to be delivered on site. This is to ensure minimal disruption to the surrounding area and to motorist.

15.9 Rubbish collection

There are no bin collection services within the site location. All Site waste will be collected in a centralized location in industrial bins on site and removed by Private waste collection Contractors. These collections will be organized outside of peak traffic times to minimize the disruption to the surrounding road network.

15.10 Road Ownership Restrictions

The City of Sydney Council is the local government authority that has jurisdiction over the inner portion of the metropolitan area of Chippendale. Central Park Avenue is a Council owned roadway, so any work that is to take place along Central Park Avenue that disrupts the day to day traffic will require council and police approval prior to starting.

15.11 Bus Services

There are no bus zone on Central Park Avenue, there is also no bus routes that frequent within One Central Park Precinct. All ingress and egress routes to and from site have taken into account the large number of bus movements around One Central Park Precinct and have been planned to minimize the impact to all STA routes. Buses frequent along Broadway and these services can be used by workers to access site and the builder shall encourage the use of such services and all public transport to lessen the impact for other road users and residents within the area

15.12 Train Services

Central train station is approximately 800MTRS from these works. At no time will this work impact on the train services for Central Railway Station. The builder will encourage all site personnel utilize the Train Service due to the proximity to site and disembark at Central Station and walk to site, so as this will lessen the impact for other road users and residents within the area.



Sydney Rail Network Map

15.13 Taxi Services

There are no taxi ranks within the vicinity of these works.

15.14 *Specific Community Groups/Places of Worship*

No Specific Community groups / places of worship will be affected by these works.

15.15 *Hospitals / Emergency Services*

No hospitals or Police Stations, or Fire Stations within in the vicinity of these works. When intricate works are undertaken, work applications will be submitted to NSW Police Force City of Sydney PAC, for approval.

15.16 *Schools, Universities in the area*

The University of Notre Dame, University of Technology and the University of Sydney are all within close proximity of these works, but all vehicle routes have taken this into consideration and construction traffic around these universities shall be minimal.

15.17 *Local Businesses / Residents*

All Local Business and residents are to remain unaffected by these works. If works are to impact local businesses notification letters will be delivered to affected businesses prior to works undertaking.

15.18 *Site Parking*

There will be limited site parking allowed during this work with all vehicles associated with the development to be parked wholly within the site. All site staff related with this works are to park in designated off street area, such as paid parking stations or be encouraged to use public transport and not park on the public roads.

16.0 Affected Authorities

The project will be conducted along Central Park Avenue, Chippendale. Traffic impacts are not expected to affect any other authority's area of responsibility. In addition, if the site requires a Council Permit or road authority notification for any works outside the initial Scope all permit application will be sourced prior to work commencing. This notification is required for each different traffic arrangement for each stage of the project.

17.0 Roles and Responsibilities

17.1 *The Project Director*

Has the primary duty under the Work Health & Safety Act to ensure, as far as reasonably practicable, that workers and other persons are not exposed to health and safety risks arising from the business or undertaking. Planning and Defining Scope, Activity Planning and Sequencing, Resource Planning, Developing Schedules, Time Estimating, Cost Estimating and developing a budget. The Project Director will liaise with the contracted traffic company to monitor and review the traffic management plan. This is likely to be in consultation with the nominated traffic officer. The project manager will ensure the CTMP is accordance with the Australian standard or the TC@WS, contract specifications and authority stipulations.

17.2 *Traffic Management Consultant*

KPI Services (NSW) Pty Ltd is responsible for the following documentation: Construction Traffic Management Plan: Design of an effective and compliant traffic management plan that outlines how the works are integrated into the operation of the road network, identifies and considers all foreseeable risks, and assesses the impact on all road users. Preparation of this Construction Traffic Management Plan (CTMP) requires a procedure to be followed whereby all essential aspects of the plan are considered in an ordered way.

Additional Traffic Guidance Schemes detail how the traffic control signs, devices and measures are to be applied at work sites to warn traffic and guide it through, or past, a work area or temporary hazard. Specific traffic guidance schemes are required for each separate element of the works. Risk Assessments for implementation of the CTMP and TGS: Entails the identification and analysis of all safety risks likely to arise during works on

road including the setting up, operating, changing and ultimate dismantling of a traffic guidance scheme, followed by the determination of appropriate measures to mitigate those risks.

17.3 *Road Users*

Central Park Avenue is a minor road corridor within One Central Park precinct. Any works along the adjacent roadways to site, should be regarded as a hazard and tool boxed to all personnel and delivery drivers arriving to site.

- Monday to Fridays' inbound peak periods are predicted to be from 08:00 to 09:30hrs and outbound from 15:30 to 18:30hrs.
- Construction worker on-street parking is strictly prohibited.

ICON Constructions and KPI Services are to be mindful to provide safety in all of the following road users with traffic controllers meeting all regulations when working on or adjacent to major road corridors.

- Heavy Vehicles
- Cyclists
- Pedestrians
- Elderly & Disabled
- Emergency Vehicles.
- Adjacent worksites
- Transport Services
- School Children

17.4 *Traffic Management Company*

Icon will appoint a registered traffic management company to implement and manage the traffic management component of this project. To ensure the safety of the worksite, on site workers and the general public. Traffic management is also required to ensure there are no traffic delays resulting from the work site on the road. Conflicting signage is removed or covered up and work in conjunction with existing or already programmed road works.

On site management, shall ensure everyone on site is well aware of any accidents and complaints. Providing only duly accredited traffic controllers that hold a current certificate of competency: RIIWHS205D, RIIWHS302D Ensure that the appropriate traffic control devices are in place on a daily basis prior to the commencement of work; and

Ensure that any Traffic Guidance Schemes have been submitted to the administrator for approval 21 days prior to the implementation and ensuring that the traffic arrangements conform to the approved Traffic Guidance Scheme, as per Council or RMS requirements.

Responsible for completing an on-site documentation and record keeping – risk assessment, SWMS, traffic related incidents and Signage Checklist.

17.5 *Site Personnel*

All personnel engaged in the field activities will adhere to the correct work practices as required by the TC@WS manual and The Code. The approving authority shall be notified should a situation arise that is not covered by this CTMP or the TC@WS. Further consideration for construction staff parking see clause 17. Worker access in and out of site is managed through Alfred St.

- All Personnel to be tool boxed on traffic conditions and TGS / TCP prior to commencing work.
- Construction Personnel of between 10-90 staff for approximately 12 months.
- Construction worker on-street parking is strictly prohibited.

17.6 *Site/Traffic Supervisors and Controllers*

The nominated registered traffic management company will appoint a Site Supervisor/Traffic Supervisor who shall undertake a review of the erected signage to ensure compliance with the approved TGS and shall maintain detailed daily records. This person shall be qualified in RIIWHS302D or equivalent Implement Traffic Management Plans, or Traffic Guidance Scheme record keeping will be undertaken.

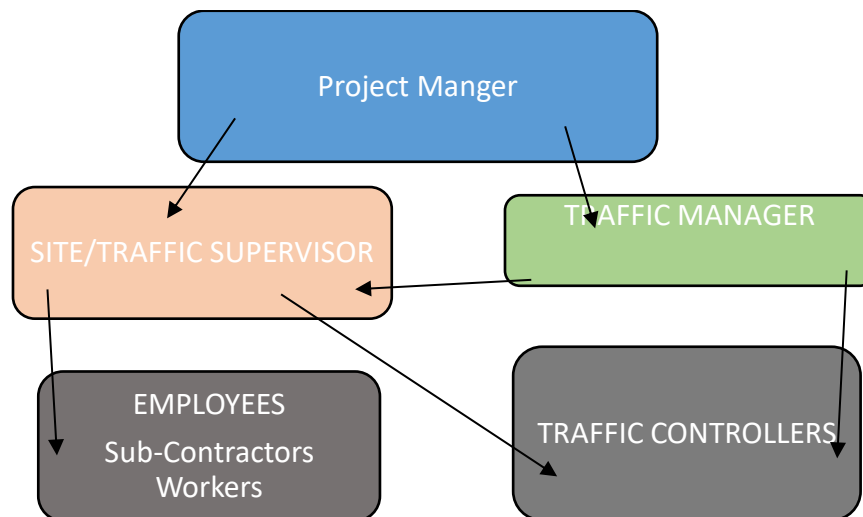
17.7 *The Traffic Manager*

For the duration of the project there will be a registered traffic management company who will appoint a Traffic Manager for the duration of the project.

17.8 *Traffic Control*

Icon Constructions will engage a registered traffic management company to undertake any traffic control duties for this site. As an example, the registration details of KPI Services Pty Ltd are contained in Appendix A.

18.0 Project Hierarchy



19.0 Incident or Accident Procedures

Emergency Services are ultimately responsible for the control and management of responses to all incidents that occur on the road network. Notwithstanding. The Project recognizes the importance of cooperation between all agencies involved in the road occupation to clear incidents quickly. Near miss reports, toolbox talks, Site meetings will be completed and actioned for any instance where safety may be compromised.

19.1 *Accidents or Incidents*

In the event of an incident or accident, including immediately adjacent to or passing through the road occupation, the Site Supervisor or Traffic Supervisor will inform NSW Police, TMC and the local authorities and the Traffic Manager of the event. Where possible, the TGS will be removed from the road. The Project commits the available traffic guidance resources to assist the respective agencies in the speedy clearance of the incident. In the event of an incident or accident, whether or not involving traffic or road users, all work shall cease, and traffic shall be stopped, as necessary, to avoid further deterioration of the situation. Any traffic crash resulting in non-life-threatening injury shall immediately be reported to the NSW Police Force or NSW ambulance Service.

19.2 *Delays in Queuing*

In the unlikely event of delays queuing in greater than 100m of length, the Site Supervisor will remove the traffic implementation until traffic has returned to acceptable levels. The Site Supervisor will also notify the Council / Traffic Management Centre (TMC) and Icon Constructions if required. Traffic Controllers are to monitor congestion at all times when onsite. Hold & Release shall not be undertaken during high traffic volumes. Icon constructions should be mindful when scheduling the type of deliveries at specific times will be effective and minimize the impact to the public.

19.3 *New South Wales Police Service*

NSW Police Service enforces any speed restrictions approved by TMC or Council and have the authority to control the traffic flow on site. If a speed reduction is required then, an ROL or Council permit will be applied for, and available on site to present to any officers requesting to sight the permit. ROL -OPLINC Submissions be made by a KPI Services (NSW) and will be kept current with project requirements.

19.4 *Remedies*

All non-conformances will be remedied within 48 hours of receipt of a written notice of the non-conformance.

19.5 *Damage to Services*

In the event that services are damaged, all work shall cease immediately, machinery and vehicles stopped, and the area cleared of personnel as soon as possible. Traffic Controllers (and other personnel if necessary) shall be deployed immediately to ensure no traffic or other road users approach the area. The relevant road authority and relevant supply authority shall be called immediately. Damage to any other services shall be treated in a similar manner, except machinery may remain operational and access may be maintained where it is safe to do so. All site personnel shall be briefed on evacuation and control procedures.

20.0 Workplace Health and Safety

Icon Constructions employers and personas in control of workplaces have a statutory duty of care to provide a safe workplace for all personnel working at the site, accessing the site or impacted by the construction activity including employees, contractors, sub-contractors, visitors to the site and the general public.

This TMP forms part of the overall project Construction Traffic Management Plan (CTMP) and provides details on how all road users (considered likely to travel through, past or around the worksite and those impacted by the works) will be safely and efficiently managed for the full duration of the site occupancy and works.

20.1 *Safe Work Method Statement*

Prior to the commencement of this activity, KPI Services will compile a Safe Work Method Statement (SWMS) for this project. KPI Services, traffic management practices require that the Traffic Controller's evaluate all traffic arrangements before they are open to traffic, immediately following the opening to traffic and periodically throughout the activity. Adjustments are recorded in the SWMS and are documented on the TCP including reasons for the changes and are lodged with the Principal Contractor. New hazards that arise throughout the work will be subject to risk assessment and incorporated into the SWMS.

21.0 Works on Roads

The Traffic Guidance Schemes (TGS) for each stage have been designed by KPI Services Pty Ltd. The devices shall be inspected periodically throughout the day in accordance with Appendix A of the TC@WS and aftercare considerations will be implemented including the covering or the removal of Workers Symbolic Signs, where they are not necessary. Traffic shall be controlled at all times, during construction, in accordance with the TC@WS v5 2018, TC@WS v6 2020, AS 1742.3 and RMS regulations. Regular toolboxes and site meeting will be undertaken during the duration of this project to maximize traffic flow and efficiency while these works are

undertaken. TCP / TGS plans will be continuously reviewed and revised to ensure worker, motorist and pedestrian flows are maximized without impeding on safety.

22.0 Site Personnel Vehicle Management Plant

22.1 Parking

An average of 40+ construction personnel are expected to work on the site per day with peak of 90 for the major stages of construction, lasting approximately 12 months.

KPI Services encourages the following to be adhered to:

- The site has made provisions internally and Externally for Delivery vehicles
- Icon encourages workers to utilize public transport and will lessen the impact the site has on the public.
- Pedestrian Access for workers in and out of site is maintained through designated pedestrian gate

22.2 Traffic Documentation

Traffic Management and Control documentation will be issued, collected and saved in accordance with Icon's quality system. Documents will conform to The Code, TC@WS and Workcover and will consist of at least the following:

- 22.2.1** Daily Toolbox Minutes/induction notes or diary entries.
- 22.2.2** Daily sign on of SWMS.
- 22.2.3** Daily signage checks or Form M994m and
- 22.2.4** Incident Report forms as required.

22.3 Traffic Control Devices

Traffic control devices and their use shall conform to the requirements of the TC@WS and AS1742.3 and shall also be in compliance with Australian Standards. All traffic control devices shall be securely fixed in the correct position and maintained in an effective and clean condition suitable for day and night operations, whilst employed on the work under the Contract. Devices which are damaged or worn, or which do not conform to the above requirements shall not be used. It is highly recommended to utilize Extension Crown Control Barriers (ECCB) to assist with delineation of site vehicles and pedestrians at all site entrance points.

22.4 Traffic Controllers

Traffic control shall be undertaken in accordance with the Traffic Controller Accreditation Scheme. Approved Traffic Controllers issued by New South Wales Authorized Training Providers (ATO). The Traffic controller shall have a copy of their Qualification certificate available on the Site at all times during which traffic control operations are being undertaken.

Where Traffic Controllers are used to control or to stop and direct traffic, Traffic Controller shall:

- 22.4.1** Operate in accordance with the TC@WS and The Code
- 22.4.2** Hold a current Construction Industry White and Traffic Control Blue card
- 22.4.3** Hold a current Traffic Controller's accreditation in New South Wales
- 22.4.4** Take appropriate breaks as required by the legislation and The Code
- 22.4.5** Traffic Controllers will be relieved from duty whilst actively guiding traffic every two hours for at least 15 minutes or undertake a change of Position on the worksite
- 22.4.6** Traffic controllers, when utilized, shall be in constant communications with the Site Supervisor and Project Directors / Site Foreman via two-way radios.

22.5 *Implementing Traffic Guidance Schemes*

As detailed by the TC@WS and The Code, all personnel who install or dismantle TGS (Refer to TC@WS Section 3.4 or AS1742.3 CL2.5.3), shall hold a current implement Traffic Control Plan qualification (yellow ticket).

22.6 *Temporary Signage*

All traffic will comply with the AS1742.3 and will be installed. Temporary signage will be erected at the Beginning of all works commencing and removed at end of shift where traffic will return to normal conditions

22.7 *Long Term*

Long term signage associated with the TGS will be installed in accordance with TC@WS Section 3.1.3 or AS 1742.3 CL 1.4.15 and 1.4. It is foreseen that signage will be not required to be kept long term on this project.

22.8 *Short Term*

Mountings for short-term operations should be arranged so that the signs are prominently displayed to traffic and will command attention. The sign should be mounted so that it is clear of the ground and free of obstruction.

22.9 *Personnel Symbolic Signs*

Personnel symbolic signs (workman and Flagman Symbolic) shall be removed or covered when those specific personnel are not visible to road users.

22.10 *Speeds*

No temporary speed reduction will be applicable to these works. If an unforeseen event occurs that requires a speed reduction for the site a Speed Zone Authorization (SZA) will be obtained from RMS -TMC or Local Council.

22.11 *Prohibition Notice*

The principal is subject to a Prohibition Notice which restricts personnel from crossing high speed multilane divided roads with posted speed limit of 100kph or greater. The Contractor is to conform to the requirements of this Prohibition Notice and at all times refrain from crossing these roads without the use of lane closures or speed reduction.

22.12 *Acceptable Traffic Impacts L.O.S.*

This is not a RMS roadway therefore an Acceptance Traffic Impact L.O.S. is not required.

22.13 *Traffic Lane Availability and Configuration*

Traffic Patterns are Monday to Friday inbound peak periods predicted are 08:00-09:30hrs along Central Park Avenue and outbound from 15:30-16:30hrs.

Road Lane	Configuration	Speed
Central Park Avenue	Two lanes - Two way Roadway	40km/h regulatory speed

22.14 *Changed Road Configuration*

No Changed Road Configurations form a part of this TMP.

22.15 *Times of Operations*

The site will operate between 7:00am to 6:00pm Monday – Friday and 8:00am – 1.00pm Saturday as per the Development Approval. Any works outside this scope, an out of hours application will be submitted to Waverley Council prior to work commencing.

22.16 *Speed Choices*

The regulatory speed on all adjacent Streets is 40km/h and shall be adhered to at all times by any vehicle associated with site.

22.17 *Provision for Police Control*

It is not envisioned that Police assistance will be utilized.

22.18 *Barriers*

It is envisaged that safety barrier systems (Concrete / Water filled) will not be required for early works, but if they are required at any time during the construction phase then RMS and council approval will be required before installation

22.19 *Anti- Gawking Screens*

During work Anti-Gawking Screens will not be place as a solid 2.5MTR high A class hoarding will be erected around the perimeter of site.

22.20 *Protection and Delineation at Excavations*

Icon Constructions will undertake a protection and delineation risk assessment during the commencement of Any Demolition or Excavation works, and will install and dismantle protection screens when required under the Construction Management Plan

22.21 *Detours*

It is envisaged that road Detours will not be required for this project

22.22 *Sidetracks*

It is not envisaged that sidetracks or road closures will not be required on this project.

23.0 Other Works in the Area

23.1 *Adjacent Works*

There is no other roadworks or construction works within the vicinity of these works. If during construction this changes at any time then a line of communication will open with all the relevant Stakeholders so a resolution for all involved can be reached.

24.0 Community

24.1 *Public Consultation*

For any road closure or disruption to traffic around this construction site, a letter will be drafted and distributed to businesses and residents in the vicinity.

24.2 *Complaints*

Icon constructions shall keep a register of all complaints received and actions taken to address each complaint. The complaints register shall be forwarded to the Administrator on a weekly basis. Icon constructions shall similarly keep a register of requests for information from the public. This public information request register shall also be forwarded to the Administrator on a weekly basis.

24.3 *Variable Message Signs*

It is envisioned that variable message signs will be not be required during demolition or construction, but if this changes then they will be in place two (2) weeks in advance of any scheduled long term roadwork Traffic Changes. When used they shall be compliant with AS 4852.2-2009, positioned and programmed such that they

do not create a distraction to drivers, do not obstruct line of sight and only display information that is relevant to current or forthcoming conditions.

24.4 Pedestrian and Bicycle and Access

Pedestrian and bicycle traffic will be managed in accordance with the TC@WS v5 2018 & TC@WS V6 2020. At all times pedestrians shall be separated from the worksite for the duration this project.

24.5 Entry into Private Properties

It is not envisaged that entry into private properties will be required on this project.

24.6 Public Transport

Public transport routes will not be affected. At any time if bus stops or Bus Routes are affected by these works all Relevant stakeholders will be notified, and works are to be approved prior to commencement.

24.7 Emergency Vehicle Access

Emergency vehicles will have continuous access throughout the duration of the project.

24.8 Night Works

Night works will be undertaken with the appropriate work approvals and permits on selected Dates when required.

24.9 Dates

Start Date: September 2021

Project Completion: September 2022

24.10 Times

Monday – Friday	0700 – 1800
Saturday	0800 – 1300
Sunday	N/A

25.0 Version 6 Amendments

KPI Services Pty Ltd has considered the implications for traffic controllers' duties (Refer p23 Clause 17.3.1.) operating within the regulatory requirements of T@WS approved procedures Clause 4.3.17 documentation. After considering all options (including safety and cost effectiveness) and having presented the prevailing circumstances (refer TGS's pages 28-42) of this site and the TC's control station locations and method of traffic control.

26.0 Standards, Rules & Policies Community

KPI Services Pty Ltd has strong emphasis on zero harm and its working relationship with its client and strives to achieve this through communication, certification and relevant documentation

POSITION	NAME	Email	CONTACT
Construction Manager			
Project Manager			
OHS Safety Rep.	Martin Warner	Martin.warner@icon.com	0450 066 301
Community Relations Officer	TBA		
Environment Officer	TBA		
Site Manager	Chris Walters	Chris.walters@icon.co	0407 215 534
Early works supervisor	TBA		
Community Liaisons Officer	TBA		

KPI Services (NSW) Pty Ltd

After Hours Contact / 24 HR emergencies 0491 278 904
 9-13 Bronte Rd, Bondi Junction NSW 2022
 NSW + ACT Operations Manager: Alex Reid - 0491 278 904
 Site Traffic Supervisor: TBA
 Traffic Management Design: Craig Reeves Orange Ticket:
 TCT0015996

ICON Constructions Pty Ltd.

ICON Sydney Office - 02 8456 6500
 179 New South Head Road Edgecliff NSW 2027
 infonsw@icon.co
 After Hours Contact: TBA

Appendix A:

Tuan Tran
Tel (02) 9482 6587
SF2017091427



KPI Services Pty Ltd
22/74 Thomsons Road
Keilor Park VIC 3042

Attn: Angela Jarvis Tel: (03) 9326 7795 Fax: (03) 9326 5778
Financial Controller Mob: 0433 699 324 Email: finance@kpiconstruction.com.au

REGISTRATION OF CONTRACTORS

Dear Madam,

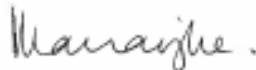
I refer to your application for category G under the RMS Registration Scheme.

After the assessment, I would like to advise that your company has been registered for:

Category G Provision of Traffic Control

The registration is valid for 3 years from the date of this letter and it will expire on 14 May 2020.

Yours faithfully,



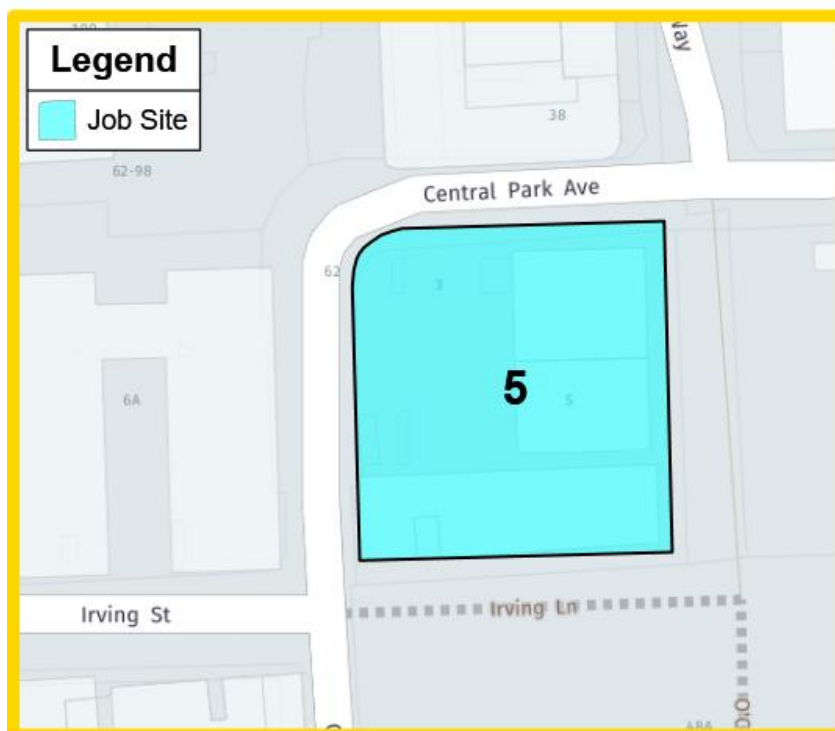
Shalendra Ranasinghe
General Manager Commercial Services
Technical & Project Services Division
15 May 2017

Roads and Maritime Services
20-44 Ennis Road, Milsons Point NSW 2061 | Locked Bag 928 North Sydney NSW 2058 DX10516 | www.rms.nsw.gov.au | 131 762

Appendix B: Traffic Guidance Schemes

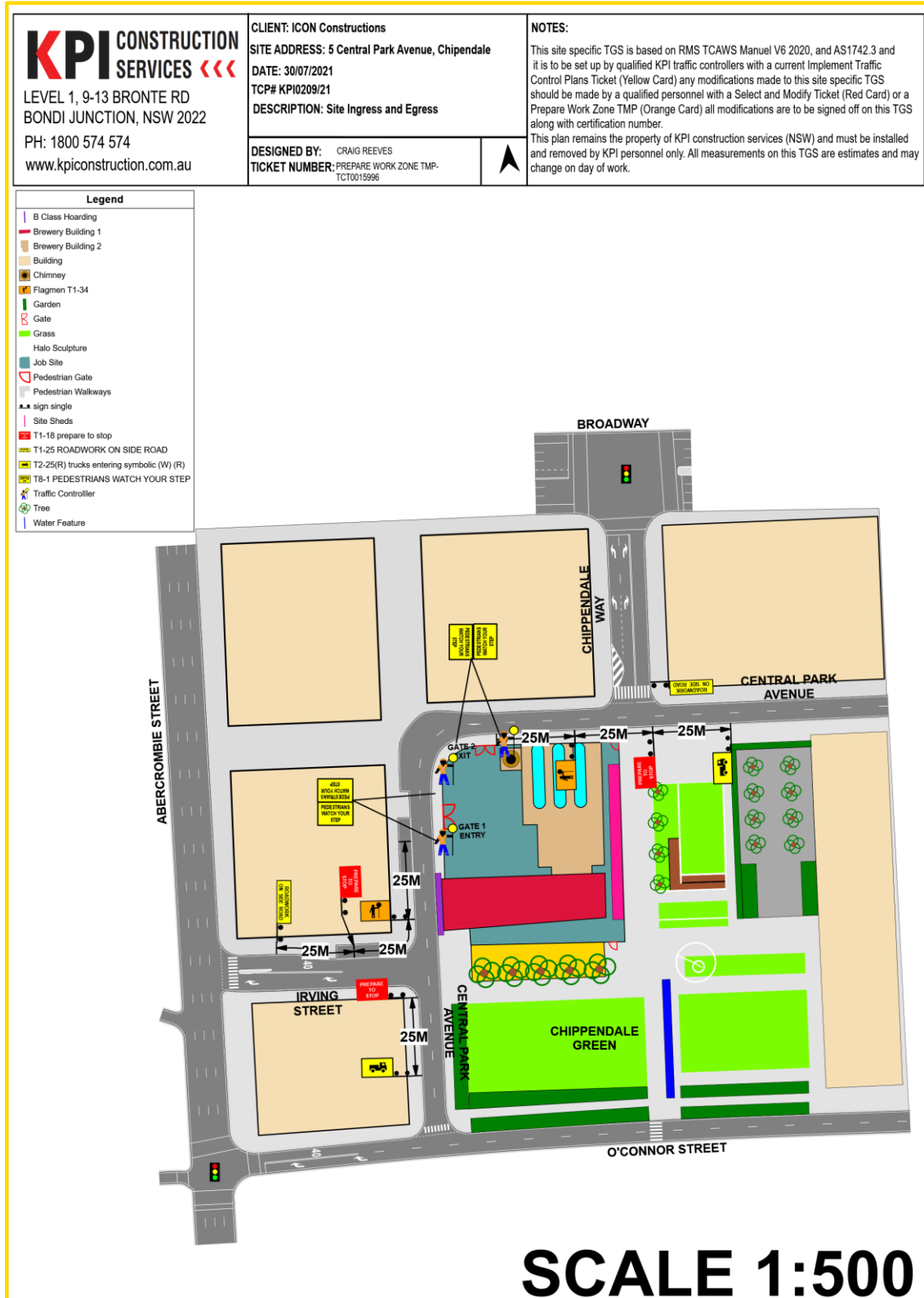
Location of works

5 Central Park Avenue, Chippendale



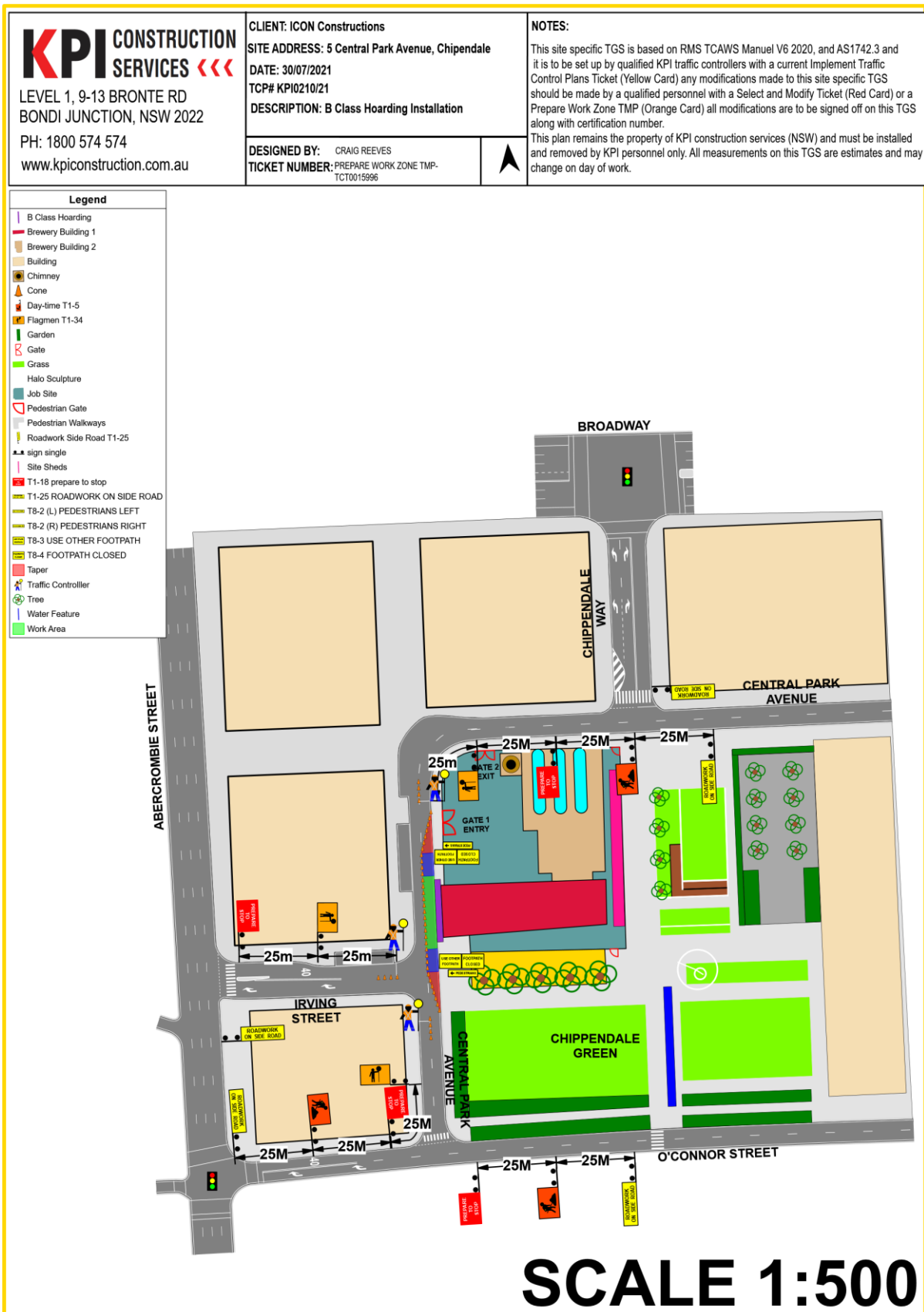
TRAFFIC GUIDANCE SCHEMES

SITE INGRESS / EGRESS PLAN – TGS KPI 0209/21

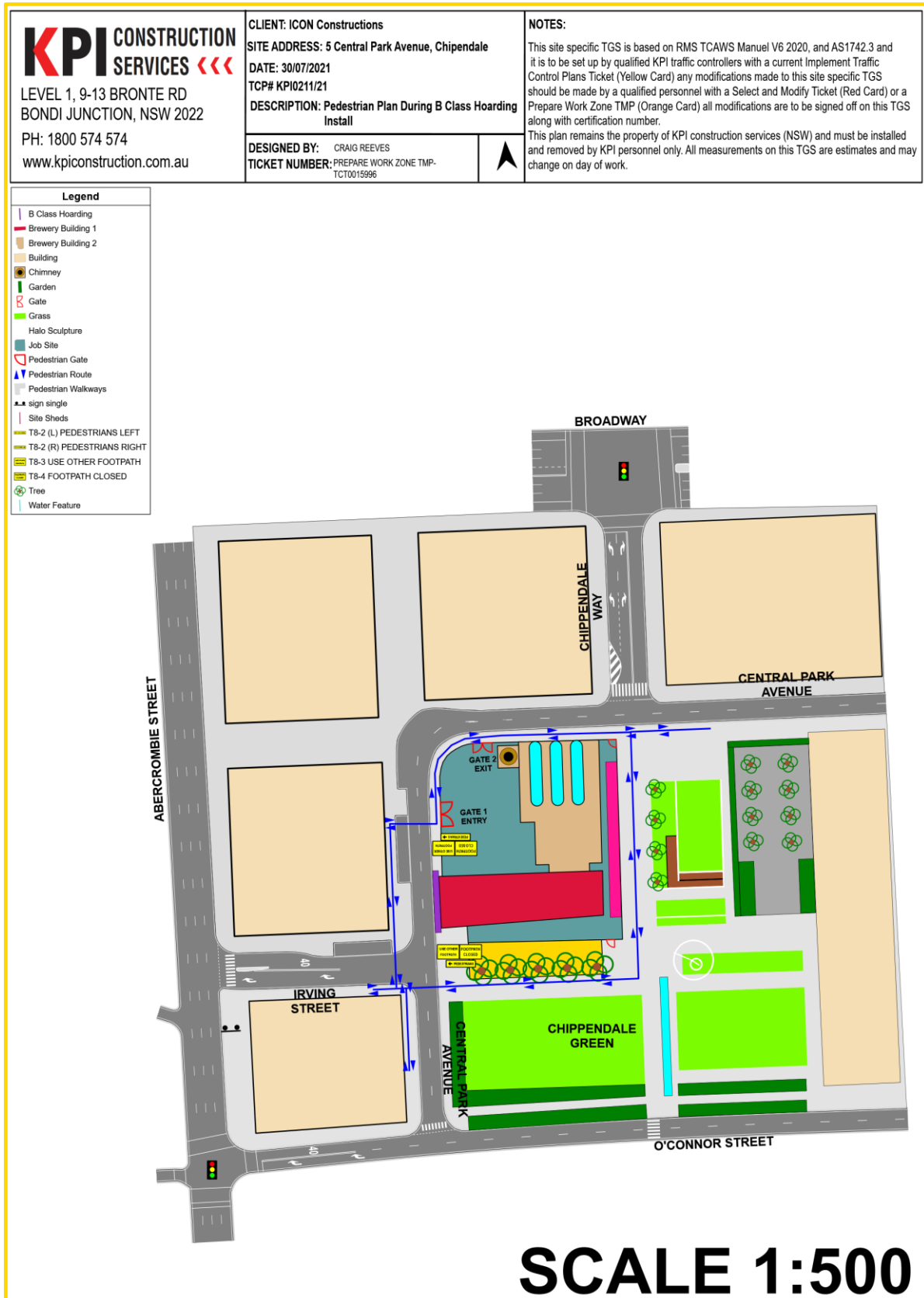


PLEASE ENLARGE OR PRINT TO A3 PAPER

B CLASS HOARDING INSTALATION – TGS KPI0210/21



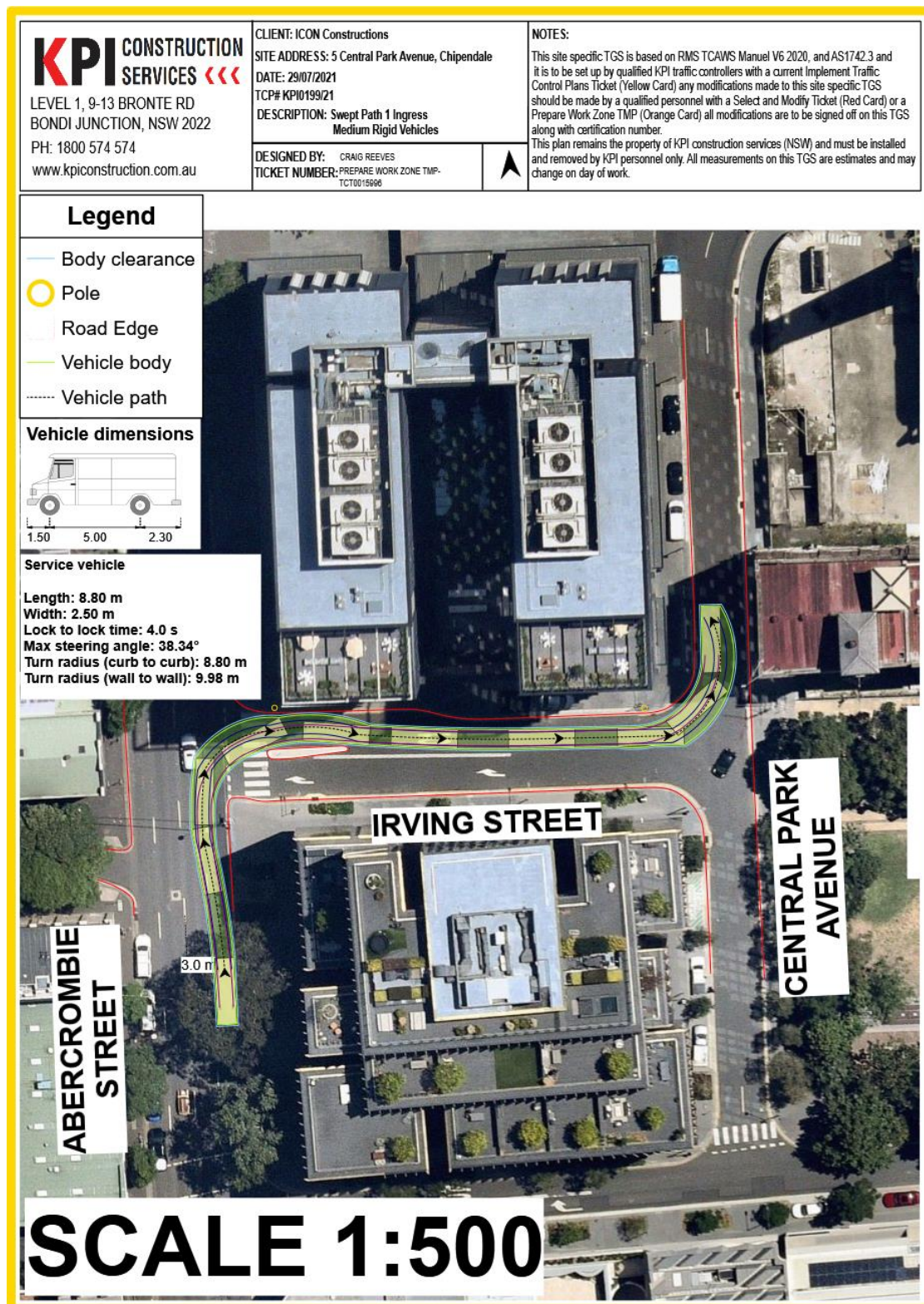
PEDESTRIAN PLAN DURING B CLASS HOARDING INSTALLATION KPIO211/21



PLEASE ENLARGE OR PRINT TO A3 PAPER

Appendix C: Swept paths

SWEPT PATHS



KPI CONSTRUCTION SERVICES

LEVEL 1, 9-13 BRONTE RD
BONDI JUNCTION, NSW 2022

PH: 1800 574 574

www.kpicconstruction.com.au

CLIENT: ICON Constructions

SITE ADDRESS: 5 Central Park Avenue, Chipendale

DATE: 29/07/2021

TCP# KPI0213/21
DESCRIPTION: Swept Path 2 Ingress
Medium Rigid Vehicles

DESIGNED BY: CRAIG REEVES

TICKET NUMBER: PREPARE WORK ZONE TMP-
TCT0015996

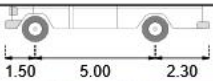
NOTES:

This site specific TGS is based on RMS TCAWS Manual V6 2020, and AS1742.3 and it is to be set up by qualified KPI traffic controllers with a current Implement Traffic Control Plans Ticket (Yellow Card) any modifications made to this site specific TGS should be made by a qualified personnel with a Select and Modify Ticket (Red Card) or a Prepare Work Zone TMP (Orange Card) all modifications are to be signed off on this TGS along with certification number.

This plan remains the property of KPI construction services (NSW) and must be installed and removed by KPI personnel only. All measurements on this TGS are estimates and may change on day of work.

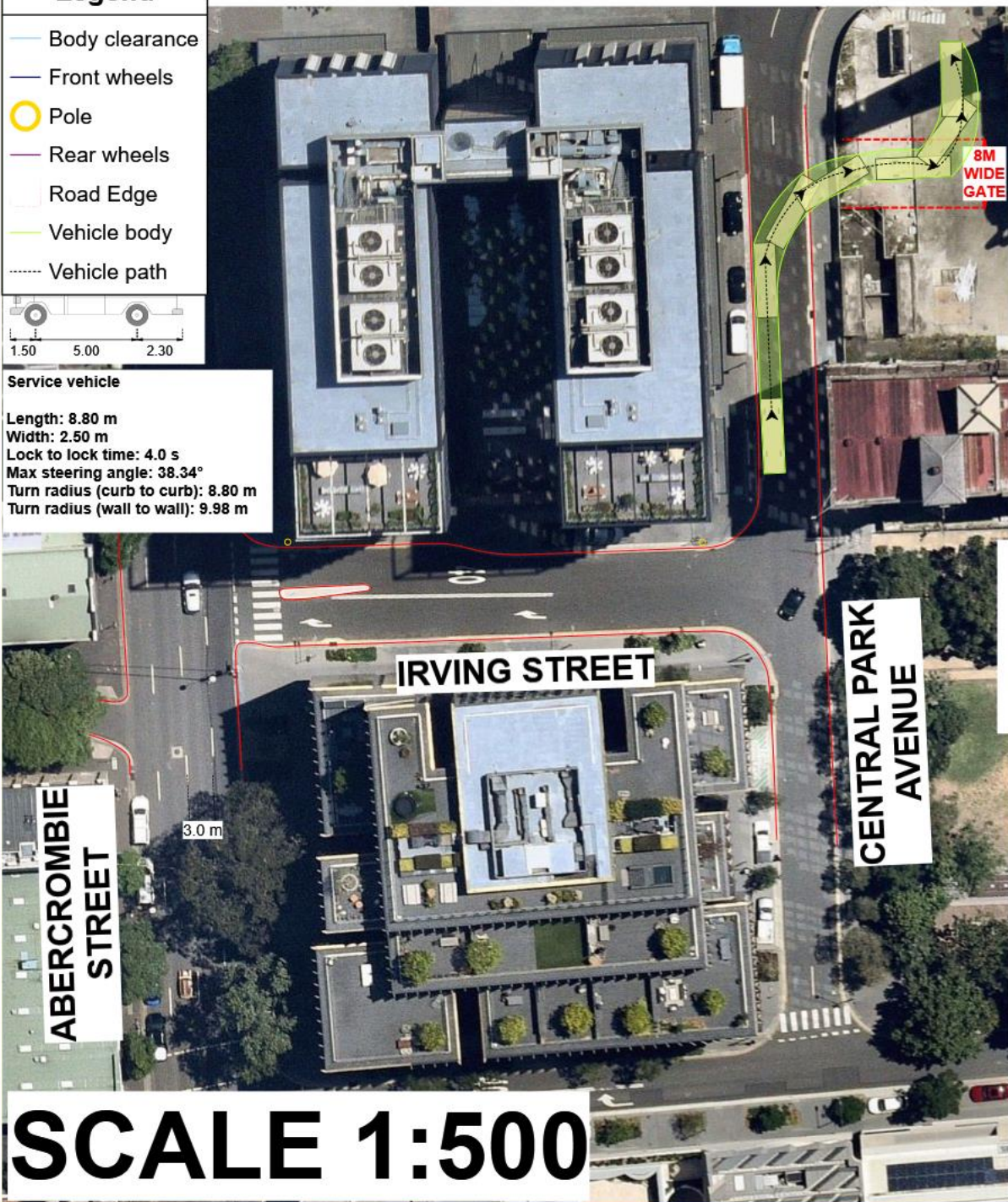
Legend

- Body clearance
- Front wheels
- Pole
- Rear wheels
- Road Edge
- Vehicle body
- Vehicle path



Service vehicle

Length: 8.80 m
Width: 2.50 m
Lock to lock time: 4.0 s
Max steering angle: 38.34°
Turn radius (curb to curb): 8.80 m
Turn radius (wall to wall): 9.98 m



KPI CONSTRUCTION SERVICES

LEVEL 1, 9-13 BRONTE RD
BONDI JUNCTION, NSW 2022
PH: 1800 574 574
www.kpiconstruction.com.au

CLIENT: ICON Constructions
SITE ADDRESS: 5 Central Park Avenue, Chipendale
DATE: 29/07/2021
TCP# KPI0200/21
DESCRIPTION: Swept Path 2 Ingress
Heavy Rigid Vehicles

DESIGNED BY: CRAIG REEVES
TICKET NUMBER: PREPARE WORK ZONE TMP-
TCT0015996

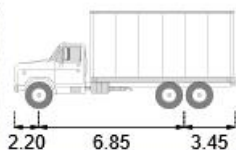
NOTES:

This site specific TGS is based on RMS TCAWS Manual V6 2020, and AS1742.3 and it is to be set up by qualified KPI traffic controllers with a current Implement Traffic Control Plans Ticket (Yellow Card) any modifications made to this site specific TGS should be made by a qualified personnel with a Select and Modify Ticket (Red Card) or a Prepare Work Zone TMP (Orange Card) all modifications are to be signed off on this TGS along with certification number.

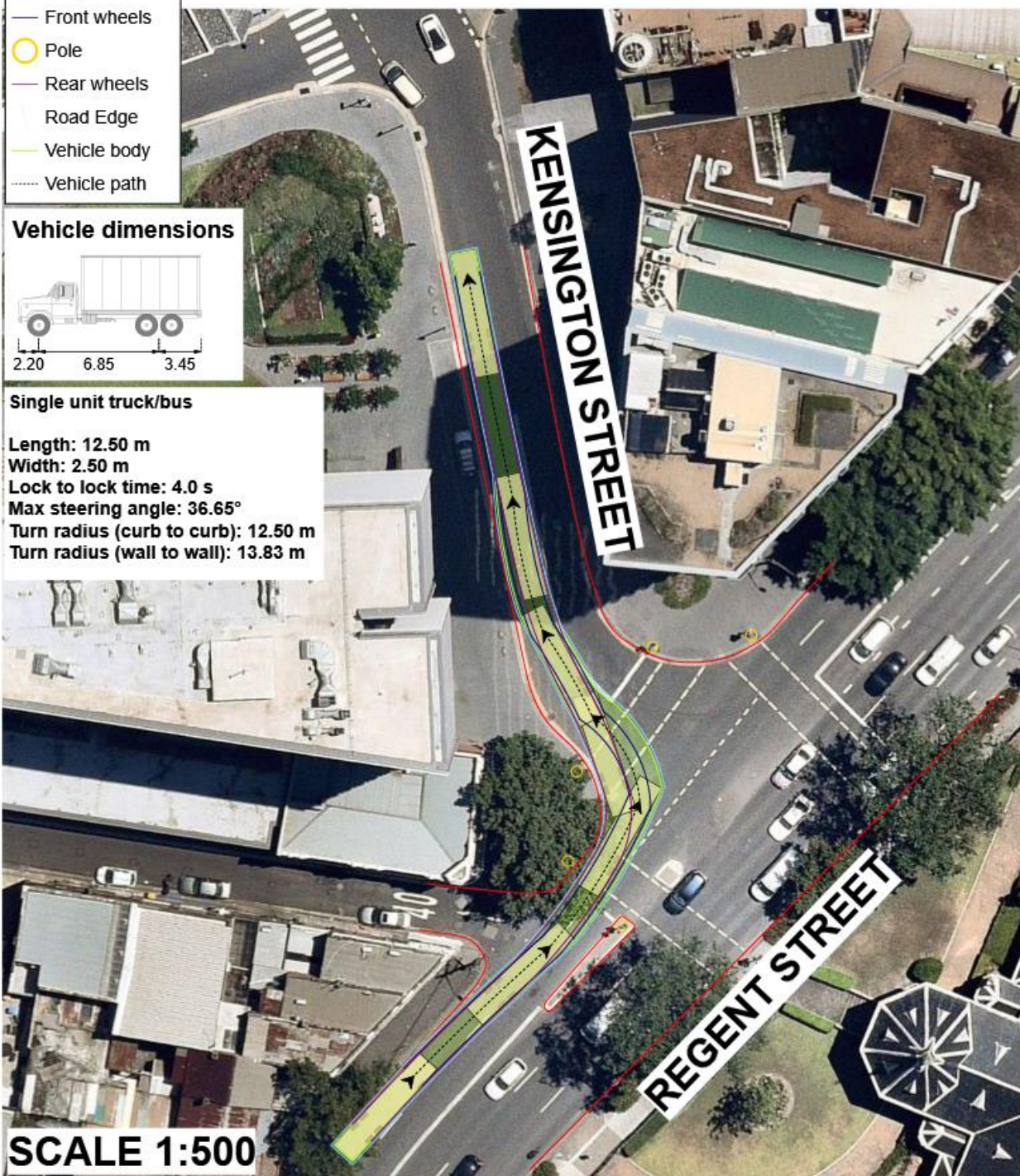
This plan remains the property of KPI construction services (NSW) and must be installed and removed by KPI personnel only. All measurements on this TGS are estimates and may change on day of work.

Legend

- Body clearance
- Front wheels
- Pole
- Rear wheels
- Road Edge
- Vehicle body
- Vehicle path

Vehicle dimensions

Single unit truck/bus

Length: 12.50 m
Width: 2.50 m
Lock to lock time: 4.0 s
Max steering angle: 36.65°
Turn radius (curb to curb): 12.50 m
Turn radius (wall to wall): 13.83 m



KPI CONSTRUCTION SERVICES

LEVEL 1, 9-13 BRONTE RD
BONDI JUNCTION, NSW 2022
PH: 1800 574 574
www.kpicconstruction.com.au

CLIENT: ICON Constructions
SITE ADDRESS: 5 Central Park Avenue, Chipendale
DATE: 29/07/2021
TCP# KPI0201/21
DESCRIPTION: Swept Path 3 Ingress
Heavy Rigid Vehicles

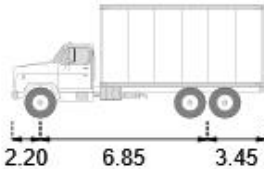
DESIGNED BY: CRAIG REEVES
TICKET NUMBER: PREPARE WORK ZONE TMP
TCT0015996

NOTES:

This site specific TGS is based on RMS TCAWS Manual V8 2020, and AS1742.3 and it is to be set up by qualified KPI traffic controllers with a current implement Traffic Control Plans Ticket (Yellow Card) any modifications made to this site specific TGS should be made by a qualified personnel with a Select and Modify Ticket (Red Card) or a Prepare Work Zone TMP (Orange Card) all modifications are to be signed off on this TGS along with certification number.

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Vehicle dimensions

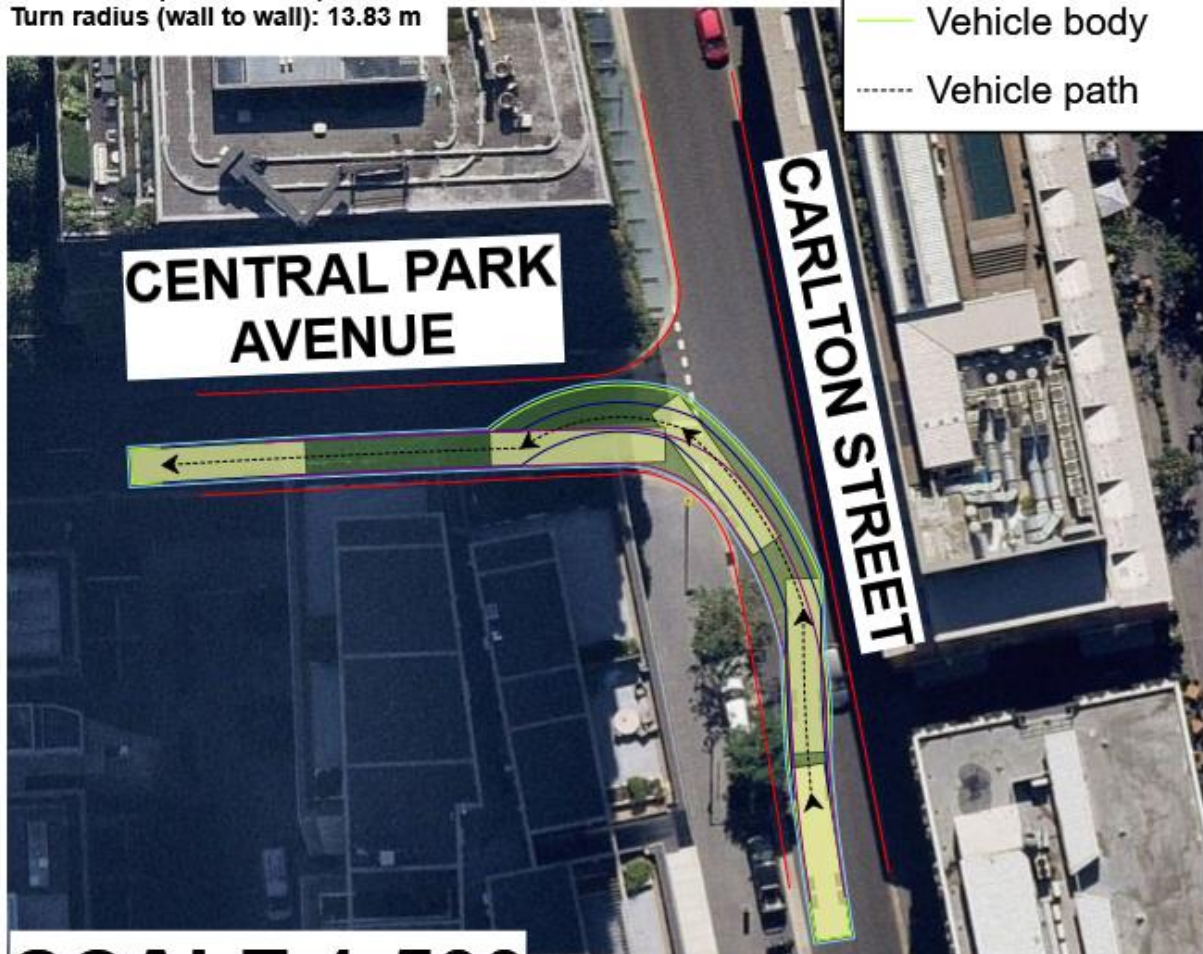


Single unit truck/bus

Length: 12.50 m
Width: 2.50 m
Lock to lock time: 4.0 s
Max steering angle: 36.65°
Turn radius (curb to curb): 12.50 m
Turn radius (wall to wall): 13.83 m

Legend

- Body clearance
- Front wheels
- Pole
- Rear wheels
- Road Edge
- Vehicle body
- - - Vehicle path



SCALE 1:500

KPI CONSTRUCTION SERVICES

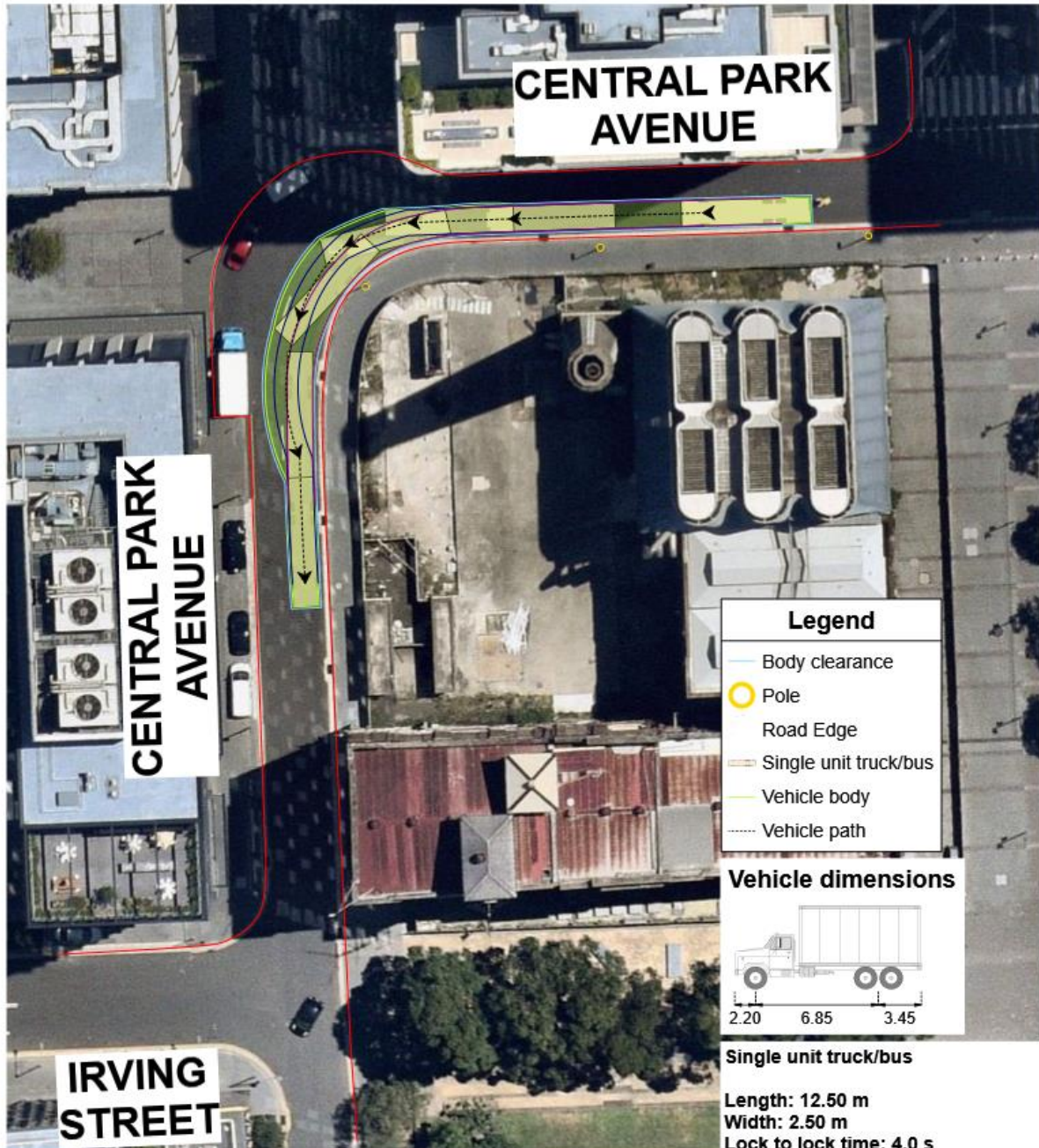
LEVEL 1, 9-13 BRONTE RD
BONDI JUNCTION, NSW 2022
PH: 1800 574 574
www.kpiconstruction.com.au

CLIENT: ICON Constructions
SITE ADDRESS: 5 Central Park Avenue, Chipendale
DATE: 29/07/2021
TCP# KPI0202/21
DESCRIPTION: Swept Path 4 Ingress
Heavy Rigid Vehicles

DESIGNED BY: CRAIG REEVES
TICKET NUMBER: PREPARE WORK ZONE TMP-
TCT0015996

NOTES:

This site specific TGS is based on RMS TCAWS Manual V6 2020, and AS1742.3 and it is to be set up by qualified KPI traffic controllers with a current Implement Traffic Control Plans Ticket (Yellow Card) any modifications made to this site specific TGS should be made by a qualified personnel with a Select and Modify Ticket (Red Card) or a Prepare Work Zone TMP (Orange Card) all modifications are to be signed off on this TGS along with certification number.
This plan remains the property of KPI construction services (NSW) and must be installed and removed by KPI personnel only. All measurements on this TGS are estimates and may change on day of work.



SCALE 1:500

KPI CONSTRUCTION SERVICES

LEVEL 1, 9-13 BRONTE RD
BONDI JUNCTION, NSW 2022

PH: 1800 574 574

www.kpiconstruction.com.au

CLIENT: ICON Constructions

SITE ADDRESS: 5 Central Park Avenue, Chipendale

DATE: 29/07/2021

TCP# KPI0203/21

DESCRIPTION: Swept Path 5 Ingress
Heavy Rigid Vehicles

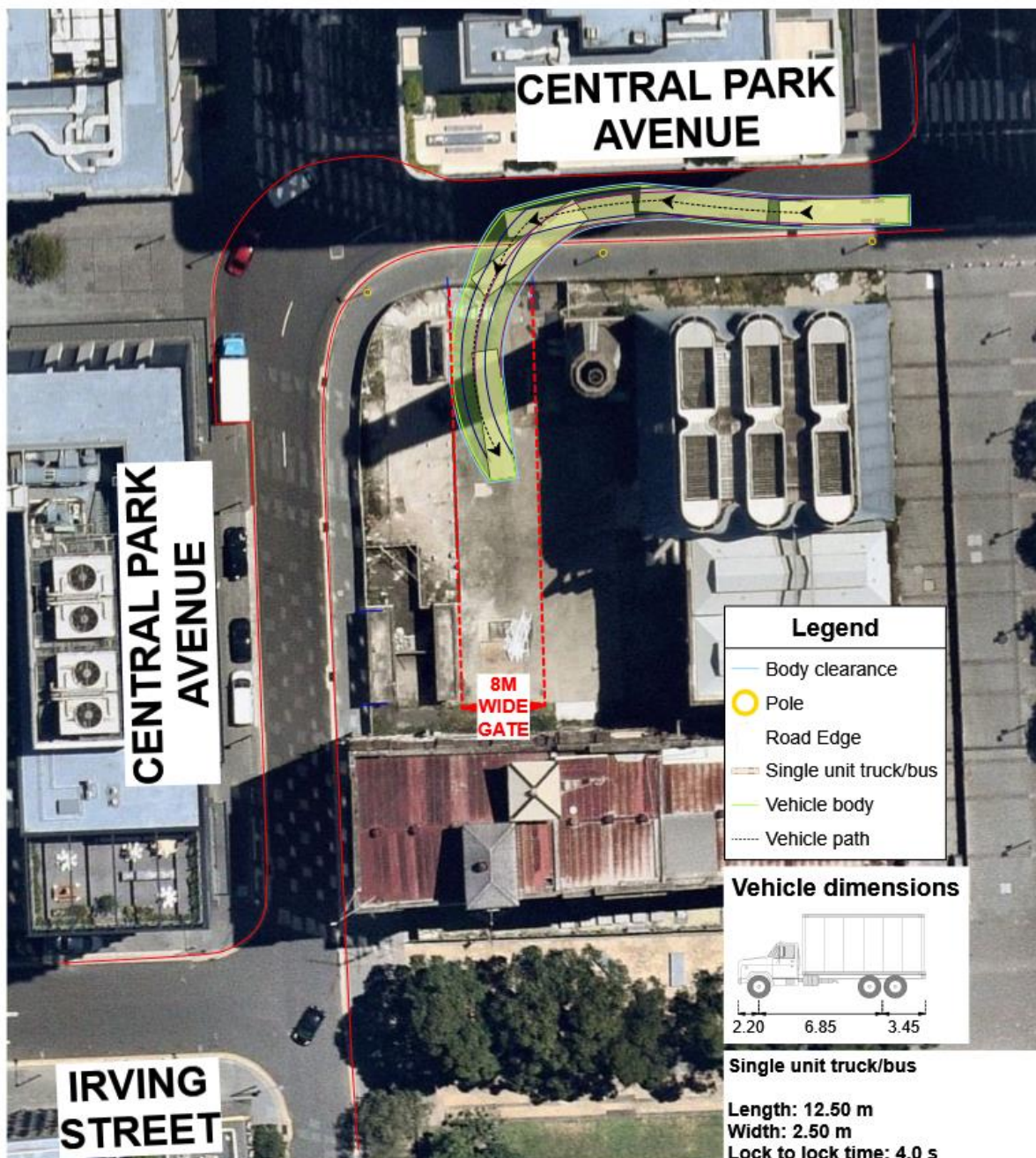
DESIGNED BY: CRAIG REEVES

TICKET NUMBER: PREPARE WORK ZONE TMP-
TCT0015996

NOTES:

This site specific TGS is based on RMS TCAWS Manual V6 2020, and AS1742.3 and it is to be set up by qualified KPI traffic controllers with a current Implement Traffic Control Plans Ticket (Yellow Card) any modifications made to this site specific TGS should be made by a qualified personnel with a Select and Modify Ticket (Red Card) or a Prepare Work Zone TMP (Orange Card) all modifications are to be signed off on this TGS along with certification number.

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SCALE 1:500

KPI CONSTRUCTION SERVICES

LEVEL 1, 9-13 BRONTE RD
BONDI JUNCTION, NSW 2022

PH: 1800 574 574

www.kpiconstruction.com.au

CLIENT: ICON Constructions

SITE ADDRESS: 5 Central Park Avenue, Chipendale

DATE: 29/07/2021

TCP# KPI0212 /21

DESCRIPTION: Swept Path 7 Ingress Gate
Heavy Rigid Vehicles

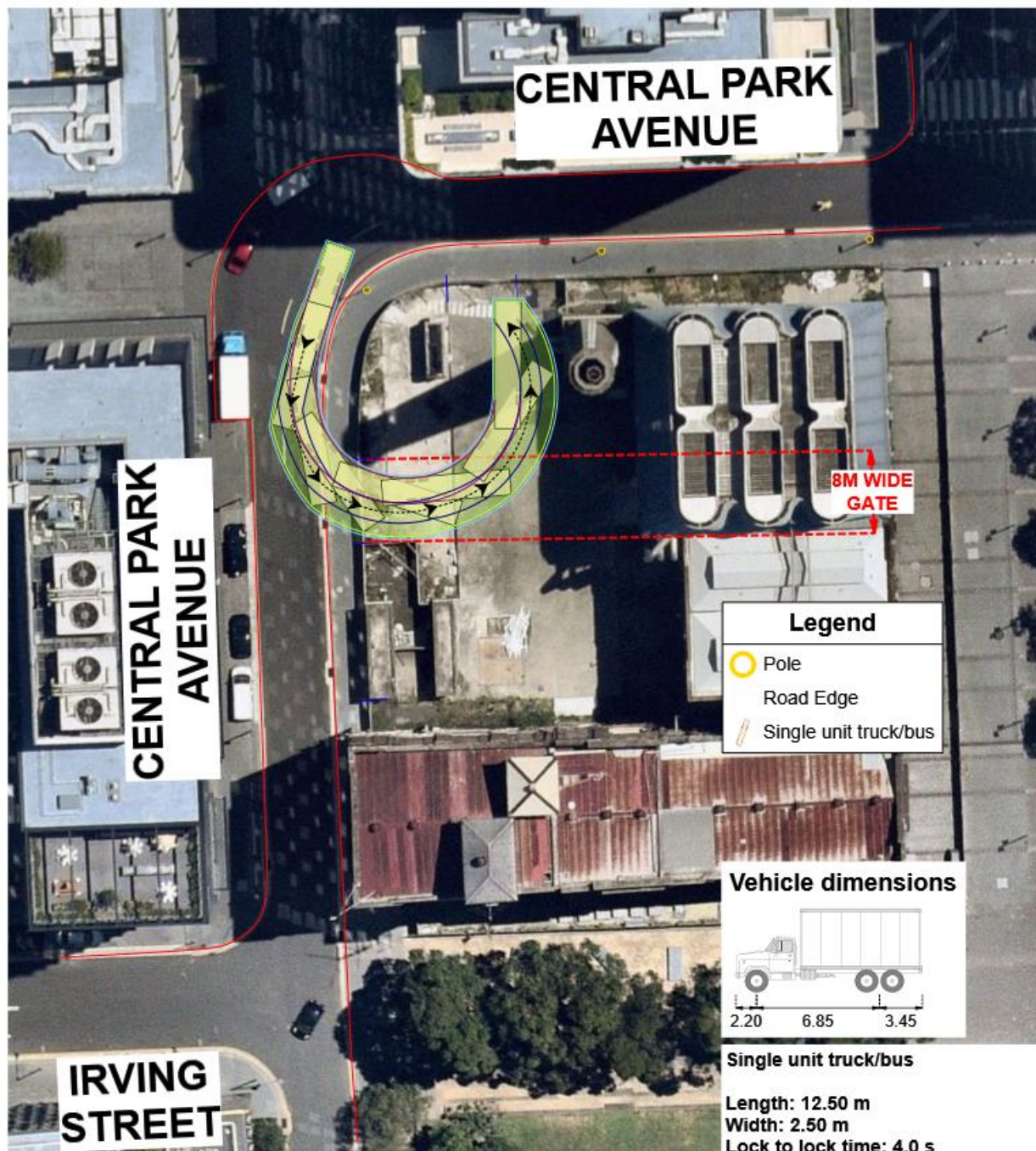
DESIGNED BY: CRAIG REEVES

TICKET NUMBER: PREPARE WORK ZONE TMP-
TCT0015996

NOTES:

This site specific TGS is based on RMS TCAWS Manual V6 2020, and AS1742.3 and it is to be set up by qualified KPI traffic controllers with a current Implement Traffic Control Plans Ticket (Yellow Card) any modifications made to this site specific TGS should be made by a qualified personnel with a Select and Modify Ticket (Red Card) or a Prepare Work Zone TMP (Orange Card) all modifications are to be signed off on this TGS along with certification number.

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SCALE 1:500

KPI CONSTRUCTION SERVICES

LEVEL 1, 9-13 BRONTE RD
BONDI JUNCTION, NSW 2022

PH: 1800 574 574

www.kpiconstruction.com.au

CLIENT: ICON Constructions

SITE ADDRESS: 5 Central Park Avenue, Chipendale

DATE: 29/07/2021

TCP# KPI0204/21

DESCRIPTION: Swept Path 6 Ingress/Egress Gate
Heavy Rigid Vehicles

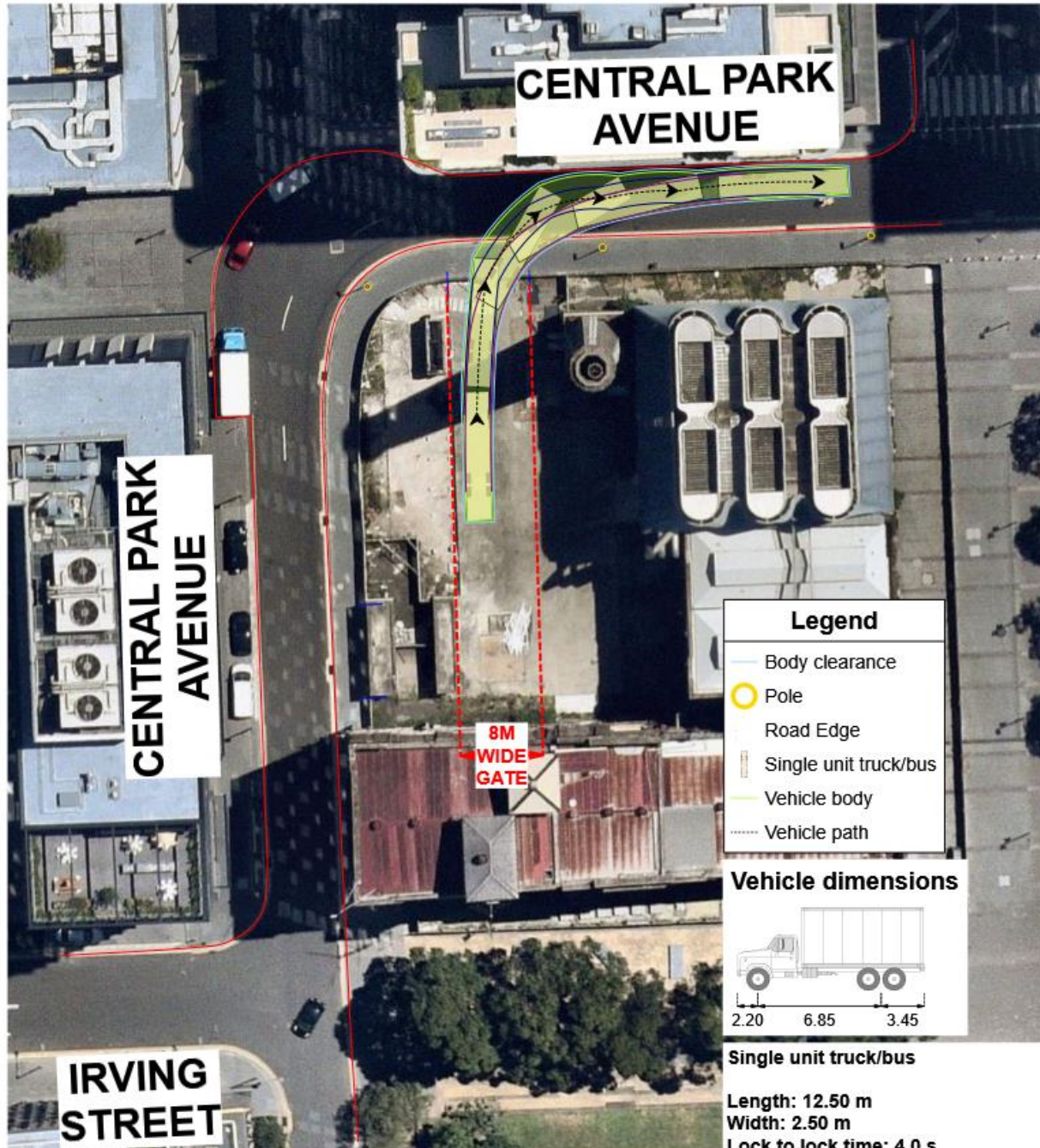
DESIGNED BY: CRAIG REEVES

TICKET NUMBER: PREPARE WORK ZONE TMP-
TCT0015996

NOTES:

This site specific TGS is based on RMS TCAWS Manual V6 2020, and AS1742.3 and it is to be set up by qualified KPI traffic controllers with a current Implement Traffic Control Plans Ticket (Yellow Card) any modifications made to this site specific TGS should be made by a qualified personnel with a Select and Modify Ticket (Red Card) or a Prepare Work Zone TMP (Orange Card) all modifications are to be signed off on this TGS along with certification number.

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SCALE 1:500



NOTICE OF TEMPORARY LANE/ROAD CLOSURE - PERMIT NO. _____
Conditions imposed by the NSW Police Force relative to Roads & Maritime Services
Or Council Permit to Stand and Operate Equipment.

To _____ of _____
Company / business contact name Company / business contact address

PARTICULARS OF CLOSURE AND CONDITIONS

- (1) A temporary lane / road closure is imposed in the location described below during the nominated times due to the obstruction / danger posed to traffic by the excavation of footpath / roadway / standing and operation of a mobile crane / travel tower / mobile concrete pump with _____ metres of jib / mast on the

_____ side of _____, between
North South East West name of street / road / lane / etc suburb

_____ and _____, occupying _____ metres of roadway,
cross street next cross street

between the hours of _____ and _____ on _____ / _____ / 20_____.
start time end time day or days of week date or dates

- (2) This notice or an exact copy is to be carried by the operator of the unit and produced if required. It is subject to cancellation at any time, and upon expiry the notice must be destroyed.
- (3) Suitable warning signs and barricades are to be erected in the area that the unit is being operated.
- (4) The roadway is to be properly marked with an adequate number of traffic lane markers to safely control the flow of traffic.
- (5) Flagmen to be in attendance to control traffic.
- (6) The unit suitably illuminated with adequate warning lamps when standing during the hours of darkness.
- (7) Approval to be obtained from the local Council Engineer for local or regional roads.
- (8) If this road is a state road you must provide police with a copy of the Road Occupancy Licence (ROL) otherwise you are not permitted to occupy the roadway.
- (9) Ambulance and Fire Brigade to be informed.(Where whole of road closure)
- (10) Relevant bus authorities to be informed. (Where closure interferes with a bus service)
- (11) RMS Traffic Control Centre to be informed. (Where closure interferes with any traffic lights)
- (12) Police conditions imposed for this operation has been obtained from _____ - Castle Hill Police Station.
- (13) Other. (Traffic Management Plan and Traffic Control Plan required)
- (14) In addition to the foregoing conditions the operator will comply with any direction of a member of the NSW Police Force.

N.B. THESE WORKS MUST COMPLY WITH AUSTRALIAN STANDARD AS 1742.3 – 1996. (TRAFFIC CONTROL DEVICES FOR WORKS ON ROADS) – ENQUIRES MAY BE DIRECTED TO WORKCOVER NSW.

Issued / / 20_____ at _____ am / pm

 Signature & print name of applicant/
 employee/ agent

Appendix E: City of Sydney Standard Requirement for CTMP

APPENDIX A

The City of Sydney Standard Requirements for Construction Traffic Management Plan

The Applicant or contractor undertakes to follow and abide by the following requirements at all times during the demolition, excavation and construction works at **(Please Insert site address and DA No here)**

1. Details of routes to and from site and entry and exit points from site – site specific
2. Details of roads that may be excluded from use by construction traffic i.e. roads with load limits, quiet residential streets or access/turn restricted streets – site specific
3. The approved truck route plan shall form part of the contract and must be distributed to all truck drivers.
4. All vehicles must enter and exit the site in a forward direction (unless specific approval for a **one-off occasion** is obtained from the City's Construction Regulation Unit).
5. Trucks are not allowed to reverse into the site from the road (unless specific approval for a **one-off occasion** is obtained from the City's Construction Regulation Unit).
6. The Applicant must provide the City with details of the largest truck that will be used during the demolition, excavation and construction.
NOTE: No dog trailers or articulated vehicles (AV) to be used (unless specific approval for a **one-off occasion** is obtained from the City's Construction Regulation Unit).
7. Oversize and over-mass vehicles are not allowed to travel on Local Roads (unless approval for a **one-off occasion** is obtained from the City's Traffic Operations Unit). Requests to use these vehicles must be submitted to the National Heavy Vehicle Regulator (NHVR) 28 days prior to the vehicle's scheduled travel date. For more information please contact the NHVR on 1300 696 487 or www.nhvr.gov.au.
8. No queuing or marshalling of trucks is permitted on any public road.
9. Any temporary adjustment to Bus Stops or Traffic Signals will require the Applicant to obtain approval from Transport for NSW (TfNSW) prior to commencement of works.
10. All vehicles associated with the development shall be parked wholly within the site. All site staff related with the works are to park in a designated off street area or be encouraged to use public transport and not park on the public road.
11. All loading and unloading must be within the development site or at an approved "Works Zone".

APPENDIX A

12. The Applicant must apply to the City's Traffic Works Co-ordinator to organise appropriate approvals for Work Zones and road closures.
13. The Applicant must apply to the City's Construction Regulations Unit to organise appropriate approvals for partial road closures.
14. The Applicant must apply to TfNSW's Transport Management Centre for approval of any road works on State Roads or within 100m of Traffic Signals and receive an approved Road Occupancy Licence (ROL). A copy of the ROL must be provided to the City.
15. The Applicant must apply to the City's Construction Regulations Unit to organise appropriate approvals for temporary driveways, cranes and barricades etc.
16. The Applicant must comply with development consent for hours of construction.
17. All Traffic Control Plans associated with the CTMP must comply with the Australian Standards and TfNSW's Traffic Control At Work Sites Guidelines.
18. Traffic Controllers are NOT to stop traffic on the public street(s) to allow trucks to enter or leave the site. They MUST wait until a suitable gap in traffic allows them to assist trucks to enter or exit the site. The Roads Act does not give any special treatment to trucks leaving a construction site - **the vehicles already on the road have right-of-way.**
19. Pedestrians may be held only for very short periods to ensure safety when trucks are leaving or entering BUT you must NOT stop pedestrians in anticipation i.e. **at all times the pedestrians have right-of-way on the footpath not the trucks.**
20. Physical barriers to control pedestrian or traffic movements need to be determined by the City's Construction Regulations Unit prior to commencement of work.
21. The Applicant must obtain a permit from the City's Construction Regulation Unit regarding the placing of any plant/equipment on public ways.
22. The Applicant must apply to the City's Building Approvals Unit to organise appropriate approvals for hoarding prior to commencement of works.
23. The CTMP is for the excavation, demolition and construction of building works, not for road works (if required) associated with the development. Any road works will require the Applicant or the contractor to separately seek approval from the City and/or TfNSW for consideration. Also WorkCover requires that Traffic Control Plans must comply with Australian Standards 1742.3 and must be prepared by a Certified Traffic Controller (under TfNSW regulations).
24. Please note that the provision of any information in this CTMP will not exempt the Applicant from correctly fulfilling all other conditions relevant to the development consent for the above site.

NEW SOUTH WALES

Level 1, 11-13 Bronte Road,
Bondi Junction, NSW 2022

T: 1800 574 574

F: 03 9326 5778

craig@kpiconstruction.com.au

VICTORIA

Unit 22, 74 Thomsons Road
Keilor Park, Victoria 3042

T: 03 9326 7795

F: 03 9326 5778

finance@kpiconstruction.com.au

QUEENSLAND

Unit 17, 15 Industrial Ave,
Molendinar, QLD 4214

T: 1800 574 574

M: 0499 224 771

terry@kpiconstruction.com.au

WESTERN AUSTRALIA

39 Dellamarta Road Wangara,
Western Australia 6065

T: 1800 574 574

finance@kpiconstruction.com.au

2019 -2020 Association Member of:





18.APPENDIX 2

18.1 CONTRUCTION AND NOISE VIBRATION MANAGEMENT SUB-PLAN



Brewery Yard, Central Park

Construction Noise and Vibration Management Sub-Plan

Icon

Report number: 210399_210823-Brewery Yard, Central Park-CNVMP-R1
Date: 23 August 2021
Version: Issue 1

Project Number: 210399

DOCUMENT CONTROL

Project Name	Brewery Yard, Central Park
Project Number	210399
Report Reference	210399_210823-Brewery Yard, Central Park-CNVMP-R1
Client:	Icon

Revision	Description	Reference	Date	Prepared	Checked	Authorised
1	For Information	210399_210823-Brewery Yard, Central Park-CNVMP-R1	23 August 2021	Ben White	Matthew Furlong	Ben White

PREPARED BY:

Pulse White Noise Acoustics Pty Ltd
ABN 95 642 886 306
Level 5, 73 Walker Street, North Sydney, 2060
1800 4 PULSE

This report has been prepared by Pulse White Noise Acoustics Pty Ltd with all reasonable skill, care and diligence, and taking account of the timescale and resources allocated to it by agreement with the Client. Information reported herein is based on the interpretation of data collected, which has been accepted in good faith as being accurate and valid.

This report is for the exclusive use of Icon

No warranties or guarantees are expressed or should be inferred by any third parties.

This report may not be relied upon by other parties without written consent from Pulse White Noise Acoustics.

This report remains the property of Pulse White Noise Acoustics Pty Ltd until paid for in full by the client, Icon .

Pulse White Noise Acoustics disclaims any responsibility to the Client and others in respect of any matters outside the agreed scope of the work.

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1 INTRODUCTION

Pulse White Noise Acoustics (PWNA) has been engaged to prepare a Construction Noise and Vibration Management Sub-Plan (CNVMSP) for the approved commercial adaptive reuse to be undertaken to the Brewery Yard (Block 4B) site located within the Central Park, Chippendale.

This CNVMSP has been prepared to satisfy the requirements of Condition C14 of the Consent given in the *Instrument of Determination* issued for Development for SSD No. 9374, dated 20th October 2020.

The assessment has been undertaken based on the previously undertaken Wood and Grieve Engineers *The Brewery Yard, Acoustic Report – Noise and Vibration Impact Assessment for State Significant Development Application* with revision 005 and dated 1/8/19 and included in the approvals for the project. The background noise levels undertaken at the site and included in the *Acoustic Report* have been used as the basis of this assessment.

A glossary of acoustic terminology used throughout this report is included in Appendix A.

1.1 Site Layout and Development Overview

The project site is located within the Central Park precinct Chippendale and includes the Brewery Yard, Block 4B.

The site is located within the Central Park precinct and includes existing residential and commercial receivers within proximity of the site.

The surrounding receivers to the site include residential receivers to the north, south east and west as well as commercial/retail receivers to the north east of the site.

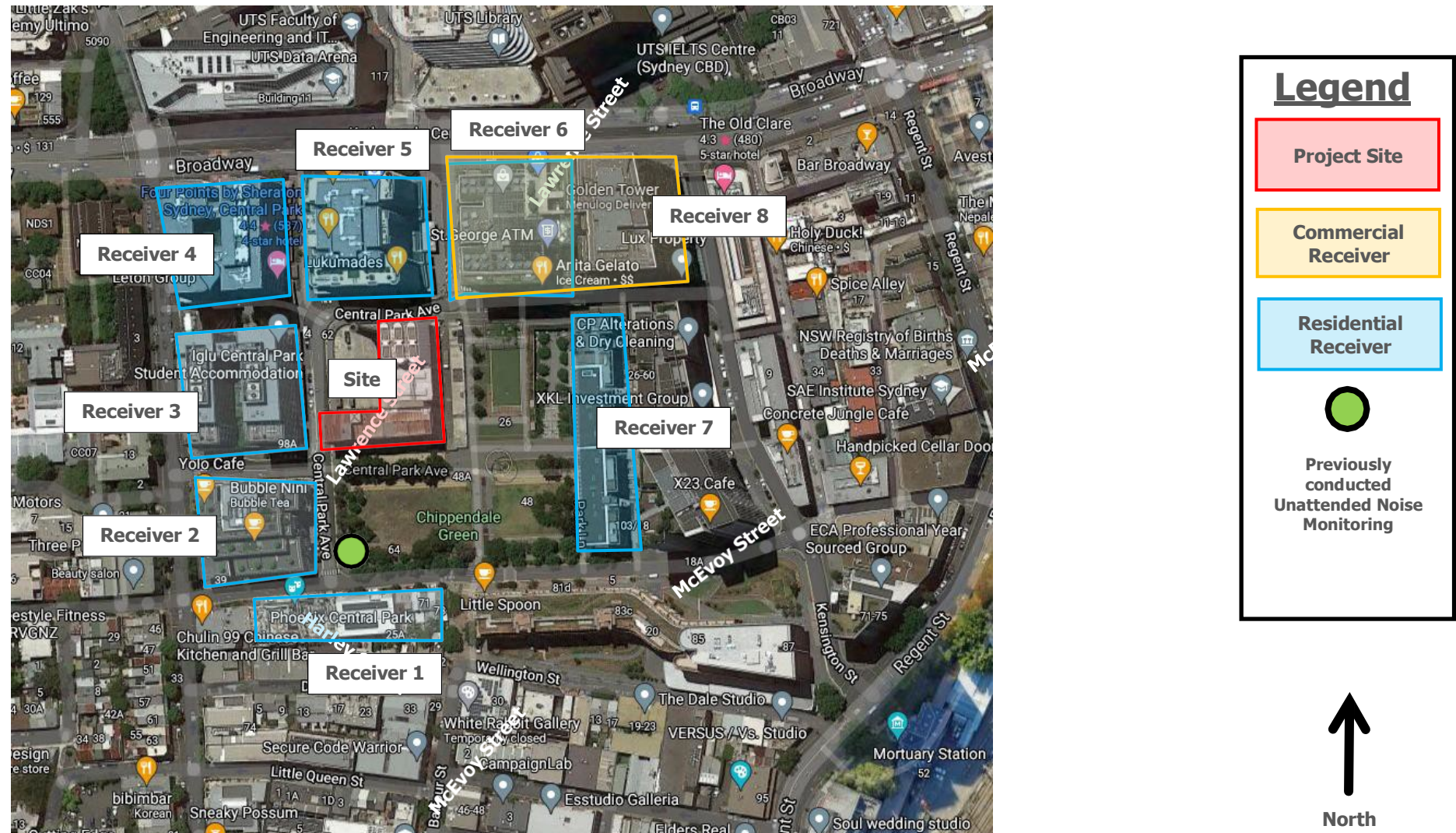
The surrounding receivers potentially affected by construction works are identified below.

Table 1 Receiver Locations

Receiver Number	Receiver Type	Location	Cardinal Direction
Receiver 1	Residential	Residence to the south of the site on O'Connor Street	South
Receiver 2	Residential	Residential receivers to the southwest of the site	South-West
Receiver 3	Residential	Residential receivers to the west of the site	West
Receiver 4	Residential	Residential receivers to the northwest of the site	North-West
Receiver 5	Residential	Residential receivers to the north of the site	North
Receiver 6	Residential	Residential receivers to the northeast of the site	North-east
Receiver 7	Residential	Residential receivers to the east of the site	East
Receiver 8	Commercial	Commercial receivers located on the lower levels of the building to the north	North

A map showing the site location, receiver locations and all measurement locations is provided in Figure 1 below.

Figure 1 Site Map, Measurement Locations and Surrounding Receivers – Sourced from SixMaps NSW



2 EXISTING ACOUSTIC ENVIRONMENT

The Wood and Grieve Engineers *The Brewery Yard, Acoustic Report – Noise and Vibration Impact Assessment for State Significant Development Application* with revision 005 and dated 1/8/19 includes unattended noise monitoring results previously established at the site at the location shown in Figure 1 above.

Information provided in *The Brewery Yard, Acoustic Report – Noise and Vibration Impact Assessment for State Significant Development Application* details the unattended noise survey as shown below.

Figure 2 Extract of *The Brewery Yard, Acoustic Report – Noise and Vibration Impact Assessment for State Significant Development Application* – Section 3.3.1, Background and Ambient Noise Monitoring

3.3.1 Background and Ambient Noise Monitoring

A noise logger was placed at position L1 as shown in Figure 1 to measure the background and ambient noise that is representative of RC1 and RC2 residential receivers. The logger was installed from the 6th to the 13th of July 2018. The results of the unattended background noise survey is shown in Table 1 below (for the day, evening and night periods). Note that any extraneous data or rain affected data has been excluded from the calculations.

Table 1: Unattended noise measurements L1

Location	Equivalent Continuous Noise Level L _{Aeq,period} - dB(A)			Background Noise Level RBL - dB(A)		
	Day	Evening	Night	Day	Evening	Night
L1	63	56	54	52	48	44

Refer to Figure 2 for the logger data. Note that the daytime may be impacted by construction noise from surrounding works.

A summary of the results of the attended noise survey included in *The Brewery Yard, Acoustic Report – Noise and Vibration Impact Assessment for State Significant Development Application* are summarised Table 2 below.

Table 2 Measured ambient noise levels – Acoustic Logic Unattended Noise Survey

Measurement Location	Daytime ¹ 7:00 am to 6:00 pm L _{A90} ²	L _{Aeq} ³
The Brewery Yard	57 dBA	61 dBA
<i>Note 1: For Monday to Saturday, Daytime 7:00 am – 6:00 pm; Evening 6:00 pm – 10:00 pm; Night-time 10:00 pm – 7:00 am. On Sundays and Public Holidays, Daytime 8:00 am – 6:00 pm; Evening 6:00 pm – 10:00 pm; Night-time 10:00 pm – 8:00 am</i> <i>Note 2: The L_{A90} noise level is representative of the "average minimum background sound level" (in the absence of the source under consideration), or simply the background level.</i> <i>Note 3: The L_{Aeq} is the energy average sound level. It is defined as the steady sound level that contains the same amount of acoustical energy as a given time-varying sound.</i>		

3 NOISE AND VIBRATION CRITERIA

This CNVMSP has been prepared to satisfy the requirements of Condition C14 of the Consent given in the *Instrument of Determination* issued for Development for SSD No. 9374, dated 20th October 2020.

Condition C14 from project approval conditions states:

Construction Noise and Vibration Management Sub-Plan

C14. The Construction Noise and Vibration Management Sub-Plan (CNVMSP) must address, but not be limited to, the following:

- (a) be prepared by a suitably qualified and experienced noise expert;
- (b) incorporate recommendations of the noise report titled *The Brewery Yard Acoustic Report Noise & Vibration Assessment for SSD* prepared by Wood & Grieve Engineers, dated 1 August 2018;
- (c) describe procedures for achieving the noise management levels in EPA's *Interim Construction Noise Guideline* (DECC, 2009);
- (d) hours of construction in accordance with **Conditions D3 to D7**;
- (e) outline regular community liaison with sensitive receivers around the site
- (f) outline how noise and vibration impacts would be monitored during construction
- (g) in consultation with adjoining sensitive receivers, outline scheduling and describe the measures to be implemented to manage high noise generating works such as jackhammering
- (h) include strategies that have been developed with the community for managing high noise generating works; and
- (i) describe the community consultation undertaken to develop the strategies; and
- (j) include a complaints management system that would be implemented for the duration of the construction.

Condition D3 to D7 from project approval conditions states:

Construction Hours

- D3. Construction, including the delivery of materials to and from the site, may only be carried out between the following hours:
 - (a) between 7am and 6pm, Mondays to Fridays inclusive; and
 - (b) between 8am and 1pm, Saturdays.
 - (c) No work may be carried out on Sundays or public holidays.
- D4. Notwithstanding condition D3, provided noise levels do not exceed the existing background noise level plus 5 dB, works may also be undertaken during the following hours:
 - (a) between 6pm and 7pm, Mondays to Fridays inclusive; and
 - (b) between 1pm and 4pm, Saturdays.
- D5. Construction activities may be undertaken outside of the hours in condition D3 if required:
 - (a) by the Police or a public authority for the delivery of vehicles, plant or materials; or
 - (b) in an emergency to avoid the loss of life, damage to property or to prevent environmental harm; or
 - (c) where the works are inaudible at the nearest sensitive receivers.
- D6. Notification of such construction activities as referenced in condition D3 must be given to affected residents before undertaking the activities or as soon as is practical afterwards.
- D7. Rock breaking, rock hammering, sheet piling, pile driving and similar activities may only be carried out in accordance with the CNVMSP and must have regard surrounding sensitive receivers.

The Wood and Grieve Engineers *The Brewery Yard, Acoustic Report – Noise and Vibration Impact Assessment for State Significant Development Application* with revision 005 and dated 1/8/19 and included in the approvals for the project includes the requirement for construction noise to be assessed in accordance with the following:

1. The EPA's *Interim Construction Noise Guideline (ICNG)*.
2. The office of the Environment and Heritage (OEH) "*Assessing vibration: A technical guideline*".

3.1 Construction Noise Criteria

This section of the report details the relevant construction noise criteria which is applicable to the site including the EPA's *Interim Construction Noise Guideline* (ICNG).

3.1.1 Interim Construction Noise Guideline

Noise criteria for construction activities are discussed in the *Interim Construction Noise Guideline* (ICNG). The ICNG also recommends procedures to address potential impacts of construction noise on residences and other sensitive land uses. The main objectives of the ICNG are summarised as follows:

- Promote a clear understanding of ways to identify and minimise noise from construction works;
- Focus on applying all "feasible" and "reasonable" work practices to minimise construction noise impacts;
- Encourage construction to be undertaken only during the recommended standard hours unless approval is given for works that cannot be undertaken during these hours;
- Streamline the assessment and approval stages and reduce time spent dealing with complaints at the project implementation stage; and
- Provide flexibility in selecting site-specific feasible and reasonable work practices in order to minimise noise impacts.

The ICNG contains a quantitative assessment method which is applicable to this project. Guidance levels are given for airborne noise at residences and other sensitive land uses.

The quantitative assessment method involves predicting noise levels at sensitive receivers and comparing them with the Noise Management Levels (NMLs). The NML affectation categories for receivers have been reproduced from the guideline and are listed in the table below.

Table 3 Noise Management Levels from Construction

Receiver Type	Time of Day	Noise Management Level $L_{Aeq(15minute)}^{1,2}$	How to Apply
Residential	During approved working hours detained with the conditions of consent	Noise affected RBL + 10 dB	The noise affected level represents the point above which there may be some community reaction to noise. Where the predicted or measured $L_{Aeq(15minute)}$ is greater than the noise affected level, the proponent should apply all feasible and reasonable work practices to meet the noise affected level. The proponent should also inform all potentially impacted residents of the nature of works to be carried out, the expected noise levels and duration, as well as contact details.
		Highly noise affected 75 dBA	The highly noise affected level represents the point above which there may be strong community reaction to noise. Where noise is above this level, the relevant authority (consent, determining or regulatory) may require respite periods by restricting the hours that the very noisy activities can occur, taking into account: 1. Times identified by the community when they are less sensitive to noise (such as before and after school for works near schools, or mid-morning or mid-afternoon for works near residences. 2. If the community is prepared to accept a longer period of construction in exchange for restrictions on construction times.
	Outside recommended standard hours	Noise affected RBL + 5 dB	A strong justification would typically be required for works outside the recommended standard hours. The proponent should apply all feasible and reasonable work practices to meet the noise affected level. Where all feasible and reasonable practices have been applied and noise is more than 5 dB above the noise affected level, the proponent should negotiate with the community.

Table 3 Continued

Receiver Type	Time of Day	Noise Management Level $L_{Aeq}(15\text{minute})^{1,2}$	How to Apply
offices, retail outlets: external	When in use	$L_{Aeq}(15\text{ min})$ 70 dB(A)	During construction, the proponent should regularly update the occupants of the commercial and industrial premises regarding noise levels and hours of work.
<i>Note 1 Noise levels apply at the property boundary that is most exposed to construction noise, and at a height of 1.5 m above ground level. If the property boundary is more than 30 m from the residence, the location for measuring or predicting noise levels is at the most noise-affected point within 30 m of the residence. Noise levels may be higher at upper floors of the noise affected residence.</i> <i>Note 2 The RBL is the overall single-figure background noise level measured in each relevant assessment period (during or outside the recommended standard hours). The term RBL is described in detail in the NSW Industrial Noise Policy (EPA 2000).</i>			

Based on the table above the suitable construction noise management levels for works undertaken on the site is detailed in Table 6 below.

Table 4 Site Construction Noise Management Levels

Noise Source	Time Period	Receiver Type	Construction Noise Management Level ¹		'High Noise Affected' Level ¹	
Construction Noise	During approved hours of work	Residential receivers	62 dB(A) (15min)	L _{Aeq}	75 dB(A) (15min)	L _{Aeq}
		Commercial receivers	62 dB(A) (15min)	L _{Aeq}	70 dB(A) (15min)	L _{Aeq}
Note 1: Construction noise management levels based on the Interim Construction Noise Guideline						

3.2 Vibration Criteria

It is noted that the Construction Hours /Noise within the Central Business District - Code of Practice 1992" (CHN CBD), issued by the City of Sydney Council does not contain any vibration criteria. In the absence of any applicable criteria the information outlined below will be adopted.

Effects of ground borne vibration on buildings may be segregated into the following three categories:

- Human comfort – vibration in which the occupants or users of the building are inconvenienced or possibly disturbed. Refer to further discussion in Section 3.2.1.
- Effects on building contents – where vibration can cause damage to fixtures, fittings and other non-building related objects. Refer to further discussion in Section 3.2.2.
- Effects on building structures – where vibration can compromise the integrity of the building or structure itself. Refer to further discussion in Section 3.2.2.

3.2.1 Vibration Criteria – Human Comfort

Vibration effects relating specifically to the human comfort aspects of the project are taken from the guideline titled "Assessing Vibration – A Technical Guideline". (AVTG) This type of impact can be further categorised and assessed using the appropriate criterion as follows:

- Continuous vibration – from uninterrupted sources (refer to Table 5).
- Impulsive vibration – up to three instances of sudden impact e.g. dropping heavy items, per monitoring period (refer to Table 6).
- Intermittent vibration – such as from drilling, compacting or activities that would result in continuous vibration if operated continuously (refer to Table 7).

Table 5 Continuous vibration acceleration criteria (m/s²) 1 Hz-80 Hz

Location	Assessment period	Preferred Values		Maximum Values	
		z-axis	x- and y-axis	z-axis	x- and y-axis
Residences	Daytime	0.010	0.0071	0.020	0.014
	Night-time	0.007	0.005	0.014	0.010
Offices, schools, educational institutions and places of worship	Day or night-time	0.020	0.014	0.040	0.028
		0.04	0.029	0.080	0.058
Workshops	Day or night-time	0.04	0.029	0.080	0.058

Table 6 Impulsive vibration acceleration criteria (m/s²) 1 Hz-80 Hz

Location	Assessment period	Preferred Values		Maximum Values	
		z-axis	x- and y-axis	z-axis	x- and y-axis
Residences	Daytime	0.30	0.21	0.60	0.42
	Night-time	0.10	0.071	0.20	0.14
Offices, schools, educational institutions and places of worship	Day or night-time	0.64	0.46	1.28	0.92
Workshops	Day or night-time	0.64	0.46	1.28	0.92

Table 7 Intermittent vibration impacts criteria ($\text{m/s}^{1.75}$) 1 Hz-80 Hz

Location	Daytime		Night-time	
	Preferred Values	Maximum Values	Preferred Values	Maximum Values
Residences	0.20	0.40	0.13	0.26
Offices, schools, educational institutions and places of worship	0.40	0.80	0.40	0.80
Workshops	0.80	1.60	0.80	1.60

3.2.2 Vibration Criteria – Building Contents and Structure

The vibration effects on the building itself are assessed against international standards as follows:

- For transient vibration: British Standard BS 7385: Part 2-1993 "*Evaluation and measurement for vibration in buildings Part 2: Guide to damage levels from ground borne vibration*"(BSI 1993); and
- For continuous or repetitive vibration: German DIN 4150: Part 3 – 1999 "*Effects of Vibration on Structure*" (DIN 1999).

3.2.2.1 Standard BS 7385 Part 2 - 1993

For transient vibration, as discussed in standard BS 7385 Part 2-1993, the criteria are based on peak particle velocity (mm/s) which is to be measured at the base of the building. These are summarised in Table 8 and illustrated in



Figure 3.

Table 8 Transient vibration criteria as per standard BS 7385 Part 2 - 1993

Line in Figure 3	Type of Building	Peak Component Particle Velocity in Frequency Range of Predominant Pulse	
		4 Hz to 15 Hz	15 Hz and Above
1	Reinforced or framed structures Industrial and heavy commercial buildings	50 mm/s at 4 Hz and above	
2	Unreinforced or light framed structures Residential or light commercial type buildings	15 mm/s at 4 Hz increasing to 20 mm/s at 15 Hz	20 mm/s at 15 Hz increasing to 50 mm/s at 40 Hz and above

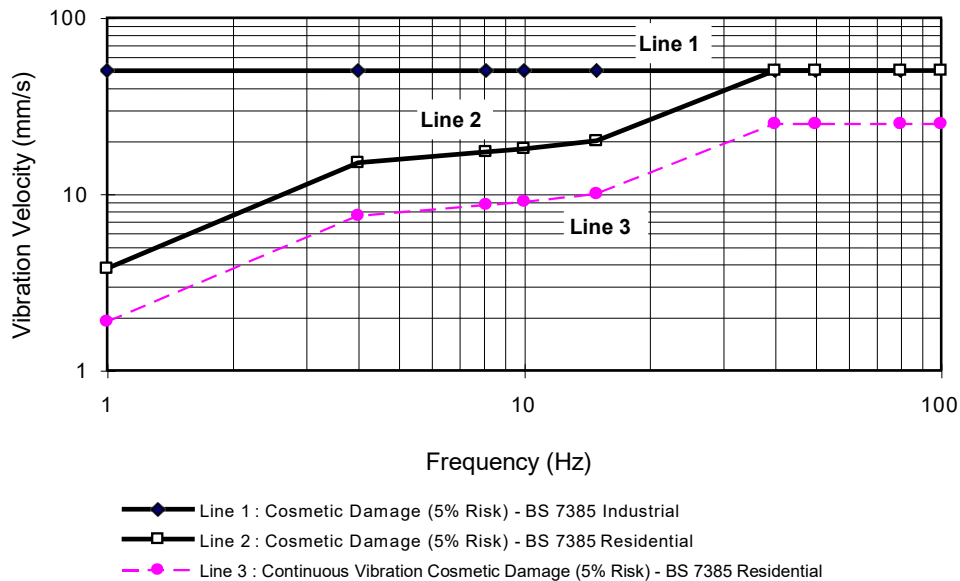
Standard BS 7385 Part 2 – 1993 states that the values in Table 8 relate to transient vibration which does not cause resonant responses in buildings.

Where the dynamic loading caused by continuous vibration events is such as that results in dynamic magnification due to resonance (especially at the lower frequencies where lower guide values apply), then the values in Table 8 may need to be reduced by up to 50% (refer to Line 3 in



Figure 3).

Figure 3 BS 7385 Part 2 – 1993, graph of transient vibration values for cosmetic damage



In the lower frequency region where strains associated with a given vibration velocity magnitude are higher, the recommended values corresponding to Line 2 are reduced. Below a frequency of 4 Hz where a high displacement is associated with the relatively low peak component particle velocity value, a maximum displacement of 0.6 mm (zero to peak) is recommended. This displacement is equivalent to a vibration velocity of 3.7 mm/s at 1 Hz.

The standard also states that minor damage is possible at vibration magnitudes which are greater than twice those given in Table 8, and major damage to a building structure may occur at values greater than four times the tabulated values.

Fatigue considerations are also addressed in the standard and it is concluded that unless calculation indicates that the magnitude and number of load reversals is significant (in respect of the fatigue life of building materials) then the values in Table 8 should not be reduced for fatigue considerations.

3.2.2.2 Standard DIN 4150 Part 3 - 1999

For continuous or repetitive vibration, standard DIN 4150 Part 3-1999 provides criteria based on values for peak particle velocity (mm/s) measured at the foundation of the building; these are summarised in Table 9. The criteria are frequency dependent and specific to particular categories of structures.

Table 9 Structural damage criteria as per standard DIN 4150 Part 3 - 1999

Type of Structure	Peak Component Particle Velocity, mm/s			Vibration of horizontal plane of highest floor at all frequencies
	Vibration at the foundation at a frequency of 1 Hz to 10 Hz	10 Hz to 50 Hz	50 Hz to 100 Hz ¹	
Buildings used for commercial purposes, industrial buildings and buildings of similar design	20	20 to 40	40 to 50	40
Dwellings and buildings of similar design and/or use	5	5 to 15	15 to 20	15
Structures that, because of their sensitivity to vibration, do not correspond to those listed in lines 1 and 2 and are of great intrinsic value (e.g. buildings that are under a preservation order)	3	3 to 8	8 to 10	8
<i>Note 1: For frequencies above 100Hz, at least the values specified in this column shall be applied.</i>				

3.2.3 Summary of Vibration Criteria

Based on the details of the relevant guidelines and standards detailed in the sections above the proposed limits for construction vibration limits potentially impacting on surrounding building structures includes the following:

1. Surrounding residential buildings – 7mm/s Peak Particle Velocity (PPV)
2. Surrounding commercial buildings – 7mm/s Peak Particle Velocity (PPV)

3.3 Ground-Borne Noise Criteria

According to the NSW EPA *Interim Construction Noise Guideline* (ICNG) 2009, the criteria for ground-borne noise at residences is defined as follows:

- Maximum internal noise levels of 40 dB LAeq(15mins) between 6:00pm and 10:00pm.

It is noted that the ground borne criteria will apply for construction works undertaken outside of standard hours. That is, work conducted during the evening period Monday to Friday between 6:00pm and 7:00pm only.

4 NOISE AND VIBRATION ASSESSMENT

4.1 Construction Noise Assessment

Sound power levels have been predicted for the construction tasks identified in the project program. The equipment anticipated for use in each task is based on previous project experience. The sound power levels for the equipment likely to be used for each of the listed tasks are provided in Table 10 below.

Table 10 Summary of predicted sound power levels

Tasks	Equipment	Sound Power Levels (dBA re 1pW)	Aggregate Sound Power Level per Task (dBA re 1pW)
Demolition	Hydraulic Hammer	118	120
	Generators	104	
	Handheld jack hammer ¹	111	
	Trucks ¹	104	
	Concrete saw ¹	114	
	Skid steer	110	
	Power hand tools	109	
Construction	Handheld jack hammer ¹	106	117
	Concrete saw ¹	114	
	Power hand tools	109	
	Welder	101	
	Bobcat	104	
	Concrete pump	108	
	Concrete agitator truck	108	
Internal Works	Power hand tools	109	109

Note 1: An assumed time correction has been applied, this being 5 minutes of operation in any 15-minute interval.

4.2 Construction Noise Management – Qualitative Assessment

Based on the assessment conducted of the expected construction noise levels generated from the site, levels are generally expected to require the building contractor to engage in management of activities on the site and engagement with the local community.

Notwithstanding, the following management controls are recommended to mitigate construction noise levels on the site:

- 1 Construction to be undertaken within the approved hours detailed within the projects *Instrument of Determination*.
- 2 All plant and equipment are to be maintained such that they are in good working order.
- 3 A register of complaints is to be recorded in the event of complaints being received, including location, time of complaint, nature of the complaint and actions resulting from the complaint.
- 4 If required a noise level measurement of the offending plant item generating complaints is to be conducted and noise mitigations undertaken to reduce noise levels to within Noise Management levels in the event magnitude of noise levels is found to be above suitable levels.
- 5 The use of percussive and concrete sawing should be undertaken behind a closed façade when possible.
- 6 The use of construction activities to be undertaken in accordance with the requirements of the *Instrument of Determination*.
- 7 Where possible any demolition of structure to include alternative processes to hydraulic hammering where possible.

In addition to the recommended mitigations above details of the proposed construction works to be conducted on the site, including type of activities to be conducted as well as the expected duration of activities should be provided to the neighbouring receivers.

In the event noise levels are found to require additional noise reduction then all possible and practical mitigations are required to be included in the construction of the project. Possible acoustic treatments and controls may include the following:

1. Use of alternative appliances to complete the required works which result in reduced noise impacts on surrounding neighbours.
2. Period when noisy appliances are undertaken, such as undertaking noisy works on locations with the greatest distance to residential receivers during morning periods if possible.
3. Construction of acoustic screening to permanently located high noise generating equipment such as pumps and generators.
4. Scheduling of high noise generating works outside of noise sensitive periods if possible including prior to 8.30am and after 4pm.
5. Other site specific treatments and controls which may become possible once works commence.

4.3 Construction Noise Assessment – Quantitative Assessment

A quantitative assessment of the construction noise levels resulting from the proposed works to be undertaken as part of the project on surrounding receivers has been undertaken.

The assessment has been based on the expected noise levels to be generated on the site including those detailed in Section 4.1 above. Calculations of the resulting construction noise levels of the receivers within proximity to the site is detailed in the table below.



Table 11 Receiver 1 – Residential - Summary of predicted construction noise levels (Standard Working Hours)

Phase	Activity	Aggregate Sound Power Level (dBA re 1pW)	Predicted Individual Noise Level at Receiver dBA L _{A10} 15 minutes	Predicted Combined Noise Level at Receiver dBA L _{A10} 15 minutes	Noise Management Level dB(A) L _{Aeq} 15 minutes	Summary of Result
Demolition	Hydraulic Hammer	120	67 to 74	68 to 75	During Approved Working Hours 52 + 10 = 62 dB(A)	Works near the nearest boundary to the receiver may be above the BG + 10dB(A) Based on the expected construction noise levels suitable management controls and community notifications are required to be conducted.
	Generators		53 to 60			
	Handheld jack hammer		58 to 65			
	Trucks		48 to 55			
	Concrete saw		58 to 65			
	Skid steer		54 to 61			
	Power hand tools		53 to 60			
Construction	Handheld jack hammer	117	53 to 60	66 to 73		
	Concrete saw		50 to 57			
	Power hand tools		63 to 70			
	Welder		58 to 65			
	Bobcat		50 to 57			
	Concrete pump		59 to 66			
	Concrete agitator truck		57 to 64			
Internal Works	Power hand tools	109	38 to 45	38 to 67		Works undertaken within the building structure expected to be within noise management levels



Table 12 Receiver 2 – Residential - Summary of predicted construction noise levels (Standard Working Hours)

Phase	Activity	Aggregate Sound Power Level (dBA re 1pW)	Predicted Individual Noise Level at Receiver dBA L _{A10} 15 minutes	Predicted Combined Noise Level at Receiver dBA L _{A10} 15 minutes	Noise Management Level dB(A) L _{Aeq} 15 minutes	Summary of Result
Demolition	Hydraulic Hammer	120	67 to 80	68 to 81	During Approved Working Hours 52 + 10 = 62 dB(A)	Based on the expected construction noise levels suitable management controls and community notifications are required to be conducted.
	Generators		53 to 66			
	Handheld jack hammer		58 to 72			
	Trucks		48 to 62			
	Concrete saw		58 to 72			
	Skid steer		54 to 68			
	Power hand tools		53 to 67			
Construction	Handheld jack hammer	117	53 to 67	66 to 80	During Approved Working Hours 52 + 10 = 62 dB(A)	Based on the expected construction noise levels suitable management controls and community notifications are required to be conducted.
	Concrete saw		50 to 64			
	Power hand tools		63 to 76			
	Welder		58 to 71			
	Bobcat		50 to 63			
	Concrete pump		59 to 72			
	Concrete agitator truck		57 to 70			
Internal Works	Power hand tools	109	38 to 51	38 to 51		Works undertaken within the building structure expected to be within noise management levels



Table 13 Receiver 3 – Residential - Summary of predicted construction noise levels (Standard Working Hours)

Phase	Activity	Aggregate Sound Power Level (dBA re 1pW)	Predicted Individual Noise Level at Receiver dBA L _{A10} 15 minutes	Predicted Combined Noise Level at Receiver dBA L _{A10} 15 minutes	Noise Management Level dB(A) L _{Aeq} 15 minutes	Summary of Result
Demolition	Hydraulic Hammer	120	71 to 80	71 to 81	During Approved Working Hours 52 + 10 = 62 dB(A)	Based on the expected construction noise levels suitable management controls and community notifications are required to be conducted.
	Generators		57 to 66			
	Handheld jack hammer		63 to 72			
	Trucks		53 to 62			
	Concrete saw		63 to 72			
	Skid steer		59 to 68			
	Power hand tools		58 to 67			
Construction	Handheld jack hammer	117	58 to 67	69 to 80	52 + 10 = 62 dB(A)	Based on the expected construction noise levels suitable management controls and community notifications are required to be conducted.
	Concrete saw		55 to 64			
	Power hand tools		67 to 76			
	Welder		62 to 71			
	Bobcat		54 to 63			
	Concrete pump		63 to 72			
	Concrete agitator truck		61 to 70			
Internal Works	Power hand tools	109	42 to 51	42 to 51		Works undertaken within the building structure expected to be within noise management levels



Table 14 Receiver 4 – Residential - Summary of predicted construction noise levels (Standard Working Hours)

Phase	Activity	Aggregate Sound Power Level (dBA re 1pW)	Predicted Individual Noise Level at Receiver dBA L _{A10} 15 minutes	Predicted Combined Noise Level at Receiver dBA L _{A10} 15 minutes	Noise Management Level dB(A) L _{Aeq} 15 minutes	Summary of Result
Demolition	Hydraulic Hammer	120	68 to 76	69 to 77	During Approved Working Hours 52 + 10 = 62 dB(A)	Based on the expected construction noise levels suitable management controls and community notifications are required to be conducted.
	Generators		54 to 62			
	Handheld jack hammer		60 to 67			
	Trucks		50 to 57			
	Concrete saw		60 to 67			
	Skid steer		56 to 63			
	Power hand tools		55 to 62			
Construction	Handheld jack hammer	117	55 to 62	68 to 75	During Approved Working Hours 52 + 10 = 62 dB(A)	Based on the expected construction noise levels suitable management controls and community notifications are required to be conducted.
	Concrete saw		52 to 59			
	Power hand tools		64 to 72			
	Welder		59 to 67			
	Bobcat		51 to 59			
	Concrete pump		60 to 68			
	Concrete agitator truck		58 to 66			
Internal Works	Power hand tools	109	39 to 47	39 to 47		Works undertaken within the building structure expected to be within noise management levels



Table 15 Receiver 5 – Residential - Summary of predicted construction noise levels (Standard Working Hours)

Phase	Activity	Aggregate Sound Power Level (dBA re 1pW)	Predicted Individual Noise Level at Receiver dBA L _{A10} 15 minutes	Predicted Combined Noise Level at Receiver dBA L _{A10} 15 minutes	Noise Management Level dB(A) L _{Aeq} 15 minutes	Summary of Result
Demolition	Hydraulic Hammer	120	73 to 80	74 to 82	During Approved Working Hours 52 + 10 = 62 dB(A)	Based on the expected construction noise levels suitable management controls and community notifications are required to be conducted.
	Generators		59 to 66			
	Handheld jack hammer		64 to 72			
	Trucks		54 to 62			
	Concrete saw		64 to 72			
	Skid steer		60 to 68			
	Power hand tools		59 to 67			
Construction	Handheld jack hammer	117	59 to 67	72 to 80	During Approved Working Hours 52 + 10 = 62 dB(A)	Based on the expected construction noise levels suitable management controls and community notifications are required to be conducted.
	Concrete saw		56 to 64			
	Power hand tools		69 to 76			
	Welder		64 to 71			
	Bobcat		56 to 63			
	Concrete pump		65 to 72			
	Concrete agitator truck		63 to 70			
Internal Works	Power hand tools	109	44 to 51	44 to 51		Works undertaken within the building structure expected to be within noise management levels



Table 16 Receiver 6 – Residential - Summary of predicted construction noise levels (Standard Working Hours)

Phase	Activity	Aggregate Sound Power Level (dBA re 1pW)	Predicted Individual Noise Level at Receiver dBA L _{A10} 15 minutes	Predicted Combined Noise Level at Receiver dBA L _{A10} 15 minutes	Noise Management Level dB(A) L _{Aeq} 15 minutes	Summary of Result
Demolition	Hydraulic Hammer	120	71 to 79	72 to 80	During Approved Working Hours 52 + 10 = 62 dB(A)	Based on the expected construction noise levels suitable management controls and community notifications are required to be conducted.
	Generators		57 to 65			
	Handheld jack hammer		63 to 70			
	Trucks		53 to 60			
	Concrete saw		63 to 70			
	Skid steer		59 to 66			
	Power hand tools		58 to 65			
Construction	Handheld jack hammer	117	58 to 65	71 to 78	During Approved Working Hours 52 + 10 = 62 dB(A)	Based on the expected construction noise levels suitable management controls and community notifications are required to be conducted.
	Concrete saw		55 to 62			
	Power hand tools		67 to 75			
	Welder		62 to 70			
	Bobcat		54 to 62			
	Concrete pump		63 to 71			
	Concrete agitator truck		61 to 69			
Internal Works	Power hand tools	109	42 to 50	42 to 50		Works undertaken within the building structure expected to be within noise management levels



Table 17 Receiver 7 – Residential - Summary of predicted construction noise levels (Standard Working Hours)

Phase	Activity	Aggregate Sound Power Level (dBA re 1pW)	Predicted Individual Noise Level at Receiver dBA L _{A10} 15 minutes	Predicted Combined Noise Level at Receiver dBA L _{A10} 15 minutes	Noise Management Level dB(A) L _{Aeq} 15 minutes	Summary of Result
Demolition	Hydraulic Hammer	120	68 to 74	69 to 75	During Approved Working Hours 52 + 10 = 62 dB(A)	Based on the expected construction noise levels suitable management controls and community notifications are required to be conducted.
	Generators		54 to 60			
	Handheld jack hammer		59 to 65			
	Trucks		49 to 55			
	Concrete saw		59 to 65			
	Skid steer		55 to 61			
	Power hand tools		54 to 60			
Construction	Handheld jack hammer	117	54 to 60	67 to 74	During Approved Working Hours 52 + 10 = 62 dB(A)	Based on the expected construction noise levels suitable management controls and community notifications are required to be conducted.
	Concrete saw		51 to 57			
	Power hand tools		64 to 70			
	Welder		59 to 65			
	Bobcat		51 to 57			
	Concrete pump		60 to 66			
	Concrete agitator truck		58 to 64			
Internal Works	Power hand tools	109	39 to 45	39 to 45		Works undertaken within the building structure expected to be within noise management levels



Table 18 Receiver 8 – Commercial - Summary of predicted construction noise levels (Standard Working Hours)

Phase	Activity	Aggregate Sound Power Level (dBA re 1pW)	Predicted Individual Noise Level at Receiver dBA L _{A10} 15 minutes	Predicted Combined Noise Level at Receiver dBA L _{A10} 15 minutes	Noise Management Level dB(A) L _{Aeq} 15 minutes	Summary of Result
Demolition	Hydraulic Hammer	120	71 to 79	72 to 80	During Approved Working Hours 52 + 10 = 62 dB(A)	Based on the expected construction noise levels suitable management controls and community notifications are required to be conducted.
	Generators		57 to 65			
	Handheld jack hammer		63 to 70			
	Trucks		53 to 60			
	Concrete saw		63 to 70			
	Skid steer		59 to 66			
	Power hand tools		58 to 65			
Construction	Handheld jack hammer	117	58 to 65	71 to 78		
	Concrete saw		55 to 62			
	Power hand tools		67 to 75			
	Welder		62 to 70			
	Bobcat		54 to 62			
	Concrete pump		63 to 71			
	Concrete agitator truck		61 to 69			
Internal Works	Power hand tools	109	42 to 50	42 to 50		Works undertaken within the building structure expected to be within noise management levels

4.4 Construction Traffic Noise Assessment

It is proposed that the construction traffic could access the site via Broadway.

Construction traffic accessing the site including the movements of heavy vehicles are required to comply with the projects Conditions of Consent and will be detailed in the sites *Construction Management Plan*

4.5 Vibration Assessment

In order to maintain compliance with the human comfort vibration criteria discussed in Section 3, it is recommended that the indicative safe distances listed in Table 19 should be maintained. These indicative safe distances should be validated prior to the start of construction works by undertaking measurements of vibration levels generated by construction and demolition equipment to be used on site.

If applicable, the criteria for scientific or medical equipment (should any of these exist close to the site) can be more stringent than those required for human comfort, vibration validating measurements should be conducted at each site to determine the vibration level and potential impact onto this sensitive equipment.

Additionally, any vibration levels should be assessed in accordance with the criteria discussed in Section 3. This information should also be included as part of the CNVMP.

Table 19 Recommended indicative safe working distances for vibration intensive plant

Plant	Rating / Description	Safe Working Distances (m)	
		Cosmetic Damage (BS 7385: Part 2 DIN 4150: Part 3)	Human Comfort (AVTG)
Small hydraulic hammer	300 kg, typically 5 – 12 tonnes excavator	2	7
Medium hydraulic hammer	900 kg, typically 12 – 18 tonnes excavator	7	23
Large hydraulic hammer	1600 kg, typically 18 – 34 tonnes excavator	22	73
Vibratory pile driver	Sheet piles	2 – 20	20
Jackhammer	Hand held	1	Avoid contact with structure and steel reinforcements

To ensure the vibration impact criteria detailed in this report are complied with the following safe working mitigations and/or working distances should be implemented as detailed in the table below.

Table 20 Vibration Mitigation Requirements

Construction Phase	Activity	Vibration Mitigation
Construction	General activities	General construction activities are not expected to exceed project vibration limits detailed in this report.

5 NOISE AND VIBRATION MANAGEMENT PLAN

Table 21 below summarises the management procedures recommended for airborne noise and vibration impact. These procedures are also further discussed in the report. Hence, where applicable, links to further references are provided in Table 21.

Table 21 Summary of mitigation procedures

Procedure	Abbreviation	Description	Further Reference
General Management Measures	GMM	Introduce best-practice general mitigation measures in the workplace which are aimed at reducing the acoustic impact onto the nearest affected receivers.	Refer to Section 5.2.1 For noise impact, also refer to Section Error! Reference source not found. For vibration impact, also refer to Section 5.3.1
Project Notification	PN	Issue project updates to stakeholders, discussing overviews of current and upcoming works. Advanced warning of potential disruptions can be included. Content and length to be determined on a project-by-project basis.	Refer to Section 5.6
Verification Monitoring	V	Monitoring to comprise attended or unattended acoustic surveys. The purpose of the monitoring is to confirm measured levels are consistent with the predictions in the acoustic assessment, and to verify that the mitigation procedures are appropriate for the affected receivers. If the measured levels are higher than those predicted, then the measures will need to be reviewed and the management plan will need to be amended.	For noise impact, refer to Section Error! Reference source not found. and Section 5.4. For vibration impact, refer to Section Error! Reference source not found.
Complaints Management System	CMS	Implement a management system which includes procedures for receiving and addressing complaints from affected stakeholders	Refer to Section 5.7
Specific Notification	SN	Individual letters or phone calls to notify stakeholders that noise levels are likely to exceed noise objectives. Alternatively, contractor could visit stakeholders individually in order to brief them in regards to the noise impact and the mitigation measures that will be implemented.	Refer to Section 5.6
Respite Offer	RO	Offer provided to stakeholders subjected to an ongoing impact. The offer could include movie tickets, meal vouchers, gift cards or equivalent measures.	-
Alternative Construction Methodology	AC	Contractor to consider alternative construction options that achieve compliance with relevant criteria. Alternative option to be determined on a case-by-case basis. It is recommended that the selection of the alternative option should also be determined by considering the assessment of on-site measurements (refer to Verification Monitoring above).	-

The application of these procedures is in relation to the exceedances over the relevant criteria. For airborne noise, the criteria are based on NMLs. The allocation of these procedures is discussed in Section 5.1.1.

For vibration, the criteria either correspond to human comfort, building damage or scientific and medical equipment. The application of these procedures is discussed in Section 5.1.2.

5.1.1 Allocation of Noise Management Procedures

For residences, the management procedures have been allocated based on noise level exceedances at the affected properties, which occur over the designated NMLs (refer to section 3). The allocation of these procedures is summarised in Table 22 below.

Table 22 Allocation of noise management procedures – residential receivers

Construction Hours	Exceedance over NML (dB)	Management Procedures (see definition above)
Standard Hours	0 - 3	GMM
Mon – Fri: 8:00 am to 5:30 pm	4 - 10	GMM, PN, V ¹ , CMS, AC
Sat: 8:00 am – 3:30 pm	> 10	GMM, PN, V, CMS, SN, AC
Outside Standard Hours	0 - 10	GMM, AC
Mon – Fri: 7:00 am to 8:00 am	11 - 20	GMM, PN, V ¹ , CMS, AC
Sat: 7:00 am to 8:00 am	> 20	GMM, PN, V, CMS, SN, RO, AC
<i>Notes</i> 1. Verification monitoring to be undertaken upon complaints received from affected receivers		

Please note the following regarding the allocation of these procedures:

- The exceedances have been estimated as part of the acoustic assessment, and these are summarised in Section 4.1.
- The allocation of procedures is based on the assumptions used for noise level predictions (refer to Section 4.1). Consequently, these allocations can be further refined once additional details of the construction program become available.

For non-residential receivers (such as commercial), management measures are provided in Section 5.4.

5.1.2 Allocation of Vibration Management Procedures

Table 23 below summarises the vibration management procedures to be adopted based on exceedance scenarios (i.e., whether the exceedance occurs over human comfort criteria, building damage criteria, or criteria for scientific and medical equipment). Please note these management procedures apply for any type of affected receiver (i.e., for residences as well as non-residential receivers).

Table 23 Allocation of vibration management procedures

Construction Hours	Exceedance Scenario	Management Procedures
Standard Hours	Over human comfort criteria (refer to Section 3)	GMM, PN, V, RO
Mon – Fri: 8:00 am to 5:30 pm		
Sat: 8:00 am – 3:30 pm	Over building damage criteria (refer to Section 3)	GMM, V, AC
Outside Standard Hours	Over human comfort criteria (refer to Section 3)	GMM, SN, V, RO, CMS
Mon – Fri: 7:00 am to 8:00 am		
Sat: 7:00 am to 8:00 am	Over building damage criteria (refer to Section 3)	GMM, V, AC

5.2 General Comments

The contractor will, where reasonable and feasible, apply best practice noise mitigation measures. These measures shall include the following:

- Maximising the offset distance between plant items and nearby noise sensitive receivers.
- Preventing noisy plant working simultaneously and adjacent to sensitive receivers.
- Minimising consecutive works in the same site area.
- Orienting equipment away from noise sensitive areas.
- Carrying out loading and unloading away from noise sensitive areas.

In order to minimise noise impacts during the works, the contractor will take all reasonable and feasible measures to mitigate noise effects.

The contractor will also take reasonable steps to control noise from all plant and equipment. Examples of appropriate noise control include efficient silencers and low noise mufflers.

The contractor should apply all feasible and reasonable work practices to meet the NMLs and inform all potentially impacted residents of the nature of works to be carried out, the expected noise levels, duration of noise generating construction works, and the contact details for the proposal.

5.2.1 General Mitigation Measures (Australia Standard 2436-2010)

As well as the above project specific noise mitigation controls, AS 2436-2010 "*Guide to Noise and Vibration Control on Construction, Demolition and Maintenance Sites*" sets out numerous practical recommendations to assist in mitigating construction noise emissions. Examples of strategies that could be implemented on the subject project are listed below, including the typical noise reduction achieved, where applicable.

5.2.2 Alternate Equipment or Process

Exceedance of the site's NMLs should result in an investigation as to whether alternate equipment could be used, or a difference process could be undertaken.

In some cases, the investigation may conclude that no possible other equipment can be used, however, a different process could be undertaken.

5.2.3 Acoustic Enclosures/Screening

Typically, on a construction site there are three different types of plant that will be used: mobile plant (i.e., excavators, skid steers, etc.), semi mobile plant (i.e., hand tools generally) or static plant i.e. (diesel generators).

For plant items which are static it is recommended that, in the event exceedances are being measured due to operation of the plant item, an acoustic enclosure/screen is constructed to reduce impacts. These systems can be constructed from Fibre Cement (FC) sheeting or, if airflow is required, acoustic attenuators or louvres.

For semi mobile plant, relocation of plant should be investigated to either be operated in an enclosed space or at locations away from a receiver.

With mobile plant it is generally not possible to treat these sources. However, investigations into the machine itself will result in a reduction of noise (i.e., mufflers/attenuators etc).

5.2.4 General Mitigation Measures (Australia Standard 2436-2010)

As well as the above project specific noise mitigation controls, AS 2436-2010 "*Guide to Noise and Vibration Control on Construction, Demolition and Maintenance Sites*" sets out numerous practical recommendations to assist in mitigating construction noise emissions. Examples of strategies that could be implemented on the subject project are listed below, including the typical noise reduction achieved, where applicable.

5.2.5 Adoption of Universal Work Practices

- Regular reinforcement (such as at toolbox talks) of the need to minimise noise and vibration.
- Regular identification of noisy activities and adoption of improvement techniques.
- Avoiding the use of portable radios, public address systems or other methods of site communication that may unnecessarily impact upon nearby sensitive receivers.
- Where possible, avoiding the use of equipment that generates impulsive noise.
- Minimising the need for vehicle reversing for example (particularly at night), by arranging for one-way site traffic routes.
- Use of broadband audible alarms on vehicles and elevating work platforms used on site.
- Minimising the movement of materials and plant and unnecessary metal-on-metal contact.
- Minimising truck movements.

5.2.6 Plant and Equipment

The operation of plant and equipment on the site should be undertaken, including the following:

- Choosing quieter plant and equipment based on the optimal power and size to most efficiently perform the required tasks.
- Selecting plant and equipment with low vibration generation characteristics.
- Operating plant and equipment in the quietest and most efficient manner.

5.2.7 Work Scheduling

- Providing respite periods which could include restricting very noisy activities to time periods that least affect the nearby noise sensitive locations, restricting the number of nights that after-hours work is conducted near residences or by determining any specific requirements.
- Scheduling work to coincide with non-sensitive periods.
- Planning deliveries and access to the site to occur quietly and efficiently and organising parking only within designated areas located away from the sensitive receivers.
- Optimising the number of deliveries to the site by amalgamating loads where possible and scheduling arrivals within designated hours.
- Including contract conditions that include penalties for non-compliance with reasonable instructions by the principal to minimise noise or arrange suitable scheduling.

5.2.8 Source Noise Control Strategies

Some ways of controlling noise at the source are:

- Where reasonably practical, noisy plant or processes should be replaced by less noisy alternatives.
- Modify existing equipment: Engines and exhausts are typically the dominant noise sources on mobile plant such as cranes, graders, excavators, trucks, etc. In order to minimise noise emissions, residential grade mufflers should be fitted on all mobile plant utilised on site.
- Siting of equipment: locating noisy equipment behind structures that act as barriers, or at the greatest distance from the noise-sensitive area; or orienting the equipment so that noise emissions are directed away from any sensitive areas, to achieve the maximum attenuation of noise.
- Regular and effective maintenance.

5.2.9 Miscellaneous Comments

Deliveries should be undertaken, where possible, during standard construction hours.

Maximise hammer penetration (and reduce blows) by using sharp hammer tips. Keep stocks of sharp profiles at site and monitor the profiles in use.

It is advised that mobile plant and trucks operating on site for a significant portion of the project are to have reversing alarm noise emissions minimised. This is to be implemented subject to recognising the need to maintain occupational safety standards.

No public address system should be used on site.

5.3 Vibration Mitigation Measures

Based on the existing distance separation to receiver's compliance with construction vibration criteria is expected to be achieved without additional mitigations.

5.3.1 General Comments

As part of the CNVMSP, the following vibration mitigation measures should be implemented:

- Any vibration generating plant and equipment is to be in areas within the site in order to lower the vibration impacts.
- Investigate the feasibility of rescheduling the hours of operation of major vibration generating plant and equipment.
- Use lower vibration generating items of construction plant and equipment; that is, smaller capacity plant.
- Minimise conducting vibration generating works consecutively in the same area (if applicable).

5.4 Noise and Vibration Monitoring

Noise monitoring is recommended to be undertaken by attended noise measurements at the start of any new phase of works (i.e. excavation or construction works etc.). The statistical parameters to be measured should include the following noise descriptors: LAmin, LA90, LA10, LA1, LAmx and LAeq. Unattended noise measurements should be conducted over consecutive 15 minute periods.

The survey methodology and any equipment should comply with the requirements discussed in Standard AS 1055.1-1997.

As part of the management of noise and vibration from the proposed construction activities to be undertaken on the site the following noise and vibration measurements are recommended to be undertaken:

1. Noise –
 - a. Attended noise level measurements of typical excavation activities should be undertaken at site.

Attended construction noise surveys of the site and surrounding impacts on neighbours should be undertaken during the following as a minimum:
 - i. Commencement of any rock breaking or sawing on the site.
 - ii. In response to any ongoing complaints received from neighbours.
2. Vibration – Based on the location of the site, including distance separation to the surrounding receivers vibration monitoring or measurements are not recommended for the proposed works to be undertaken on the site.

5.5 Noise Mitigation Measures for Non-Residential Receivers

Where exceedances have been identified in Section 3, the following mitigation measures are recommended:

- Undertake general mitigation measures as discussed in Section 5.2.1
- Issue project updates to tenants in affected premises. The updates can include overview of current and upcoming works, as well as advanced warning of potential disruptions. These updates can also be issued through an email distribution list or via social media. Refer to Section 5.6 for further details.
- Signage to be posted in order to provide stakeholders information regarding project details, emergency contacts and enquiry contact information.

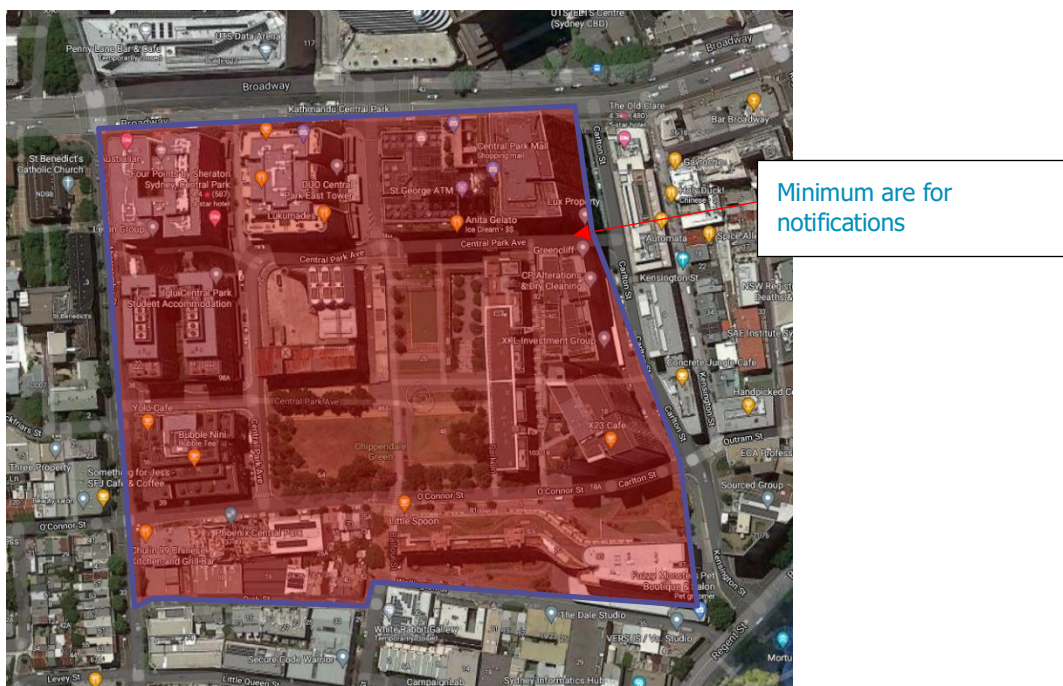
5.6 Community Consultation

Active community consultation and the maintenance of positive relations with local residents and businesses would assist in alleviating concerns and thereby minimising complaint. It is common for construction projects to provide community consultation if an exceedance of noise goals has been predicted. This communication is commonly conducted in the form of a letter box drop or more active engagement with more highly impacted receivers.

This form of notification should provide specific notification of the duration and timing of the construction activities so that residents are informed about the proposed works ahead of time. The letter should also provide the community with a hotline number for a community liaison officer available to adequately respond to all project related enquiries.

Ideally the hotline number should provide concerned locals an opportunity to raise any concerns with the project proponent and provide an opportunity to determine the best method to satisfy all requirements.

Prior to the works onsite being undertaken, it is recommended that community consultation with the neighbouring affected parties be undertaken, these include all locations identified in the figure below.



The communication, however, should not be limited to the beginning of the onsite works but throughout, providing the community with constant updates on the progress and upcoming works. In our experience these could include:

- Site noticeboard;
- Email notifications; and
- Letterbox drops.

5.7 Complaints Management System

Should complaints arise they must be dealt with in a responsible and uniform manner, therefore, a management system to deal with complaints is detailed below:

Local residents and land owners should be informed by direct mail of a direct 24-hour telephone line where any noise complaints related to the construction will be recorded. The 24-hour telephone line number will be made available on the construction site signage.

All complaints should be investigated by the Contractor in accordance with the procedures outlined in Australia Standard 2436-2010. Consequently, a complaint response procedure should be implemented. Information to be gathered as part of this process should include:

- location of complainant
- time/s of occurrence of alleged noise or vibration impacts
- nature of impact particularly with respect to vibration
- Perceived source
- Prevailing weather conditions and similar details that could be utilised to assist in the investigation of the complaint.

All resident complaints will be responded to in the required timeframe and action taken recorded.

Post receiving a noise and or vibration complaint, the process outlined in the *Contingency Plans* below should be undertaken.

5.8 Contingency Plans

Contingency plans are required to address noise or vibration problems if excessive levels are measured at surrounding sensitive receivers and/or if justified complaints occur. Such plans include:

- Stop the onsite works.
- Identify the source of the main equipment within specific areas of the site which is producing the most construction noise and vibration at the sensitive receivers; and
- Review the identified equipment and determine if an alternate piece of equipment can be used or the process can be altered.
- In the event an alternate piece of equipment or process can be used, works can re-commence.
- In the event an alternate piece of equipment or process cannot be determined implement a construction assessment to be performed by a suitably qualified acoustic consultant.

The Superintendent shall have access to view the Contractor's noise measurement records on request. The Superintendent may undertake noise monitoring if and when required.

6 CONCLUSION

This report details the construction noise and vibration assessment of the proposed construction activities to be undertaken as part of the Brewery Yard, Central Park development.

An assessment of noise and vibration impacts from the required processes to be undertaken during the construction period of the project has been undertaken and suitable treatments, management controls, perioding measurements and community engagement has been detailed in this report.

This CNVMSP has been prepared to satisfy the requirements of Condition C14 of the Consent given in the *Instrument of Determination* issued for Development for SSD No. 9374, dated 20th October 2020.

This report includes the recommended noise and vibration mitigations and management controls for the proposed construction activities to be undertaken on the site to ensure impacts to surrounding receivers are minimised as required by the projects *Instrument of Determination*.

For any additional information please do not hesitate to contact the person below.

Regards

A handwritten signature in blue ink that reads "BG White".

Ben White
Director

Pulse White Noise Acoustics

APPENDIX A: ACOUSTIC GLOSSARY

The following is a brief description of the acoustic terminology used in this report:

Ambient Sound	The totally encompassing sound in a given situation at a given time, usually composed of sound from all sources near and far.																				
Audible Range	The limits of frequency which are audible or heard as sound. The normal ear in young adults detects sound having frequencies in the region 20 Hz to 20 kHz, although it is possible for some people to detect frequencies outside these limits.																				
Character, acoustic	The total of the qualities making up the individuality of the noise. The pitch or shape of a sound's frequency content (spectrum) dictate a sound's character.																				
Decibel [dB]	The level of noise is measured objectively using a Sound Level Meter. The following are examples of the decibel readings of every day sounds; <table> <tr> <td>0dB</td><td>the faintest sound we can hear</td></tr> <tr> <td>30dB</td><td>a quiet library or in a quiet location in the country</td></tr> <tr> <td>45dB</td><td>typical office space. Ambience in the city at night</td></tr> <tr> <td>60dB</td><td>Martin Place at lunch time</td></tr> <tr> <td>70dB</td><td>the sound of a car passing on the street</td></tr> <tr> <td>80dB</td><td>loud music played at home</td></tr> <tr> <td>90dB</td><td>the sound of a truck passing on the street</td></tr> <tr> <td>100dB</td><td>the sound of a rock band</td></tr> <tr> <td>115dB</td><td>limit of sound permitted in industry</td></tr> <tr> <td>120dB</td><td>deafening</td></tr> </table>	0dB	the faintest sound we can hear	30dB	a quiet library or in a quiet location in the country	45dB	typical office space. Ambience in the city at night	60dB	Martin Place at lunch time	70dB	the sound of a car passing on the street	80dB	loud music played at home	90dB	the sound of a truck passing on the street	100dB	the sound of a rock band	115dB	limit of sound permitted in industry	120dB	deafening
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90dB	the sound of a truck passing on the street																				
100dB	the sound of a rock band																				
115dB	limit of sound permitted in industry																				
120dB	deafening																				
dB(A)	<i>A-weighted decibels</i> The ear is not as effective in hearing low frequency sounds as it is hearing high frequency sounds. That is, low frequency sounds of the same dB level are not heard as loud as high frequency sounds. The sound level meter replicates the human response of the ear by using an electronic filter which is called the "A" filter. A sound level measured with this filter switched on is denoted as dB(A). Practically all noise is measured using the A filter. The sound pressure level in dB(A) gives a close indication of the subjective loudness of the noise.																				
Frequency	Frequency is synonymous to <i>pitch</i> . Sounds have a pitch which is peculiar to the nature of the sound generator. For example, the sound of a tiny bell has a high pitch and the sound of a bass drum has a low pitch. Frequency or pitch can be measured on a scale in units of Hertz or Hz.																				
Loudness	A rise of 10 dB in sound level corresponds approximately to a doubling of subjective loudness. That is, a sound of 85 dB is twice as loud as a sound of 75 dB which is twice as loud as a sound of 65 dB and so on																				
LMax	The maximum sound pressure level measured over a given period.																				
LMin	The minimum sound pressure level measured over a given period.																				
L1	The sound pressure level that is exceeded for 1% of the time for which the given sound is measured.																				
L10	The sound pressure level that is exceeded for 10% of the time for which the given sound is measured.																				
L90	The level of noise exceeded for 90% of the time. The bottom 10% of the sample is the L ₉₀ noise level expressed in units of dB(A).																				
Leq	The "equivalent noise level" is the summation of noise events and integrated over a selected period of time.																				
dB (A)	'A' Weighted overall sound pressure level																				
Sound Pressure Level, LP dB	A measurement obtained directly using a microphone and sound level meter. Sound pressure level varies with distance from a source and with changes to the measuring environment. Sound pressure level equals 20 times the logarithm to the base 10 of the ratio of the rms sound pressure to the reference sound pressure of 20 micro Pascals.																				
Sound Power Level, Lw dB	Sound power level is a measure of the sound energy emitted by a source, does not change with distance, and cannot be directly measured. Sound power level of a machine may vary depending on the actual operating load and is calculated from sound pressure level measurements with appropriate corrections for distance and/or environmental conditions. Sound power levels is equal to 10 times the logarithm to the base 10 of the ratio of the sound power of the source to the reference sound power of 1 picoWatt																				

19. APPENDIX 3

19.1 CONSTRUCTION WASTE MANAGEMENT SUB-PLAN

The Brewery Yard (Central Park, Chippendale)

AUGUST 2021

Construction Waste Management Plan



**WASTE AUDIT AND
CONSULTANCY SERVICES**

Level 21 / 133 Castlereagh Street
Sydney, NSW 2000

Telephone (02) 9199 4521
www.wasteaudit.com.au

This report contains confidential information. It has been compiled by Waste Audit and Consultancy Services (Aust) Pty Ltd on behalf of Icon for the Brewery Yard (Central Park, Chippendale) development.

This Waste Management Plan is not a substitute for legal advice on the relevant environmental legislation, which applies to Icon, its contractors or other bodies. Accordingly, Waste Audit and Consultancy Services (Aust) Pty Ltd will not be liable for any loss or damage that may arise out of this project, other than loss or damage caused as a direct result of Waste Audit and Consultancy Services (Aust) Pty Ltd's negligence.

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1. Introduction

This Plan details the management of waste during the construction phase of the Brewery Yard (Central Park, Chippendale), development. It has been prepared on behalf of Icon to respond to Development Application conditions for the development.

This Construction Waste Management Plan has been written in accordance with the City of Sydney's *Guidelines for Waste Management in New Developments, 2018*, and other Authority's requirements in the development of the waste estimates and related requirements. In addition, industry data for the development profile has also been referred to as well as applying other aspects of industry best practice for waste management for construction.

Management strategies reflect current best-practice requirements, and relevant Sections of the *Protection of the Environment Operations Act 1997* and the NSW Environment Protection Authority *Waste Classification Guidelines, Part 1: Classifying Waste*.

These sources have been referred to in the development of the waste estimates and related requirements. They are intended to inform the design of the waste services by identifying the estimated waste profile for the development.

All recommended waste management plans will comply with council codes and any statutory requirements.

The Construction Waste Management Plan has been developed to ensure that all waste resulting from construction activities are managed in an effective, safe and environmentally aware manner. Specifically:

- To minimise the generation of waste to landfill
- To maximise waste material avoidance and reuse on site
- To ensure that where practicable, an efficient recycling procedure is applied to waste materials
- To raise awareness among employees and subcontractors of their waste management responsibilities

Section 143 of the Protection of the Environment Operations Act 1997 requires waste to be transported to a place that can lawfully accept it. It will be the responsibility of the site developers to ensure all contractors clearly specify where all wastes are to be transported, the capacity of the nominated facilities to receive/manage the waste and to ensure that reports on management aspects (types, quantities and disposal pathways) are provided.

2. Construction Waste Management Principles

2.1 Waste Management Principles

The following waste hierarchy will be used as a guiding principle:



Avoid and Reduce

Minimise the production of waste materials in the construction process by:

- Assessing and taking into consideration the resultant waste from different design and construction options
- Purchasing materials that will result in less waste, which have minimal packaging, are pre-cut or fabricated.
- Not over ordering products and materials

Reuse

Ensure that where ever possible, materials are reused either on site or offsite.

- Identify all waste products that can be reused
- Put systems in place to separate and store reusable items
- Identify the potential applications for reuse both onsite and offsite and facilitate reuse

Recycling

Identify all recyclable waste products to be produced on site.

- Provide systems for separating and stockpiling of recyclables
- Provide clear signage to ensure recyclable materials are separated
- Process the material for recycling either onsite or offsite

Note: In some cases, it may be more economical to send the unsorted waste to specialised waste contractors who will separate and recycle materials at an offsite location.

Disposal

Waste products which cannot be reused or recycled will be removed and disposed of. The following will need to be considered:

- Ensure the chosen waste disposal contractor complies with regulatory requirements
- Implement regular collection of bins

Section 143 of the Protection of the Environment Operations Act 1997 requires waste to be transported to a place that can lawfully accept it. It will be the responsibility of the site developers to ensure all contractors clearly specify where all wastes are to be transported, the capacity of the nominated facilities to receive/manage the waste and to ensure that reports on management aspects (types, quantities and disposal pathways) are provided.

2.2 Liquid Waste

Liquid waste may be produced on site for environmental control measures such as:

- Site and vehicle cleaning
- Dust control waste

The following measures will be taken to minimise the impact of liquid waste:

- Ensure water is used in moderation and no taps are left continuously running
- Use any grey water produced on site for irrigation or for dust suppression
- Only discharge clean water into storm water

2.3 Stormwater Pollution Prevention

All actions will be undertaken to avoid pollution entering stormwater drains and for litter generation. The following will be initiated:

- i. Prior to commencement of any works a Safe Work Method Statement will be completed and reviewed to determine potential for stormwater pollution and/or litter generation
- ii. The proponent (contractor), will need to develop a management strategy to manage the potential for these issues to be realised
- iii. Site inspections will be conducted during the working day to monitor potential for stormwater pollution generation and where identified, works will cease until appropriate controls are implemented
- iv. Waste water and storm water will be managed and disposed of in accordance with Water Authority requirements.

2.4 Litter Management

- i. Daily site inspections will be conducted to identify litter, remedy the situation and investigate the cause so as to reduce the potential for the issue to occur in the future.

- ii. Sufficient quantities of bins (and/or bin space), will be made available so as to avoid dumping of materials outside bins
- iii. All waste/recycling bins will have covers so as to ensure that wastes cannot be blown out during windy conditions. This will also apply to relevant stocks of materials to be used in construction.
- iv. Personnel will be allocated the role of litter management in that they will periodically inspect the site and surrounds for litter and if identified collect and dispose of it.

2.5 Records

Records will be kept of all wastes and recyclables generated and either used on site, or transported off-site during the construction stages of the development.

It will be a condition of appointment that all waste/recycling contractors involved in the construction stages provide these records, and that they also contain details of the facilities that the materials are transported to.

These records will be made available to Council on request.

2.6 Waste/recyclables storage (on-site)

All waste and recycling materials will be stored in bins provided by the appointed contractor(s). These bins will be appropriately coloured and signed to indicate what materials are to be deposited into them and located so as to maximise the recovery of reusable/recyclable materials.

As construction activities progress, the designated bins will be moved so as to maximise the collection of materials that will be diverted from landfill. This will also involve relocating signage advising as to correct waste management.

3. Construction Waste Profile

3.1 Overview

All waste contractors/sub-contractors will be required to detail all intended disposal facilities to ensure that legislative and safety requirements are met, the guiding principles of the waste hierarchy are upheld and maximum diversion from landfill is achieved. Records will be required to be maintained by all contractors and made available to Council so as to validate management pathways.

The potential for reuse of materials on-site (and this will be encouraged will depend on the quality of the materials once construction proceeds.

3.2 Estimated Volumes

The following summarises the types, quantities and management systems for construction materials that may be generated during construction.

The quantity of waste materials to be generated onsite are estimates and therefore the systems that will be put in place need to incorporate flexibility to allow for variation in the total quantities generated. Active site management during the construction phase will ensure all waste/recyclable materials are disposed of appropriately and that all waste receptacles are of sufficient capacity to manage onsite activities.

Finalisation of the system(s) that will be implemented for the recovery of materials and for disposal of others to landfill will occur following appointment of contractor(s). A component of the appointment will be that contractors will be required to provide data as to the disposal pathway (eg., materials, volumes and final disposal site), as well as a validation process for this information.

The appointed contractor(s) will also be responsible for sourcing speciality recycling facilities for the materials that cannot be reused on site.

Records will be required to be maintained by all contractors and made available to Council so as to validate management pathways (ie., disposal facilities). The site manager will be responsible for collecting and maintaining these records.

Waste management systems – construction

Materials on site			Destination	
Type of material	Estimated volume (m ³)	On-site (Reuse or recycle)	Off-site (Detail contractor and recycling contractor)	Disposal (Detail contractor and landfill site)
Excavation material	20m ³	Will either be stockpiled for use during construction if required and if not disposed off-site.	Collected and used as clean fill (if appropriate), by the appointed contractor and/or forwarded to various facilities such as garden landscapers, or roadworks.	Facility TBA upon appointment of contractor.
Concrete	10m ³	Separated on site and crushed for use in pavement construction where possible	Collected by contractor and disposed at concrete recycling facility	Facility TBA upon appointment of contractor
Timber	90m ³	Separated and where feasible, reused for further formwork	Unused material separate and stockpiled onsite. Collected by specialist timber subcontractor for recycling	Facility TBA upon appointment of contractor
Metals	35m ³	No on-site reuse	Collected by specialist metal subcontractor for recycling	Facility TBA upon appointment of contractor
Plasterboard	40m ³	No on-site reuse	Collected by the contractor for recycling.	Facility TBA upon appointment of contractor

Materials on site		Destination		
Type of material	Estimated volume (m ³)	On-site (Reuse or recycle)	Off-site (Detail contractor and recycling contractor)	Disposal (Detail contractor and landfill site)
Mixed hard plastics	25m ³	No on-site reuse	Collected by contractor for recycling.	Facility TBA upon appointment of contractor.
Tiles	2m ³	No on-site reuse	Unusable tiles will be collected and recycled at an appropriate recycling facility	Facility TBA upon appointment of contractor
Carpet	8m ³	No on-site reuse	This will be disposed of into a designated bin and collected regularly as required for recycling if of the required quality or disposal to landfill	Facility TBA upon appointment of contractor
Glazing	4m ³	No on-site reuse	Recyclers consulted as to potential for recycling and if suitable separated for recycling.	Facility TBA upon appointment of contractor
Soil/Sand/Gravel	3m ³	Will be stockpiled for reuse.	Disposed of a clean-fill.	Facility TBA upon appointment of contractor
Mixed Recyclables	30m ³	No on-site reuse	Contractor appointed to collect and recycle	No disposal to landfill. Facility TBA upon appointment of contractor

Materials on site		Destination		
Type of material	Estimated volume (m ³)	On-site (Reuse or recycle)	Off-site (Detail contractor and recycling contractor)	Disposal (Detail contractor and landfill site)
General waste	80m ³	No on-site reuse	No recycling or reuse	Facility TBA upon appointment of contractor

3.3 Other Materials

A range of other materials may be present on the site once the construction activities commence.

All potentially recyclable materials are to be separated and stored on-site for an appointed waste/recycling contractor to inspect and to determine the suitability of the material for recycling (or even reuse). If approved for either action, then the contractor can then remove the items.

For materials that are not designated as potentially able to be reused or recycled, then they are to be disposed of at a landfill (or other facility) licenced to receive those specific materials.

4. Hazardous Waste Materials

4.1 Management Procedures

At this stage, no hazardous materials have been identified on the site.

Contractors employed to manage any identified hazardous wastes will be required (prior to appointment), to demonstrate their compliance with NSW EPA and WorkCover requirements for management of the specific materials they are contracted to manage.

The following are the recommended approaches for managing the wastes and other materials that were identified during the site analysis.

The key principles that need to be adhered to are¹:

1. All hazardous wastes need to be correctly identified and managed in accord with all relevant legislation, Codes of Practices and the developed management actions (as per the *Hazardous Materials Survey 2020*).
2. Hazardous materials need to be separated into their individual categories and not mixed with any other materials

Prior to commencing any clean-up activities, a Workplace Health & Safety Plan will be developed, implemented and monitored with all relevant site personnel receiving specific training in management of hazardous waste materials (including suspected hazardous materials).

In regards to potentially contaminated soil, a Remedial Action Plan is being prepared to ensure that this material is to be managed in accord with applicable regulations.

4.2 Asbestos

The process for managing what has been suspected of being or containing asbestos waste is as follows:

- i. Treat the material as asbestos unless proven otherwise
- ii. Do not disturb the material (ie., shift or place into a container) at all
- iii. Seek advice from a suitably qualified laboratory to test the material(s) to determine if it is or is not asbestos.
- iv. If determined not to be asbestos, then it can be managed as an inert waste.
- v. If determined to be asbestos then managed by a licenced contractor for packaging, removal and disposal.

¹ Reference should be made to the NSW EPA publication, Waste Classification Guidelines Part 1: Classifying Waste.

- vi. If the material has accidentally been uncovered, then the area should be cleared, barriers erected to prevent access, NSW WorkCover and EPA notified, and if broken, covered with a fine spray/mist of water.

For what has been conclusively identified as asbestos containing materials (including soils), a specialist/licenced asbestos contractor will be used. As required, only workers trained in asbestos removal techniques will be allowed to manage the removal of asbestos contaminated soil and any contained on the buildings.

In regards to disposal of asbestos containing materials, there are regulatory requirements under clause 42 of the Protection of the Environment Operations (Waste) Regulation 2005 that apply to the management of asbestos waste, including:

- Waste must be stored on the premises in an environmentally safe manner.
- Non-friable asbestos material must be securely packaged at all times.
- Friable asbestos material must be kept in a sealed container.
- Asbestos-contaminated soil must be wetted down.
- All asbestos waste must be transported in a covered, leak-proof vehicle.
- Asbestos waste must be disposed of at a landfill site that can lawfully receive this waste. Always contact the landfill beforehand to find out whether asbestos is accepted and any requirements for delivering asbestos to the landfill.
- It is illegal to dispose of asbestos waste in domestic garbage bins.
- It is also illegal to re-use, recycle or dump asbestos waste

These requirements will be adhered to.

5. Contracts and purchasing

Each subcontractor working on the site will be required to adhere to this Waste Management Plan.

The Head Contractor will ensure each subcontractor:

- Takes practical measures to prevent waste being generated from their work
- Implements procedures to ensure waste resulting from their work will be actively managed and where possible recycled, as part of the overall site recycling strategy or separately as appropriate
- Ensures that the right quantities of materials are ordered, minimally packaged and where practical pre-fabricated. Any oversupplied materials are returned to the supplier
- Implements source separation of off cuts to facilitate reuse, resale or recycling.

The Site Manager will be responsible for:

- Ensuring there is a secure location for on-site storage of materials to be reused on site, and for separated materials for recycling off site.
- Engaging appropriate waste and recycling contractors to remove waste and recycling materials from the site
- Co-coordinating between subcontractors, to maximise on site reuse of materials
- Monitoring of bins on a regular basis by site supervisors to detect any contamination or leakage
- Ensuring the site has clear signs directing staff to the appropriate location for recycling and stockpiling station/s. And that each bin/skip/stockpile is clearly sign posted
- Providing training to all site employees and subcontractors in regards to the WMP as detailed in Section 6 below.

Should a subcontractor cause a bin to be significantly contaminated, the Site Manager will be advised by a non-conformance report procedure. The offending subcontractor will then be required to take corrective action, at their own cost. The non-conformance process would be managed by the Head Contractors' Quality Management Systems

6. Training and Education

All site employees and sub-contractors will be required to attend a site specific induction that will outline the components of the WMP and explain the site specific practicalities of the waste reduction and recycling strategies outlined in the WMP.

All employees are to have a clear understanding of which products are being reused/recycled on site and where they are stockpiled. They are also to be made aware of waste reduction efforts in regards to packaging.

The site manager will post educational signage in relation the recycling activities on site in breakout areas, lunch rooms etc.

20. APPENDIX 4

20.1 CONSTRUCTION SOIL AND WATER MANAGEMENT SUB-PLAN



CONSTRUCTION SOIL & WATER MANAGEMENT SUB-PLAN

PROJECT	THE BREWERY YARD
ADDRESS	5 CENTRAL PARK Ave. CHIPPENDALE
REVISION	1
ISSUE DATE	20/10/2021

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1. REGISTER OF DOCUMENT REVIEW

REVISION	DATE	SECTION	DESCRIPTION OF AMENDMENTS		
1	20/10/21	ALL	Preparation of Soil & Water Management plan		
Authorisation		Name		Position	Signature
Author		Bella Doyle		Cadet	
Reviewer		Brianna Beuzen		Design Manager	
Owner/Approver		Blake Greenaway		Project Manager	

This plan has been developed using the below Master Template revision.

Construction Soil & Water Management Plan	Date: 20/10/2021
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A copy of each superseded plan is to be retained.

2. ABBREVIATIONS AND DEFINITIONS

CA	Contract Administrator
CM	Construction Manager
Competent Person	A person who has acquired through training, qualification, or experience, or a combination of these, the knowledge and skills enabling that person to perform the required task.
Critical Incident	A critical incident is any incident in the work place that results in death; major structural damage, serious/permanent disability or injury or major impact on a client's operations
DIR	Directors
Env.MP	Environmental Management Plan
EMP	Emergency Management Plan
EPA	Environment Protection Authority or relevant state based environmental regulatory body
FAI	First Aid Injury
GM	General Manager
Icon	Icon Co (Aust) Pty Ltd, Icon Co (NSW) Pty Ltd, Icon Co (QLD) Pty Ltd, Icon SI (Aust) Pty Ltd, Cockram Construction Ltd, Cockram Construction QLD Pty Ltd
KPI	Key Performance Indicator
MFB	Metropolitan Fire and Emergency Services Board
NZ	New Zealand Operations
OM	Operations Manager
HIRAC	Hazard Identification, Risk Assessment & Controls
HSEM	Health, Safety and Environment Manager
HSEC	Work Health and Safety Coordinator or equivalent (site based safety personnel)
HSR	Health & Safety Representative
PPE	Personal Protection Equipment
PM	Project Manager
Precast Panel	Includes concrete precast panels and tilt up concrete panels
SDS	Safety Data Sheet
SSC	Site Safety Committee
SM	Site Manager
SWMS/JSEA	Safe Work Method Statement or JSEA in New Zealand (also sometimes referred to as a TA – Task Analysis)
TWA	Trade Waste Agreement

3. PURPOSE & OBJECTIVES

A site-specific Construction Soil and Water Management Sub-Plan (CSWMSP) has been developed for The Brewery Yard Redevelopment project by ICON, prior to the commencement of construction onsite. This plan forms part of the Environmental Management plan for the Brewery yard Redevelopment.

This CSWMBP has been prepared in accordance with the *Section 4.38 of the Environmental Planning and Assessment Act 1979* and DA Item C16.

This plan sets out the framework for all construction impacting site soil and water management including but not limited to:

- a) Description of all Erosion and Sediment controls to be implemented during construction.
- b) Plan of how all construction works will be managed in wet weather events
- c) Management of all site off-flows during construction
- d) Site dewatering management plan
- e) Development impacts on surface and groundwater hydrology and quality.

3.1 PURPOSE

The purpose of the Construction Soil and Water Management Plan is to outline management measures to minimise potential impact to the environment of the site and surrounding area during construction activities that are proposed to be undertaken at the site by Icon for the duration of the works. Relevant parties include all people on site during the construction works which may include but not be limited to Icon employees and sub-contractors engaged as part of the works.

Management measures outlined within this document will be implemented to avoid potential impacts to the environment at the site in line with the requirements of ISO 14001 Environmental Management Systems. Where impacts are unavoidable, measures to reduce and control impacts will be implemented as per this plan.

The CSWMSP provides a clear statement of auditable actions, environmental performance indicators and management systems consistent with achieving the above objective

3.2 OBJECTIVE

The principle objectives are to:

- Ensure that the construction works are carried out in accordance with the appropriate environmental statutory requirements;
- Ensure that the works are carried out in accordance with the advice prepared by a suitable qualified expert in consultation with council and where necessary the department of planning, industry and environment – Water (DPIE – Water)
- Ensure the compliance with any water licensing requirements or other approvals required under the *water act 1912 or water management act 2000*

4. GENERAL SITE MANAGEMENT

Icon shall ensure there is minimal impact to the environment from general activities at the site and provides all practical resources for the implementation of relevant State Environment Protection Policies (SEPPs).

4.1 INSPECTION AND MONITORING

The following processes are used to identify, control, monitor and evaluate effectiveness of control implemented on site:

PROCESS	FREQUENCY	BY WHO	COMPLIANCE & EFFECTIVENESS MONITORED BY
Site Establishment Checklist	Start of project	PM/SM	HSEM
Pre Start Meeting	Prior to commencement of HRCW activity (Not required daily)	Subcontractor Led (attended by SM and Foreman as relevant)	SM
Site Safety & Environmental Walk and Hazard Identification*	Weekly	SM/HSR/HSEC PM = Quarterly	HSEM
Australia: SWMS Review for HRCW NZ: JSEA Review for all tasks	All subcontractors	SM	HSEM
Task Interactions*	1 per week	Project Team	Internal Audits
Incident Investigations	Ongoing	CM/PM/SM/HSEM	Director
Project Risk Assess. (Includes Enviro)	Prior to commencement Reviewed Monthly	PM/SM	HSEM/Internal audits
Design Risk Assessment	Design Phase when D&D	Design Mgr/PM/SM/Consultants	HSEM/Internal audits
Safety Committee Meeting*	As per Local legislated requirement	Safety Committee	SM/HSR/HSEM/HSEC
Site HSE Audit	Within 3 months of start Then 6 monthly	HSEM/Consultant	Ops Mgr/General Mgr/Director
Compliance Audit 14001	Annual	External Certifying Body	Corp Systems Mgr
Management Review	Yearly	Directors/Senior Mgt/HSEM	Internal audit/Compliance Audit

*Frequency is dependent on construction phase and number of workers on site

5. RESPONSIBILITIES

The following key Company personnel have authority and responsibility for environmental management on the project as defined. Site based personnel will sign in to the plan to signify that they:

- Have read the plan;
- Understand their role and responsibilities in the effective and environmentally responsible management of the project, as defined in this section of the plan;
- Will effectively fulfil their role as defined in this plan and its appendices.

Activities related to the implementation of this plan are detailed within various sections of this document.

Note: Roles are applicable to all Icon operations across Australia and New Zealand.

Refer: 071 Document Review & Sign On

5.1 CORPORATE HSEQ SYSTEMS MANAGER

The Corporate HSEQ Systems Manager ensures that the EMS is established, implemented and maintained to meet the requirements of ISO 14001:2015.

The Corporate HSEQ Systems Manager is responsible for administering the EMS and shall ensure that legal and other compliance obligations are identified, assessed and that the systems are set in place to identify aspects and impacts relative to the construction activity. An environmental system audit regime is to be developed and implemented to ensure company wide compliance to statutory and other compliance obligations.

5.2 HSE MANAGER (ENVIRONMENTAL MANAGEMENT REPRESENTATIVE)

The HSE Manager acts in the capacity of Environmental Management Representative for each project. The Environmental Management Representative's responsibilities include:

- Assist the Corporate HSEQ System Manager in ensuring EMS is established, implemented and maintained to meet the requirements of ISO14001:2015, as well as legal and other compliance obligations;
- Ensure an Environmental Management Plan is developed for each project;
- Ensure that environmental issues are covered in the site induction process;
- To liaise with the Sub-contractor(s), authorities and local community as necessary;
- Put in place an inspection and audit regime to ensure compliance to this plan;
- Collate data required for management review and potential improvements;
- Ensure training is undertaken as required.

5.3 CONSTRUCTION MANAGER/OPERATIONS MANAGER/GENERAL MANAGER

The Construction Manager has the following responsibilities:

- Ensure that this plan is implemented in accordance with relevant legislation, codes of practice and Australian and New Zealand Standards;
- Ensure appropriate resources have been allowed;
- Ensure that the agreed project audit schedule is implemented, and that the results of those audits are made available to the senior management;
- The Construction Manager will assign or delegate responsibility for the implementation of project procedures.

5.4 PROJECT MANAGER

The environmental responsibilities of the Project Manager include:

- Customisation of this plan specific to project and client requirements;
- The implementation of this plan to ensure the project meets the environmental needs, expectations and compliance obligations of the project's stakeholders;
- Allocating resources to ensure that appropriate actions are taken to identify and manage project environmental aspects and impacts;
- The site operation of this plan;
- Ensuring that this plan is adhered to by direct employees;
- Ensuring that the project audit schedule is implemented, and the results of those audits are made available to relevant parties.

5.5 SITE MANAGER

The Site Manager will report to the Project Manager and is responsible for:

- To ensure that relevant licenses, clearances, permits and approvals are in place in the appropriate manner;
- Manage employees/contractors and construction activities on a daily basis to ensure the appropriate environmental controls are implemented and maintained in accordance with the requirements of the Site Environmental Management Plan;
- Ensure all staff are inducted into the site;
- Undertake site inspections of environmental controls and maintain records of environmental actions;

- Report any environmental management concerns or incidents to the Project Manager;
- Report all environmental incidents as per legislative and company requirements;
- Respond to all enquiries from the EPA as required during the duration of the project
- Recommend improvements to the Project Manager; and
- Implement corrective actions issued as a result of any site inspections, audits or meeting.

5.6 SUBCONTRACTORS

- Ensure their employees are aware of and comply with the requirements of Icon's Environmental Management Plan;
- Comply with the requirements of relevant Acts, Regulations and Codes of Practice and ensure their employees observe them at all times;
- Ensure supervision is suitable and employees receive adequate, appropriate training to carry out their tasks; and
- Provide suitable WHS documentation (including task specific SWMS/JSEA's).

6. TENDERING

During the contract tendering phase the project environmental requirements will be addressed and noted within the Tender Interview document which forms part of the Purchase Order engaging the Subcontractor. This includes, as appropriate, information about potential significant environmental impacts associated with the transportation or delivery, use, end-of-life treatment and final disposal of products and services.

The contract documentation issued to the Tenderer will include all relevant parts of the Project Contract Documents, including relevant sections of Preliminaries and General Requirements.

7. ENVIRONMENTAL CONTROL SUB PLANS

7.1 WATER HYDROLOGY & QUALITY MANAGEMENT

The chances of contaminated water leaving the site is relatively low. Rainwater and the water used for dust suppression will mainly be removed from site through evaporation and through the removal of demolition material from site.

Performance objective (s)	To ensure that all water entering and leaving site is controlled and the re-use of water is maximised
Treatment strategies	General • Water captured in the building or site will be used for dust suppression (where possible) • Approval to discharge or reuse water will be obtained before any discharge. PPE to be used in accordance with relevant SDS and SWMS where treatment is required • An on-site treatment process discharging to the storm water system will be implemented (where needed) • Where water is to be collected for reuse off-site, water is to be collected in portable tanks and after testing • All relevant stormwater drains, erosion control structures and containment areas will be maintained to ensure maximum efficiency • Site workers directly involved in water quality management will be given training in the operation and maintenance of the measures to be implemented

- Where saw cutting works are undertaken in areas where runoff to stormwater may occur Geotech fabric and Geotech socks are to be in place before work commences and wet vac is operational before work commences - Water is to be prevented from entering site from boundaries e.g. run off from unconnected rainwater pipes etc. and to excavations to minimise dewatering requirements (where practical)
Dewatering procedure for re-use on site for dust suppression:
- Obtain approval to reuse – Dewatering Permit completed and signed - Test/treat water for visible oil or grease and pH levels. Note: there is no requirement to test/treat for TSS • Ensure no erosion is caused from the discharge and runoff is controlled within the site boundary
Dewatering procedure for reuse on site for dust suppression:
- Obtain approval to discharge – Dewatering Permit completed and signed - Water must meet acceptable criteria prior to discharge - Water is to be tested for total suspended solids and PH every hour when pumping out to land - Regularly visually check pump out flow for turbidity - Discharge will by low energy pump. Flow from outlet must be directed onto a non-erodible surface or material and ensure no erosion occurs. The pump inlet must be placed so that it will not take sediment or sediment laden water - Any water discharged to stormwater drains, must be clean and free from any contaminants including, turbidity, litter, chemicals, oil and grease
Water Quality Criteria for Discharge:
- Before any water can be discharged in to the stormwater from sediment tank(s) the water must meet the following criteria (see also Dewatering Permit) - Nata certified water test to ensure there are no contaminants - pH between 6.5-8.5 - Total Suspended Solids (TSS) <50mg/L - No visible oil or grease - PCBs - 0 mg/Kg - Heavy metals in accordance with ANZECC criteria (if suspected to contain elevated levels)
Water Treatment:
pH Levels: - If the water pH is above 8.5, hydrochloric acid is used to lower the pH: - A 500mL dose of acid typically lowers 7000L of water by a pH of approximately 1.5. - If the water pH is below 6.5, a base such as agricultural lime, with a pH of about 8.2, will be used to raise the pH Suspended Solids (TSS): - If the TSS of water is greater than 50 mg/L (or equivalent Turbidity, after establishing correlation) a flocculent will be used as follows: - Treating water with flocculent (e.g. gypsum, liquid alum or flocculent blocks).

	○ The flocculent should be evenly applied and left until the sediment has time to settle out. ○ Only environmentally safe flocculants will be used based on the Environmental Officer's review of SDS information. Hydrocarbons: • If an oily sheen is found on the surface of the water absorbent material from a spill kit will be used to absorb and skim off the sheen prior to discharge.
Responsibility	• Site Supervisor is responsible for ensuring installation and maintenance of controls • Site Supervisor / Environmental Representative will test the water (using proprietary and certified testing kit) against the above criteria and complete the Dewatering Permit • Site Supervisor / Environmental Representative will arrange samples to be sent to NATA credited laboratory • Environmental Representative is responsible for performing monitoring, conducting inspections, responding to incidents and authorising Dewatering Permit • All workers are responsible for reporting incidents
Performance Indicator	• Nil unauthorised discharge of water from the project • Nil inrush of water to site from boundary • Nil infringement notices from regulator (e.g. EPA)
Monitoring	• Visual check the dewatering discharge point hourly for turbidity and PH (where used) • The tank system will be checked daily and maintained as necessary (where used) • Water treatment and testing equipment will be in 'as new' condition and the manufacturers recommended procedures will be followed in regards to maintenance • Daily visual inspections of site boundaries, excavations and controls. • Weekly completion of project site inspection checklists
Reporting	• All incidents are to be reported to the site supervisor • Contact appropriate authorities including client/EPA as required notifiable incidents
Corrective Action	• Where results of testing are not within the criteria, treatment is to be conducted including retesting prior to discharge • Pumping is to be suspended and treatment provided until water quality criteria has been met. Once water quality criteria has been met, pumping may continue • Where water is identified as entering site, the source must be identified and prevention measures are to be installed e.g. diversions, blocking, capping, sealing • Where sheet water is identified as entering excavations a diversion system is to be installed e.g. trough, gully etc. where practicable • System deficiencies to be recorded on corrective action report

7.2 EROSION AND SEDIMENT CONTROL

As the site has very minimal ground exposure the risk of sediment leaving site is low.

Performance Objective(s)	To prevent erosion and ensure that sediment laden water does not leave the site or contaminate stormwater or other waterways
	General:
	- Geotech fabric and Geotech Socks will be installed to all on-site pits and inlets and protection provided - Kerbside stormwater pits/sump drains will be protected with Geotech fabric and Geotech Socks or similar devices (where water is leaving site) - Sediment fencing will be installed to terrains (where identified, or required) - Site compounds, access tracks, stockpile sites and temporary work areas will be located so that disturbed areas are minimised. Disturbed areas will be stabilised ASAP - Stockpiling of material will cease in rainy conditions - Site workers directly involved in sediment and erosion control will be given training in the operation and maintenance of the measures to be implemented
	Sediment and other material tracked from site
	- The loading of trucks shall take place on hardstand areas on site, where possible - A vehicle wheel wash or gravel pit or grid will be put in place near the egress point - Vehicles to have wheels inspected before leaving site - The hard stand area, loading point and egress point will be kept clean and swept regularly
	Erosion of natural materials
	- In the event that walls below ground level of the building(s) are natural material they will be visually monitored during construction, demolition or excavation works - In the event of excessive erosion temporary covers such as Soil Tackifier, bituminous spray or plastic/fabric sheeting will be placed over soil/stock pile/areas
	Working near water bodies
Responsibility	A floating boom will be on standby and hydro-vac available to remove sediment laden water plume and sediment- laden water source (as required)
	Working on the move (Mobile work):
Performance indicator	A set (Geotech socks and filter sedimentation unit) will be laid out and taken up as site moves. Reset and cleaned out using appropriate methods – manually. Cleaning will be done when accumulated sediment has reduced the capacity of the structure by 30%, based on a visual assessment.
	- Site Supervisor is responsible for ensuring installation and maintenance of controls - Environmental Representative is responsible for performing monitoring, conducting inspections and responding to incidents - All workers are responsible for reporting incidents and maintaining controls
Performance indicator	- Nil visible signs of sedimentation entering waterways or on roadways - Nil visible signs of erosion cause by our works

Monitoring	- Weekly completion of Project Site Inspection Checklist - Daily visual inspection of erosion and sediment controls
Reporting	All incidents are to be reported to the site supervisor
Corrective action	- If any sedimentation appears on roads it will be cleaned with road sweeper or by the MDG workers - Where erosion or sediment controls become ineffective all workers are to take action to correct the risk - System deficiencies to be recorded on Corrective Action Report

7.3 CONSTRUCTION DURING WET WEATHER

Due to the extent of demolition and construction done within the existing building envelope therefore contaminated water run-off from within the site will be low risk.

Performance objective	To ensure that there is controls in place to prevent contaminated water run-off in a wet weather event during construction, leaving the site.
Treatment strategies	- In order to control contaminated water run-off from the site during wet weather, Geotech fabric and Geotech Socks will be installed to all on-site pits and inlets and protection provided - Kerbside stormwater pits/sump drains will be protected with Geotech fabric and Geotech Socks or similar devices (where water is leaving site) - Areas within the site that are exposed to wet weather will be kept clean and clear of any dust and construction debris to ensure there is no risk of run-off contaminating the ground or the water system. - Demolition and careful removal handling of contaminated materials will be removed by a hazmat professional and loaded straight onto trucks, covered and protected to them be correctly disposed of. Hazardous materials will not be handled under wet weather conditions. - Vehicles and deliveries containing any hazardous materials will not be left out in wet weather. The materials will be moved to undercover for storage prior to use or disposal.
Responsibility	- Site Supervisor is responsible for ensuring installation and maintenance of controls - Environmental Representative is responsible for performing monitoring, conducting inspections and responding to incidents - All workers are responsible for reporting incidents and maintaining controls
Monitoring	- Deliveries and demolition removal must be booked in using an online booking platform. This platform will notify workers of plans change due to wet weather - Traffic control management - Programme works on inclement weather days
Reporting	Any incidents are to be reported to head contractor or site supervisor as soon as possible
Corrective action	- Where results of testing are not within the criteria, treatment is to be conducted including retesting prior to discharge - De-watering corrective action procedures to be followed.

7.4 DEWATERING MANAGEMENT PLAN

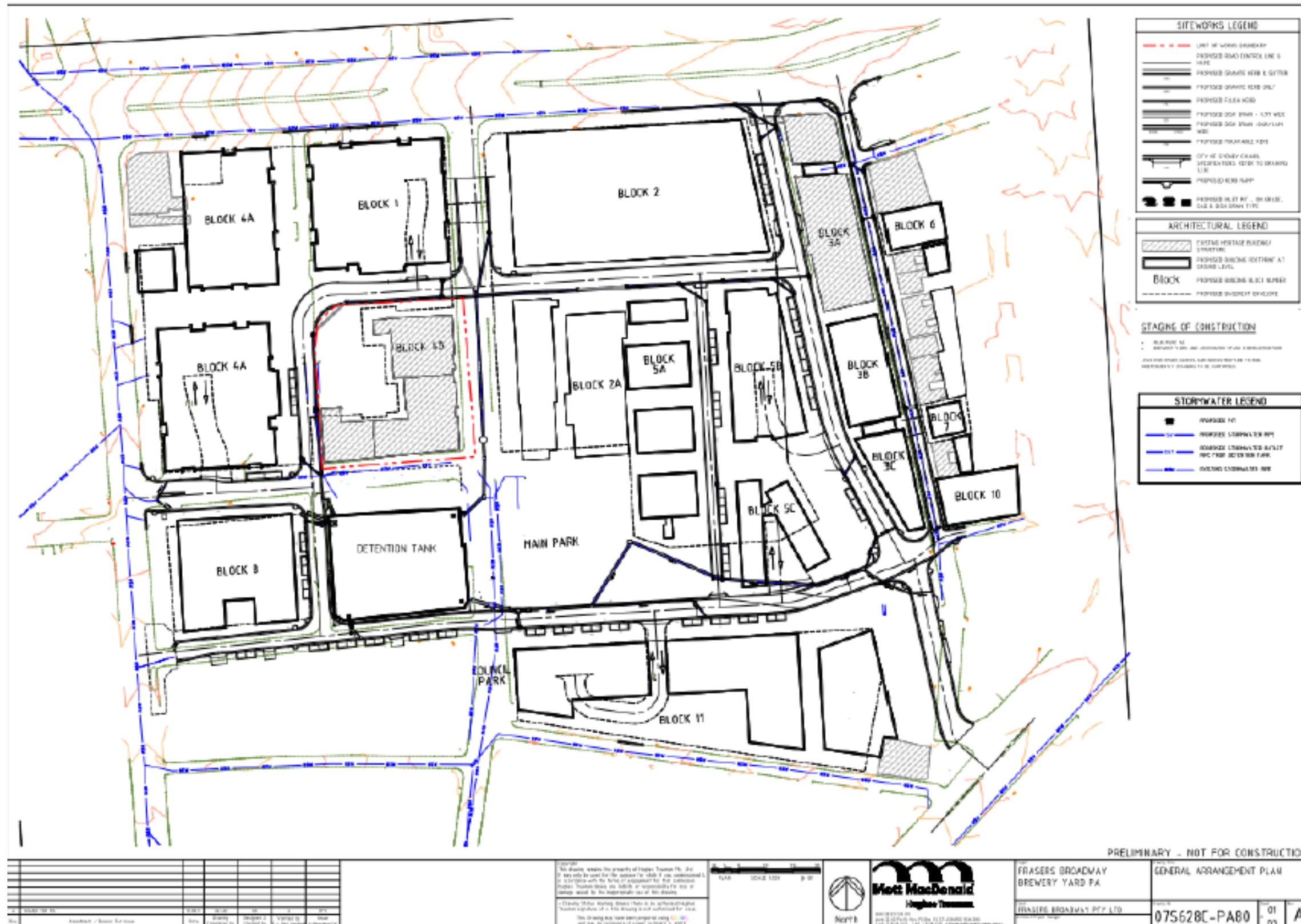
Performance objective	Dewatering activities must be done properly to avoid eroding the soil onsite. It is also important to choose the best location for discharge
Treatment strategies	- Water will not be pumped directly onto sloped - De watering activities will be directed to a wood buffer (if available) - There will be special attention to the de-watering area to monitor if the dewatering area shows signs of instability or erosion - Channels used for de-watering are more stable and better when they are protected by grass or vegetation - Dewatering will be avoided under heavy rains because the infiltration rate is at a minimum and water will move slower or the dewatering process will not function - There will be no discharge of water that has been contaminated with oil, grease, chemical, and the like directly. - The following methods are considered the most effective and practical methods to use - Water pumping - Siphoning - Earth channels - Sediment tank. (the purpose of a portable sediment tank is to trap and retain sediment and treat turbid water prior to pumping the water to the sewer system)
Responsibility	- The responsibility will fall to the head contractor site management as well as the subcontractors responsible for their own works. - Head contractor responsibilities include ensure that relevant authority permits are obtained in all cases of de-watering.
Performance indicator	Nil visual indicators
Monitoring	- Control and monitoring behind dewatering will be acknowledged in toolbox talks - Visual inspections during dewatering
Reporting	All incidents are to be reported to the site supervisor
Corrective action	- Where results of testing are not within the criteria, treatment is to be conducted including retesting prior to discharge - Pumping is to be suspended and treatment provided until water quality criteria has been met. Once water quality criteria has been met, pumping may continue - Where water is identified as entering site, the source must be identified and prevention measures are to be installed e.g. diversions, blocking, capping, sealing

7.5 STORMWATER RETENTION AND SILT PLAN

Performance objective	Retain the soil on the disturbed land due to construction activities and ponds stormwater run-off.
Treatment strategies	- Temporary dish drains will be established to direct water run-off - At all discharge points to the site stormwater system, the pit lids are to be covered with shade cloth, filter fabric or silt socks - The downhill sides of the fencing will have shade cloth filter fabric to a height of 300mm if the directional flow of water travels through the fence enclosure. - The new stormwater system will be installed and commissioned as early as possible to minimise the period of uncontrolled roof and road water. - Ensure good housekeeping of site and cleaning up around footpaths and roads surrounding the site
Responsibility	- The site supervisor - The workers are responsible to maintaining the prevention and treatment strategies in place.
Performance indicator	- Nil visible signs of sedimentation entering waterways or on roadways - Nil visible signs of erosion cause by our works
Monitoring	- Visual inspections ongoing - Fence and drainage controls will be maintained on a regular basis to ensure effectiveness
Reporting	All incidents are to be reported to the site supervisor
Corrective action	- Re-instate the catchment provisions to the discharge areas - Thoroughly clean up any excess dust, silt and construction debris and stop any further contaminating - Provide treatment to the affected area and readjust the control plan to contain the contaminated run-off before opening up the stormwater discharge points again.

8. OFF-SITE FLOWS

8.1 STORMWATER SITE LOCATIONS



9. ACCESS TO LEGAL AND OTHER REQUIREMENTS

Activities at the site must conform with relevant Environment Protection Policies (SEPPs) and environmental regulations promulgated under relevant legislation.

Legal obligations have been reviewed and compiled to accord with the environmental aspects identified in section 6 - Environmental Aspects and Controls of this document.

Further information on legal and other obligations is available on the Environmental Essentials Pty Ltd website accessed via the company website.

9.1 FEDERAL ENVIRONMENTAL LEGISLATION

[Environment Protection and Biodiversity Conservation Act 1999](#)

[Aboriginal and Torres Strait Islander Heritage Protection Act 1984](#)

[Australian Heritage Council Act 2003](#)

[National Environment Protection Council Act 1994](#)

[National Environment Protection Measures \(Implementation\) Act 1998](#)

[Natural Heritage Trust of Australia Act 1997](#)

9.2 NEW SOUTH WALES

General Environmental Legislation	Protection of the Environment Operations Act 1997
Waste Minimisation / Material Recycling	Protection of the Environment Operations Act 1997 , s 47-48, 142A-E, s 143 Crown Lands Act 1989 , s 155 Management of Waters and Waterside Lands Regulations – NSW , cl 13 Protection of the Environment Operations (Waste) Regulation 2005 , cl 42, 48, 49, 22, 24
Contaminated Waste Management	Protection of the Environment Operations Act 1997 , s 47-48, 142A-E, 143 Crown Lands Act 1989 , s 155 Management of Waters and Waterside Lands Regulations – NSW , cl 13 Protection of the Environment Operations (Waste) Regulation 2005 , cl 49, 42, 43, 44-46, 48, 22, 24, 32-37 Contaminated Land - Guidance Hazardous Waste - Guidance
Storm water Retention and Silt Control	Protection of the Environment Operations Act 1997
Air Quality and Dust Control	Protection of the Environment Operations Act 1997 , s 124-125, 126 Protection of the Environment Operations (Clean air) Regulations 2010 NTC Brochure: Load Restraint Guide 2004 Smoke-Free Environment Act 2000 , s 6-10 Smoke-Free Environment Regulation 2007 , 4-7 Public Health Act 1991 , s 46 Air - Guidance
Noise and Vibration Control	Protection of the Environment Operations Act 1997 , s 139, 140

	Protection of the Environment Operations (Noise Control) Regulation 2008 Noise - Guidance
Hazardous and Flammable Material Management	Work Health and Safety Regulation 2011 Dangerous Goods - Guidance
Equipment Emissions	Protection of the Environment Operations Act 1997 , cl 155, 124 -125

Useful linksEnvironment Protection Authority: <http://www.epa.nsw.gov.au>Office of Environment and Heritage: <http://www.environment.nsw.gov.au/>

21. APPENDIX 5

21.1 HERITAGE IMPACT STATEMENT

HERITAGE IMPACT ASSESSMENT

BREWERY YARD

BUILDING ASSETS

22, 23, 26 & 30

**CENTRAL PARK,
CHIPPENDALE NSW
2008**

URBIS STAFF RESPONSIBLE FOR THIS REPORT WERE:

Director, Heritage	Stephen Davies, B Arts Dip Ed, Dip T&CP, Dip Cons Studies, M.ICOMOS		
Associate Director, Heritage	Fiona Binns, B Arts, M Arts (Curatorial Studies)		
Senior Heritage Consultant	Ashleigh Persian, B Property Economics		
Project Code	SH1320		
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EXECUTIVE SUMMARY

We have been engaged by IP Generation Pty Ltd to prepare this Heritage Impact Statement (HIS) to address the Secretary's Environmental Assessment Requirements (SEARs) for the State Significant Development Application (SSDA) – SSD 18_9374. The SEARs are outlined at Section 1.4.

The proposal pertains to the adaptive reuse of the former Irving Street Brewery Buildings (hereafter referred to as 'the Brewery Buildings'), located within the Central Park precinct on Broadway, Chippendale, south of the Sydney Central Business District (CBD).

This HIS has been prepared to satisfy the SEARs and to assess the proposal against relevant planning policies and guidelines, to assist the consent authority in their determination.

The proposal has been assessed herein and it is concluded that the proposal will not result in an adverse heritage impact to the place or the heritage listed chimney which forms part of the site.

While the proposal includes a high degree of fabric modification and alteration, the overall design is highly considered and seeks to mitigate impacts where possible and provides for sensitive design solutions, resulting in an acceptable level of heritage impact. Practical solutions to the ongoing occupation of these buildings have been carefully considered with regard to minimising adverse impacts, while looking for ways to celebrate and interpret the history of the place.

A careful balance of conservation and contemporary intervention has been achieved with the current proposal, which seeks to provide a feasible outcome for the use of the space, but also embraces and celebrates the site's history through interpretation and retention of significant fabric.

Rather than diminishing the heritage of the City of Sydney, the subject proposal seeks to enhance the heritage values of the Brewery Buildings by enabling the future occupation of the space, and providing for the adaptive reuse of the site. The proposal will allow the Brewery Buildings to be an integrated, accessible part of the Central Park precinct.

The proposal has been developed with design excellence at the forefront. The design has been undertaken by Tzannes Architects, who are responsible for the design of the tri-generation cooling tower atop Building 30 of the Brewery Buildings. This first stage of the Brewery building renewal was internationally recognised and Tzannes were the recipients of the 2016 Chicago Athenaeum International Architecture Award, and the 2016 UNESCO Heritage Award for New Design in Heritage Contexts for this work, as well as the Lachlan Macquarie Award for Heritage at the 2015 National Architecture Awards. This SSDA proposal sees the continuation of high quality architectural design and innovative approaches on the Brewery Building project.

The Brewery Buildings not only form part of the Central Park precinct, they are the historic centrepiece of this urban environment, and the last remaining physical representations of the site's significant brewing history and the former industrial buildings on the site. The buildings must be adapted for future use not only to prevent their physical deterioration, but to provide an important central element within the public domain of the Central Park precinct.

Aboriginal and Historic Archaeological potential has been assessed as low to nil and with consideration for the highly disturbed nature of the site as well as the minimal nature of the proposed excavation, the proposed works are unlikely to impact on the archaeological resource.

The proposal is supported from a heritage perspective and is recommended for approval subject to the recommendations outlined in section 8.1.

1. INTRODUCTION

1.1. BRIEF AND PURPOSE

We have been engaged by IP Generation Pty Ltd to prepare this Heritage Impact Statement (HIS) to address the Secretary's Environmental Assessment Requirements (SEARs) for the State Significant Development Application (SSDA) – SSD 18_9374. The SEARs are outlined at Section 1.4.

The proposal pertains to the adaptive reuse of the former Irving Street Brewery Buildings (hereafter referred to as 'the Brewery Buildings'), located within the Central Park precinct on Broadway, Chippendale, south of the Sydney Central Business District (CBD) – refer to Figure 1. The purposed of the proposal is to conserve and creatively adapt the site for contemporary purposes, and to facilitate a built form outcome that is both functional and commercially viable, while being cognisant of the heritage values of the place.

This HIS has been prepared to satisfy the SEARs (refer to section 1.5) and to assess the proposal against relevant planning policies and guidelines, to assist the consent authority in their determination.

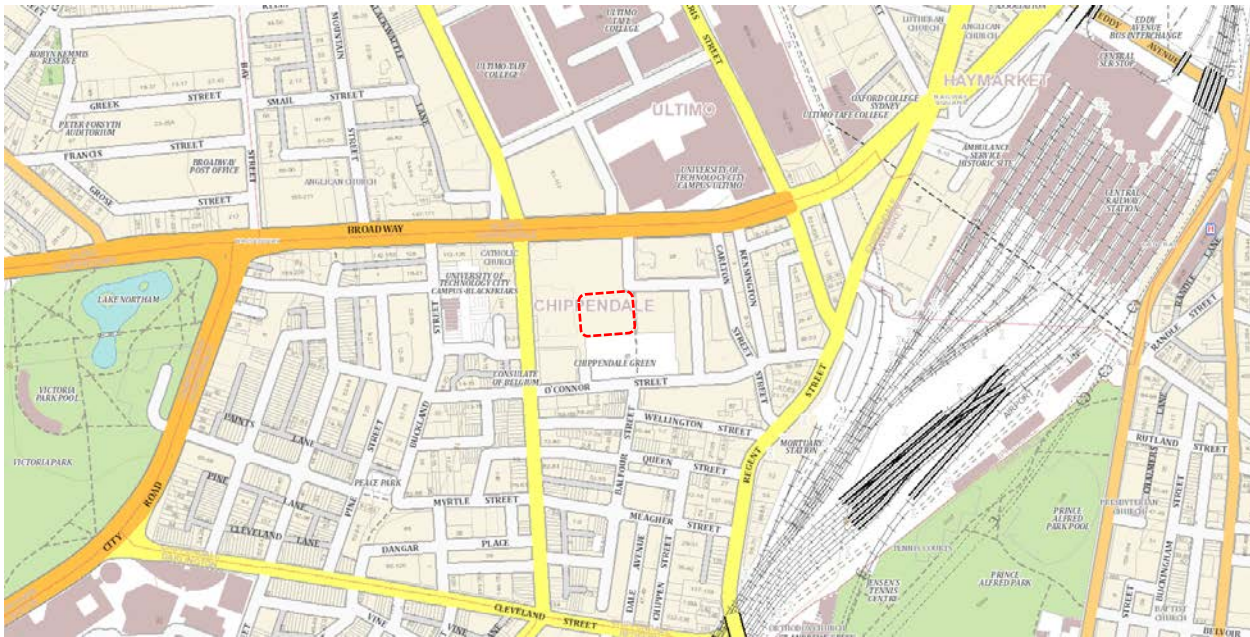


Figure 1 – Locality diagram (location of the Brewery Buildings shown outlined)

Source: SIX Maps 2018

1.2. METHODOLOGY

This HIS has been prepared in accordance with the NSW Heritage Division guidelines 'Assessing Heritage Significance' and 'Statements of Heritage Impact'. The philosophy and process adopted is that guided by the *Australia ICOMOS Burra Charter* 1999 (revised 2013).

The proposal has considered the following documents:

- Sydney Local Environmental Plan 2005.
- State Environmental Planning Policy (State and Regional Development) 2011.
- Special Elements Conservation Plan report, prepared for the Irving Street Brewery Buildings by Urbis in 2009.
- NSW Heritage Division guideline 'Statements of Heritage Impact'.
- NSW Heritage Council's 'New Uses for Heritage Places'.

1.3. AUTHOR IDENTIFICATION

The following report has been prepared by Fiona Binns (Associate Director) and Ashleigh Persian (Senior Heritage Consultant). Unless otherwise stated, all drawings, illustrations and photographs are the work of Urbis.

1.4. LIMITATIONS

Archaeological Assessment of the Brewery Buildings precinct has previously been undertaken by GML Heritage in 2006 (refer to discussion at Section 5). In the intervening period, the subject property (Brewery Buildings precinct) has undergone substantial disturbance in association with the construction of the tri-generation plant in 2015.

The provision of a revised / further Archaeological Assessment is outside the scope of this report.

1.5. APPLICATION OF SECRETARY'S ENVIRONMENTAL ASSESSMENT REQUIREMENTS

On 21 June 2018, the SEARs were issued under Section 4.12(8) of the Environmental Planning and Assessment Act 1979. The SEARs of relevance to the heritage impact assessment of the proposal are included in the following table.

Table 1 – SEARs

SEARs	Addressed at
<u>1. Statutory and strategic context</u>	
The EIS shall address the statutory provisions applying to the site contained in all relevant environmental planning instruments (EPIs), including: • State Environmental Planning Policy (State and Regional Development) 2011 • Sydney Local Environmental Plan 2005.	Refer to Section 7.2.
• Heritage Council Guidelines Assessing the Significance of Archaeological Sites and Relics	Refer to Section 5.
• Heritage Council Guideline on Heritage Curtilages 1996	Not applicable.
• Heritage Council Guideline, Design in Context – guidelines for infill development in the Historic Environment, 2005.	Not applicable.
<u>5. Heritage and historical archaeology</u>	
The EIS shall: • provide a detailed heritage impact statement (HIS), in accordance with the NSW Heritage Office publication Statement of Heritage Impact, that identifies and addresses any heritage impacts of the proposal: • on the heritage significance of the site and surrounding area, including any built and landscape items, conservation areas, and views or settings	This Heritage Impact Statement satisfies this requirement.

SEARs	Addressed at
- on places, items or relics of significance to Aboriginal and non-Aboriginal people - having regard to any endorsed conservation management plans for heritage items on the site	
identify, describe and assess the impacts of the proposal on the Aboriginal cultural heritage values that exist across the site in consultation with Aboriginal people. This may include the need for surface survey and test excavation. The identification of cultural heritage values and consultation should be guided by the Guide to investigating, assessing and reporting on Aboriginal Cultural Heritage in NSW (DECCW, 2011) and Aboriginal cultural heritage consultation requirements for proponents 2010 (DECCW)	Refer to discussion at Section 1.4 and 5 regarding the archaeological significance of the site, and previous assessments undertaken. Refer also to the assessment of impacts in Section 7.
demonstrate attempts to avoid impact upon cultural heritage values and identify any conservation outcomes. Where impacts are unavoidable, the EIS must outline measures proposed to mitigate impacts. Any objects recorded as part of the assessment must be documented and notified to Office of Environment and Heritage	Refer to the detailed impact assessment included at Section 7.
have regard to any relevant heritage studies or assessments of existing buildings and industrial elements on the site, such as the Special Element Conservation Plan Irving Street Brewery Buildings and Yard, by Urbis 2009	Refer to assessment against the relevant provisions at Section 7.4.
include a heritage interpretation plan to inform the detailed architectural design and adaptive reuse of the existing buildings.	Refer to interpretation strategy included at Appendix A.
<u>Plans and Documents</u>	
The EIS must include all relevant plans, architectural drawings, diagrams and relevant documentation required under Schedule 1 of the EP&A Regulation 2000. Provide these as part of the EIS rather than as separate documents. In addition, the EIS must include the following: heritage impact assessment (including archaeological assessment)	Refer to the detailed impact assessment included at Section 7. Refer to discussion at Section 1.4 and 5 regarding the archaeological significance of the site, and previous assessments undertaken.
heritage interpretation plan	Refer to interpretation strategy included at Appendix A.

2. SITE DESCRIPTION

The Brewery Buildings are located wholly within Lot 200 of Deposited Plan 1212253, and form part of the broader Central Park precinct on Broadway, in Chippendale.

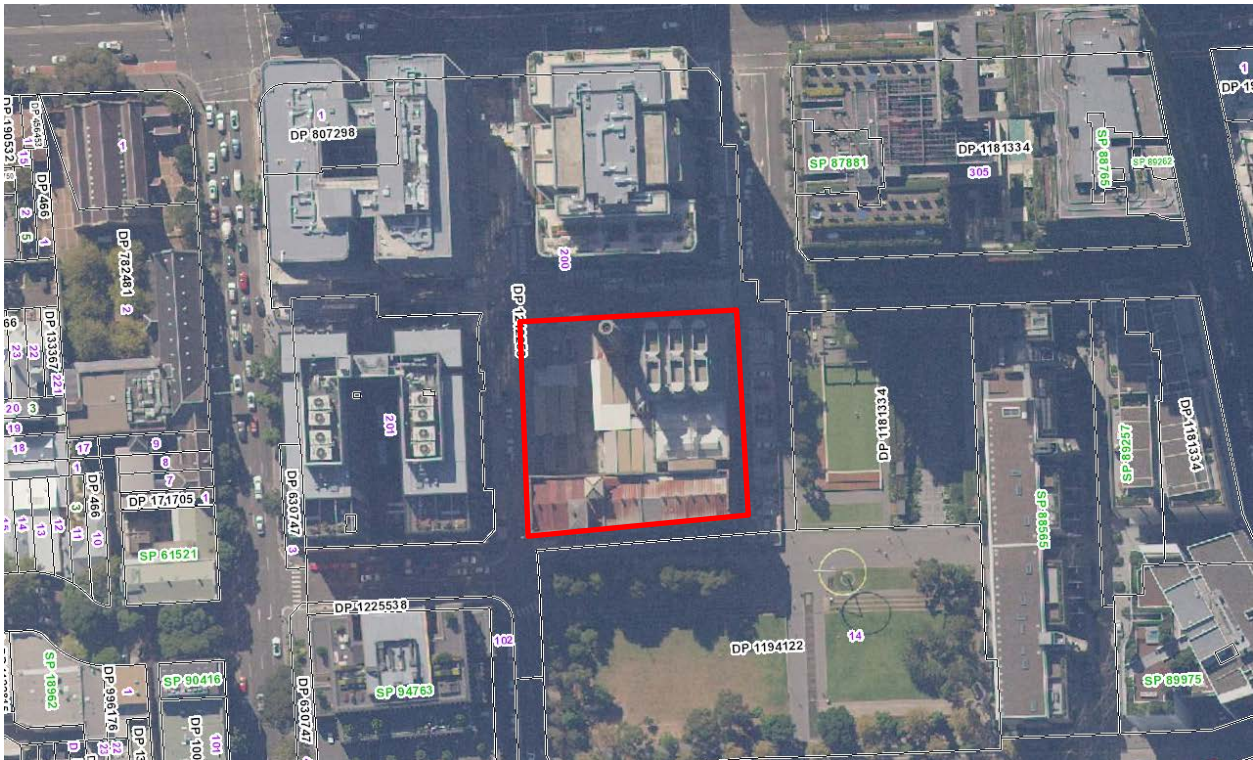


Figure 2 – Aerial diagram of the Brewery Buildings

Source: SIX Maps 2018



Figure 3 – View of the subject Irving Street Brewery Buildings (22 and 23)

Source: Urbis July 2012

2.1. IRVING STREET BREWERY PRECINCT

The following description of the Irving Street Brewery Precinct (No. 4) has been taken from the Heritage Impact Statement on the Concept Plan by Godden Mackay Logan (2006A:35-36).

The Irving Street Precinct is defined as the area bounded by Balfour, Carlton and Irving Streets, with Broadway on the northern boundary. In this precinct is the largest surviving group of early twentieth century brewery structures on the site, whose form, massing and architectural character, externally at least, provide the most visually direct link to the early brewery functions. Included in the oldest group from 1912 are the Filtration Building (22), Malt Silo (23), Substation (26), former Boiler House (30), Bright Beer Plant (35A) and Refrigeration Block (35B). Within the L-shaped yard formed by the rear of these structures is the brick-walled chimney stack (36) which originally served the boilers.

Architecturally this group of structures, constructed largely of brick with sandstone bases and/or dressing, is characteristic of the simplified and robust neo-classical industrial (and warehouse) buildings of the late Federation period in Sydney. Though varying in character, quality of detail, level of intactness and physical condition, the exteriors of the buildings provide important evidence of the physical character, functional layout and site organisation of the turn of the century brewery. Internally, however, much of the original layout and efficiency all the early equipment/fitout have been removed and replaced. The associated additions and alterations involving extensive new servicing has resulted in the present additions to the external facades of the buildings.

Demolished Buildings

Many of the former buildings and elements in the Irving Street Brewery Precinct have been subject to demolition, including the Malt Receiving Station (24), Boiler House (31), Bright Beer Plant (35A), Refrigeration Block (35B), Laboratory Block (35C), CO2 Block (33D), Toilet Block (35E), Infill Block (35F), Great Western Hotel (39) and the vacant lot (56). These buildings were assessed by Godden Mackay Logan in 2007 as having moderate significance or lower, some being intrusive, and have all been demolished.

Heritage Items

The Chimney Stack (36) is listed as a building element under Part 2 of Schedule 8 of the Sydney Local Environmental Plan 2005. None of the other Irving Street Brewery buildings are listed as heritage items under the LEP, although their heritage significance has been recognised in their retention and adaptation.

Table 2 refers to assets that are subject to this report. These assets are located within the Irving Street Brewery Precinct and were assessed by Godden Mackay Logan in 2006 and 2007.

Table 2 – Brewery heritage assets

Asset No.	Name of Asset	Significance	Concept Plan GML Assessment (2006A)	Demolition Plan GML Assessment (2007)
22	Filtration Building	High	Retained and conserved	Retained and conserved
23	Malt Silo Building	High	Retained and conserved	Retained and conserved
25	Staircase Block	Intrusive	Demolished	Retained
26	Gas Receiving Station	Moderate	Retained and conserved	Retained and conserved
30	Old Boiler House	Moderate	Retained and conserved	Retained and conserved
36	Chimney Stack	High	Retained and conserved	Retained and conserved
52	Irving Street Brewery Yard	High	Conserved	Conserved

The above assets were photographed in November 2007 by Dilapidation Surveys and reference should be made to these reports for the appearance of the buildings prior to removal of contaminated fabric and

hazardous materials. The following building descriptions are taken from the CMP by Noel Bell Ridley Smith and Partners (2005:57-59).

Site photos were taken by Urbis, typically during inspections in late 2018, although some previous images have also been used where appropriate to demonstrate past condition or works.

2.2. FILTRATION BUILDING (22) AND MALT SILOS BUILDING (23)

The Filtration Building (22) and the Malt Silo Building (23) form a five-storey (ground, first, second, third and fourth floors) face brick building with impressive facades with fine detailing in brick and sandstone. The Filtration Building does not retain its original function of brewing and presently houses a filtration plant, whereas the Malt Silos Building still retains its original function as a Malt Silo.

The building retains most of its original façades that constitute a major component of its fabric of significance including typical Irving Street Brewery elements such as engaged brick piers forming blind arches; expressed voussoirs; keystones, dentils, lintels and bracketed mouldings in sandstone; string courses; and multi paned arched and rectangular windows. The pair of arched passages together with stone plaque with 'TOOTH & CO. Ltd. / 1911 / IRVING ST' in relief lettering on the front/south façade are significant as references to building 22 & 23's function as entrance to the Irving Street Brewery.

The Malt Silos Building retains some of its original interior fabric such as exposed roof structure comprising wooden queen post truss, steel beams and timber floors. It also retains some of its original equipment such as masonry silo tanks, wooden silo bins, timber floor decks, unloading dock with connection to basement and the overall scheme/and sequence of the original Malt handling/storage process. The facades are substantially intact, although showing deterioration of stone, brickwork and windows.

Internally, the Filtration Building has undergone major alterations comprising the gutting of interior spaces whereas the Malt Silos Building interiors have undergone limited alterations. Externally the building has suffered a few intrusive alterations including the Corridor connection to building 20 [Brew House, now demolished]; roof level extension on the Irving Street façade; the reinforced concrete slab intrusions of the new staircase block (25); all later window infill (excluding windows originally closed) and services running on façades. The overall condition of original and later internal and external fabric is fair.



Figure 4 – Part view of the southern (principal) façade of building 22

Source: Urbis September 2018



Figure 5 – Part view of the southern (principal) façade of building 22 – showing the principal entry

Source: Urbis September 2018



Figure 6 – The western façade of building 23 (the malt silos)

Source: Urbis September 2018



Figure 7 – The northern façade of building 22/23 and brewery yard in the foreground

Source: Urbis September 2018

The interior of building 22, the former Filtration plant, was rebuilt in the 1980s in conjunction with the change of use. This included new concrete structure and floors. The malt silo (building 23) was the only building to retain its original use and still houses the original 8 concrete silos (hence the enclosed façade windows).



Figure 8 – The ground floor of building 23 showing the base of the silos

Source: Urbis September 2018



Figure 9 – Typical interior of the former Filtration building (22)

Source: Urbis September 2018

2.3. STAIRCASE BLOCK (25)

A staircase block was built between buildings 22 and 26 in the 1980s and functioned as the main staircase to building 26 as well as an additional staircase to building 22. The stair was rebuilt in conjunction with stage 1 works in 2014, of concrete construction, with metal clad exterior (eastern elevation pictured below). The reinforced concrete slabs intrude into the original face brickwork of the adjacent buildings.

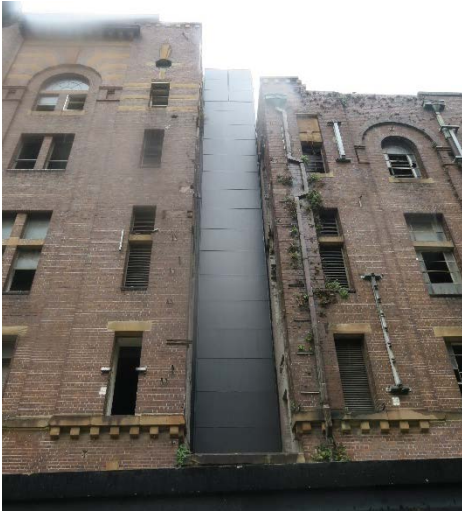


Figure 10 – The eastern façade showing the inset stair block between buildings 22 (left) and 26 (right)

Source: Urbis September 2018



Figure 11 – Interior of the stair, and interface with the adjoining building

Source: Urbis October 2018

2.4. GAS RECEIVING STATION (26)

The Gas Receiving Station (26) is a four storey face brick building with impressive façades with fine detailing... The buildings are representative of the Federation Warehouse style with typical features including engaged brick piers forming blind arches; expressed voussoirs; keystones, dentils, lintels and bracketed mouldings in sandstone; string courses, multi paned windows, round arches, etc.

The Gas Receiving Station retains very little of the original interior fabric or equipment owing to gutting of most internal spaces. Significant fabric includes original façade configuration and elements. Intrusive elements to Building 26 include the coal elevator shaft, staircase from adjacent old boiler house (30), window infills, and alterations to façades and service pipework on facades. The overall condition of exterior fabric is fair. The building façades are substantially modified but retain the overall form and character of the original group, although the interiors show low degree of intactness. The existing fabric lacks the ability to demonstrate any significance.



Figure 12 – The western façade of building 26

Source: Urbis September 2018



Figure 13 – The eastern façade of building 26

Source: Urbis September 2018

2.5. OLD BOILER HOUSE (30)

The Old Boiler House was originally a two-storey face brick building with several façade details in common with the rest of the precinct buildings. The fabric of significance comprises the original double storey façades, flue connected to the chimney and the firing floor slab. Its significance is compromised by extensive alterations to its exterior including first floor extension to the west façade; pitched roof block on second floor level, the coalbunker at roof level; all window infills and services running on the façades.

The interior has undergone several alterations, such as ground floor intrusion from the Gas Receiving Station (26) and complete gutting of upper floor space leading to loss of original structural system. No original equipment or interior fabric has been retained although the facades show a fair to low degree of intactness. The condition of external fabric is fair whereas the original first floor slab is in extremely poor condition and structurally unstable.

The building was adapted for use as the boiler house in the mid-20th century, which necessitated the vertical addition, to house the coal hoppers (which remain extant).

In addition to the above, Building 30 was adapted to house the cooling towers of the tri-generation Plant in 2015, with works including demolition of the northern façade and structural intervention to support the plant. Central Park site is now the largest site in Australia powered by its own tri-generation energy plant



Figure 14 – The eastern and northern brewery facades, with building 30 (at right) on the northern side, capped by the contemporary trigeneration

Source: Urbis September 2018



Figure 15 – The western façade of building 30 and base of the chimney stack (36)

Source: Urbis September 2018



Figure 16 – The northern façade (open) and hoppers

Source: Urbis September 2018



Figure 17 – Detail of one of three coal hoppers

Source: Urbis September 2018

2.6. CHIMNEY STACK (36)

The Chimney Stack is a 54 metre tall brick [structure] with a square base and a hexagonal plan tower located in the centre of the precinct, attached to the old Boiler House (30). It is no longer functional as a chimney stack. It retains most of its original fabric with little alteration.

The chimney was adapted for reuse in conjunction with the trigeneration plant and was subject to conservation works including partial reconstruction of the upper brick courses.



Figure 18 – The prominent chimney stack prior to trigen works (2012)

Source: Urbis July 2012



Figure 19 – View of the scaffolded chimney during conservation and trigen works fin 2014

Source: Urbis June 2014

2.7. IRVING STREET BREWERY YARD (52)

The yard comprises a concrete paved open area bound by the rear façades of the Irving Street Brewery buildings. It forms an irregular shape in plan and provides access to most of the buildings of the former Brewery. The yard was formed c. 1912 when the Brewery buildings were constructed, and it is an important aspect of the former Brewery group, allowing interpretation of industrial buildings in the group and views of the chimney stack.

The Yard was excavated in conjunction with the construction of the trigeneration plant (pictured below) and has been capped with a concrete slab.



Figure 20 – 2012 view of the yard under excavation for the trigen plant

Source: Urbis 2012



Figure 21 – The northern building façade and brewery yard, including trigen plant/ access at right

Source: Urbis September 2018

3. THE PROPOSAL

The following has been summarised from the Design Report prepared by Tzannes Associates and submitted with the subject Development Application.

3.1. THE CENTRAL PARK CONCEPT PLAN

The Site is located on land that forms part of the Central Park (Carlton United Brewery) Concept Plan MP 06_0171. The Concept Plan establishes the importance of the Brewery Yard site within the precinct. The Site encompasses several of the major heritage buildings in the precinct as well as the Central Park Thermal Plant trigeneration facility. The existing heritage buildings address Chippendale Green and are bounded on the east by the north-south pedestrian and cycle link connecting Chippendale to Broadway.

Within the site boundary the Concept Plan designates building heights, publically accessible spaces and GFA. The Brewery Yard forecourt within the north-west portion of the site is planned as publically accessible, privately owned space, whilst a publically accessible through site link intersects the southern block.

In addition to the Concept Plan a Part 3A Project Application (MP 10_0217) was approved on 15 May 2012 for the alterations to and adaptive reuse of the Brewery Yard buildings. The approval included two construction stages, being:

- Stage 1: construction of associated plant related to the approved Central Thermal Plant including cooling towers and metal enclosure to the roof of the Old Boiler House, external chimney flues, reuse of chimney stack and stairs and air ducts in Brewery Yard.

SSD conditions of consent required conservation works to the buildings and a schedule of conservation works was prepared by Urbis, which has recently been revised.

- Stage 2: partial demolition of some existing building fabric and the adaptive reuse of the Brewery Yard buildings providing 6,386m² of GFA.

This consent has been acted upon and the first stage has been constructed in accordance with the consent, completed in 2014. Should the subject SSDA be approved, Stage 2 would be relinquished.

The current state of the buildings on the Site varies. Whilst the 2014 works are in good condition other parts of the heritage buildings are generally in fair condition and contain intrusive elements, hazardous materials and contaminants. For further detail refer to the Schedule of Conservation Works: The Former Irving Street Brewery prepared by Urbis.

3.2. THE SUBJECT PROPOSAL/ NEW WORK

The proposed new work follows conservation, restoration and adaptation principles established by the 2014 works. New elements are a direct expression of its function adapted to the particular form and character of the heritage building. The use of metalwork for new additions sympathetically contrasts the heritage masonry of the existing building and reflects the more contemporary industrial legacy of the building's adaptation over time.

The proposed new work comprises five major elements:

- a new roof form and addition comprising two new floor levels
- a new glazed northern façade (modified but similar to that previously approved)
- reorganisation of floor levels internally to allow for additional mezzanine floors
- a distinct new egress stair to the west (off the northern façade) and
- a new entrance lobby facing onto Brewery Yard (west elevation)

The brewery buildings will be tenanted and educational uses are being considered.

The new roof form to the south building creates additional learning space and follows the building's tradition of a landscape of roofs which was extended by the Central Thermal Plant rooftop addition. The roof form and skylights are designed to ensure sun access to Chippendale Green and act as lightwells to bring natural light

to the internal spaces. The proposal is also sensitive to the heritage building form as the visual impacts are minimised from the park, with little to no visibility of the proposed roof addition.

A new glazed facade to the north ties in with the architectural language of the Central Thermal Plant above and establishes a relationship with the materiality of the adjacent residential buildings. The north east corner of the site is the first view of the Brewery Yard site on approach from Broadway. The union of the old and new is apparent, with the glazed facade on the north and heritage brickwork to the east presenting a powerful expression of the building's adaptive reuse. The new horizontal element in the north facade is designed to align with the existing parapet in the east facade to express the relationship between the new addition and the existing fabric. The integrity of the relation between the existing and the new fabric is expressed in the relationship of the new built form with the existing parapet on the east facade. Within this northern building new floors have been introduced to provide floor-to-ceiling heights suited to a university building. In the southern block (building 22) a proposed mezzanine at level 2 breaks up the former industrial space to be re-appropriated as learning spaces.

The new egress stair in the Brewery Yard integrates existing structures in the yard, including escapes from and ventilation to the below ground plant spaces, into the one built form element and directly expresses its function as a stair in the space. It utilises a simple industrial detail language of metalwork which again connects the architecture to its more contemporary industrial legacy.

This Heritage Impact Statement considers plans and reports as follows:

Architectural Drawings and Reports

The following was prepared by project architects: Tzannes Associates

Design Report – 27 November 2018

DA0100	Area Plans	Revision B	12.12.18
DA1000	Level B2 Demo Plan	Revision B	12.12.18
DA1001	Level B1 Demo Plan	Revision B	12.12.18
DA1002	Ground Demo Plan	Revision B	12.12.18
DA1003	Level 1 Demo Plan	Revision B	12.12.18
DA1004	Level 2 Demo Plan	Revision B	12.12.18
DA1005	Level 3 Demo Plan	Revision B	12.12.18
DA1006	Level 4 Demo Plan	Revision B	12.12.18
DA1007	Level 5 Demo Plan	Revision B	12.12.18
DA1008	Level 6 Demo Plan	Revision B	12.12.18
DA1100	Level B2 Plan	Revision B	12.12.18
DA1101	Level B1 Plan	Revision B	12.12.18
DA1102	Ground Floor Plan	Revision B	12.12.18
DA1103	Level 1 Plan	Revision B	12.12.18
DA1104	Level 2 Plan	Revision B	12.12.18
DA1105	Level 3 Plan	Revision B	12.12.18
DA1106	Level 4 Plan	Revision B	12.12.18
DA1107	Level 5 Plan	Revision B	12.12.18
DA1108	Level 6 Plan	Revision B	12.12.18
DA1109	Roof Plan	Revision B	12.12.18
DA2000	Elevation East	Revision B	12.12.18

DA2001	Elevation North	Revision B	12.12.18
DA2002	Elevation West	Revision B	12.12.18
DA2003	Elevation South	Revision B	12.12.18
DA3000	Section 1	Revision B	12.12.18
DA3001	Section 2	Revision B	12.12.18
DA3002	Section 2	Revision B	12.12.18
DA3003	Section 4 and 5	Revision B	12.12.18

Services and Utility

Prepared by Wood and Grieve

01	Basement Lower Floor Plan	Revision D	03.10.2018
01	Basement Upper Floor Plan	Revision D	03.10.2018
02	Ground Floor Plan	Revision C	28.09.2018
03	Level 1 Floor Plan	Revision D	03.10.2018
04	Level 2 Floor Plan	Revision D	03.10.2018
05	Level 3 Floor Plan	Revision D	03.10.2018
06	Level 4 Floor Plan	Revision D	03.10.2018
07	Level 5 Floor Plan	Revision D	03.10.2018
08	Level 6 Floor Plan	Revision D	03.10.2018
08	Roof Plan	Revision D	03.10.2018

Structural Engineering Statement

Prepared by Wood and Grieve

38311/SK-001 Basement 2

38311/SK-002 Basement 1

38311/SK-003 Ground Floor Level

38311/SK-004 Level 1

38311/SK-006 Level 2

38311/SK-007 Level 3

38311/SK-008 Level 4

Landscape Design

Public Domain Central Park, Sydney, prepared by Jeppe Aagaard Andersen + Turf Design Studio. SSDA December 2018 (Final Draft)

Reference should be made to the submitted plans.



Figure 22 – Photomontage showing proposed stair and roof additions to building 22/23

Source: Tzannes Associates Dec 2018



Figure 23 – Photomontage showing the principal southern façade and demonstrating the negligible visibility of the proposed rooftop additions to building 22/23

Source: Tzannes Associates Dec 2018



Figure 24 – Photomontage showing the view of the northeast corner from Broadway, with the new northern façade and openings to the ground floor eastern façade. The trigen plant is existing.

Source: Tzannes Associates Dec 2018

3.3. COMPLIANCE WITH THE CONCEPT PLAN

The proposed development complies with the Concept Plan, specifically with regard to public open space, street activation, land uses and retention of significant heritage items.

Public open space and through site connections are provided in accordance with the Concept Plan Public Domain Plan (refer to the submitted Design Report prepared by Tzannes). New elements are below the sun access plane to Chippendale Green and are designed to ensure no additional overshadowing is created to public spaces.

The placement and form and materiality of new elements ensure there is minimal impact to the view of the heritage building from Chippendale Green, yet they are clearly distinguishable as new additions from Brewery Yard. The proposal has been developed in accordance with the recommendations of Urbis heritage architects and has included retaining or reconstructing items of heritage significance. The education use is appropriate to the heritage building and contributes to the vibrant mixed use community in accordance with the Concept Plan.

The Concept Plan requires that street activation is maximised through casual surveillance, street frontages and minimal driveways. The proposed development includes multiple access path accessed directly off pedestrian footpaths providing passive surveillance and activation at street level. Ground floor frontages are sensitively integrated into the heritage fabric, which together with a fully operable facade to the north, create a permeable ground plane and enrich the street character. The entrance to the university is located in Brewery Yard, which activates the public space. No car parking is provided on the site and service access is limited to the south west corner of the site in order to maximise active frontages.

The proposed building exceeds the GFA for block 4B in the Concept Plan. However, the additional GFA does not negatively impact solar access to public open spaces, or detract from the heritage aesthetic of the brewery buildings. The Concept Plan allows a maximum GFA of 3,898sqm for block 4B. The proposed development has a GFA of 6386sqm. The additional GFA is provided by new floor levels within the existing envelope and the roof extension.

3.4. SITE LANDSCAPING

A brick paved forecourt is proposed to provide breakout opportunities for the new upgraded Brewery Building. This Significant Development Application (SSDA) will also include a renewed through site link, connecting from the forecourt to the southern open space. The new publicly accessible forecourt and through site link will be characterised by active building frontages, deciduous trees, planting features and a detailed brick paving palette.

The proposed design includes a simplified palette that stitch together the historic character of the building and hint of modernity reflected throughout the site. The proposed herringbone pattern stitch into the key bustling Kensington Street. Steel planters emphasises the industrial character of the Brewery building while connecting with the neighbouring public forecourt between DUO and The Steps

Deciduous trees are proposed within key planters to the centre of the forecourt, west of the building. To complement the trees and the site wide character, lush vibrant coloured under storey species were proposed.

4. HISTORY

This section of the report reviews existing documentation (such as the Conservation Management Plans prepared in 1991 and 2005) for the Irving Street Brewery Precinct, and summarises the historical background to the development of the precinct. Further research has been undertaken at the Noel Butlin and Powerhouse Museum archives.

4.1. EARLY OWNERSHIP AND DEVELOPMENT OF THE AREA

The subject site was part of a grant of land to Felix Wilson in 1841, part of the Military Gardens Subdivision.¹ The Military Garden had been set up in Parramatta Street, the major route to Parramatta, in the early years of the Colony, to enable military officers to supplement their rations by growing vegetables and keeping livestock.² The Gardens were subdivided in the 1830s into five large lots, which were soon further subdivided into residential lots.

Nearby, the western part of Major George Druitt's land grant was purchased in 1834 by John Tooth and his brother-in-law Charles Newnham, who established the Kent Brewery on it during the following year.

The Military Garden Subdivision was developed with a mix of working class housing, shops and small industries, and by the mid-19th century was considered a slum.³ Various Council enquiries led to the demolition of the cottages in Linden Lane during the 1870s. The Kent Brewery gradually expanded its operations by acquiring several adjacent sites and demolishing the houses. By 1900 its site had grown to more than 6 acres (2.4 hectares).⁴

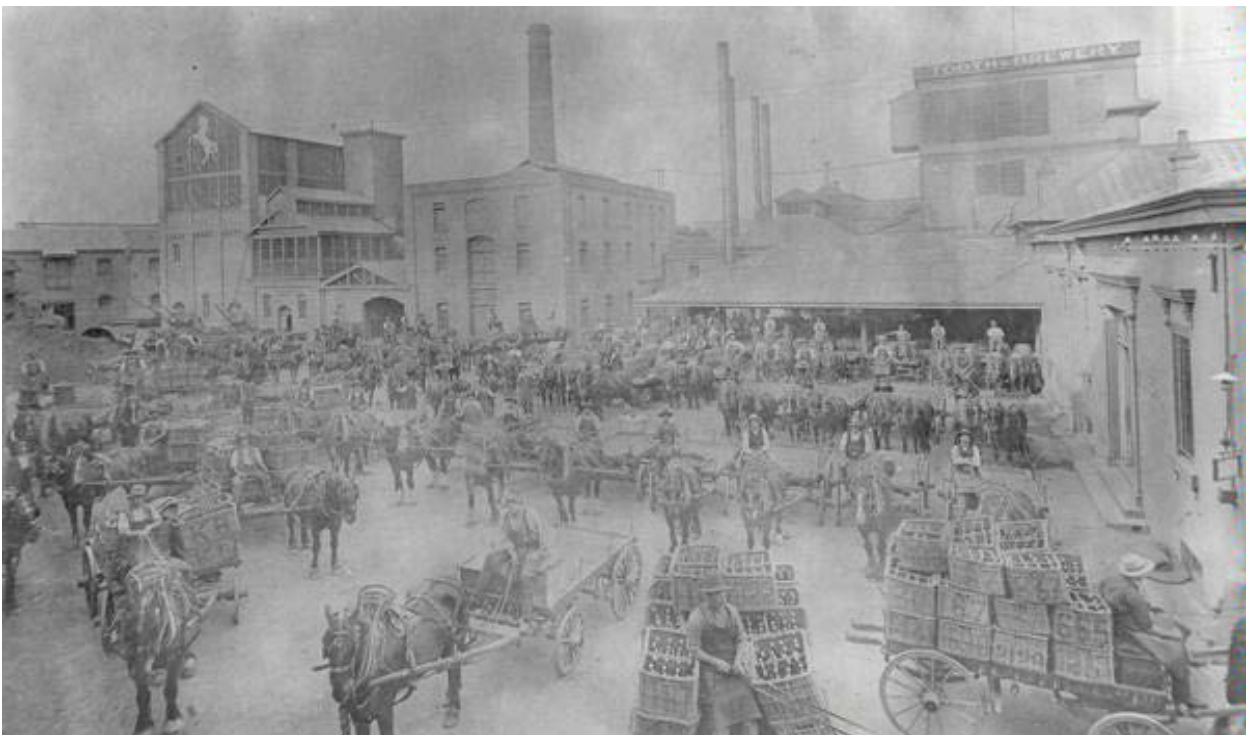


Figure 25 - Kent Brewery in the late 1800s

Source: *The Australian National University*, 46130

¹ Noel Bell Ridley Smith & Partners Pty Ltd (NBRS), *Conservation Management Plan, Volume 4 Part 5 – Inventory Sheets, Carlton Street Precinct*, May 2005, Summary p1, Inventory Sheet No 48, p3, Inventory Sheet No 46, p1.

² Godden Mackay Logan, *Former Carlton and United Brewery Site, Broadway, Heritage Impact Statement*, October 2006, p15.

³ Godden Mackay Logan, p16.

⁴ Godden Mackay Logan, p18.

The greatest expansion of the brewery occurred during the early 20th century, particularly after the Council resumptions of slum areas. Houses on the western side of Kensington Street and the northern side of Wellington Street were purchased and demolished. In 1912 the Irving Street Brewery was constructed, covering the land between Carlton and Balfour Streets.

In 1926 notice was given that properties along Parramatta Street (by then known as George Street West) were to be resumed by Sydney Municipal Council for the widening of the road. The widened road was renamed Broadway in 1933. Tooth and Company purchased the residual land on the new Broadway frontage.⁵

By the 1950s the brewery site had expanded from Carlton Street to Abercrombie Street. After the Adelaide Steamship Company took over Tooth and Company, the brewery site was sold to Carlton and United Breweries (CUB) in 1983. Diversified brewing operations continued on the site, and further property purchases were made to gradually expand the land holdings. At the time of the proposed sale of the site to Australand in 2003, the holding had grown to almost 6 hectares, and included hotels in Broadway, disused factories in O'Connor Street, and rows of terrace houses in Kensington Street and Abercrombie Street.⁶

The Kent Brewery ceased operations in 2005 but the sale of assets to Australand did not proceed. The current owners, Frasers Broadway Pty Ltd, purchased the land holdings in 2007.

4.2. DEVELOPMENT OF THE IRVING STREET BREWERY PRECINCT

The Irving Street Brewery Precinct is bounded by Balfour Street, Carlton Street, Irving Street and Broadway. After the subdivision of the Military Gardens, the area was developed with shops and hotels in Parramatta Street and rows of terrace housing in the side streets (Figure 26 and Figure 27).

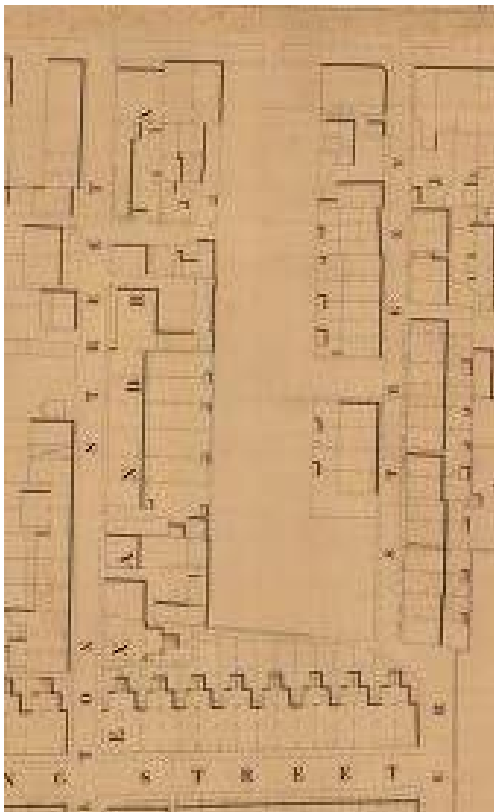


Figure 26 - Survey showing area of Irving Street Brewery Precinct, 1886

Source: The area bounded by George Street West (top), Irving Street (bottom), Carlton Street (left) and Balfour Street (right) was developed with a mix of building types, including a row of terraces in Irving Street; [Source: Metropolitan Detail Series, Mitchell Library, Sheet F2]

⁵ Department of Lands (2008B), Land & Property Information Book 1290 No 733.

⁶ Godden Mackay Logan, p20.



Figure 27 - Row of Terraces in Irving Street, 1908

Source: *The row of terrace houses in Irving Street. Carlton Street is on the left;* [Source: City of Sydney Archives, NSCA CRS 51/242]

In 1908 the Tooths Board approved the preparation of plans for a new bottled beer brewery, following a report by Arthur Tooth. The land to the north of Irving Street was acquired by the brewery for the expansion of their operations to cope with the increasing demand for Australian beer. The terraces and other buildings were demolished. The following year construction of the new brewery commenced. However a coal strike intervened, so bricks were difficult to obtain, and the buildings were not completed until 1912. This complex was known as the Irving Street Brewery, and was separated from the Kent Brewery by the reconfigured Balfour Street.⁷

4.3. IRVING STREET BREWERY BUILDINGS

The Irving Street Brewery was designed by the architectural firm of Halligan & Wilton, in a deviation from the brewery's long term use of architects Spain and Cosh.⁸ The builders were Moodie Brothers and the Monier System reinforced floors were built separately by Gummow Forest and Co.⁹

Most of the functional areas were housing in separate buildings, and the repetition of detailing and style on the various buildings provided a unified architectural whole, unlike the varied styles in the Kent Brewery. The materials and opening proportions were also consistent between the different buildings. The brewing tower was integrated into the design of the Irving Street Brewery, unlike in the original Kent Brewery where the structure was purely a tower to contain the brewing plant.

The new buildings had a clearly expressed base level and an emphasised main entrance in Irving Street. The windows were ordered into vertical panels in a recurrent rhythm around all facades and the building is clearly finished at the top.

⁷ Tooth & Co Ltd, *Over a Century of Brewing Tradition*, 1953, p27.

⁸ Planning Workshop, *Kent Brewery Conservation Plan*, 1991, p49, referencing ANU ABL N20/1085.

⁹ Planning Workshop, p163.



Figure 28 - Portion of March 1921 block plan by Brewery
Source: Courtesy of Powerhouse Museum



Figure 29 - Portion of 1927 Fire Underwriters Association of NSW site plan dated 27-06-27
Source: Courtesy of Powerhouse Museum

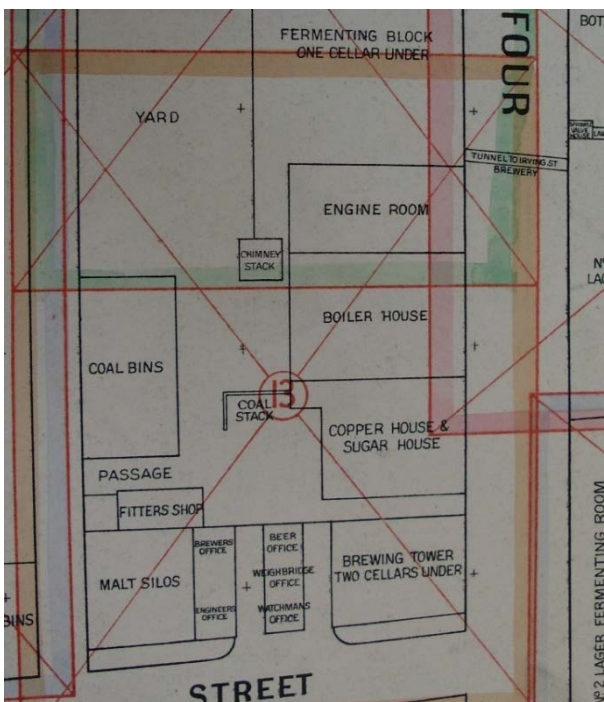


Figure 30 - Portion of 1930 block plan by Brewery
Source: Courtesy of Powerhouse Museum

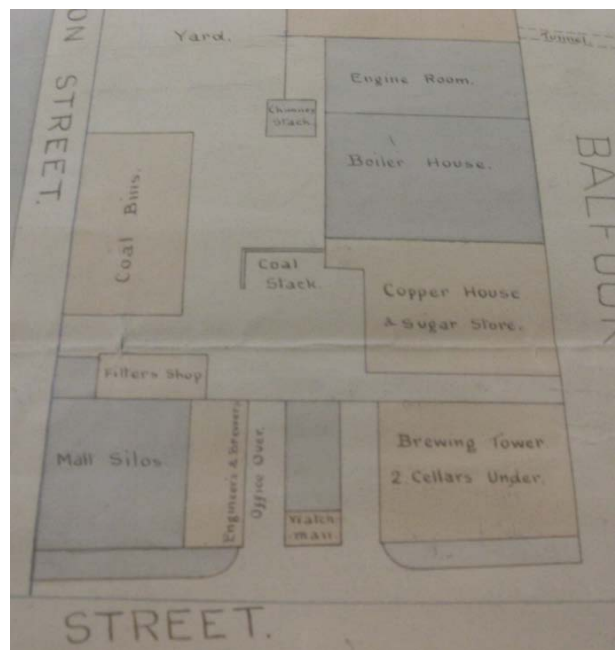


Figure 31 - Portion of 1930 block plan by Office of the Engineer in Chief, Kent Brewery, Plan No. K2 dated 22-05-30
Source: Courtesy of Powerhouse Museum

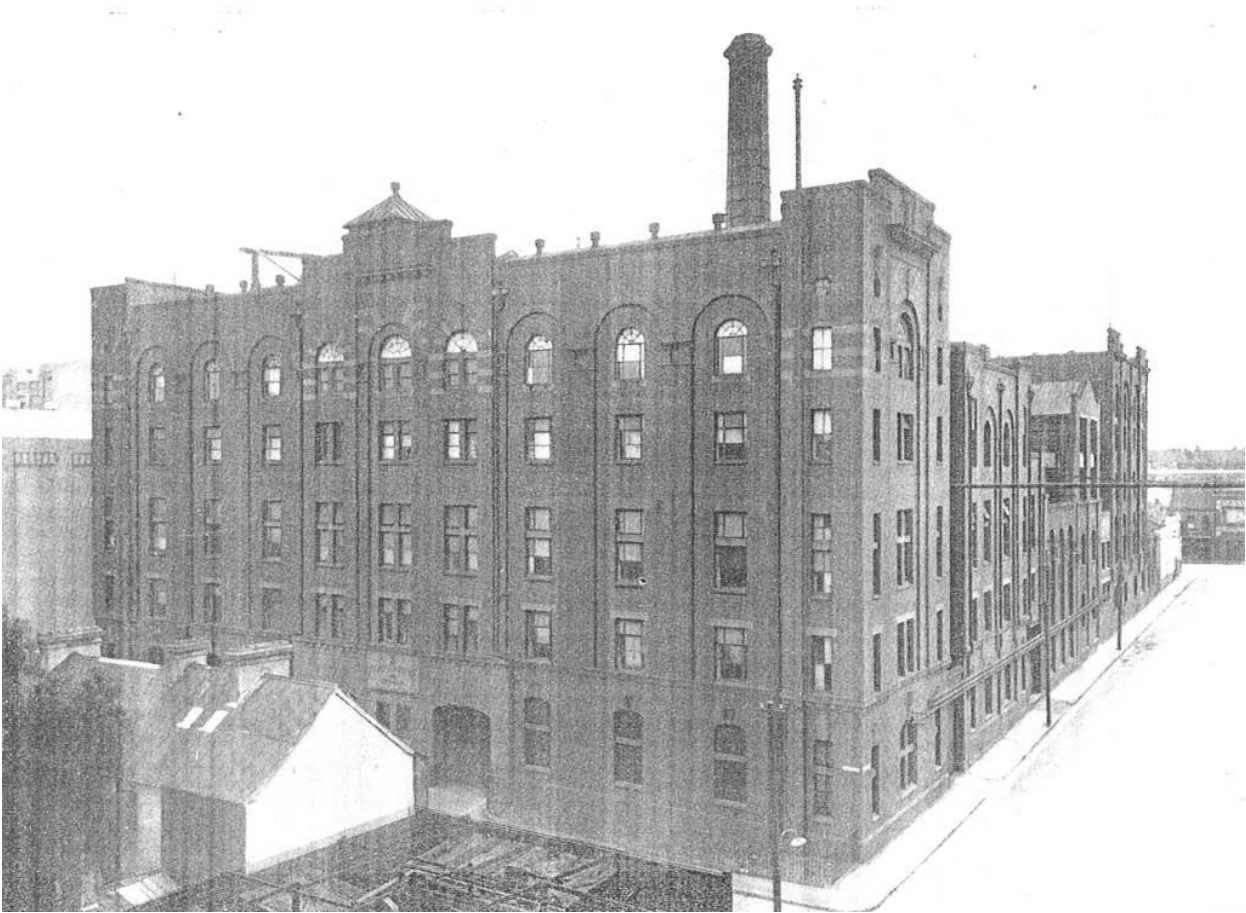


Figure 32 - Irving Street Brewery, 1935

Source: *Tooth & Co Ltd 1935:92*

In 1939 the Irving Street Brewery was upgraded and beer production on the site doubled. Sheaf Stout was brewed, as well as ales. The Fermenting and Skimming Block was extended west to Carlton Street with the addition of a Skimming, Racking, Washing and Chilling Building. Unlike the later buildings in the precinct, this addition was designed to fit in with the original architectural style of the brewery.¹⁰ The architects were Copeman Lemont and Keesing.¹¹

Minor alterations were carried out by architects Lemont Niblett and Daubney in 1959, including alterations to the yard, bar and gatekeeper's office.¹² Modification undertaken in the late 1960s included major building refitting and plant alterations.

¹⁰ This building is outside the subject area.

¹¹ Planning Workshop, p165.

¹² Planning Workshop, p167.

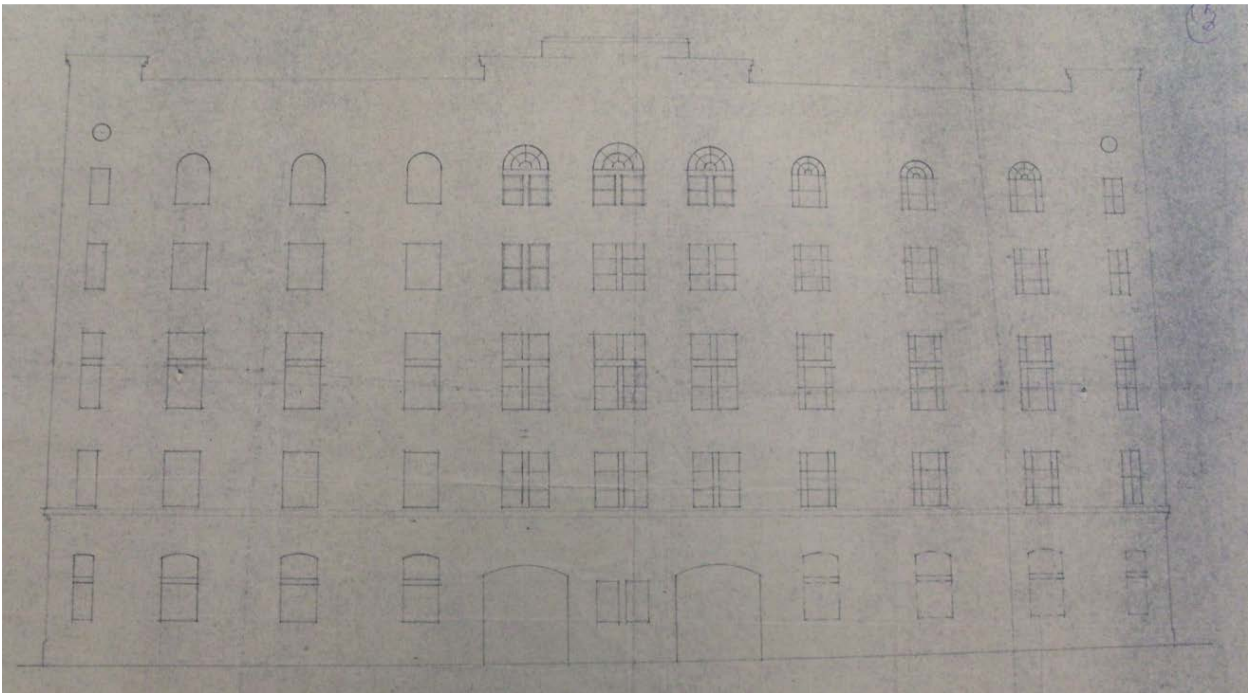


Figure 33 - Elevation drawings showing windows of Irving Street Brewery buildings: South façade of buildings 22 and 23 by the Department of Building Materials, Drawing No. M24708 dated 28-04-50

Source: Courtesy of the Powerhouse Museum archives collection

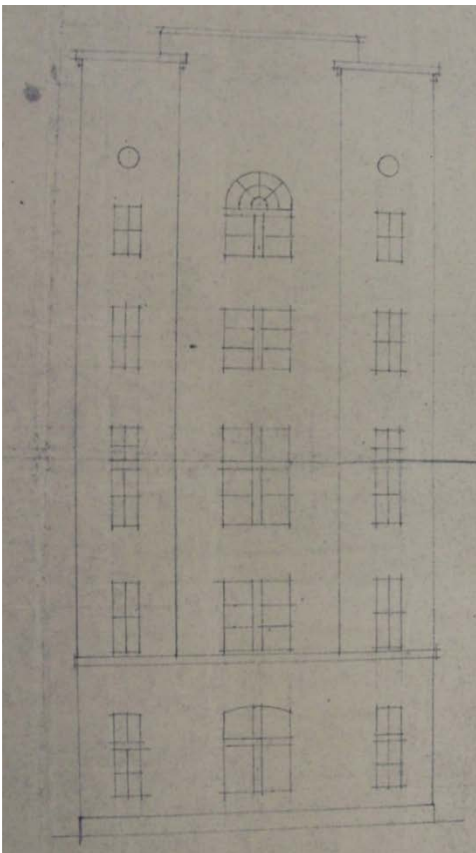


Figure 34 - Elevation drawings showing windows of Irving Street Brewery buildings: East façade of building 22 by the Department of Building Materials, Drawing No. M24708 dated 28-04-50

Source: Courtesy of the Powerhouse Museum archives collection

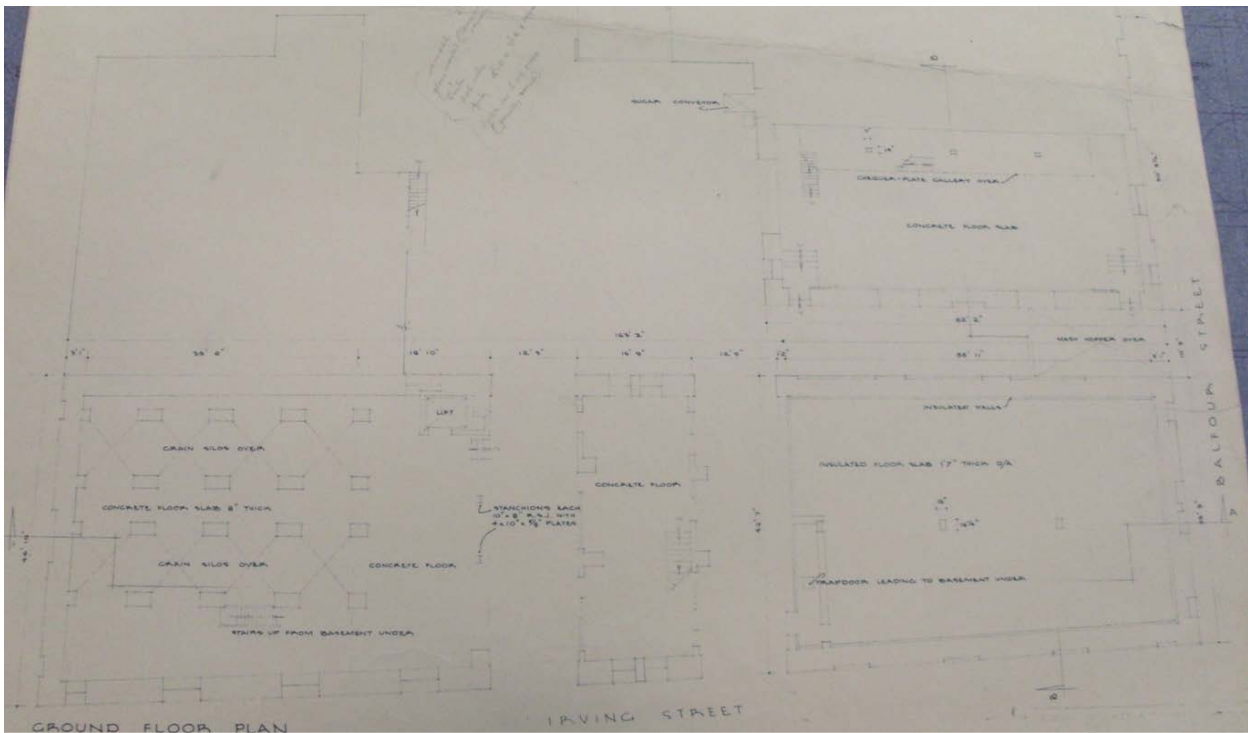


Figure 35 - Plan drawings showing windows of Irving Street Brewery buildings: Ground floor plan by Lemont Niblett and Daubney, Drawing No. 4E-852A dated 27-07-54

Source: Courtesy of the Powerhouse Museum archives collection

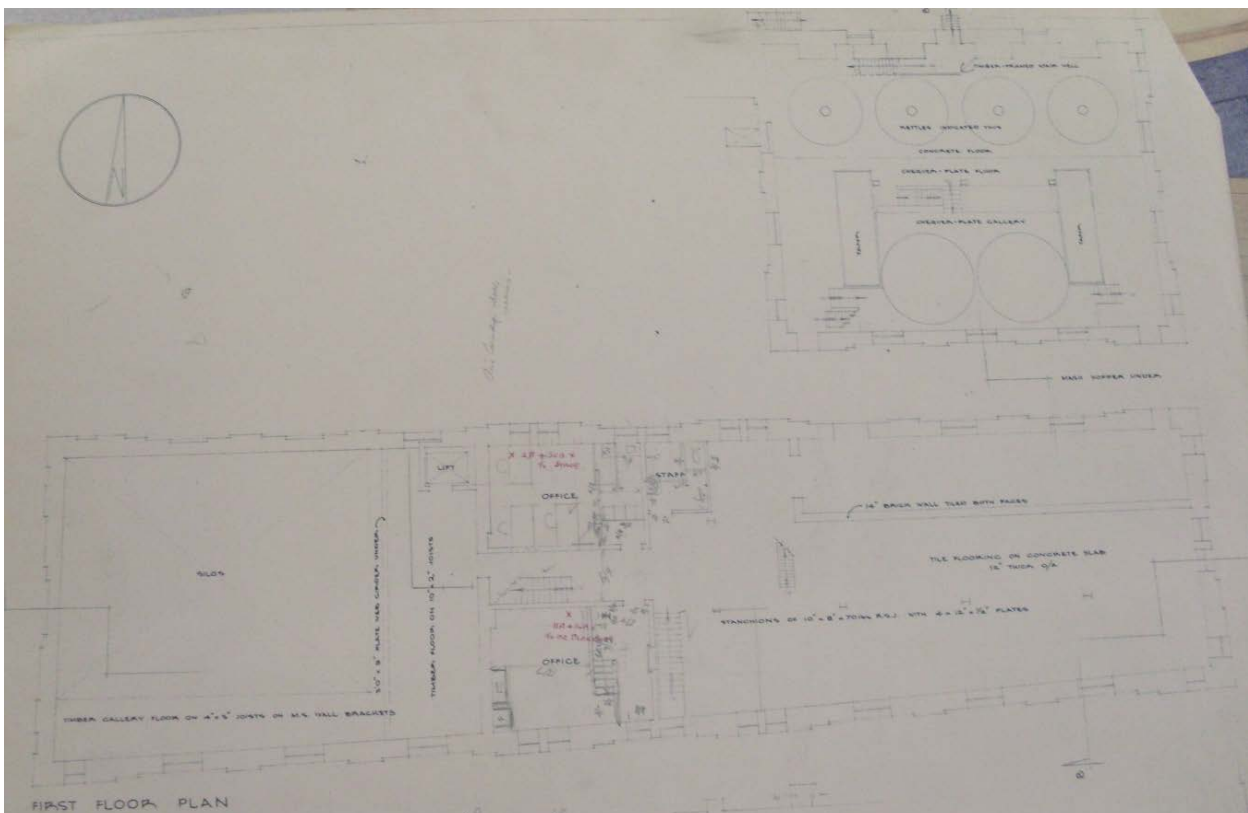


Figure 36 - Plan drawings showing windows of Irving Street Brewery buildings: First floor plan by Lemont Niblett and Daubney, Drawing No. 4E-852A dated 27-07-54

Source: Courtesy of the Powerhouse Museum archives collection

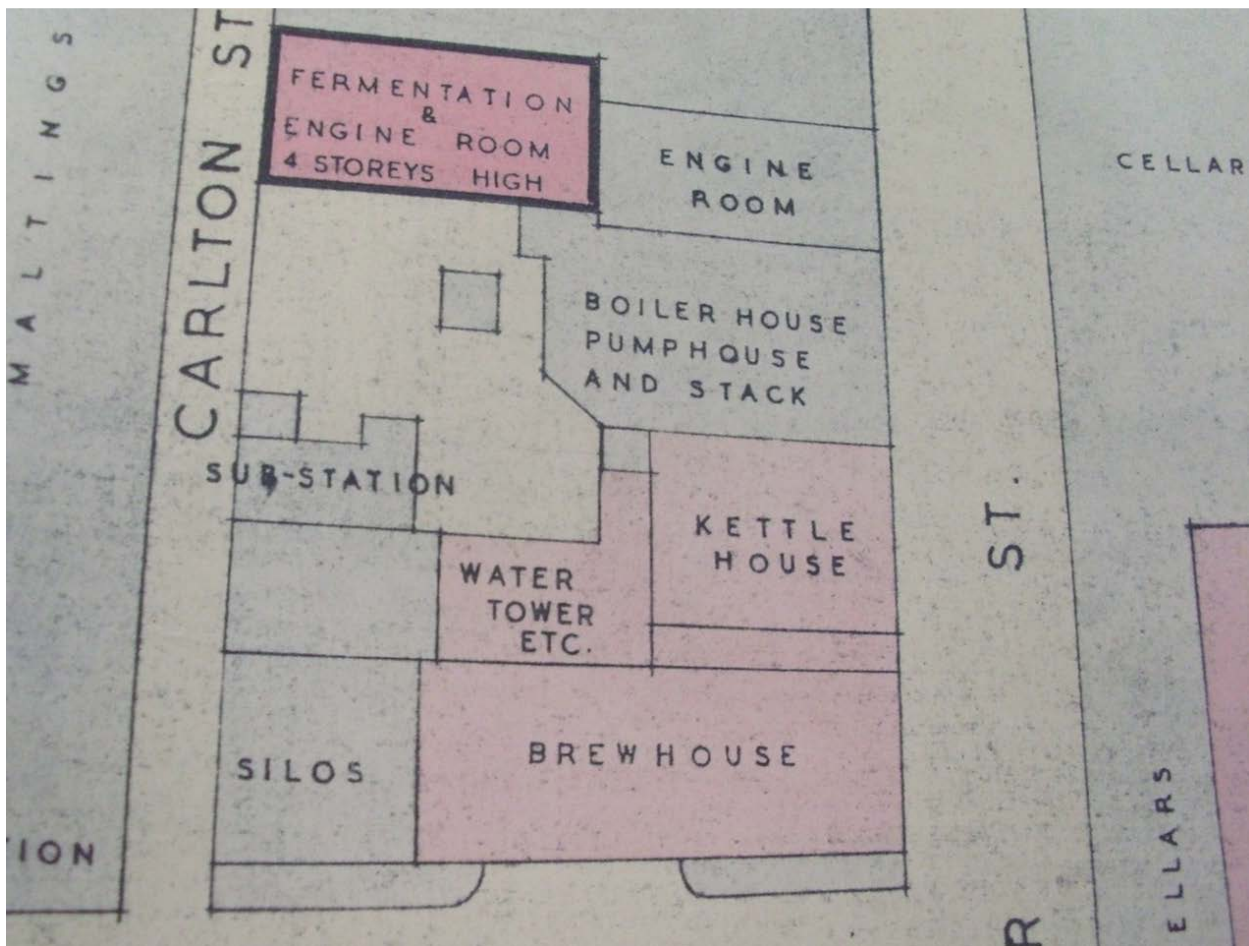


Figure 37 - Section of block plan showing Irving Street Brewery Buildings by Lemont Niblett and Daubney, Drawing No. 798, MA9691 dated 31-03-55

Source: Courtesy of the Powerhouse Museum archives collection

Major changes, including the gutting of some earlier buildings and the addition of new buildings, occurred during the early 1980s. At that time the two breweries, the original Kent Brewery and the Irving Street Brewery, were completely integrated. This required large amounts of automated pipework and access points to be constructed along the sides of the buildings and between the sites. The brewing tanks were replaced, the brewing and packaging processes had been automated and a sophisticated system of loading and unloading was in place.¹³

By the 1980s the Irving Street Brewery provided the following functions: filtration (22), bright beer storage (35A), refrigeration (35B) and carbon dioxide plants (35D), machine maintenance workshop and laboratories (35C). The boiler house was decommissioned and the power plant was replaced by an electrical substation in Building 26.

¹³ Susan O'Flahertie, *Kent Brewery: The Last Shift*, p26.

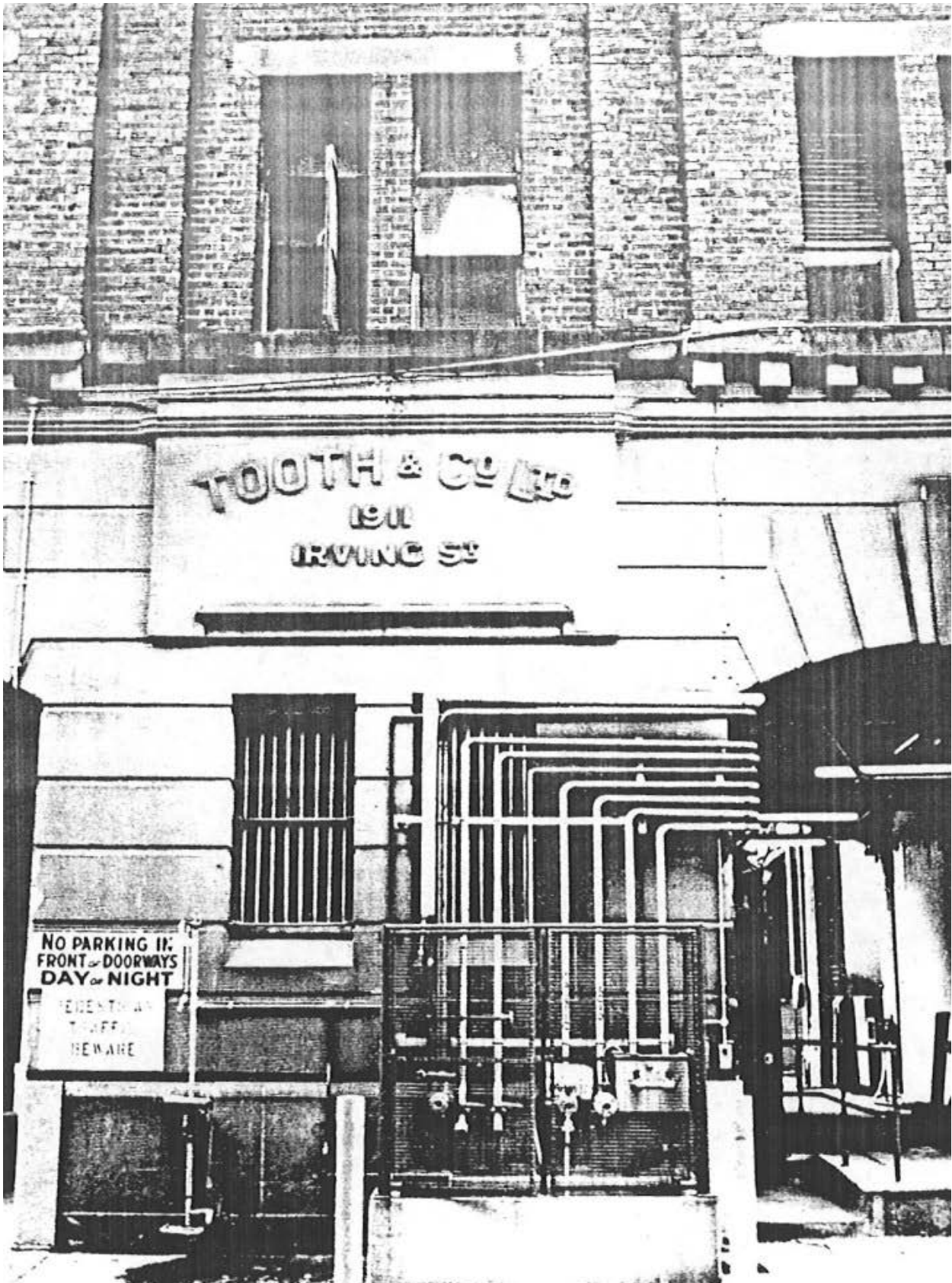


Figure 38 - Irving Street entrance to Brewery, 1991. An example of the pipework which was added to the exterior elevations.

Source: *Planning Workshop*, p170

From 2003, when it was announced that the brewery would close, tanks and equipment were gradually decommissioned and transported to the Yatala Brewery in Queensland. The brewery closed in 2005.

Despite the ongoing upgrades and additions, the exterior fabric of the original buildings is relatively intact, however nearly all of the internal machinery and fittings have been removed. Externally, most of the later additions (such as pipework) have been removed from the original buildings, while the newer buildings have recently been demolished (mid 2008).

4.4. MALT SILOS (23)

This is the only building in the complex which retained its original function until the closure of the brewery in 2005. The malt stores at the Kent Street Brewery contained bins and silos with a total capacity of 114,000 bushels (4 megalitres). The supplementary Irving Street Brewery Silos had a capacity of around 2.3 megalitres.¹⁴

The malt was the end product of the Maltings (Asset Nos 33 and 34, now demolished), where barley was cleaned and steeped in water to start germination then held for several days. At the end of the germinating process it was dried, with different drying temperatures being used to produce different types of malt. After drying, the malt was transferred to the silos ready for the Brew House (also known as the Brewing Tower).

On the eastern side of the Malt Silos were the Engineer's Office and the Brewer's Office, accessed via the entry from Irving Street. Between the two entrances were the Watchman's Office, the Weighbridge Office and the Beer Office.

Badly rusted steel-framed windows on the Irving Street frontage were replaced by bronze sashes and frames in 1950. A pneumatic plant (designed by architects Copeman Lemont and Keesing) was added to the Silos in 1935, a lift was installed by architect Reg E Grout in 1949 and a substation (now demolished) added to the north of the building in 1953.¹⁵

Most of the original internal fabric of the Silos is intact – this includes the timber trusses and ripple iron sheet lining of the internal walls and ceiling. In 1991 the Malt Silos still contained the original timber silos and cleaning socks, chutes and valve gates, some of which dated from 1912. There were also the footings for the plumbers' blocks on the internal wall, which were probably part of the original bucket elevator. A large steel angle and plate riveted original girder spanned across the building at a high level.¹⁶

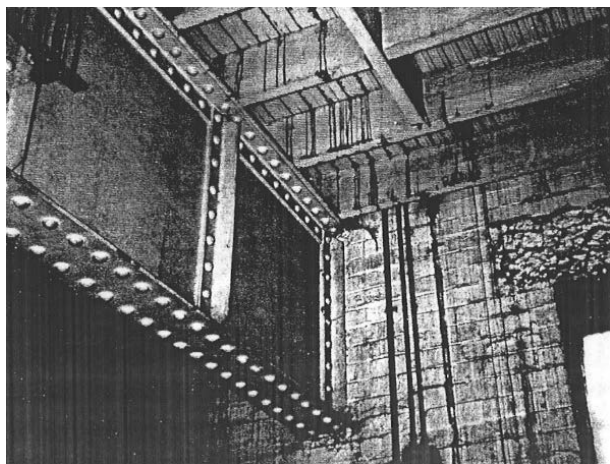


Figure 39 - Detail of riveted steel beams, timber floor structure and brickwork, 1991

Source: *Planning Workshop*, pp170-1



Figure 40 - Timber bins on the second floor, 2004

Source: Noel Bell Ridley Smith, *Inv44-22 & 23*, p9

¹⁴ Tooth & Co Ltd, 1953, p53.

¹⁵ Planning Workshop, p167.

¹⁶ Planning Workshop, p226.

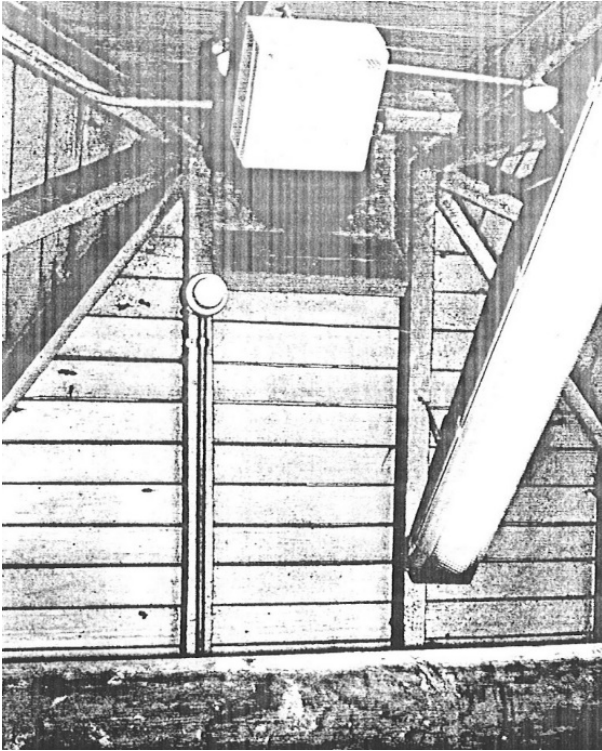


Figure 41 - Detail of roof structure and lining to turret, 1991

Source: *Planning Workshop*, pp170-1

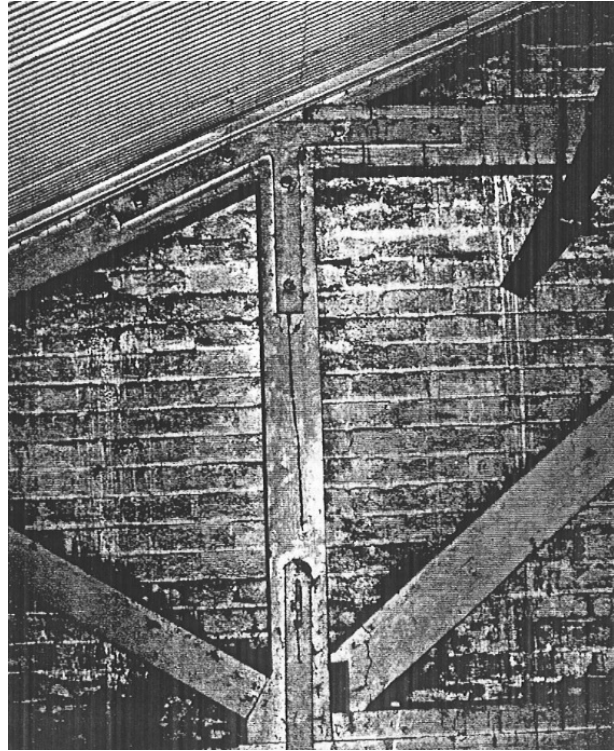


Figure 42 - Detail of roof structure & corrugated metal interior lining, 1991

Source: *Planning Workshop*, pp170-1

4.5. FILTRATION PLAN / BREW HOUSE (22)

At the top of the brewing tower, “grist” (crushed malt) cases and “hot liquor” (water) tanks contained the primary materials for the brewing process. The grist was “mashed in” with hot water then the resulting solution of sugars was separated from the grain husks in the lauter tun. The large mash-tuns were on the lower floors.¹⁷ Two cellars were located under the Brew House.

By 1976 the Brew House had ceased functioning as the new Brew House (Asset No 20 to the south) was operational. In the early 1980s the interior of the old Brew House was gutted and new concrete floors and columns were constructed. The spaces were converted to house the filtration plant (Figure 14). The external walls remained relatively intact. The works were designed by architects Peddle Thorp and Walker, and engineers Woolacott Hale Corlett and Jumikis. As part of these 1980s works, all of the original brewing machinery was removed from the building.

¹⁷ Tooth & Co Ltd, 1953, p54.

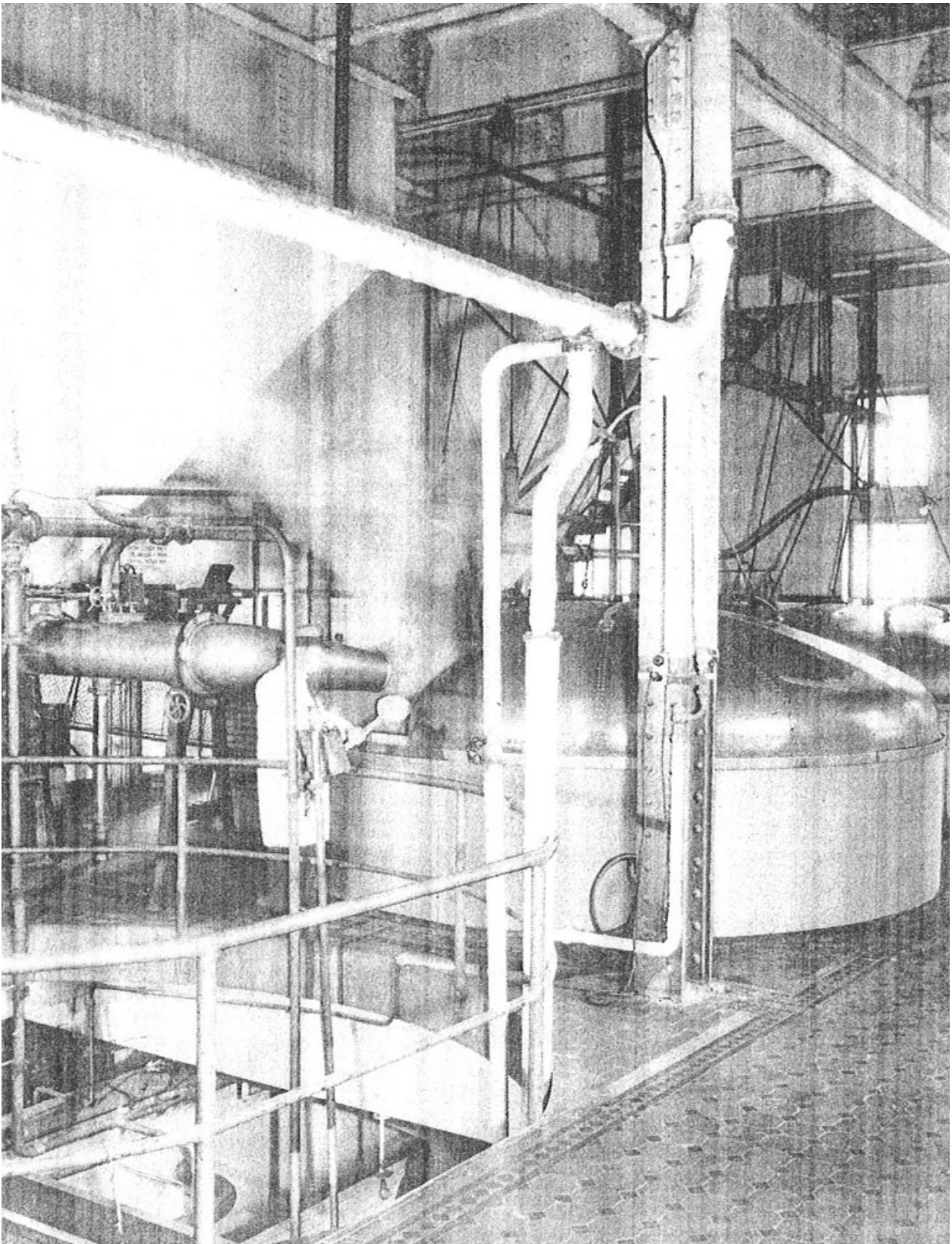


Figure 43 - Mash Tuns in Brew House (22), 1953

Source: *Tooth & Co Ltd 1953:55*



Figure 44 - Filtration Plant (22), 2004. Second floor interior showing the double height space.

Source: Noel Bell Ridley Smith, Inv44-22&23, p8

4.6. STAIRCASE BLOCK (25)

A brick and concrete stair was constructed between the old Brew House (Asset No. 22) and the old Copper and Sugar House (Asset No. 26) in the early 1980s, as part of the upgrade designed by Peddle Thorp and Walker. It provides access to the Substation (Asset No. 26) and an additional access point to the Filtration Building (Asset No 22). The reinforced concrete slabs intrude into the original face brickwork of the adjacent buildings, and original openings have been filled.

4.7. GAS RECEIVING STATION / COPPER HOUSE AND SUGAR HOUSE (26)

The second stage of the brewing process was boiling, during which the hops were added. The building contained large boiling vessels known as coppers or kettles.¹⁸ There was also a Sugar Store on the ground floor.

¹⁸ Tooth & Co Ltd, 1953, p54.

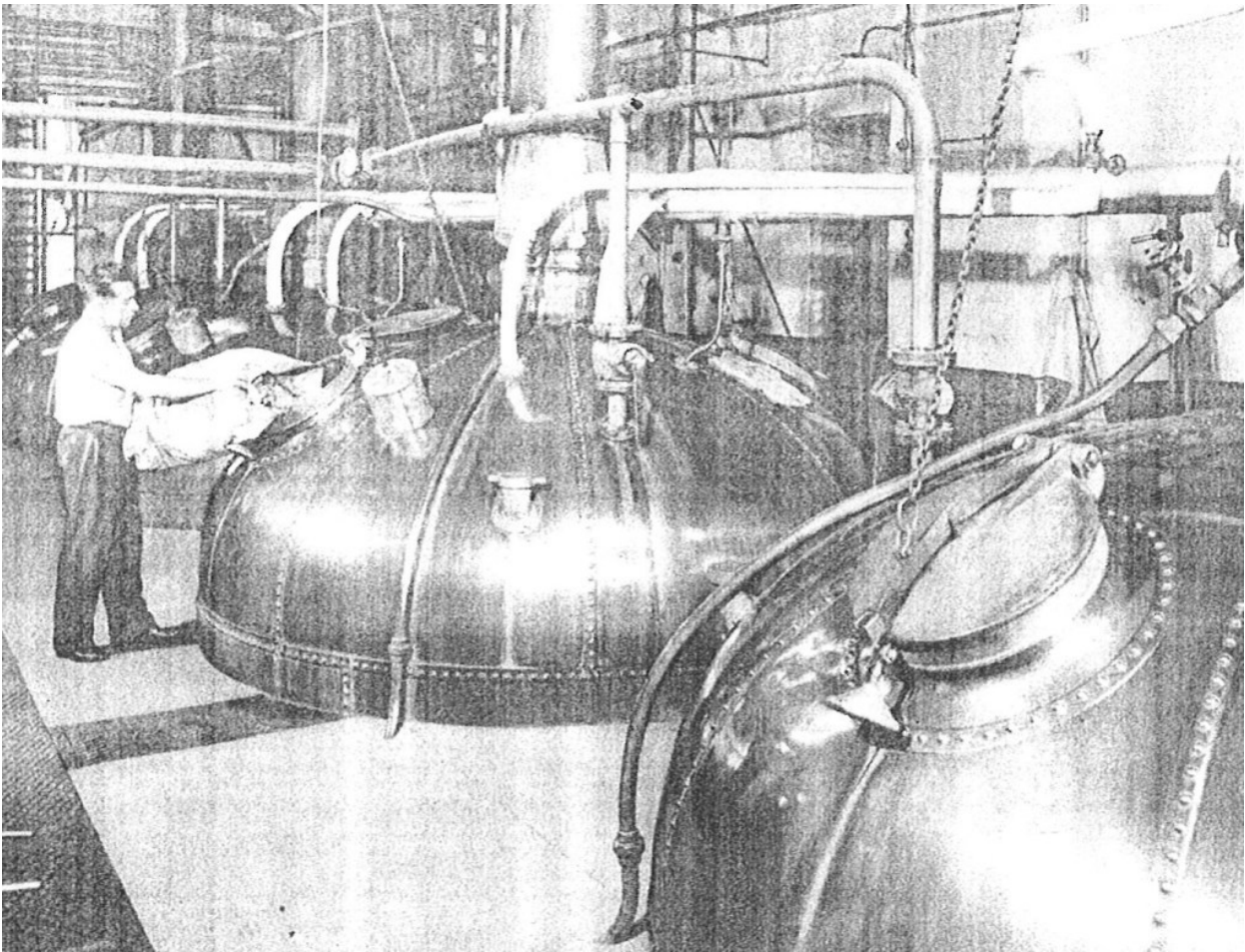


Figure 45 - Kettles in the Copper House

Source: Tooth & Co Ltd 1953:54

In the early 1950s, the Balfour Street openings were enlarged, and concrete lintels installed, to create bunker access through the Sugar Store to the yard.¹⁹ Similar access openings were created in the yard elevation. In addition, some of the upper level windows were blocked or bricked up, and one was enlarged with non-matching brickwork. The architect was Reg E Grout.

More recently the interior was gutted to create a space for an electricity Substation, vacuum filters, offices and other equipment. New reinforced concrete floors and columns were installed and openings on the southern facade were bricked up. When the steam raising operation (Asset No. 30) was converted from coal to gas in 1989, the gas was piped to a tank installed on the top of this building.

4.8. OLD BOILER HOUSE (30)

The boilers created steam for the brewing process and for the generation of electricity. Around 1950 the Boiler House was substantially altered when it was converted to use coal. Designed by architect Reg E Grout, the changes involved placing a coal bunker (a sheet metal shed) on the top of the building, adding inverted pyramid-shaped coal hoppers and raising the level of the adjacent roof. Concrete-framed additions obscured the yard façade on the first floor level. The steam raising function was converted from coal to gas in 1989 as part of the construction of a new Boiler House (31), and the boilers were removed from the old Boiler House.²⁰ Subsequently, electricity was provided via a Substation in the old Copper and Sugar House (26).

¹⁹ Planning Workshop, p168.

²⁰ O'Flahertie, p33.

4.9. CHIMNEY STACK (36)

Located in the centre of the brewery complex, the octagonal, brick chimney was part of the 1912 constructions, and served the Old Boiler House (30). Around 1990 it was re-strapped vertically on each corner and horizontally throughout its height.²¹

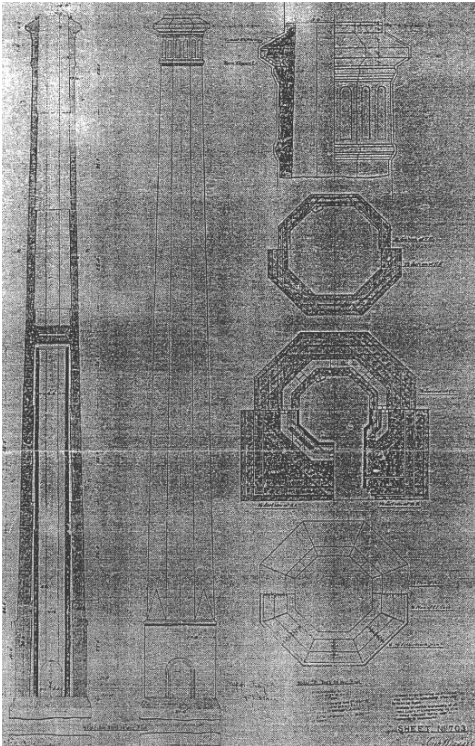


Figure 46 - Chimney Stack (36), original plans and Brewery in 1930s

Source: Noel Bell Ridley Smith and Partners
2005:V4P4:INV40-36, p.25

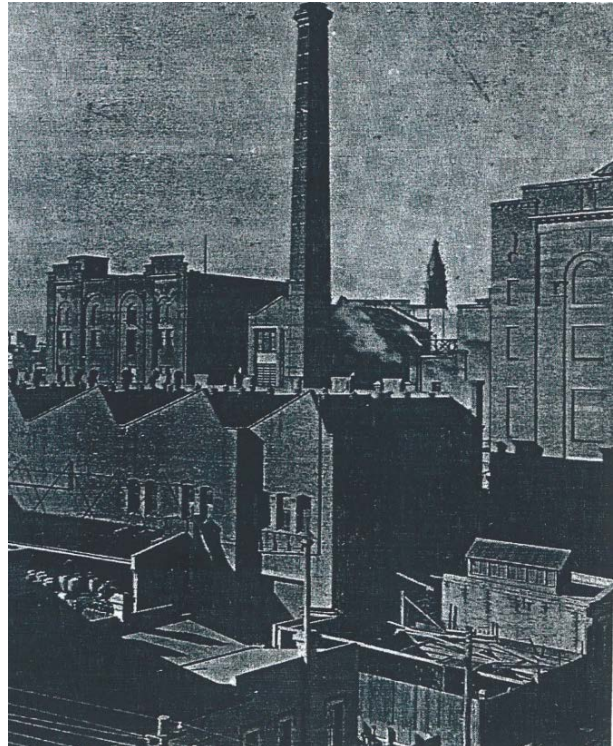


Figure 47 - Brewery buildings and chimney stack in 1930s

Source: Noel Bell Ridley Smith and Partners
2005:V4P4:INV40-36, p.26

4.10. BREWERY YARD (52)

In the design of the Irving Street Brewery complex, architectural detailing was at least as important as the brewing technology in developing the form of the buildings. This resulted in impressive elevations not only to the streets, but also in the working yard.

The yard is paved in concrete and most of the late 20th century structures within the yard have been removed. While the boilers were fuelled by coal, there was a Coal Stack adjacent to the Chimney Stack.

4.11. GRAIN HOPPER (24) AND NEW BOILER HOUSE (31)

The grain hopper has been demolished, which was located on the northern façade of building 23. It was a double height metal shelter with roller shutters on two opposite faces, allowing grain trucks to drive through. The trucks unloaded malted barley, by tipping it into a floor grating leading to the basement of the Malt Silos. Adjacent to the hopper was a Fitters Shop and later a Substation, the outline of which is still visible on the northern façade of the Malt Silos building (23).

The New Boiler House (31), constructed in the 1980s, has been demolished. It was on the site of the Coal Bins which supplied coal to the Old Boiler House.

²¹ Planning Workshop, p165.

5. ARCHAEOLOGICAL ASSESSMENT

In 2006 GML Heritage was commissioned by Carlton and United Breweries (NSW) Pty Ltd to prepare an Archaeological Assessment and Research Design (AARD) for the former Carlton and United Brewery site, Broadway, Chippendale. The report was written to accompany a submission of a 'concept plan' to the Minister for Planning pursuant to section 75M of the Environmental Planning and Assessment Act 1979 (the 'EP&A Act'). The Concept Plan proposed the redevelopment of the former Carlton and United Brewery (CUB) site and adjacent land holdings. Stakeholders from local and state government, cultural and community industries, and the local community were consulted, and their respective submissions were taken into consideration in the determination of the Concept Plan.

The AARD report assessed the archaeological potential and significance of the land within the site and statutory requirements. The report also set the framework for archaeological investigations and management to be undertaken in conjunction with the bulk excavation and redevelopment of the whole of the former CUB site. With regard to the Irving Street Brewery Precinct, the report recommended management to mitigate potential impacts of the bulk earthworks. Testing was only required on the far northern side of the precinct (on the Broadway frontage) as specific potential had been identified in this area. Archaeological monitoring was recommended in conjunction with demolition of associated brewery buildings to the north of the subject site and within the brewery yard. The objective of this monitoring program was to determine the nature and extent of any archaeological remains in these areas and whether further investigation was warranted.

Archaeological monitoring was also noted as being potentially required periodically throughout the bulk excavation program, in order to determine whether evidence associated with the paleo-environment or Aboriginal occupation of the area may survive in this area.

Following the 2006 assessment and in conjunction with the staged development of the site, extensive excavation/ investigation has been undertaken at the former Carlton United Brewery site including within the subject brewery yard. The following summarises the findings of the previous assessments and details relevant excavation/ works to date. Relevant assessments and reports are referenced below.

5.1. HISTORICAL PHASING

The Archaeological Assessment broadly summarised the history of the site into the following phasing sequence:

- Phase 1—Geology and Pre-European Environment.
- Phase 2—Aboriginal Occupation (c5000 BP—c1788).
- Phase 3—Early European Settlement: Military Gardens, Wayside Inns and Rural Activities (1788—c1834).
- Phase 4—Kent Brewery and Early Subdivisions (1834—c1845).
- Phase 5—Nineteenth Century Urban Settlement and Brewery Expansion (c1845—1900).
- Phase 6—Resumptions, Redevelopment and Expansion (1900—1955).
- Phase 7—1955 Masterplan, Redevelopment and Expansion (1955—2004). For the purposes of this summary assessment, this report extends this phase from 1955-2018 to encompass the more recent site works and development.

These phases correspond to historical information provided in section 4 of this report. The discussion of archaeological potential summarised below, relates to specific evidence to these phases.

5.2. AREAS OF DISTURBANCE

The former Brewery site has been subject to extensive development throughout its history, including periods of major redevelopment in the late twentieth century and since 2005 for the redevelopment in accordance with the SSDA. The entire site area either contains built elements or hard surfaces—no undeveloped areas remain, with extensive surface modification (including the introduction of fill deposits to create level yard and building areas) and grading/excavation works associated with various phases of redevelopment and upgrade of the site.

Development of the site throughout its history has also included the construction of various subsurface elements, including cellars/basements, building foundations (particularly for larger built elements, including chimneys and towers) and service infrastructure (including pipes, drains, channels, tanks/cisterns, tunnels, wells and privies). These underground features are associated with both former and existing site features (indeed some of them represent archaeological features themselves). In more recent years, the site has also been extensively and variously excavated with new basements provided in conjunction with the Central Park redevelopment.

As such, the 2006 GML AARD assessed the entire CUB site as having been subject to at least minor disturbance which would have affected the potential for the site to contain archaeological evidence associated with previous phases of development and occupation (including Aboriginal and historical archaeological remains and paleo-environmental evidence).

Areas where major disturbance was known to have occurred (eg where basements exist or where underground tanks have been installed) have been assessed as having no archaeological potential (except where built elements or other features may themselves represent an archaeological resource). Areas where major subsurface elements have been installed or constructed (including built elements and other infrastructure) but where the extent of disturbance has not been confirmed or where bulk removal may not have occurred, eg substantial building foundations or major services were assessed as having low potential.

The subject Brewery buildings are located within the Irving Street Brewery Buildings, and were assessed as being in an area of major disturbance.

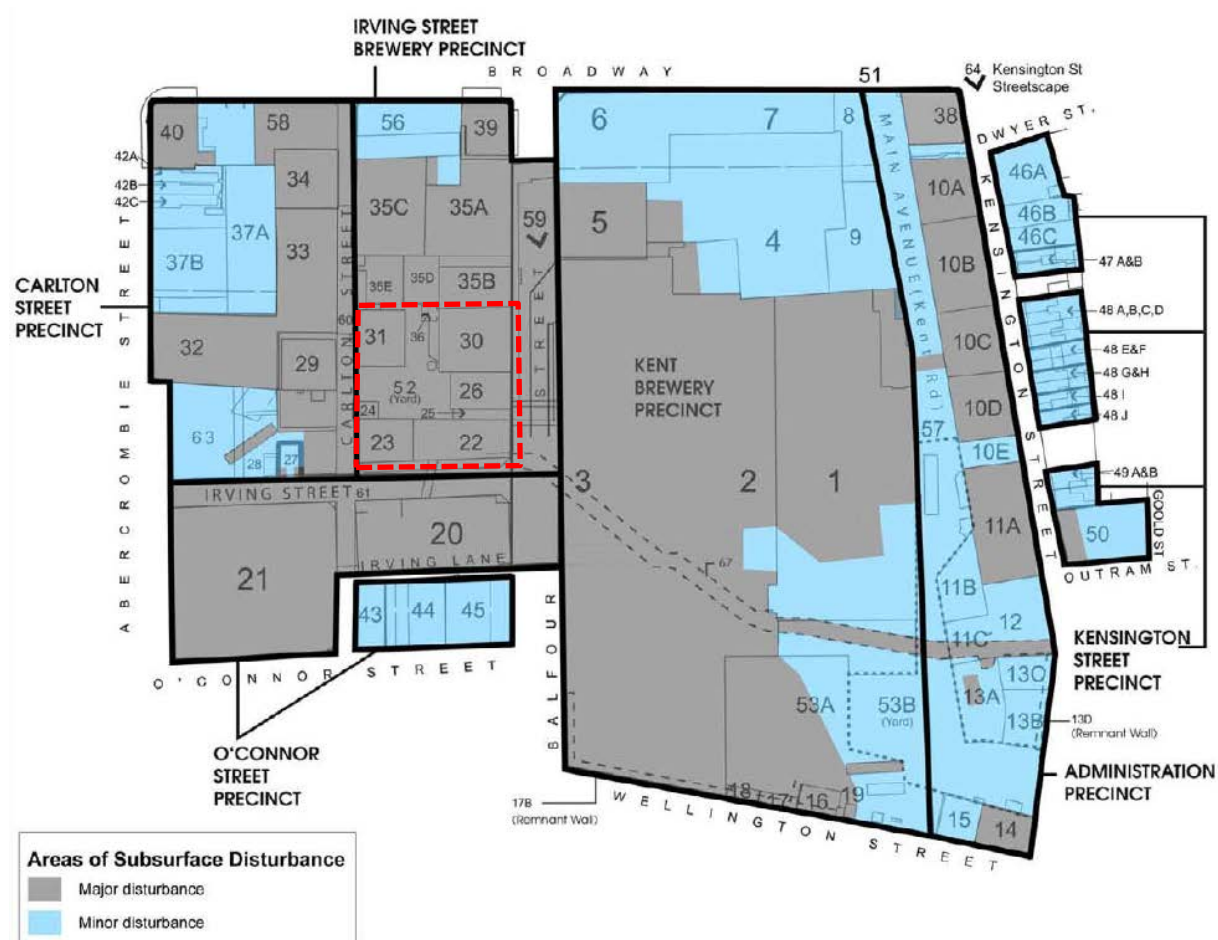


Figure 48 - Areas of Archaeological disturbance (location of the Brewery Buildings for this report shown outlined in red)

Source: GML 2006B:53 (Figure 3.1)

5.3. ABORIGINAL ARCHAEOLOGICAL ASSESSMENT AND POTENTIAL

The following is summarised from the 2006 GML AARD.²²

The CUB site forms the central section of the eastern arm of the extensive Blackwattle Creek catchment area. The creek flowed with fresh water and was not subject to tidal influence. The vegetation with the site would have consisted of an open dry sclerophyll forest dominated by Turpentine and Ironbark on the higher, better drained, areas. The lower wet areas along the creek and around Blackwattle Swamp would have supported wetlands.

Approximately 30 named Aboriginal groups are recorded in the historical literature to have occupied the broader Sydney region at Contact (marked by the arrival of Europeans arrived in Australia). At least two of these groups are also documented to have had a close association with the land that now comprises the Central Business District of Sydney and its immediate surrounds that includes the former CUB site.

Available historical information suggests that two Port Jackson Aboriginal clans were closely associated with the local landscape surrounding the subject site at Contact. These groups appear to have comprised the Cadigal and the Wan(n)gal. Available information suggests that the traditional Aboriginal owners of the Blackwattle landscape were alienated from their land rapidly following the establishment of the European settlement at Sydney Cove.

With the subject site positioned on the western edge of the developing town limits up until c1830, it is possible that Aboriginal visitation to the site continued well into the 'historic' period where the land was 'open space' and/or was used for activities such as market gardening/early industry; however, our understanding of post-Contact Aboriginal life on the 'fringes' of the developing township of Sydney is poor.

5.3.1. Assessment of Aboriginal Archaeological Potential

Analysis of nearby and previous site investigations, Site formation processes, conditions and ongoing pre- and post-Contact uses influenced the creation of the potential Aboriginal archaeological profile at the subject site, including the presence of the Blackwattle Creek and the broader location of the site between two principal marine and inland resource zones; namely, the estuarine and deepwater contexts of Rozelle, Blackwattle and Johnston's Bays and Darling Harbour (Cockle Bay) to the northeast, and the hinterland to the south towards Botany Bay and the Cooks Rivers that from around 1790 was referred to as 'the Kangaroo Grounds'. It appears likely that both of these resource zones would have been extensively and repeatedly exploited by Aboriginal people over time.

The 2006 AARD concluded that although there were no known Aboriginal Archaeological sites on the former CUB site, it was likely that the subject site was subject to intermittent but short-term visitation and use of the local landscape by Aboriginal people in the past that may have continued into the first decades of the post-Contact period.²³ The AARD further clarified however that it was unlikely that Aboriginal people would have established long-term occupation sites on the lower lying and poorly drained land.²⁴

The following range of Aboriginal archaeological and/or environmental evidence was assessed as having the potential to survive within the subsurface profiles on the former CUB site²⁵:

- Evidence for the pre-Contact environment in the form of creek sediments and palynological remains.
- Potential evidence for past Aboriginal visitation and use of the site in the form of flaked stone artefacts and possible midden deposits.
- Evidence for environmental impact in the form of vegetation clearance and replacement by introduced species, land degradation and pollution.

The AARD does not assess significance or potential specific to the Brewery Buildings, as these aspects of the site's significance are unrelated to the precinct boundaries.

²² GML 2006: Former Carlton and United Brewery Site, Broadway—Archaeological Assessment and Research Design, page 12

²³ Godden Mackay Logan 2006B:72

²⁴ Godden Mackay Logan 2006B:72-73

²⁵ Godden Mackay Logan 2006B:72

The 2006 AARD concluded the following²⁶:

- If present, Aboriginal archaeological evidence would likely to be buried relatively deep in subsurface profiles situated beneath nineteenth century fill deposits, overlying structures, and hard surfaces that now cover the site.
- Past Aboriginal use of the Blackwattle Creek landscape is likely to have comprised short-term visits by people travelling to and from favourable resource zones in the vicinity, and it seems unlikely that people would have as a result established long-term occupation sites on the low lying and poorly drained land in the vicinity of the former brewery site that would have resulted in the creation of substantial archaeological deposits.
- Potential evidence associated with past Aboriginal visitation and use of the subject site would likely consist of low-density distributions of flaked stone artefacts (or durable midden remains that may survive in favourable conditions) that would be encountered in relatively disturbed recovery circumstances as outlined below.
- It would appear that there is potential for the site to provide an opportunity to examine early paleo-environmental contexts (at depth) that could inform us about how Aboriginal people may have lived in the landscape prior to the stabilisation of current sea-levels during the period between 5,000 and up to 8,000 years ago
- Large areas of the subject site have minimal archaeological potential as a result of significant impacts that have occurred through multiple phases of construction that will have extensively disturbed the original topography and sub surface soil profiles across the site.
- The channel and banks of the original watercourse that traversed the site (located to the south of the subject brewery buildings in the main park area) have been extensively modified over time as the creek was progressively transformed from a free-flowing feature to a now formalised storm water drain.
- **The accumulated impacts associated with the ongoing post-Contact development and occupation of the site are therefore likely to have operated to extensively disturb and/or destroy much of the Aboriginal archaeological evidence that may have formerly been present on the site.**

It is noted that post the 2006 AARD, extensive excavation and redevelopment has been undertaken to complete the main park (to the south of the Brewery Buildings) and for the construction of the trigeneration plant beneath the brewery yard (refer to Figure 20). It is not known if any archaeological investigations were undertaken, however the 2006 AARD did not require any testing in the area of the brewery yard, rather it noted that *Archaeological monitoring may also be required periodically throughout the bulk excavation program, in order to determine whether evidence associated with the paleo-environment or Aboriginal occupation of the area may survive in this area*²⁷.

Any associated outcomes are unknown to Urbis.

5.3.2. Assessment of Aboriginal Significance

Aboriginal archaeological sites/places are commonly assessed in terms of three broad significance criteria that generally mirror the five key types of cultural heritage values identified in the Burra Charter that forms the basic framework for assessing significance by heritage authorities in New South Wales.

These three principal values consist of cultural (Aboriginal), public (educational/social) and scientific (archaeological) significance. These criteria embody the recognition that Aboriginal sites are valuable in a number of ways, and are all interrelated. Namely, that they are important to:

- the Aboriginal community (as representing tangible links to their past);
- the general public (for both their educational and broader heritage value); and
- the scientific community (for their potential research value that may ultimately lead to both the clarification and augmentation of the criteria above).

²⁶ Ibid 73-74

²⁷ GML 2006B: Page 119

Consultation undertaken with the Aboriginal community during previous archaeological investigations in the Blackwattle Creek catchment indicates that the area originally formed a small part of a far larger cultural landscape that was highly significant to the traditional Aboriginal owners of Sydney for thousands of years prior to the arrival of Europeans, and that the landscape of the region continues to be highly valued by the Aboriginal community today.

5.3.3. Summary Conclusion

Although no consultation was undertaken in conjunction with this report, it is likely that the Central Park site (inclusive of the subject Brewery site) is of some significance to the Indigenous community, noting that the former Brewery site formed a small part of a far larger cultural landscape that was highly significant to the traditional Aboriginal owners of Sydney. Potential for Aboriginal Archaeological remains are however assessed as low.

Having regard to the above assessment, it is concluded that the accumulated impacts associated with the ongoing post-Contact development and occupation of the site are likely to have extensively disturbed and/or destroyed the Aboriginal archaeological resource that may have formerly been present on the site. Aboriginal Archaeological potential is therefore assessed as low to nil.

Protections apply to Aboriginal artefacts or archaeological remains under the NPW Act 1974.

5.4. INDIGENOUS CONSULTATION

With consideration for the minor nature of proposed excavation works, being limited to:

- Further excavation in previously disturbed areas of buildings 22/23 (already comprising basements and previously assessed as having nil potential) and
- Minor and limited excavation for lifts and services.

And having regard for the identified low archaeological potential, the highly developed and disturbed nature of the site, as well as previous assessments, consultation with indigenous groups has not been undertaken at this time. Where required, it is recommended that consultation be undertaken as part of conditions of consent.

5.5. HISTORICAL ARCHAEOLOGICAL ASSESSMENT AND POTENTIAL

5.5.1. Historical Archaeological Potential

The following is a summary of the archaeological potential of the entire Brewery Buildings Precinct identified in GML's Archaeological Assessment (2006):²⁸

The Irving Street Brewery was built in 1912 in response to the growing demand for bottled beer. This precinct is situated partly on land that was originally within the Military Garden (established 1830s) and partly on William Chippendale's 95-acre grant. The area was subdivided in 1835 into a series of small lots with narrow lanes and developed with a mixture of workshops, cottages, stables and inns. The area degenerated throughout the mid to late 19th century into slum-like conditions, which led to wholesale resumption and clearance of much of the area by c1910. Construction of the brewery on this land the following year also required demolition of 14 terraces along the western side of Irving Street, built in the 1880s.

In its initial phase, the brewery comprised the malt silo (23) and brewing tower building (22), a copper and sugar house (26), boiler house (30) and attached chimney (36), the engine room, (35B) (now demolished) and a fermenting and skimming building (35A) (now demolished). A bottling plant was constructed around the same time in Carlton Street (demolished).

The Irving Street Brewery went through several modifications with major refitting of buildings and plant alteration in the late 1960s, 1970s and early 1980s. The plant has now been decommissioned.

In relation to the retained Irving Street Brewery Buildings and Yard (subject of this application), the archaeological potential was assessed by GML as follows: ²⁹

²⁸ Godden Mackay Logan 2006B:44-45

²⁹ Godden Mackay Logan 2006B:45-47

Table 3 – Archaeological Potential

Asset No.	Site Integrity	Potential Remains	Phase / Date	Potential
22/23	Major disturbance	-	-	Nil
25 (stair well)	Major disturbance	No former structures recorded here—rear portion of five domestic yards of houses fronting Irving Street, Post the 2006 AARD the stair was replaced which would have further disturbed any potential resource, such that the potential is now considered to be low to nil.	5: 1880s (c1910)	Low to nil
26	Major disturbance	May contain fragmentary evidence associated with the former Military Garden, including structural remains, features or deposits (unrecorded features and activities) May contain structural remains, deposits and features associated with former terrace houses fronting eastern side Linden Lane (30—32 Linden Lane—two-room timber houses; yards and outbuildings)	3: c1803 (1830s) 4: c1845 (c1910)	Low Low
30	Major disturbance	May contain fragmentary evidence associated with the former Military Garden, including structural remains, features or deposits (unrecorded features and activities) May contain fragmentary evidence associated with former terrace houses fronting eastern side Linden Lane, including structural remains, deposits and features (22, 24, 26 and 28 Linden Lane—two-room timber houses; yards and outbuildings)	3: c1803 (1830s) 4: c1845 (c1910)	Low Low
36 (chimney)	Major disturbance	-	-	Nil
52 (yard)	Part major disturbance (services/ pits/ adjacent footings)	The previous assessment noted that the Yard may contain fragmentary evidence associated with the former Military Garden and/or fragmentary evidence associated with former terrace houses fronting eastern side of Carlton Street/Abercrombie Place/Daltons Place and western side of Linden Lane, including structural remains, deposits and features (10, 12, 14 and 16 Carlton Street—two-room timber houses; yards and outbuildings; 17, 19, 23, 25, 27, 29, and 31 Linden Lane—brick houses; 15 Linden Lane—timber house). It is noted that post the 2006 AARD, extensive excavation and redevelopment was undertaken for the construction of the trigeneration plant beneath the brewery yard (refer to Figure 20) such that the archaeological potential is now considered to be nil,	3: c1803 (1830s) 4: c1845 (c1910)	Nil

Asset No.	Site Integrity	Potential Remains	Phase / Date	Potential
		where it was considered low in the previous assessment.		

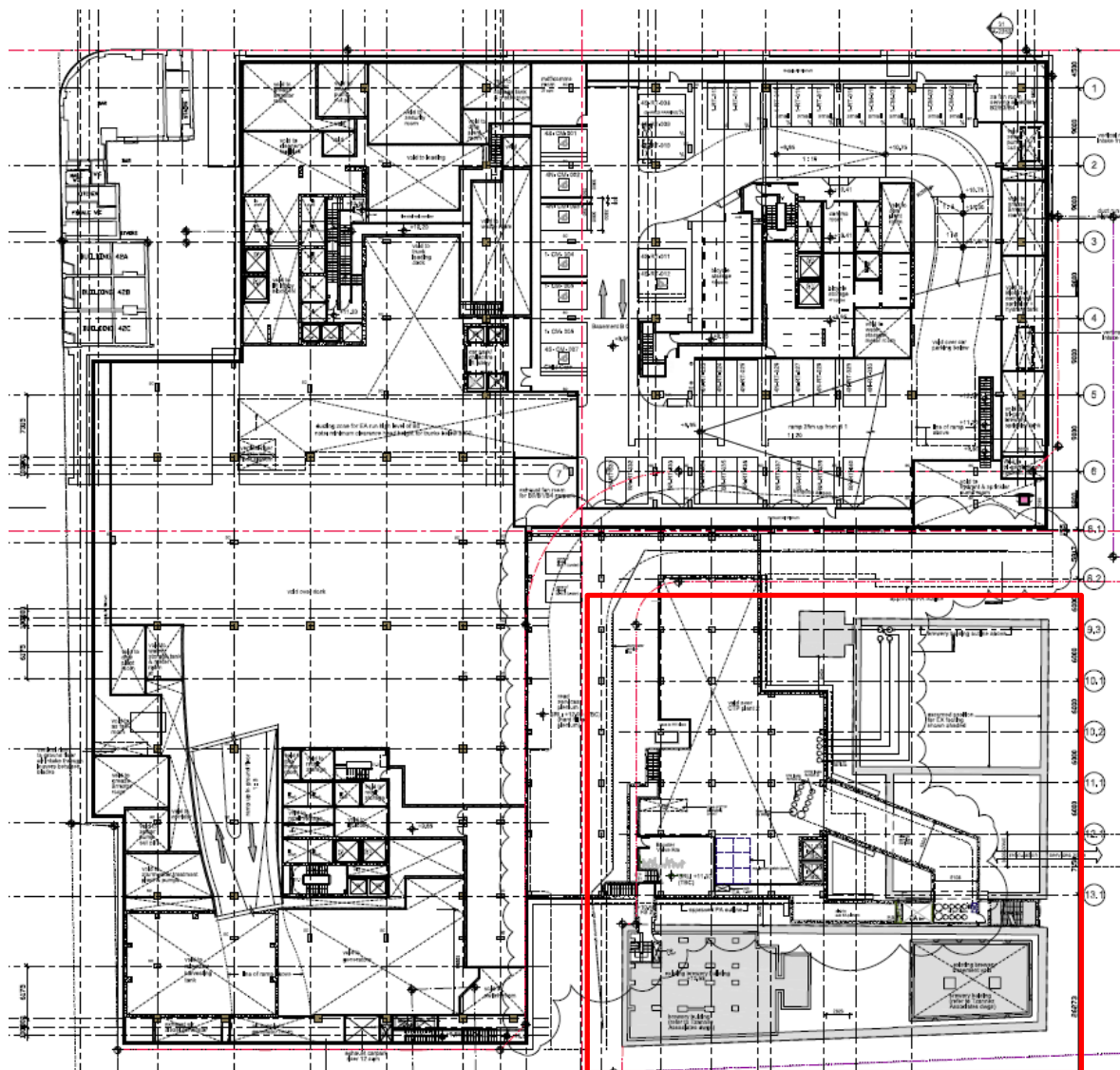


Figure 49 – Part site plan showing the basement and trigon plant in blocks 1 and 4 North. The subject brewery building and yard are indicated at the bottom right of the image

Source: PTW Architects, Drawing No. PA-A-1759

5.5.2. Historical Archaeological Significance

The 2006 AARD provided a Summary Statement of Significance for the whole of the Central Park/ former CUB site³⁰ which is provided at section 6.2. This includes discussion of the historical archaeological values.

Significance of specific archaeological remains relevant to the subject site and the Irving Street precinct is assessed as follows:

³⁰ Ibid 87-88

Table 4 – Archaeological Significance Assessment

No	Likely Remains	Significance	Research Potential
22/23	Nil	Nil	Nil
25	Late nineteenth-century residential development	Moderate	Low
26	Evidence of Military Garden Early residential development	High High	Moderate Moderate
30	Evidence of Military Garden Early residential development	High High	Moderate Moderate
36	Nil	Nil	Nil
52	Nil	Nil	Nil

6. HERITAGE SIGNIFICANCE

Section 6.1 provides the statement of heritage significance for the entire former Carlton and United Brewery (CUB) site, as well as graphically showing areas of archaeological and heritage significance throughout the site (as determined by Godden Mackay Logan in 2006).

Section 6.3 and 6.4 revises Godden Mackay Logan's 2006 assessment and statement of significance for the Brewery Buildings.

6.1. CURRENT HERITAGE LISTINGS

A summary of the statutory heritage listings applicable to the Brewery Complex and its vicinity are provided below. Whilst the heritage listing is limited to the chimney stack (item 36), the significance of the brewery buildings has been recognised in its retention in the SSDA and previous reporting, including the Special Element Conservation Plan (prepared by Urbis).

Table 5 – Statutory controls and heritage listings

Precinct	CUB Asset No. of Heritage Items	Heritage Listing
Irving Street Brewery Precinct	Chimney Stack (36)	Sydney Local Environmental Plan 2005

6.2. SIGNIFICANCE OF FORMER CUB SITE

The following statement of significance has been taken from the Heritage Impact Statement by Godden Mackay Logan for the Concept Plan (2006A:47-49), which applies to the entire CUB site. The subject Irving Street Brewery Buildings are assessed below in sections 5.3 and 5.4, however the buildings are of course a strong contributor to the values of the former CUB site as a whole.

The CUB site has Local significance as a rare surviving large industrial site on the city's edge, providing evidence of the evolution of a major brewery over 170 years. It was, until its closure, the largest and oldest continuously operating brewery in New South Wales and in its present form, demonstrates aspects of the evolutionary history of the site from the early 1890s to the present day.

The site incorporates within its boundaries the whole of the original Kent Brewery site, established in 1835, which is capable of interpretation.

The site has strong associations with the Tooth Family from the establishment of brewing in 1835 to the incorporation of Tooth and Company as a public company in the 1880s.

Individual buildings within the site have associations with the various firms of architects employed by Toths, notably Spain, Cosh and Minnett, Halligan and Wilton, Robertson and Marks, Copeman Lamont and Keesing, and Sidney Warden.

The site contains individual buildings, building groups, streets patterns and lanes, structures and industrial equipment which are significant for their individual values and for their contribution to an understanding of the broader historical evolution of the site. The site includes a rare group of terraces of historical importance, a rare Art Deco style portal gateway of exceptional aesthetic value and a rare, highly intact Federation era garage building.

The most important component elements of the site include the Main Entry Portal Gateway (51), the Main Avenue (Kent Road) (57), the County Clare Hotel, Broadway (38), the Australian Hotel, Broadway (40), the Abercrombie Street Terraces (42A, B and C), the Castle Connell Hotel (14), the Kensington Street Terraces (47A and B, 48A to J, and 49A and B), the Kensington Street Streetscape (64), the Irving Street Brewery Group (22, 23, 26, 30, 35A, 35B and 36), the Administration Buildings (10A and B), the former Motor Garage/Kensington Street Store (46A) and the former Barley Store (32). The Carpenters Workshop (13A) had been rated in the 2005 CMP and subsequent Executive Report as being of Moderate significance and that therefore it may warrant listing at the local level, but a subsequent Construction Analysis Report

(Godden Mackay Logan, July 2006) revised this assessment. The 2006 report concluded that the building does not meet the relevant threshold for listing at a local level.

As a result of its long association with brewing and its physical presence at the edge of the city, the CUB site retains an ability to demonstrate the dominant character of industrial uses that once bounded the city core. It demonstrates the importance that breweries had in the economic structure of the state and in the social lives of Australians since Colonial times.

The identified significance of the site is enhanced by extensive surviving records which are in the public domain. These demonstrate aspects of the identified historical significance of the site. Substantial documentary evidence survives in several public archives along with artefacts surviving on site and in the Sydney Powerhouse Museum, which would support interpretation of the various aspects of the significance of the site.

The site has potential to contain historical archaeological resources that may provide tangible links to significant phases in the history and evolution of the site. The site has been subject to varying degrees of disturbance and has low to medium potential to provide information about the development and occupation of the site throughout its history, which would complement the comprehensive historical information that is available. This evidence may also provide further information about poorly-understood aspects of Sydney's early history, through evidence associated with early agricultural activities, residential occupation, and development and commercial enterprises. The site is unlikely to contain extensive evidence associated with the operation of the brewery itself, owing to the dramatic impact that twentieth century investment in and redevelopment of the brewery enterprise had on the surviving archaeological resource.

The site has low potential to contain archaeological deposits and features that may contribute to our understanding of past Aboriginal use of this part of Sydney, or the paleo-environment. Any such evidence would be of High significance with Moderate research potential, given that such evidence is likely to be relatively disturbed, if it survives at all.

6.3. ASSESSMENT OF SIGNIFICANCE – IRVING STREET BREWERY BUILDINGS

The Assets listed in the following table are the Brewery Buildings that are subject to this report. The assessment of the overall assets for both built and archaeological significance were undertaken by Godden Mackay Logan (2006A:50-53) in their Heritage Impact Statement on the Concept Plan for the site's redevelopment.

Construction of the brewery buildings was completed in 1912. As brewing operations advanced the buildings' uses also changed. Their uses in 1912 and 2005 when the brewery closed are noted below. All buildings are currently vacant.

Table 6 – Brewery Assets: Use and Significance

Asset No.	Name of Asset	Building Use (2005)	Built and other Element Significance	Archaeological Significance
22	Filtration Building	Filtration Plant	High	Nil
23	Malt Silo Building	Malt Silos	High	Nil
25	Staircase Block	Stairs (built 1980)	Intrusive	Moderate
26	Gas Receiving Station	Gas Receiving Station and Offices	Moderate	High
30	Old Boiler House	Storage (1989-2005)	Moderate	High
36	Chimney Stack	Chimney	High	Nil

Asset No.	Name of Asset	Building Use (2005)	Built and other Element Significance	Archaeological Significance
52	Yard	Yard	High (for non-built significance)	Partially nil, partially moderate, partially high

The following assessment of heritage significance has been developed specifically for the Brewery Buildings, following on from GML's 2006 Heritage Impact Statement.

Table 7 – Heritage Significance Assessment – Brewery Buildings

Criteria	Description	Significance Assessment
A – Historical Significance	An item is important in the course or pattern of the local area's cultural or natural history.	<i>The [former] CUB site is significant for its demonstration of important historical evolutionary processes of growth and development from the earliest alienation and use of the land for agricultural and housing purposes through to the establishment of the colonial brewery and continuous expansion, growth and change up to the end of the 20th Century.</i> The remaining Irving Street Brewery Buildings (Assets Nos. 22, 23, , 26, 30, 36 and 52) have historical significance at a local level as the last remaining industrial buildings on the former CUB site. They provide tangible evidence of the history of the brewing process. The Malt Silo (23) is the only building in the complex which retained its original function until the closure of the brewery in 2005 with tangible evidence of the function being apparent in the retained malt silos.
B – Associative Significance	An item has strong or special associations with the life or works of a person, or group of persons, of importance in the local area's cultural or natural history.	<i>The former CUB site at Broadway is significant for its close associations with members of the Tooth family who were prominent members of Sydney society and contributed to the social, cultural and economic life of Sydney and NSW in the mid-late 19th Century.</i> <i>The former CUB site at Broadway is significant at a secondary level for its associations with the work undertaken for the brewery by a number of prominent architects in designs for component parts of the site.</i> The remaining Irving Street Brewery Buildings have associative significance at a local level as significant industrial buildings designed by architects Halligan and Wilton.
C – Aesthetic Significance	An item is important in demonstrating aesthetic characteristics and/or a high degree of creative or technical achievement in the local area.	The remaining Irving Street Brewery Buildings have aesthetic significance at a local level, as they are good albeit altered examples of Edwardian warehouse buildings. They are remnants of the site's former distinctive industrial character and function. The chimney (36) retains its aesthetic significance as a recognisable and prominent element on the site and landmark of the Chippendale area.

Criteria	Description	Significance Assessment
D – Social Significance	An item has strong or special association with a particular community or cultural group in the local area for social, cultural or spiritual reasons.	The former CUB site at Broadway (particularly in its redeveloped form) does not strongly demonstrate this criterion based on available information studies. However, the Irving Street Brewery Buildings were at the heart of the site physically, they represented the core of the industrial processes taking place on the site, and had significance for the working population at the brewery from 1912 to 2005.
E – Research Potential	An item has potential to yield information that will contribute to an understanding of the local area's cultural or natural history.	<i>The potential archaeological resource at this site is very complex, with various phases of construction, expansion and demolition across the site which occurred throughout the site's history.</i> It is likely that the Central Park site (inclusive of the subject Brewery site) is of some significance to the Indigenous community, noting that the former Brewery site formed a small part of a far larger cultural landscape that was highly significant to the traditional Aboriginal owners of Sydney. Potential for Aboriginal Archaeological remains are however assessed as low to nil. It is concluded that the accumulated impacts associated with the ongoing post-Contact development and occupation of the site are likely to have extensively disturbed and/or destroyed the Aboriginal archaeological resource that may have formerly been present on the site. The archaeological evidence for the Irving Street Brewery Buildings is likely to be historical in nature, considering the major disturbance of the site. It may contain fragmentary evidence associated with the former Military Gardens and former residential development phases. The site is however noted as being highly disturbed; including deep excavation of the brewery yard for the trigen plant and redevelopment of the site for the brewery buildings, which included provision of basements to buildings 22/23. Potential is therefore assessed as low. Any remains associated with the military garden and early residential development where surviving is likely to be of moderate or high heritage significance. The research potential of the Irving Street Brewery Buildings is likely to be associated with evidence of their construction. The Malt Silos (23) and the coal hoppers in the Boiler House (30) have high significance for their ability to demonstrate the industrial processes occurring on the site.

Criteria	Description	Significance Assessment
F – Rarity	An item possesses uncommon, rare or endangered aspects of the local area's cultural or natural history.	The remaining Irving Street Brewery Buildings are rare within the City of Sydney LGA, and are likely to be rare at a State level (particularly buildings 23 and 30), noting the extent of the industrial fabric and unique design. Their integrity as elements of a rare industrial complex has been diminished by the removal of other buildings from the former CUB site. <i>Archaeological remains associated with the early agricultural and residential use of the site (1788-c1850) would be rare, representing a poorly documented and understood aspect of Sydney and New South Wales' history. Archaeological remains associated with an early brewery complex are also rare, especially one that had continuous occupation for over 170 years.</i> Archaeological potential has however been assessed as low.
G – Representative	An item is important in demonstrating the principal characteristics of a class of NSWs (or the local area's): cultural or natural places; or cultural or natural environments.	The remaining Irving Street Brewery Buildings are now stand-alone former industrial elements rather than part of an industrial complex. The retained buildings are no longer representative of large scale industrial sites however they are representative of Edwardian industrial architecture and the early 20th century development of the CUB site.

6.4. STATEMENT OF SIGNIFICANCE – IRVING STREET BREWERY BUILDINGS

The following statement of significance for the Brewery Buildings has been revised by Urbis, based on changes to the site and the Heritage Council's seven assessment criteria (above).

The remaining Brewery Buildings (Assets Nos. 22, 23, 26, 30, and 36) have rarity at a state level, particularly the Malt Silos (23) and Old Boiler House (30). They also have research potential and historical, associative aesthetic and representative significance at a local level.

The former CUB site is significant for its demonstration of important historical evolutionary processes of growth and development from the earliest alienation and use of the land for agricultural and housing purposes through to the establishment of the colonial brewery and continuous expansion, growth and change up to the end of the 20th Century. The remaining Irving Street Brewery Buildings have historical significance as the last remaining industrial buildings on the former CUB site. They provide tangible evidence of the history of the brewing process. The Malt Silo (23) is the only retained Brewery building that retained its original function (until the closure of the brewery in 2005).

The remaining Brewery Buildings have aesthetic significance, as they are good albeit altered examples of Federation warehouse buildings. They are remnants of the site's former distinctive industrial character and function. The Chimney Stack (36) retains its aesthetic significance as a recognisable element on the site and landmark in the Chippendale area.

The former CUB site at Broadway is significant for its close associations with members of the Tooth family who were prominent members of Sydney society and contributed to the social, cultural and economic life of Sydney and NSW in the mid-late 19th Century. The former CUB site at Broadway is significant at a secondary level for its associations with the work undertaken for the brewery by a number of prominent architects in designs for component parts of the site. The remaining Irving Street Brewery Buildings have associative significance as they were designed by Halligan and Wilton.

The Irving Street Brewery Buildings were at the heart of the site physically, and represented the core of the industrial processes taking place on the site. As such, it is likely that the brewery buildings demonstrate social significance for the working population at the brewery from 1912 to 2005.

The research potential of the Brewery Buildings is likely to be associated with evidence of their construction. The reinforced concrete malt silos with the Malt Silos Building (23) and the coal hoppers within the Old Boiler House (30) have high significance for their ability to demonstrate the industrial processes occurring on the site.

It is likely that the Central Park site (inclusive of the subject Brewery site) is of some significance to the Indigenous community, noting that the former Brewery site formed a small part of a far larger cultural landscape that was highly significant to the traditional Aboriginal owners of Sydney. Potential for Aboriginal Archaeological remains are however assessed as low. The potential historical archaeological resource at the former CUB site is very complex, with various phases of construction, expansion and demolition across the site which occurred throughout the site's history. The archaeological evidence for the Irving Street Brewery Buildings is likely to be historical in nature, considering the major disturbance of the site. It may contain fragmentary evidence associated with the former Military Gardens and former residential phases, however the potential is assessed as low to nil.

The remaining Irving Street Brewery Buildings are rare within Sydney's Central Business District, and likely to be rare at a State level (particularly buildings 23 and 30) given their unique design. Their integrity as elements of a rare industrial complex has been diminished by the removal of other buildings from the former CUB site.

The remaining Irving Street Brewery Buildings are now stand-alone former industrial elements rather than part of an industrial complex. As such the subject retained brewery buildings are no longer representative of large scale industrial sites but they are representative of Edwardian industrial architecture and the characteristic early 20th century development of the CUB site.

6.5. SIGNIFICANT ELEMENT DIAGRAMS

The following plans by Tzannes Associates dated October 2008 illustrate the significance grading of elements throughout the Brewery Buildings.



SIGNIFICANCE OF ELEMENTS - IRVING STREET BREWERY BUILDINGS & YARD - BASEMENT FLOOR PLAN - 0300



Figure 50 – Significance Diagram – Basement Floor Plan

Source: Tzannes, 2008

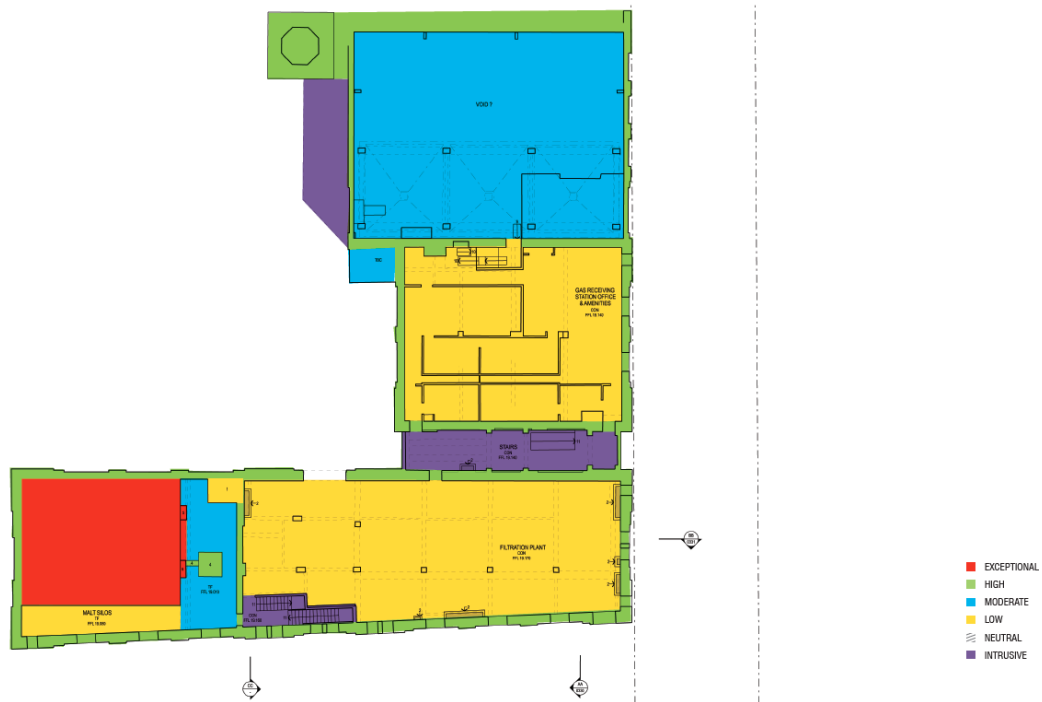


SIGNIFICANCE OF ELEMENTS - IRVING STREET BREWERY BUILDINGS & YARD - GROUND FLOOR PLAN - 0301



Figure 51 - Significance Diagram – Ground Floor Plan

Source: Tzannes, 2008



SIGNIFICANCE OF ELEMENTS - IRVING STREET BREWERY BUILDINGS & YARD - FIRST FLOOR PLAN - 0302



Figure 52 - Significance Diagram – First Floor Plan

Source: Tzannes, 2008

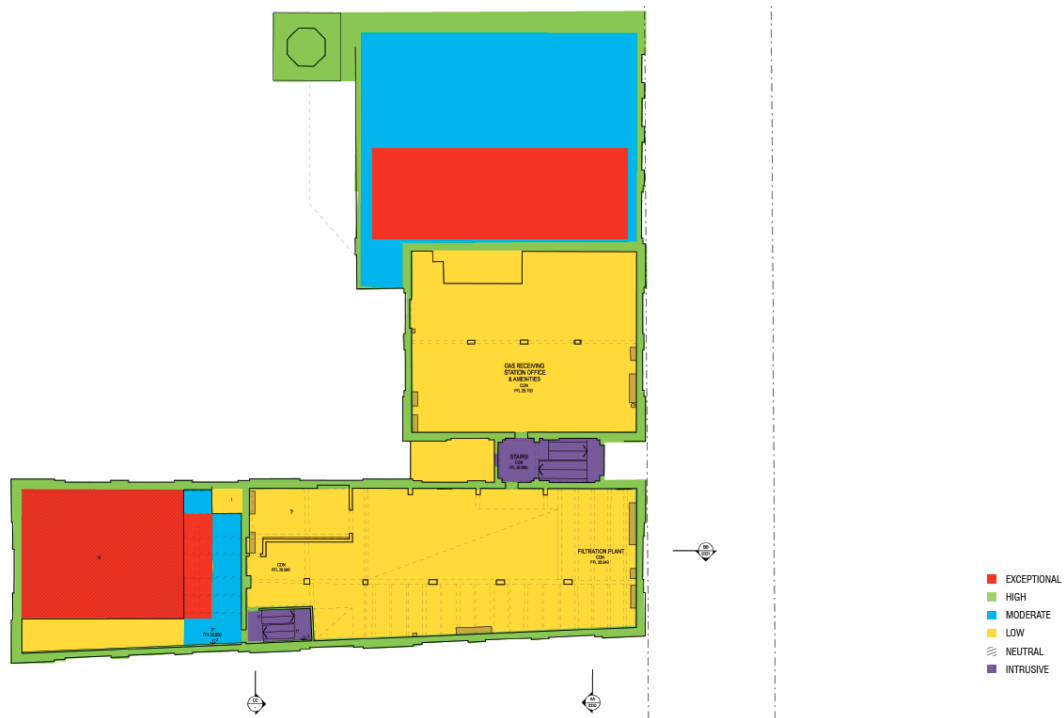


SIGNIFICANCE OF ELEMENTS - IRVING STREET BREWERY BUILDINGS & YARD - SECOND FLOOR PLAN - 0303



Figure 53 - Significance Diagram – Second Floor Plan

Source: Tzannes, 2008

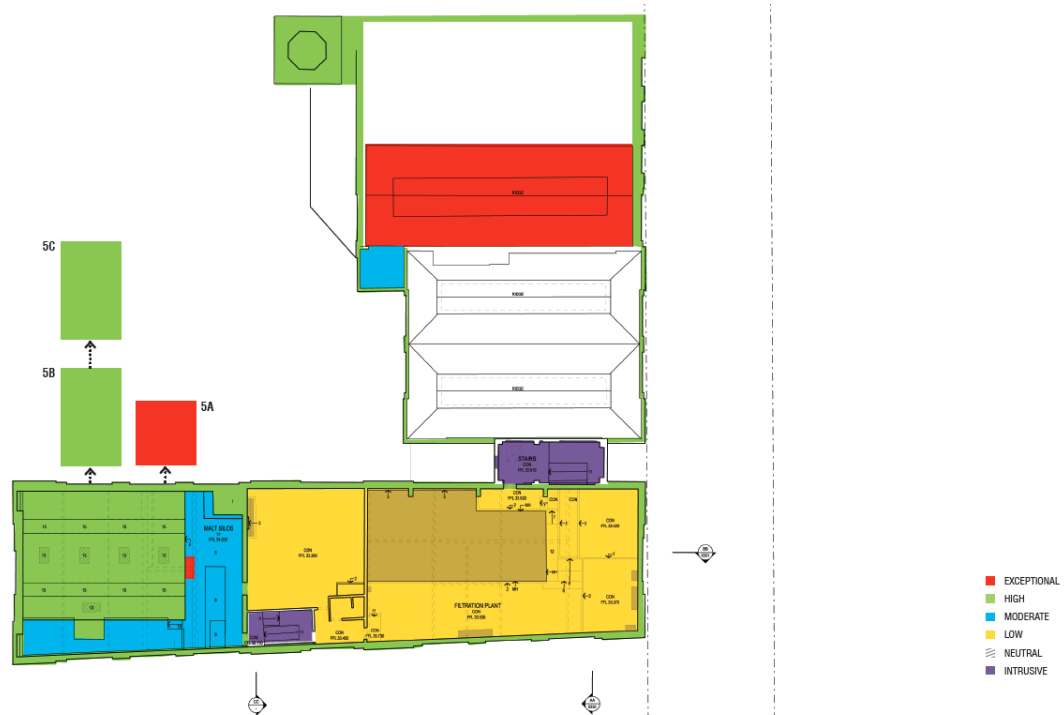


SIGNIFICANCE OF ELEMENTS - IRVING STREET BREWERY BUILDINGS & YARD - THIRD FLOOR PLAN - 0304



Figure 54 - Significance Diagram – Third Floor Plan

Source: Tzannes, 2008



SIGNIFICANCE OF ELEMENTS - IRVING STREET BREWERY BUILDINGS & YARD - FOURTH & FIFTH FLOOR PLAN - 0305



Figure 55 - Significance Diagram – Fourth & Fifth Floor Plan

Source: Tzannes, 2008

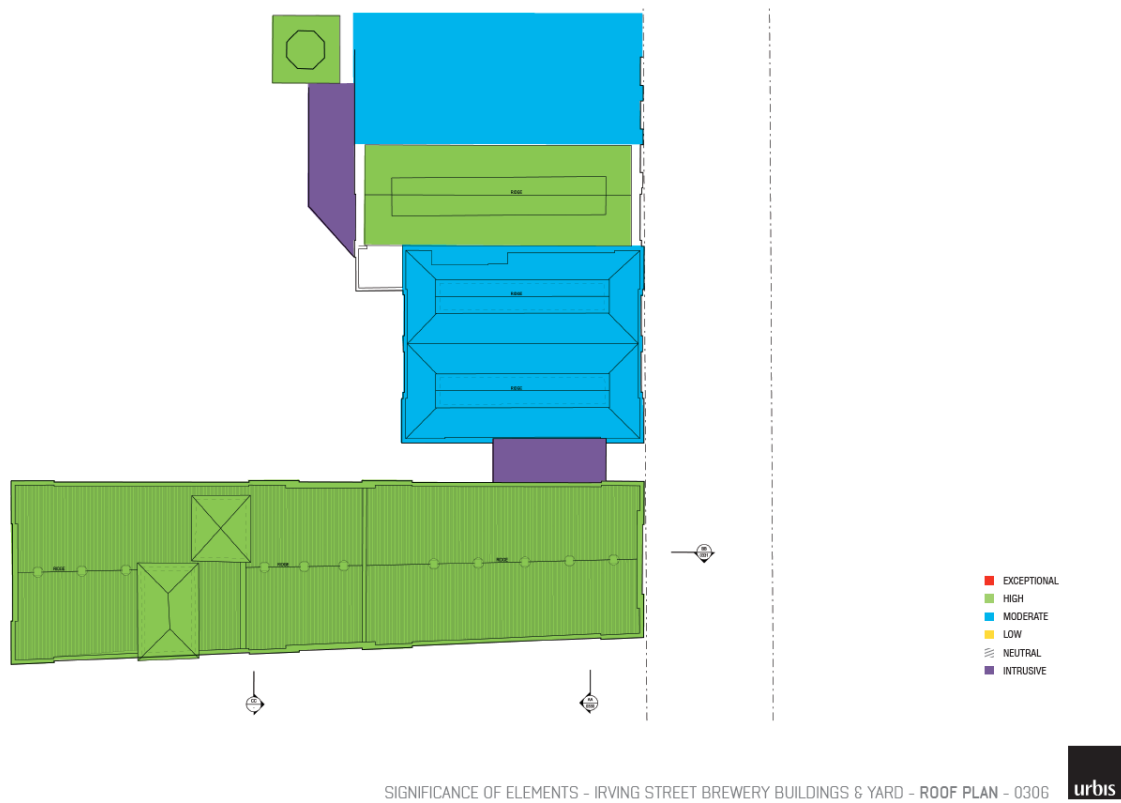


Figure 56 - Significance Diagram – Roof Plan

Source: Tzannes, 2008

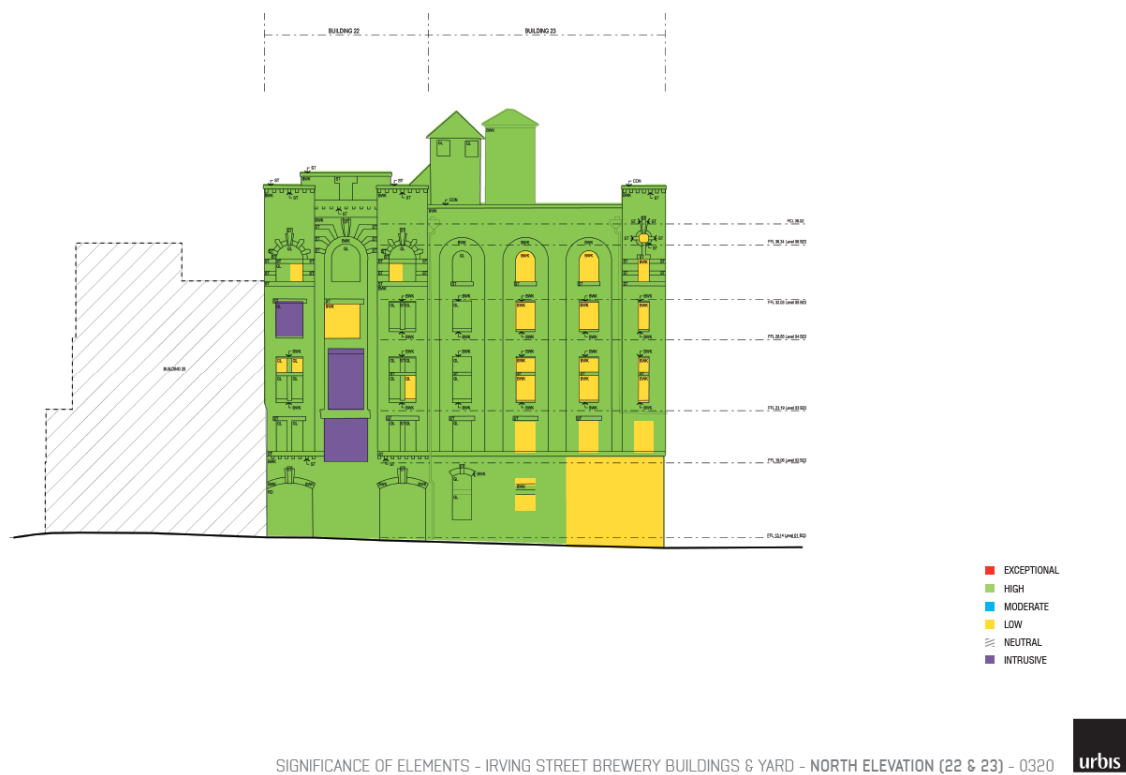


Figure 57 - Significance Diagram – North Elevation

Source: Tzannes, 2008

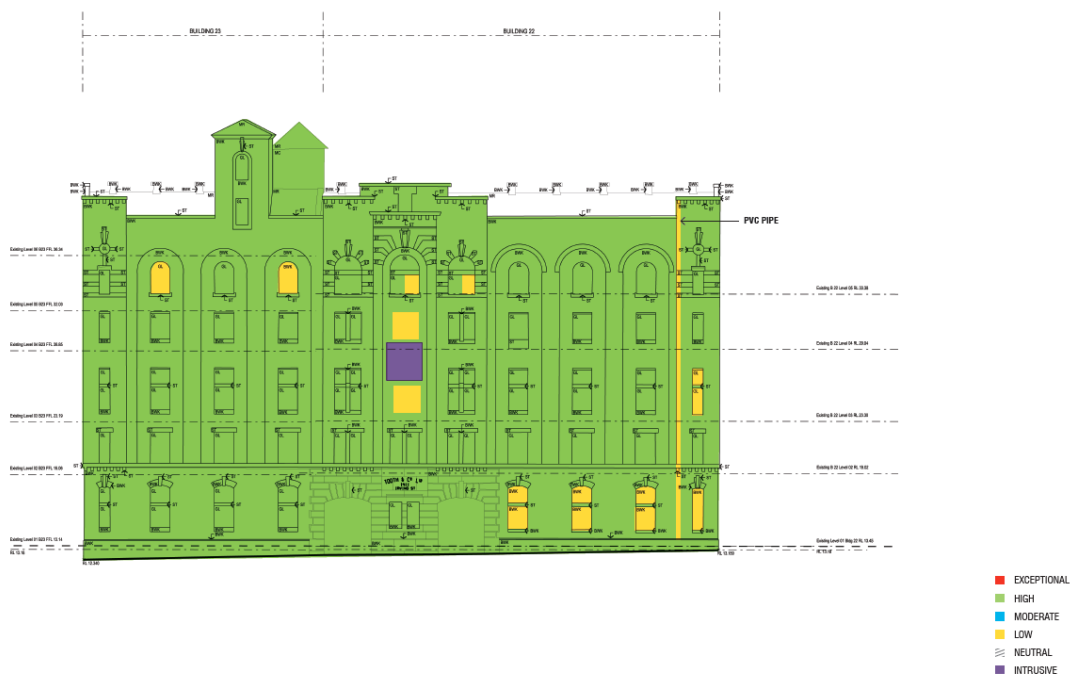


SIGNIFICANCE OF ELEMENTS - IRVING STREET BREWERY BUILDINGS & YARD - EAST ELEVATION - 0321



Figure 58 - Significance Diagram – East Elevation

Source: Tzannes, 2008

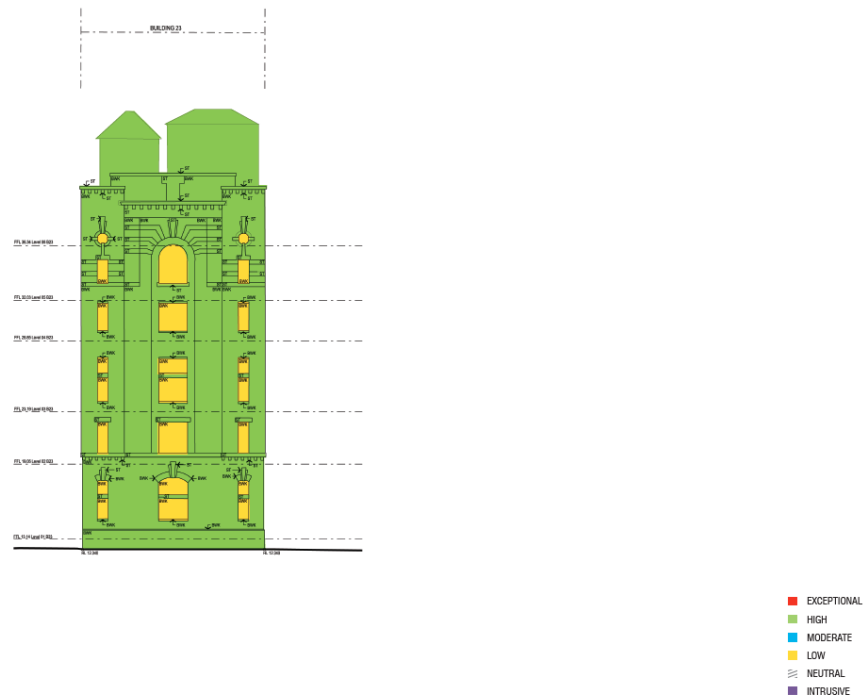


SIGNIFICANCE OF ELEMENTS - IRVING STREET BREWERY BUILDINGS & YARD - SOUTH ELEVATION - 0322



Figure 59 - Significance Diagram – South Elevation

Source: Tzannes, 2008

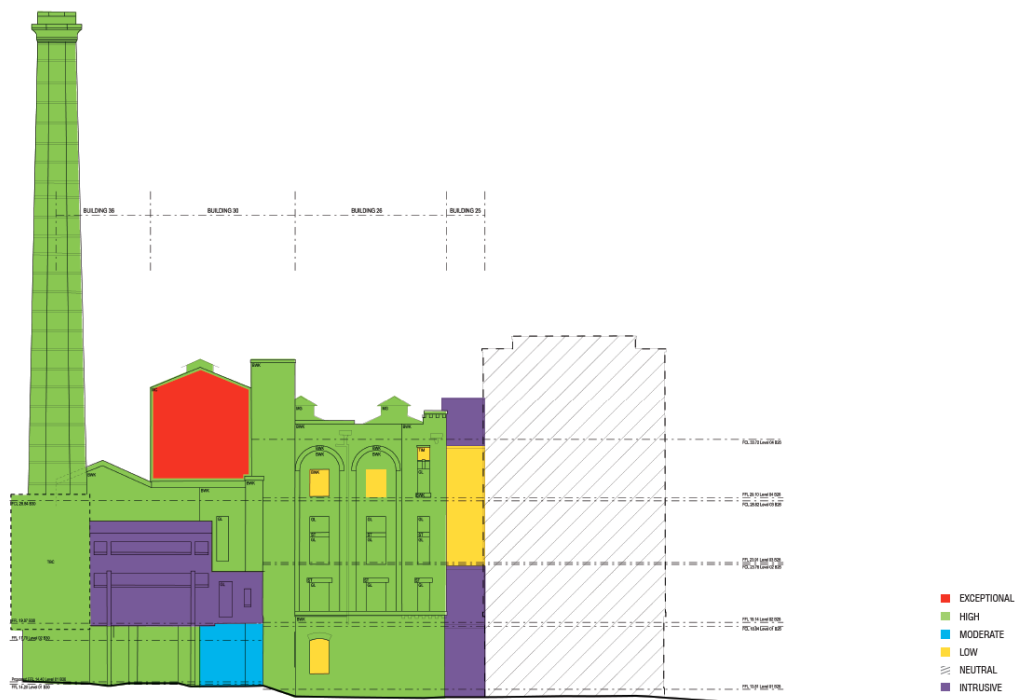


SIGNIFICANCE OF ELEMENTS - IRVING STREET BREWERY BUILDINGS & YARD - WEST ELEVATION (23) - 0323



Figure 60 - Significance Diagram – West Elevation (23)

Source: Tzannes, 2008



SIGNIFICANCE OF ELEMENTS - IRVING STREET BREWERY BUILDINGS & YARD - WEST ELEVATION (25, 26, 30, 36) - 0324



Figure 61 - Significance Diagram – West Elevation (25, 26, 30, 36)

Source: Tzannes, 2008

7. IMPACT ASSESSMENT

7.1. KEY ELEMENTS OF THE PROPOSAL

Proposed works are set out in section 3 of this report. The proposed new work follow conservation, restoration and adaptation principles established by the 2014 works. New elements are a direct expression of its function adapted to the particular form and character of the heritage building. The use of metalwork for new additions sympathetically contrasts the heritage masonry of the existing building and reflects the more contemporary industrial legacy of the building's adaptation over time. The proposed new work comprises five major elements:

- a new roof form and addition comprising two new floor levels
- a new glazed northern façade (modified but similar to that previously approved)
- reorganisation of floor levels internally to allow for additional mezzanine floors
- a distinct new egress stair to the west (off the northern façade) and
- a new entrance lobby facing onto Brewery Yard (west elevation)

The brewery buildings will be tenanted and educational uses are being considered.

Key elements of the proposal are assessed below in section 7.1. Proposed works are also assessed against the relevant provisions of the LEP, Heritage Division guidelines and the sites own Conservation Plan (SECP) as set out in sections 7.2 to 7.4. Potential Archaeological Impacts are assessed in section 7.5.

7.1.1. External Façade Works and Additions

As detailed above, new work and proposed additions include a new roof form and addition comprising two new floor levels (assessed in section 7.1.2 below), amendments to the glazed northern façade of building 30 (approved under the previous scheme), modifications to the infill stair (block 25) between building 22 and 26 and extension of the stair to accommodate the upper floor additions, provision of a new egress stair off the northern façade within the brewery yard, and provision of a new entry off the western façade at the ground level.

Proposed modifications to window and door fenestration are generally consistent with those approved under the former SSDA including provision of new ground floor openings and replacement of windows which have been infilled or highly modified. New works to the facades include modifications for services, predominantly providing for louvres (assessed in section 7.1.6).

Proposed conservation works are subject to a separate schedule of conservation works, in conjunction with the SSDA conditions of consent and do not form part of this proposal. A separate schedule has been prepared by Urbis and requires façade renewal including (but not limited to) removal of plants, repointing and patching of brickwork, repair/ replacement of sandstone, replacement of windows (in accordance with the previous consent) and reinstating windows to match the original, where they have been infilled, removing identified intrusive elements and refurbishment of rainwater goods.

Select works are assessed below.

Modifications to window and door fenestration

As detailed above, proposed modifications to window and door fenestration are generally consistent with those approved under the former SSDA including provision of new ground floor openings and replacement of windows which have been infilled or highly modified. These works therefore have not been assessed.

Additional modifications to fenestration include:

- Replacement of infilled windows to the western façade at the ground floor of building 23
- Modification of the existing door to the north of the new entry foyer on the western façade of building 26 – the previous proposal sought to reinstate a window in this location.
- Removal of the intrusive central window to the southern façade (between the second and third floors) (this is incorporated in the schedule of conservation works) and reinstatement of altered or infilled windows to the northern façade of building 22.

- Provision of a new metal gate to the eastern arched entry on the southern façade

The above works will have no heritage impact and are consistent with the previous approved works to fenestration. The proposed replacement of the infilled windows with new glazed windows on the western façade replaces the original infilled condition, however enhances the amenity min line with the change of use. The proposed windows will be designed to match the appropriate window typology, in terms of break up and design. Proposed removal of the central window and reinstatement of the original two windows (typology to match the original) to the southern façade and proposed reinstatement of altered windows to the northern façade of building 22 will have an improved heritage impact and includes removal of an identified intrusive element, in line with best heritage practice. The final design of the replaced windows and typologies should be subject to further heritage advice in the detailed design development phase. The proposed gate to the eastern portal entry of the southern façade is consistent with the new use and will not detract from the original fabric, with the original function remaining able to be interpreted. Materials, method of fixing etc should be subject to further heritage advice in the detailed design development phase. The proposed retention of the entrance door on building 26 (west façade) will have no significant further heritage impact – the door was previously modified from a window opening and this remains able to be interpreted. Significant features such as the arch detail are able to be retained and conserved.

Reconstruction of the stair tower between Building 22 and 26.

It is proposed to reconstruct the stair (building 25) between buildings 22 and 26. The reconstruction is proposed for efficiencies and to facilitate access and correspond to level changes in building 22 and further to extend stair access to the proposed rooftop addition to building 22/23.

Reconstruction of the stair tower in between Building 22 and Building 26, in the location of the existing stairwell, is considered to be sympathetic to the significant fabric of the buildings and does not have a significant further impact than the present stair. The proposed addition will be clad in a recessive metal cladding (material to be determined) distinguishing between old and new fabric, and similar to the existing, is setback to enable the return facades of buildings 22 and 26 to be read. Whilst the footprint of the stair is extended, this is only minimal and does not impact on significant façade features such as windows or decorative sandstone elements on the return sections of the façade.

Whilst the new stair will be higher in scale than the existing stair well, accessing the new roof addition, materiality and setbacks will mitigate this visual impact. The use of metal cladding to the proposed new stair well visually separates it from the strong masonry materiality of the original buildings. The metal cladding will be placed with horizontal banding, which intentionally contradicts the verticality of the original Brewery buildings. These aspects of the proposal will ensure that the new stairwell is easily identifiable as new work, and is recessive to the principal building forms.

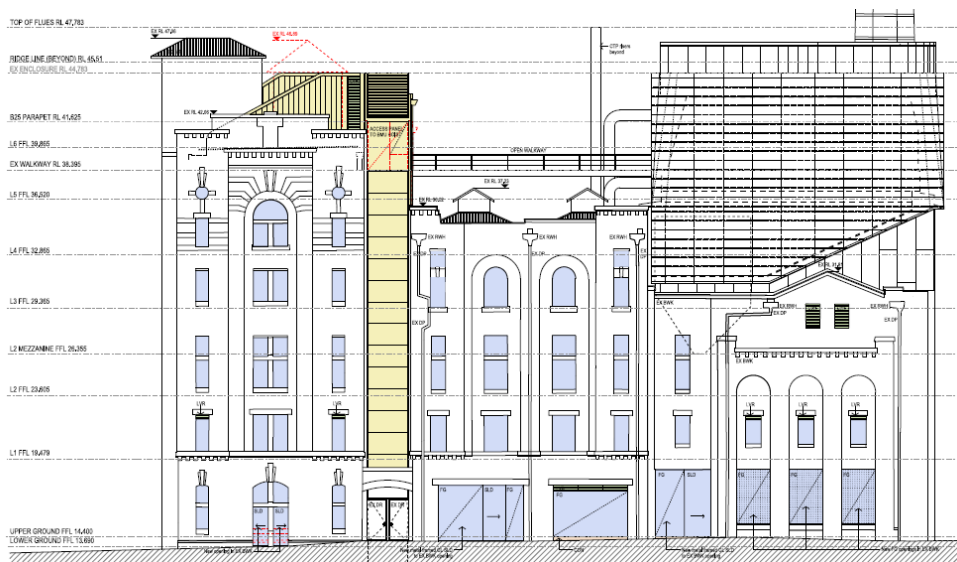


Figure 62 – Extract of Proposed Eastern Elevation

Source: Tzannes, 2018

Proposed additions

Proposed new works include external works to the northern façade of Building 30, the addition of the distinct egress stair on the northern façade and the proposed new entry to the western façade of building 26. The building is able to be viewed in the round and proposed additions will be apparent in views of the northern and western facades and within the brewery yard. Proposed additions are located to the rear of the building and will not obscure significant view lines to the Brewery Buildings from the main public domain within Central Park (i.e. views of the principal southern and eastern facades). These works facilitate the future use and occupation of the place, and have been carefully considered and designed in such a way as to mitigate impacts on significant fabric where ever possible. The proposed additions are contemporary in their form and materiality and respond to the contemporary and industrial character of the addition for the trigen plant atop building 30. These works include the following:

- Creation of a contemporary, full-height glazed wall to the northern façade of Building 30. This glazed wall acts as a contemporary response to the tri-generation cooling towers located directly above, whilst also having the benefit of enabling visual access into Building 30's interior and therefore views of the extant coal hoppers. This elevation will be the most contemporary of the Brewery Buildings', and celebrates an aspect of the place which already integrates old and new elements. The glazing is an acceptable solution to a currently open void space, which allows for visual appreciation of the industrial character of the internal spaces, whilst connecting it and activating the façade within the vibrant urban environment within which it sits. The proposed façade modifies the previous approval for a glazed façade, however takes into account the structural amendments required for the extended internal floor plates. The proposed façade will have no significant further impact than the previous approval.
- Construction of an external fire stairwell, connected to the northern façade of Building 23. The structure will appear as a freestanding built element within the Brewery Yard, providing breathing space to Building 23's northern elevation and minimising intervention to the façade as much as possible. Pedestrian connection will be created through bridge links between the stairwell structure and each internal level within Building 23, through the modification of existing blind windows on each level. The fire stair does not extend to full height and therefore retains an appreciation of the parapet form of the original building and does not require the parapet detail to be interrupted. The removal of masonry fabric is not considered to significantly impact the heritage significance of this secondary façade, and will enable the future occupation of the space. The proposed steel / mesh cladding is considered complementary to the building's industrial character and the extant rooftop plant addition. The stair is effectively reversible with the ability to restore the northern façade in the future if required.

All brickwork will be salvaged for reuse in conjunction with conservation of the building facades.

The further detailed design of the stair and specifically the interface with the highly significant northern façade

- A new entrance is being created to Building 26, along its western façade, through the adaptation of an existing opening. A contemporary structure will be added to this entrance, as a foyer, to direct pedestrians into the building from within the Brewery Yard precinct. The structure will be subservient to the main form, materiality and scale of the original Brewery Buildings, by employing light-weight glazing and metal cladding in its exterior elements. The structure is only single storey, and will not dominate any elements of significance on the site. The structure will provide the benefit of a clear defined entrance route, again providing a physical and philosophical connection between the surrounding urban environment and the historic Brewery Buildings.
- The proposal quite deliberately focuses new work and additions on the northern and western facades within the brewery yard. Principal facades to the south and east are retained and conserved and allow for the interpretation of the original form and facades. The western and northern brewery yard facades have been previously altered and have a lesser level of integrity.

It is noted that the additions are apparent and clearly contemporary in their materiality, responding to the contemporary form, design and materiality of the award winning rooftop trigen plant. Consistent with the trigen, the materiality also responds to the robust and industrial character of the place. Generally, when adding to a heritage building, additions should be subservient, however the extant plant addition very clearly demonstrates that unapologetic contemporary architecture can be elegantly integrated with a heritage building, celebrating the new, while not dominating and still enhancing the old. What could easily have dominated the heritage building, instead gracefully furberishes the roof with a sculptural form. Similarly, the proposed additions are robust, however its does not follow that this must negatively impact on the significant heritage form and facades.

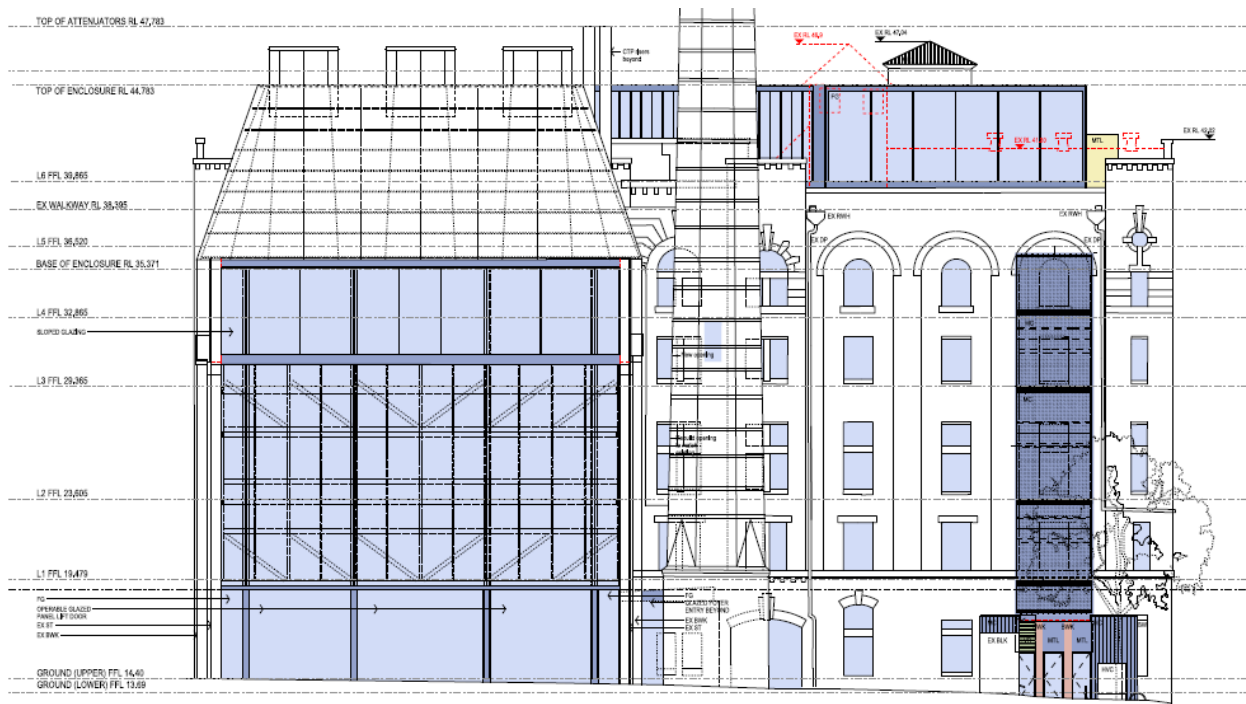


Figure 63 – Extract of Proposed Northern Elevation

Source: Tzannes, 2018

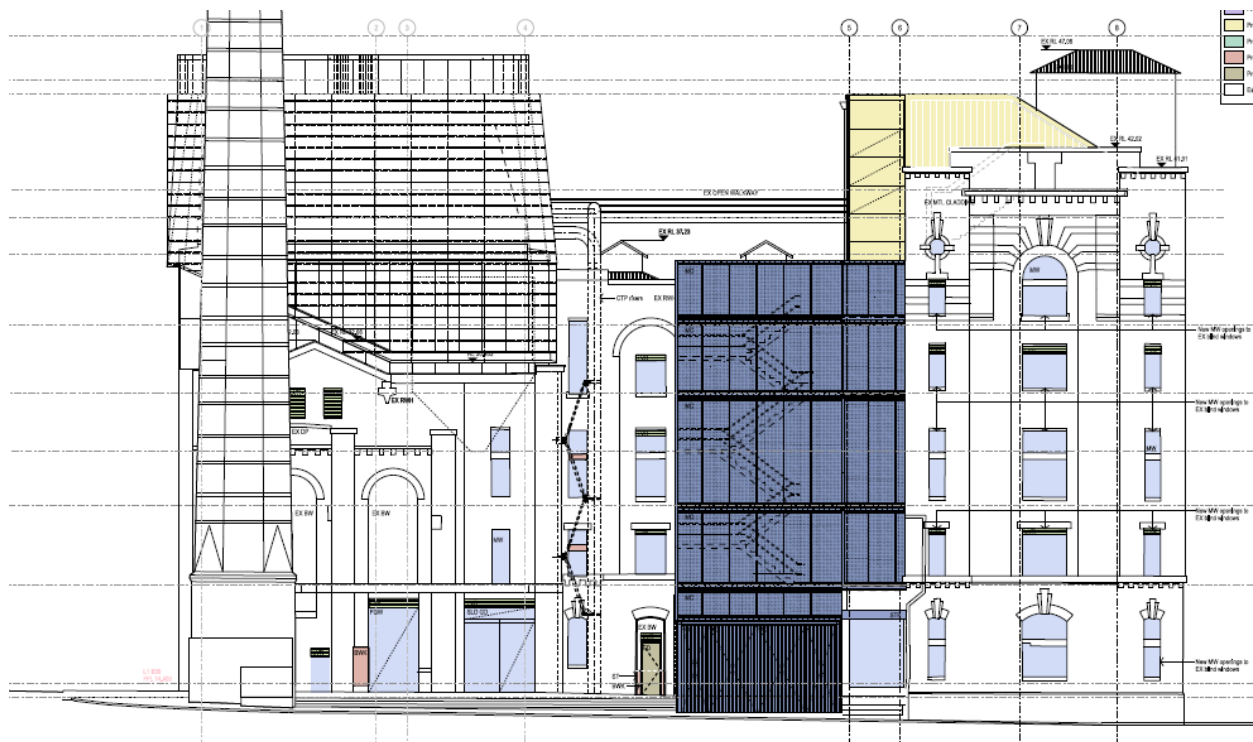


Figure 64 – Extract of Proposed Western Elevation

Source: Tzannes, 2018

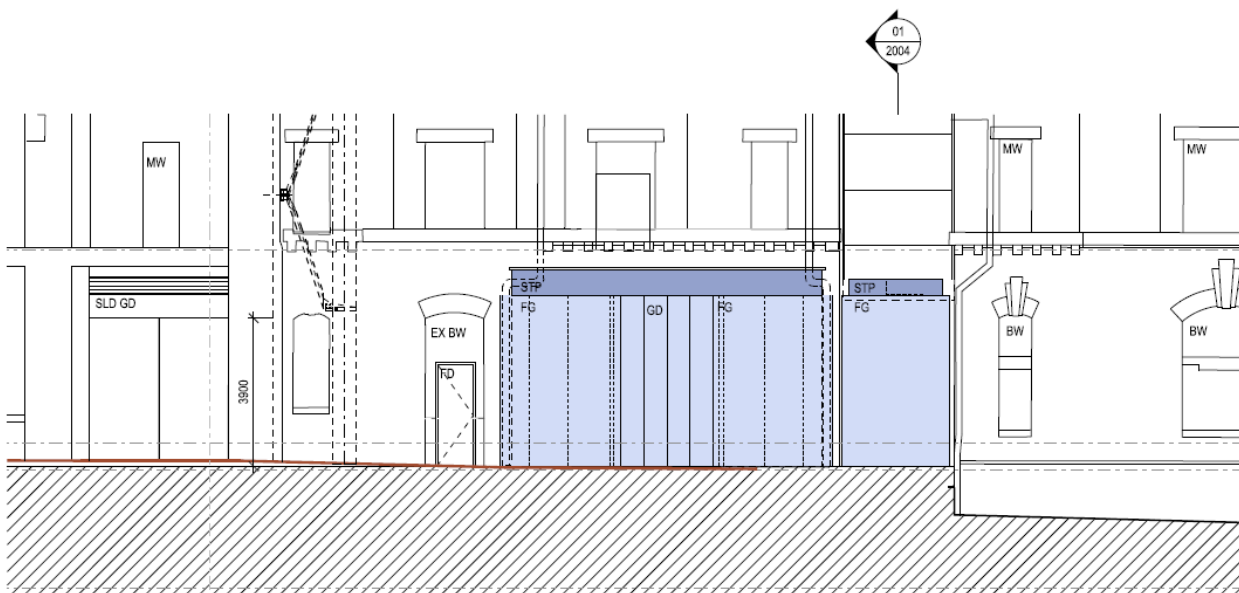


Figure 65 – Extract of Proposed Western Elevation (showing new ground floor entrance attached to the western elevation of Building 26)

Source: Tzannes, 2018

7.1.2. Additional Floor Space

The proposal maximises the potential floor space of the Brewery Buildings through adaptation of existing spaces and introduction of new levels. This includes provision of an additional mezzanine floor within building 23 and infill of the former void to building 30 with further floors, as well as the proposed roof top addition to building 22/23. These modifications have been designed in such a way to mitigate impacts on the significant fabric of the building, and to prevent visual impacts. The overall design solution has sought to mitigate impacts by incorporating the following:

- The previous approval incorporated a large void at the northern section of building 30, above the first floor. The current proposal partially infills this void, to allow for much needed additional floor space including extension of levels 2 and 3 to the glazed northern façade and provision of a mezzanine floor on level 4 (setback from the glazed northern façade). The proposal necessitates the removal of the central coal hopper (assessed in section 7.1.4) however retains the remaining 2 hoppers, and still provides for the interpretation of these elements, arguably in an improved form than the original scheme, as the scheme allows for closer interaction with the heritage fabric. The hoppers also remain able to be viewed from below.
- The proposed additional mezzanine to building 23 is offset from the windows and hence has no visual impact on the exterior of the building. It is similarly offset from the western wall to mitigate impacts on remnant fabric of the silos, to be retained on the wall. As a floating mezzanine within level 2, it is apparent as a contemporary insertion.
- Floor-to-floor heights in building 22 have been reduced to enable an overall reduction in the height of additional floors above, whilst responding to façade elements including window openings. This is achieved through the off-setting of floor slabs to large arched windows instead of altering or bisecting them, thereby preventing intervention to the façade fabric. It is noted that the extant concrete structure to building 22 was replaced and is not of heritage significance. New floor levels are proposed to building 23 in conjunction with the removal of the silos.
- A roof top addition is proposed to the length of Buildings 22 and 23, the southern-most building in the Brewery Buildings complex. The proposed addition provides for an additional 2 floors allowing additional required floor space to make this adaptive re-use project financially and practically feasible. Visual impacts have been mitigated through the built form, with the addition partly obscured behind the parapet and the form of the upper floor addition modulated with a splayed roof form to protect principal views from the south to the principal southern and eastern elevations. Setbacks to the east and west of the addition similarly protect these views and ensure that the addition is obscured by the parapeted facades.

The additional floors will be apparent in views from the north towards the northern elevation of Building 22/23 – however these are secondary, ‘rear’ views and this will not have a detrimental impact on the heritage values of the site. The addition will be distinct from the original masonry form of the building, and will comprise glazing and metal materiality to distinguish between the old and new and also to respond to the contemporary materiality of the trigen plant/ cooling towers. This materiality complements the industrial character of the original Brewery buildings and therefore is considered appropriate. This approach has been taken with all of the proposed additions. Removal of the existing gabled truss roof is unavoidable to facilitate this outcome, however this is mitigated by the retention and conservation of the gabled truss roof at Building 26. Overall the proposed addition is considered reasonable with consideration for the facilitation of future occupiable space, and the design efforts taken to mitigate visual impacts.

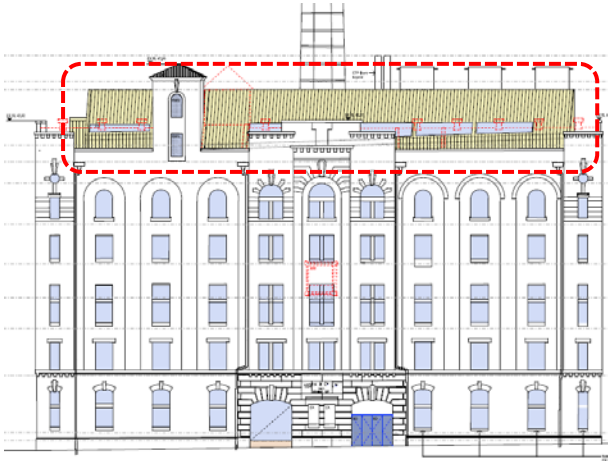


Figure 66 – Proposed Level 6 when viewed from the south (facing southern elevation)

Source: Tzannes, 2018

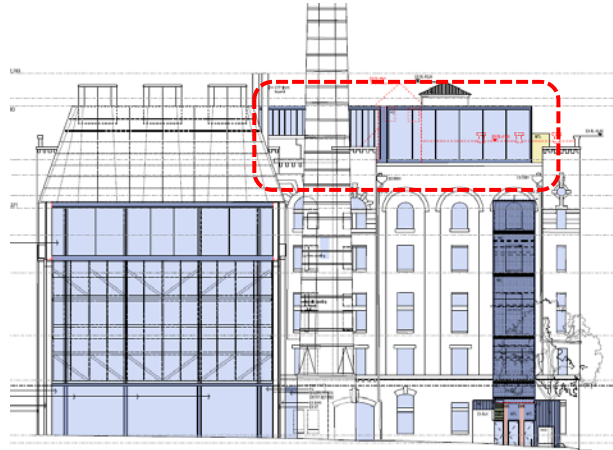


Figure 67 – Proposed Level 6 when viewed from the north (facing northern elevation)

Source: Tzannes, 2018

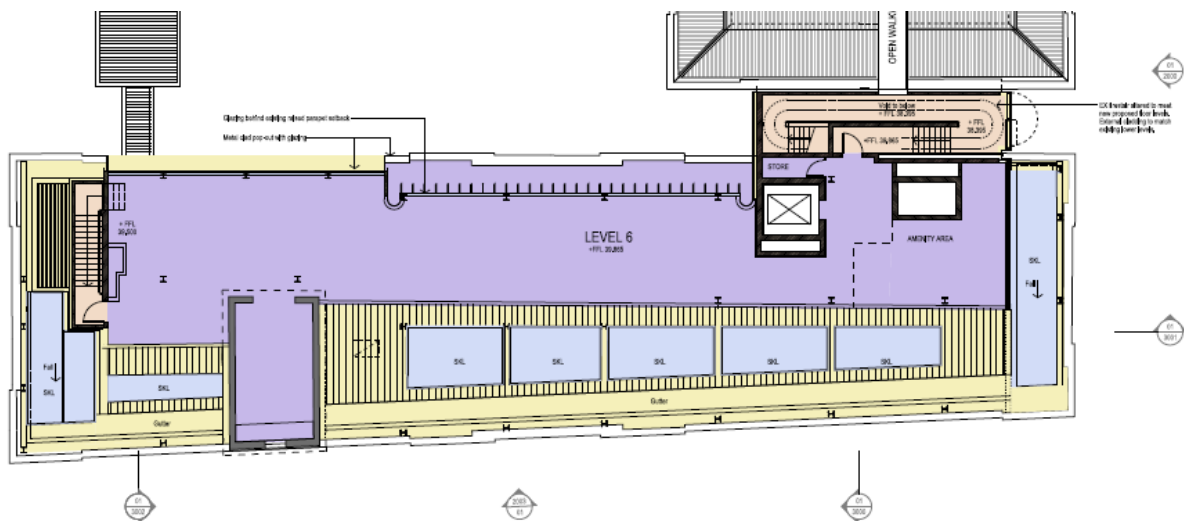


Figure 68 – Extract of Proposed Level 6 Plan

Source: Tzannes, 2018

7.1.3. Internal Works

Generally internal works comprise of the removal of existing structure and construction of new floors. The majority of the internal structure is later and / or modified concrete structure, of no heritage significance, and is not required to be retained on heritage grounds. Its removal and replacement with new ‘floating floors’ as proposed, will not have a detrimental heritage impact. The exception is building 23, the former maltings, which retained the original structure, comprising of concrete silos which run through the building. The

previous approval allowed for the removal of 6 of the 8 silos, retention and adaptation of the remaining 2. This is assessed in section 7.1.5.

Internal works also include demolition of some internal fabric, to create openings between buildings, including for the modified stair (Building 25). These openings have been carefully considered with reference to their location and scale. These have been determined in consultation with Urbis as heritage consultant to this project, to ensure that the openings are proposed in areas of previous modification, or are designed in such a way as to prevent extensive intervention to significant fabric. The largest internal openings are located on the ground floor to connect Building 22 and Building 26. These openings are vital to ensure building connectivity and pedestrian flow throughout the space, and are centred on the core lift wells providing access to all levels of the building. Openings will involve the removal of brick masonry within these sections. It is noted that facades on the ground floor have been previously altered.

Further modifications to existing openings are proposed on each level above, within Building 25 – the new stair well. These modifications are being undertaken to existing openings which have been created from previous window / blind window features (as these walls were previously external walls prior to the construction of the existing stair well). The openings are proposed to be modified to provide for pedestrian access from the stair well and lifts to the buildings. Each level has been carefully considered with regard to mitigating heritage impacts, and it is recommended that final detailed design resolution be subject to consultation with the project heritage consultants. Demolition and rebuilding of the Building 25 stair allows for the opportunity to better resolve the staircase in terms of intervention to the formerly external façades Brewery Buildings, which cuts significant façade details. The new stair will mitigate impacts where possible.

These openings are considered minor in the context of the broader development and are necessary for the functional operation of the space, and are therefore supported from a heritage perspective. The original character of the façade and the form of the fenestration is clearly able to be interpreted, the affected openings being mirrored on the western extent of the façade.

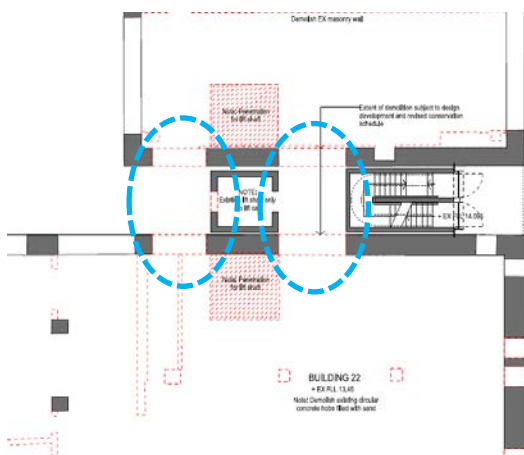


Figure 69 – Demolition Plan – Ground Floor, showing proposed openings

Source: Tzannes, 2018

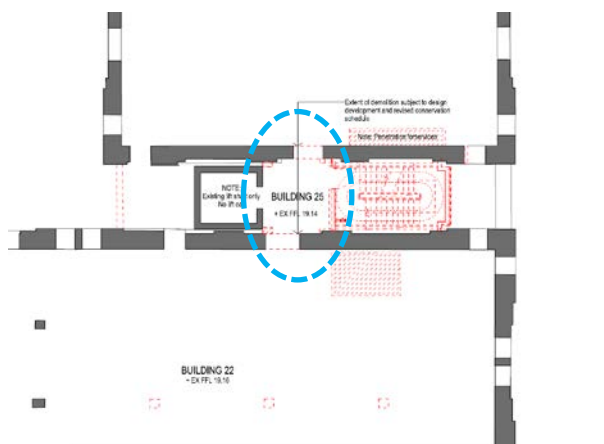


Figure 70 – Demolition Plan – Level 1, showing proposed openings

Source: Tzannes, 2018

New internal stair wells are required to facilitate the safe occupation of the buildings. New internal fire stairs are proposed in Building 26 and Building 23. These stair wells will be off-set from the existing masonry walls to prevent intervention into significant fabric, and will circulate vertically throughout the building. The proposed stair within building 26 is located in the northwest corner. Although the stair is required to be enclosed, the affected façade windows will still be restored, and will appear as open externally and hence the stair will not impact on the façade. It is noted that the northern fire stair also affects windows that are already externally obstructed by the tri-generation plant. These windows are also missing / in poor condition.

The proposed stair within building 23 is located at the northwest corner and functions in conjunction with the external stair addition, bringing the egress stair inside the building at the upper levels to minimise impacts to significant façade elements, namely the parapet and to reduce the height and massing of the external stair addition. The stair also provides access to the basement of building 23. It is acknowledged that the stair impacts on the interpretation of the silos at the northwest corner, however the extent of the silos remains able to be interpreted.

The proposal also includes modifications to the two open former cart drives within building 22. These were the original 'in' and 'out' vehicular access points for the Brewery Buildings. It is proposed retain these openings as is, with the western-most cart drive being glazed to create an interior space, and the eastern-most cart drive being glazed and ramped internally, to provide a main point of entry for the building. This adaptation is considered reasonable as vehicular access is no longer a viable use for these spaces, and it will allow the users of this space to experience this significant feature of the building, while retaining the ability to interpret the original form and function.



Figure 71 – Photograph of existing cart drive openings
Source: Urbis

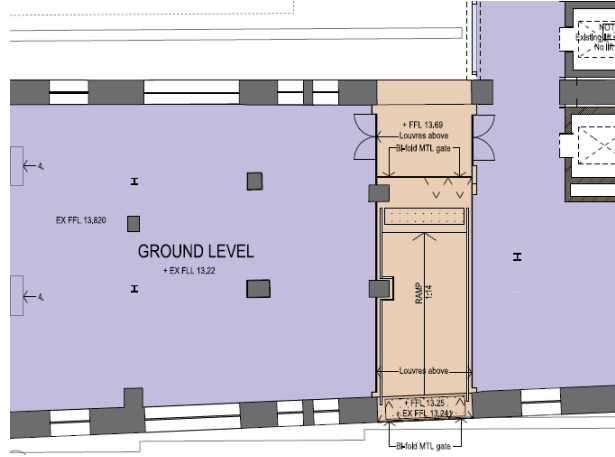


Figure 72 – Proposed ground floor entry to Building 23 through former cart drive
Source: Tzannes, 2018

Overall, with consideration for the modified or replaced nature of the existing internal structures, the proposed internal works are considered to have no adverse impact on the heritage values of the place. The significant elements of the buildings will be retained or adequately interpreted, while enabling the development of a functional space for future occupation. The proposed internal works are supported from a heritage perspective. Detailed design development should be undertaken in conjunction with a qualified heritage consultant to ensure fabric removal is undertaken appropriately.

7.1.4. Coal Hoppers – Building 30

There are three existing former coal hoppers extant within the shell of Building 30, the northern-most building within the Brewery Buildings group. These hoppers are located in a row with an east-west alignment, on the southern side of the building at the roof level. The central hopper is required to be demolished to enable practical occupation of this space, and allow for the adaptive re-use of this building through the provision of additional floor space as set out in section 7.1.2.

The hopper being removed is of high significance. However, the remaining two hoppers will be retained in situ, and will facilitate the meaningful interpretation of this significant element. The new floor levels being inserted within Building 30 will allow for users of this space to have a close interaction with the remaining hoppers, and provides for continued interpretation. A bridge is proposed spanning between building 26 and the new extended floor level within building 30 and running between the two remaining hoppers. The proposed bridge is glazed and should be subject to detailed design in conjunction with heritage advice to best provide for interpretation of the remaining silos.



Figure 73 – View of the bottom of the Hoppers in Building 30

Source: Urbis

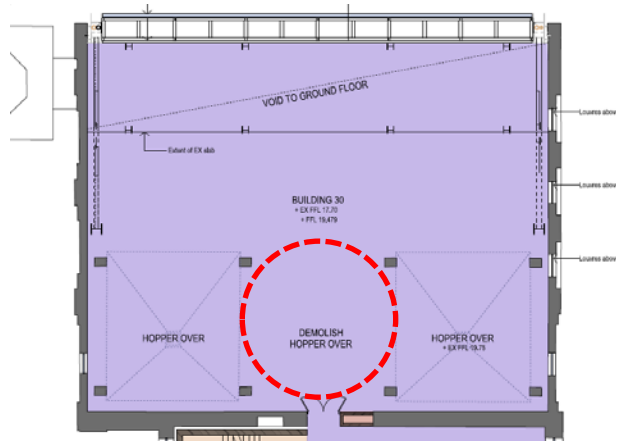


Figure 74 – Extract of Level 1 Proposed Plan – proposed hopper to be removed shown circled

Source: Tzannes, 2018

7.1.5. Silos – Building 23 Structure

Building 23 is the only building to have an original internal structure and was the only building to retain its original function as part of the malt silos/ plant. All of the other Brewery Buildings had their structures rebuilt in the 1980s, and as such there is no heritage significance ascribed to these concrete structures. However, Building 23's structure is tied to the eight silo structures which extend vertically throughout the building. Without the removal of these silo structures, this building is not able to be adaptively re-used and has no purpose or function for occupation. The previous approval allowed for the demolition of 6 of the 8 concrete silos, with the 2 easternmost silos being retained, along with the retention of the pyramidal funnel forms at the base of all 8 silos on the ground floor. It was also further proposed to retain the associated plant equipment on the two easternmost silos as a complete picture of the former structure and providing interpretation of the function. It was proposed in the stage 1 scheme to adaptively reuse upper concrete silo sections of the retained pair for a fire stair, however further structural investigations have determined that this use is not feasible for structural reasons.

The current proposal seeks to further reduce the extent of the silos, retaining the two concrete silos on the first floor only and removing the silos on the upper floors. Structural engineers have advised that the silos are not able to be retained from a construction perspective and it is proposed to rebuild part of this silo structure on the new Level 1 to provide accessible and meaningful interpretation of this former use. Adjoining this rebuilt structure will be an interpretation display of salvaged items associated with the history and use of this building. On the ground level, the pyramidal form of the funnels at the base of the silos will be rebuilt, at a slightly raised ceiling height to facilitate use of the floor (the present floor to ceiling heights restrict the use and occupation of the space). The proposed fire stair and lift at the northwest corner of the space will mean that only 5 of the 8 funnels will be interpreted, however the full extent remains legible, communicated by the retention of the full extent of the southern funnels and the extent of the interpretation of the two easternmost funnels, which were replicated across the remaining 6 silos.

Further, an interpretation area will be provided on the Basement Level containing elements of the silos' built form and equipment, which will be visible through a glass walkway at ground level. This Basement Level interpretation space, together with the faithful reconstruction of part of the silo structure at the ground floor and Level 1, will enable the understanding and interpretation of this building's former use. It is appreciated that the proposal further impacts on fabric that is acknowledged as being of high heritage significance and which is regarded as rare, however the proposed adaptive reuse of the building is critical for its ongoing conservation and the proposal still provides for a meaningful heritage interpretation and built form response.

Without these measures being taken, and the level of fabric removal being proposed, there would be no viable use solution for this building, which would otherwise remain unoccupied and underutilised.

With consideration for the future use and occupation of this building, the proposed interpretation measures are considered sufficient to mitigate the impact of internal fabric loss in this building, and the proposal is supported from a heritage perspective.

It is recommended that concrete sections / walls of the silo structure be retained on internal walls to assist interpretation of the original extent of the silos structure

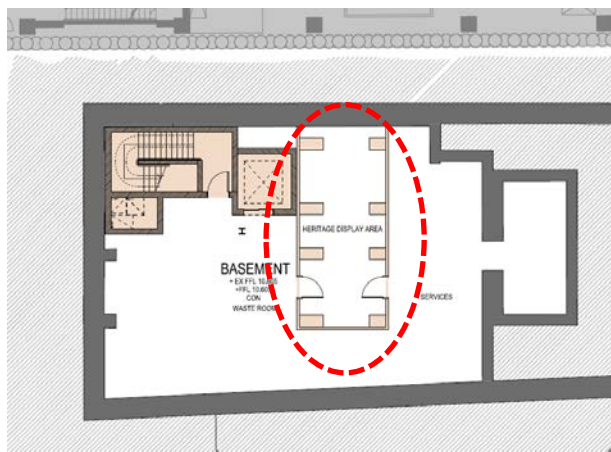


Figure 75 – Extract of Basement Level Proposed Plan – heritage display area at base of silos circled

Source: Tzannes, 2018

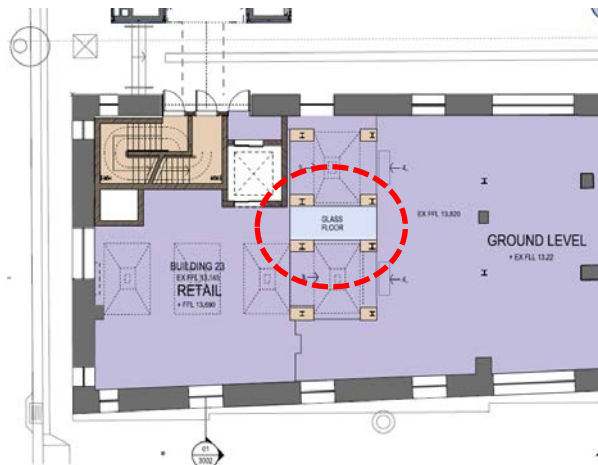


Figure 76 – Extract of Ground Floor Proposed Plan – proposed glazed walkway to view Basement interpretation is circled and the remaining 5 funnels are indicated

Source: Tzannes, 2018

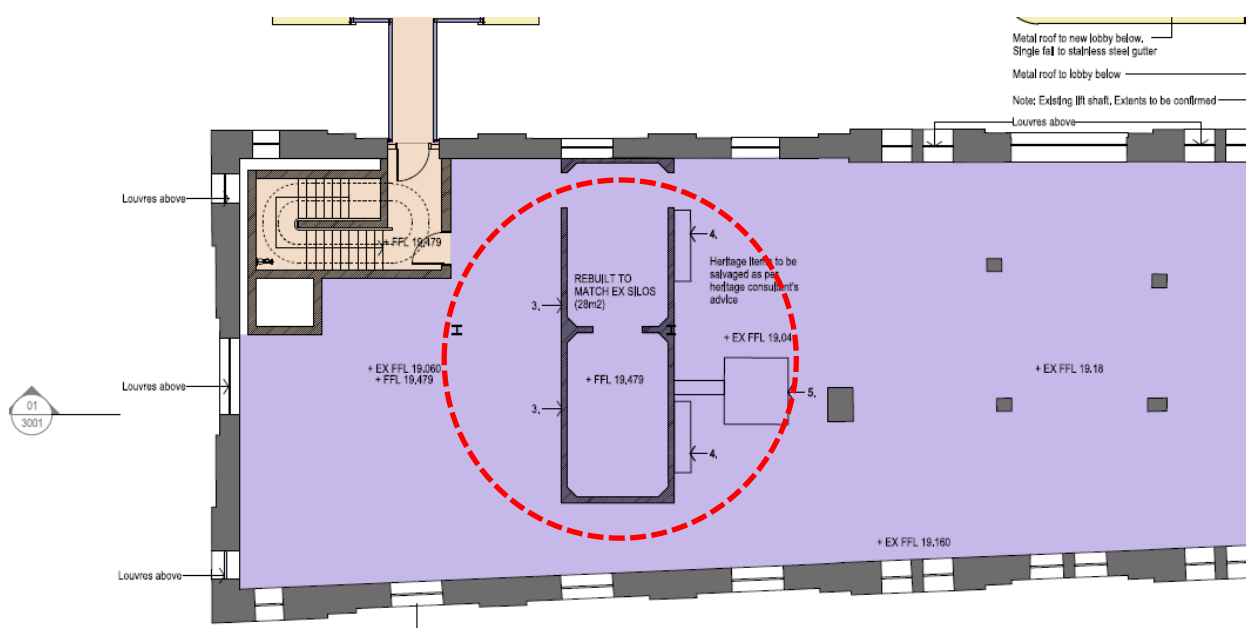


Figure 77 – Extract of Level 1 Proposed Plan – proposed silo reconstruction / interpretation circled

Source: Tzannes, 2018

7.1.6. Services

The proposed services in this application are applicable to a base-build standard for a commercial use tenant. This assumes an occupation rate of 8 square metres per person. Any deviation from this commercial use may trigger future services upgrade requirements and will require a separate and additional development application. It is understood that an educational use is being considered, and will be subject to a separate fitout application.

The services proposed in this application have been designed to respond to the industrial and heritage character of the building. This has been achieved through the following design resolutions:

- Installation of the required louvres / ducts are limited to the eastern and western facades. No louvres are to be installed on the principal southern façade to prevent intervention to this significant elevation. Louvres / ducts on remaining façades will be balanced to achieve an overall consistent approach and to enhance the symmetry of the façade and window typologies. All louvres have been designed to fit within existing window openings to minimise visual impacts and further intervention to the façades.
- Internally services are generally exposed throughout including ducting, which aligns with the industrial use and character of the space and means that much of the services are reversible.
- The existing basement level will be used for new / adapted services, such as replacement of the existing tank. The re-use of the basement for services requires removal of some existing equipment, and does not allow for public access to this level. However, the proposal provides for heritage interpretation, with proposed heritage displays incorporating conservation / retention and display or remnant basement level equipment, visible through the glass floor at ground level. This further enhances interpretation of the ground floor silo elements and malting process as a whole.
- The proposal provides for base services provided for future bathrooms, with final fitout subject to the future tenant application. The locations of the bathrooms do not impact on heritage significance. The open plan character of the place remains.
- Services on the roof will not be visible from the public domain and will be concealed behind parapet walls.
- Proposed internal lifts have been off-set from masonry walls to minimise intervention to facades where possible. Windows in these locations will remain able to be interpreted within the core.

7.1.7. Interpretation Elements

The Brewery buildings are of heritage significance as the only remaining industrial buildings from the former Carlton United/ Kent Brewery. The proposal recognises and celebrates the sites unique heritage values by integrating a number of interpretative elements. Detail of these is included at the Interpretation Plan included at **Appendix A**. To summarise, these elements include the following:

- Interpretation of part of the malt silos structure including provision of a heritage display area on the Basement Level, visible through a glazed walkway on the Ground Floor, ground floor interpretation of the base of the funnels and partial retention of two silos on level 1, as well as retention of remnants of the silos on the western and northern walls (where possible)
- Provision of dedicated interpretation areas throughout the building to enable the display of salvaged equipment or artefacts relevant to the significant history of the place including identification of an interpretation zone on level 1 adjoining the area of the interpreted silos
- Retention of significant elements such as the former coal hoppers in Building 30. Construction of a 'mezzanine' style floor around the hoppers to enable users of the space to interact with these significant features.
- Conservation and restoration of significant facades and fabric.

7.2. SYDNEY LOCAL ENVIRONMENTAL PLAN 2005

The subject property being the Brewery Buildings within the 'Frasers Broadway' at Central Park in Chippendale, is the only site that is still subject to the provisions of the Sydney Local Environmental Plan (LEP) 2005.³¹ This piece of legislation has been otherwise repealed from use for the remainder of the Sydney Local Government Area, which is instead subject to the more recent Sydney Local Environmental Plan 2012.

Table 8 – Assessment against Sydney Local Environmental Plan 2005

Clause	Discussion
PART 6 HERITAGE PROVISIONS	
67 Objectives The objectives of the heritage provisions are: (a) to conserve the heritage of Central Sydney, and (b) to integrate heritage conservation into the planning and development control processes, and (c) to provide for public involvement in heritage conservation, and (d) to ensure that any development does not adversely affect the heritage significance of heritage items, and (e) to provide greater certainty in the management of the heritage of Central Sydney, and (f) to encourage high quality design and the continued use or adaptive re-use of heritage items.	Overall the proposal addresses the objectives of the Sydney LEP 2005. The proposal seeks to retain and conserve the heritage values of the site, through the adaptation of the Brewery Buildings for a new use and future occupation. The design development of the proposal as outlined in this report has been guided by the involvement of heritage experts at Urbis, to ensure that the proposal achieves a balanced outcome of providing a functional and adaptable space, without compromising on the heritage values and integrity of the place. The subject proposal has been designed by Tzannes, who are responsible for the design of the tri-generation cooling tower atop Building 30 of the Brewery Buildings. Tzannes were the recipients of the 2016 Chicago Athenaeum International Architecture Award, and the 2016 UNESCO Heritage Award for New Design in Heritage Contexts for this work, as well as the Lachlan Macquarie Award for Heritage at the 2015 National Architecture Awards. This SSDA proposal sees the continuation of high quality architectural design and innovative approaches on the Brewery Building project. Urbis have had extensive involvement in the site, having collaborated with Tzannes on stage 1 and also authoring a number of reports for the site, including the conservation plan. The proposal has been assessed herein and it is concluded that the proposal will not result in an adverse heritage impact to the place. While there are a number of fabric modifications and alterations being undertaken, (some of which are potentially controversial) the overall design and mitigation of impact has resulted in an acceptable level of heritage impact. Practical solutions to the ongoing occupation of these buildings have been carefully considered with regard to minimising adverse

³¹ City of Sydney 2018, Local Environmental Plans, webpage, accessed 29 November 2018 at <https://www.cityofsydney.nsw.gov.au/development/planning-controls/local-environmental-plans>

Clause	Discussion
	impacts, and looking for ways to celebrate and interpret the history of the place.
68 Consent required for certain development (1) The following development may be carried out only with development consent: (a) demolition of a heritage item or building in a heritage streetscape, (b) structural or non-structural alterations to the exterior or interior of a heritage item, (c) structural or non-structural alterations to the exterior of a building in a heritage streetscape that is not a heritage item, (d) erection of a sign or advertising structure on a heritage item, (e) erection of a building on the site of a heritage item or building in a heritage streetscape, (f) subdivision of a site of a heritage item.	While the majority of the Brewery Buildings site is not listed as a heritage item, the heritage significance of the place has been acknowledged. Therefore, in order to protect the heritage values of the place, consent is required for any structural works to the place, in accordance with this provision. The chimney is listed as an individual heritage item under the Sydney LEP 2005 although no works are proposed to the chimney as part of the subject proposal.
69 Consent authority must have regard to heritage conservation The consent authority must not grant consent to a development application involving a heritage item unless it has taken into consideration: (a) the heritage significance of the heritage item concerned, and (b) the extent to which the carrying out of the proposed development would affect the heritage significance of the heritage item and any historic subdivision pattern in the locality, and (c) the heritage inventory assessment report prepared in relation to the heritage item, and (d) any conservation management plan or heritage impact statement required by the consent authority, and (e) any plan of management required by the consent authority, and (f) the provisions of any relevant development control plan or policy adopted by the Council, and (g) the heritage significance of the interiors of any heritage item concerned.	Again, the subject site (apart from the former chimney) is not a listed heritage item. The heritage significance of the place has however been assessed through previous studies including the Special Elements Conservation Plan prepared by Urbis in 2009, and previous heritage reports for the place. Section 5 of this report outlines the heritage significance of the Brewery Buildings subject to this proposal. The subject brewery buildings have acknowledged heritage significance, demonstrated by its retention in the overall precinct redevelopment and hence the control has been assessed here. In order to protect these heritage values, the proposal has been designed in consultation with Urbis as heritage consultants, who have provided guidance and input throughout the design development phase. Further, the proposal has been assessed herein with regard to relevant heritage-related planning principles, as well as conservation policy, to ensure that the proposal does not result in an adverse heritage outcome. Whilst there are considerable interventions to the building, including reorganisation of the internal structure to provide for additional floor levels and mezzanines; proposed additions including a roof top addition, new external stair

Clause	Discussion
	structure, extension of the existing stair tower (building 25); and works to significant internal fabric, notably the reduction in the retention of the silos and proposed removal of one of the 3 coal hoppers, overall the proposed works are considered to achieve an appropriate balance between conservation of the heritage values, and providing for the required adaptive reuse of the site. The proposed works are assessed in more detail in section 7.1 above and sections 7.3 and 7.4 below.
70 Definition of “materially affects” for the purposes of clauses 71–73 (1) For the purposes of clauses 71–73, development on land that comprises or includes the site of a heritage item materially affects the item only if: (a) it will reduce or increase the building envelope occupied by the item, or (b) it will be carried out within the airspace above the building envelope occupied by the item. (2) However, development does not materially affect a heritage item if, in the opinion of the consent authority, the proposed development will not adversely affect the heritage significance of the heritage item concerned.	See below discussion. The proposed works increase the building envelope however it is considered that the proposed works will not adversely impact on the identified heritage significance and/ or heritage fabric of the place as set out above and below.
71 Floor space ratio of heritage items (1) The maximum floor space ratio for a heritage item is the floor space ratio of the item when this plan commenced, except as provided by subclauses (2), (3) and (4). (2) After considering the matters specified in clause 69, the consent authority may consent to development that will result in that maximum floor space ratio being exceeded, only if: (a) the proposed development will not materially affect a heritage item, and (b) the proposed development involves mainly internal building work or minor additions, and (c) the proposed development is on part of the site not occupied by any existing building of heritage significance, and (d) the floor space ratio complies with clause 54. (3) The consent authority, after considering the matters specified in clause 69, may consent to development that	As discussed above, the subject site, apart from the chimney, is not a listed heritage item, however has been treated as such in terms of the assessment, in acknowledgement of the recognised heritage values of the place. The proposal is seeking an increase in floor space to deliver a viable future use for the subject Brewery Buildings. The subject site occupies a central location within a thriving urban environment, and modification of the buildings is required to facilitate the practical future use of the buildings. Design of internal floors and additions has been carefully considered to mitigate physical and visual impacts to significant fabric, and has been undertaken in consultation with qualified heritage consultants. Overall, the proposed increased floor space is considered acceptable with consideration for the revitalisation of the precinct and the facilitation of future use. Without providing a functional space and viable future use, the subject Brewery Buildings would remain unoccupied, underutilised, and this would likely result in the degradation of significant fabric. It is noted that the buildings have been vacant since the closure of the

Clause	Discussion
will materially affect a heritage item and that will result in that maximum floor space ratio being exceeded, but only if the consent authority complies with clauses 72 and 73. (4) However, subclauses (2) and (3) do not apply so as to allow consent to be granted for development of land that consists of or includes the site of a heritage item that will result in the floor space ratio specified for the land elsewhere in this Chapter being exceeded.	brewery in 2005. The brewery is the most significant building on site yet also remains the only building still in derelict condition (other than the works for the trigen) and which does not have a defined adaptive reuse. Various proposals have been considered and have not proceeded for economic reasons. Whilst there is some intervention to heritage elements in the scheme (most notably affecting the remnant industrial brewery elements, being the silos and coal hoppers) a careful balance of conservation and modern intervention has been achieved with the current proposal, which seeks to provide a feasible outcome for the use of the space, but also embraces and celebrates the site's history through interpretation and retention of significant fabric and mitigating design. The proposal for further floor space is therefore supported from a heritage perspective.
72 Development that would materially affect a heritage item The consent authority must not grant consent for development that will materially affect a heritage item unless it is satisfied that: (a) the item, or the part of the item, affected is not of such heritage significance or landmark value that the proposed development would diminish the heritage of the City of Sydney, and (b) the proposed development exhibits design excellence and is superior in quality to the existing heritage item, and	(a) The Brewery is the centrepiece and the jewel in the crown of the Central Park redevelopment. Rather than diminishing the heritage of the City of Sydney, the subject proposal seeks to enhance the heritage values of the Brewery Buildings by enabling the future occupation of the space, and providing a new phase of use for the site. The proposal will allow the Brewery Buildings to be an integrated, accessible part of the Central Park precinct which is representative of and provides for the innovative interpretation of the former brewing function of the precinct. (b) The proposal has been developed with design excellence at the forefront. The design has been undertaken by Tzannes Architects, who are responsible for the design of the tri-generation cooling tower atop Building 30 of the Brewery Buildings. The success of the previous stage was internationally recognised and Tzannes were the recipients of the 2016 Chicago Athenaeum International Architecture Award, and the 2016 UNESCO Heritage Award for New Design in Heritage Contexts for this work, as well as the Lachlan Macquarie Award for Heritage at the 2015 National Architecture Awards. This SSDA proposal sees the continuation of high

Clause	Discussion
(c) the proposed development would make a contribution to the quality of the public domain of the City of Sydney superior to that made by the existing heritage item, and (d) in the case of partial demolition, the proposed development would conserve the heritage significance (and would not prejudice the continued heritage item status) of the item, would facilitate its continued use or adaptive reuse, and would contribute to the ongoing conservation of the heritage item, or the affected part of the item that will be retained, and (e) in the case of complete demolition, the retention of the heritage item would render the site on which it is located incapable of viable continued use or adaptive reuse.	quality architectural design and innovative approaches on the Brewery Building project. The design responds to the heritage values and fabric of the place, whilst integrating high quality contemporary insertions. (c) The Brewery Buildings not only form part of the Central Park precinct, they are the historic centrepiece of this urban environment, and the last remaining physical representations of the site's significant brewing history. The buildings must be adapted for future use not only to prevent their physical deterioration, but to provide an important central element within the public domain of the Central Park precinct. The proposal builds on the architectural language of the stage 1 trigeneration plant which makes an incredibly dynamic contribution to the urban environment. (d) As discussed at Section 7.1.3, the proposal involves major internal demolition of the existing structure of building 22, however this is not considered to adversely impact on the heritage values of the site. The internal structure is generally modified or later fabric, and is not of heritage significance. Significant structure including the former malt silos, is being reconstructed in part and interpreted. The significant external fabric and form is generally being retained and conserved, with new additions cleverly designed to mitigate visual impacts and limit new work to secondary facades presenting to the brewery yard. As detailed above, the adaptive reuse opportunity presented by the scheme is of critical importance to the ongoing conservation of the buildings. (e) Not applicable.
73 Process for major changes to heritage items (1) This clause applies to development that will materially affect a heritage item, but only if the development involves: (a) demolition that will result in a reduction by more than 35% of the building envelope of the heritage item, or (b) increasing the size of that building envelope by more than 20%, or (c) building over more than 20% of the footprint of that building envelope within the airspace above the item, but not within the airspace next to the item.	Detailed assessment of the proposal is included at Section 7.1 of this report. Reference should also be made to the submitted Statement of Environmental Effects (SEE).
74 Development within the vicinity of a heritage item	The potential heritage impacts of the proposal are discussed throughout Section 7 of this report. In regards to

Clause	Discussion
The consent authority, when considering an application for development within the vicinity of a heritage item, must take into account the impact of the proposed development on the heritage significance of the heritage item.	potential impact on the former chimney (the only formally listed heritage item within the Brewery Buildings), the proposal will have no impact on the significance of this element. The proposal seeks to refurbish and revitalise the whole of the Brewery Buildings precinct, and therefore open up accessibility and interpretation opportunities throughout the buildings. This will act to enhance the recognition and understanding of the chimney heritage item as part of a larger group of former brewery buildings.
75 Development of potential archaeological sites The consent authority may grant a consent required by this Part for the carrying out of development on a potential archaeological site only if it has considered an archaeological assessment of how the proposed development would affect the conservation of the site and any relic known or reasonably likely to be located at the site.	GML heritage undertook an Archaeological Assessment of the site in 2006 (refer to discussion at Section 5). That assessment has been reviewed in light of recent site development and it is concluded that the Brewery Buildings precinct had low to nil archaeological potential. The assessment determined that the potential Aboriginal archaeological resource on the site was most likely destroyed by the varied and subsequent European site development. Notably, the Brewery Yard is considered to be substantially disturbed following the construction of the tri-generation plant below ground level in 2015. Buildings 22 and 23 were previously regarded as disturbed due to the construction of the maltings and filtration buildings, which included excavation for substantial basements. Presumably there has also been further disturbance to building 30, in conjunction with the construction of the trigen plant. The subject proposal will not involve substantial amounts of excavation, requiring works typically in conjunction with services such as for lift pits and localised excavation for services and stairs. Having regard to GML's previous assessment, and the limited excavation required, the proposal is unlikely to result in adverse impacts to the potential archaeological resource.

7.3. NSW HERITAGE DIVISION GUIDELINES

The proposed works are addressed in relation to relevant questions posed in the NSW Heritage Division's 'Statements of Heritage Impact' guidelines.

Table 9 – Heritage Division Guidelines

Question	Discussion
The following aspects of the proposal respect or enhance the heritage significance of the item or conservation area for the following reasons:	The proposal has been assessed herein and it is concluded that the proposal will not result in an adverse heritage impact to the brewery buildings or the heritage listed chimney which forms part of the site. While the proposal includes a high degree of fabric modification and alteration, the overall design and applied mitigation measures has resulted in an acceptable level of heritage impact. Practical solutions to the ongoing occupation of these buildings have been carefully considered with regard to minimising adverse impacts, and looking for ways to celebrate and interpret the history of the place. Although some significant interventions are proposed, a careful balance of conservation and modern intervention has been achieved with the current proposal, which seeks to provide a feasible outcome for the use of the space, but also embraces and celebrates the site's history through interpretation and retention of significant fabric. Rather than diminishing, the subject proposal seeks to enhance the heritage values of the Brewery Buildings by enabling the future occupation of the space, and providing a new phase of use for the site. The proposal will allow the Brewery Buildings to be an integrated, accessible part of the Central Park precinct, with public access being unprecedented for the subject buildings. The proposal has been developed with design excellence at the forefront. The design has been undertaken by Tzannes Architects, who are responsible for the design of the tri-generation cooling tower atop Building 30 of the Brewery Buildings. Tzannes were the recipients of the 2016 Chicago Athenaeum International Architecture Award, and the 2016 UNESCO Heritage Award for New Design in Heritage Contexts for this work, as well as the Lachlan Macquarie Award for Heritage at the 2015 National Architecture Awards. This SSDA proposal sees the continuation of high quality architectural design and innovative approaches on the Brewery Building project. The Brewery Buildings not only form part of the Central Park precinct, they are the historic centrepiece of this urban environment, and the last remaining physical representations of the site's significant brewing history. The buildings must be adapted for future use not only to prevent their physical deterioration, but to provide an important central element within the public domain of the Central Park precinct. Much needed conservation and restoration of facades is provided for under the previous SSDA conditions of consent, subject to the Schedule of Conservation Works prepared by Urbis.

Question	Discussion
The following aspects of the proposal could detrimentally impact on heritage significance. The reasons are explained as well as the measures to be taken to minimise impacts:	As detailed above, the proposal does incorporate some considerable interventions to the brewery buildings and significant elements such as the silos and coal hoppers. This is proposed however to facilitate a viable use and the proposal seeks to mitigate impacts wherever possible through sympathetic design. Specific situations are detailed below. The proposal incorporates some further intervention to a limited area of the facades to facilitate interconnectivity and create openings between the buildings. Demolition of some internal fabric is proposed to create openings between buildings. These openings have been carefully considered with reference to their location and scale. These have been determined in consultation with Urbis as heritage consultant to this project, to ensure that the openings are proposed in areas of previous modification, or are designed in such a way as to prevent extensive intervention to significant fabric. The largest internal openings are located on the ground floor to connect Building 22 and Building 26. These openings are vital to ensure building connectivity and pedestrian flow throughout the space, and are centred on the core lift wells providing access to all levels of the building. Openings will involve the removal of brick masonry within these sections. This is considered reasonable to facilitate access between the site and with consideration for previous modifications most notably to insert the stair (building 25). Further modifications to existing openings are proposed on each level above, within Building 25 – the new stair well. These modifications are being undertaken to existing openings which have been created from previous window / blind window features (as these walls were previously external walls prior to the construction of the existing stair well). The openings are proposed to be modified to provide for pedestrian access from the stair well and lifts to the buildings. Each level has been carefully considered with regard to mitigating heritage impacts, with final design resolution to be achieved through consultation with Urbis heritage consultants. These openings are considered minor in the context of the broader development and are necessary for the functional operation of the space, and are therefore supported from a heritage perspective. The proposal also includes demolition of the gabled truss roof to buildings 22/23 to facilitate the proposed roof top addition and additional floor levels. The loss is considered mitigated by the retention of the truss in building 26 and with consideration for the need to create a viable adaptive reuse. The proposal also involves partial demolition of significant interpretation elements, most notably the silos (building 23) and the coal hoppers (building 30). Refer also to the assessment in section 7.1.4 and 7.1.5 above. There are three existing former coal hoppers extant within the shell of Building 30, the northern-most building within the Brewery Buildings group. These hoppers are located in a row with an east-west alignment. The central hopper is required to be demolished to enable practical

Question	Discussion
	occupation of this space, and allow for the adaptive re-use of this building through the provision of additional floor space. The hopper being removed is of high significance. However, the remaining two hoppers will be retained in situ, and will facilitate the meaningful interpretation of this significant element. The new floor and bridge between the hoppers will allow for users of this space to have a close interaction with the remaining hoppers, and provides for continued interpretation. The configuration with the third hopper will also be legible. The previous approval allowed for the substantial demolition of the silos within building 23 and the subject proposal seeks a further reduction in the retention of the remaining two silos within building 23, limiting retention and interpretation of the silos to the basement, ground and first floors and demolishing the remainder of the silos on the second floor and above. Similarly, further intervention to the ground floor for the introduction of the stair and lift, will necessitate the removal of 3 of the 8 funnels on the ground floor. Whilst this constitutes a considerable further intervention, it is considered that the remaining fabric will still allow for a meaningful and innovative interpretation of the significant fabric and function whilst facilitating the adaptive reuse.
The following sympathetic solutions have been considered and discounted for the following reasons:	Refer to above discussion regarding the reasons for fabric removal, and mitigation approaches. Overall it is considered that the proposal achieves an appropriate balance between retention of fabric, conservation and interpretation and necessary adaptive reuse.
Partial Demolition Is the demolition essential for the heritage item to function? Are important features of the item affected by the demolition (e.g. fireplaces in buildings)? Is the resolution to partially demolish sympathetic to the heritage significance of the item? If the partial demolition is a result of the condition of the fabric, is it certain that the fabric cannot be repaired?	See above discussion in Sections 7.1.3, 7.1.4 and 7.1.5 regarding demolition of internal structure and features within the buildings to facilitate the new use.
Minor additions How is the impact of the addition on the heritage significance of the item to be minimised? Can the additional area be located within an existing structure? If no, why not?	The proposal includes a number of minor additions, including a roof top addition to Buildings 22/23 (Level 6), a new lobby entrance in the Brewery Yard, and new external fire stairs. Further discussion regarding these elements is included at Section 7.1 of this report.

Question	Discussion
Will the additions visually dominate the heritage item? Is the addition sited on any known or potentially significant archaeological deposits? If so, have alternative positions for the additions been considered? Are the additions sympathetic to the heritage item? In what way (e.g. form, proportions, design)?	
Change of use Has the advice of a heritage consultant or structural engineer been sought? Has the consultant's advice been implemented? If not, why not? Does the existing use contribute to the significance of the heritage item? Why does the use need to be changed? What changes to the fabric are required as a result of the change of use? What changes to the site are required as a result of the change of use?	The proposed new work follows conservation, restoration and adaptation principles established by the 2014 works. New elements are a direct expression of its function adapted to the particular form and character of the heritage building. The proposed application provides for a base-build standard for a commercial use tenant. This assumes an occupation rate of 8 square metres per person. Any deviation from this commercial use may trigger future services upgrade requirements and will require a separate and additional development application. It is understood that an educational use is being considered, and will be subject to a separate fitout application. As detailed above, considerable intervention is required to facilitate a new use, however the brewery function has been redundant since 2005 and it has been difficult to establish a viable and practical ongoing use. It is considered that the scheme achieves an appropriate balance between the new use and retention of heritage values.
New development adjacent to a heritage item How does the new development affect views to, and from, the heritage item? What has been done to minimise negative effects? How is the impact of the new development on the heritage significance of the item or area to be minimised? Why is the new development required to be adjacent to a heritage item? How does the curtilage allowed around the heritage item contribute to the retention of its heritage significance? Is the development sited on any known, or potentially significant archaeological deposits? If so, have alternative sites been considered? Why were they rejected?	The potential heritage impacts of the proposal are discussed throughout Section 7 of this report. In regards to potential impact on the former chimney (the only listed heritage item within the Brewery Buildings), the proposal will have no negative impact on the significance of this element. Rather the proposal seeks to refurbish and revitalise the whole of the Brewery Buildings precinct, and therefore open up accessibility and interpretation opportunities throughout the buildings. This will act to enhance the recognition and understanding of the chimney heritage item as part of a larger group of former brewery buildings. No works are proposed to the chimney as part of the current stage of works. It was previously adapted for use as part of the trigon plant. The proposed new additions will not dominate the chimney or compromise its status as a Chippendale landmark. Impacts on the potential archaeological resource are assessed in section 7.5.

Question	Discussion
Is the new development sympathetic to the heritage item? In what way (e.g. form, siting, proportions, design)? Will the additions visually dominate the heritage item? How has this been minimised? Will the public, and users of the item, still be able to view and appreciate its significance?	
New services (e.g. air conditioning, plumbing) How has the impact of the new services on the heritage significance of the item been minimised? Are any of the existing services of heritage significance? In what way? Are they affected by the new work? Has the advice of a conservation consultant (e.g. architect) been sought? Has the consultant's advice been implemented? Are any known or potential archaeological deposits (underground and under floor) affected by the proposed new services?	A detailed discussion regarding new services within the Brewery Buildings is included above at Section 7.1.6.
New landscape works (including car parking and fences) How has the impact of the new work on the heritage significance of the existing landscape been minimised? Has evidence (archival and physical) of previous landscape work been investigated? Are previous works being reinstated? Has the advice of a consultant skilled in the conservation of heritage landscapes been sought? If so, have their recommendations been implemented? Are any known or potential archaeological deposits affected by the landscape works? If so, what alternatives have been considered? How does the work impact on views to, and from, adjacent heritage items?	The proposal includes provision of soft landscaping in the brewery yard, designed by Turf Design, to complement and enhance the new entry and provide a forecourt to the brewery buildings. No significant original landscape features remain. As set out in section 3.4, the proposal includes provision of a brick paved forecourt to provide breakout opportunities for the new upgraded Brewery Building. This Significant Development Application (SSDA) will also include a renewed through site link, connecting from the forecourt to the southern open space. The new publicly accessible forecourt and through site link will be characterised by active building frontages, deciduous trees, planting features and a detailed brick paving palette. The proposed design includes a simplified palette that stitches together the historic character of the building and modern elements reflected throughout the site. The proposed forecourt incorporates a herringbone pattern. Steel planters emphasises the industrial character of the Brewery building and the architectural language of the new additions, while connecting with the neighbouring public forecourt between DUO and The Steps. The Deciduous trees are proposed within key planters to the centre of the forecourt, west of the building. To complement the trees and the site

Question	Discussion
	wide character, lush vibrant coloured under storey species were proposed. Archaeological potential for the yard has been assessed as nil, noting the extensive excavation of the former yard for the underground basement/ trigen plant and associated shoring of the brewery buildings.

7.4. SPECIAL ELEMENTS CONSERVATION PLAN

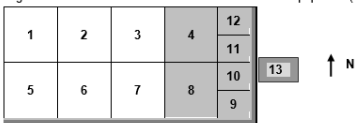
The proposal has been assessed with regards to the relevant policies contained in the Special Elements Conservation Plan report, prepared for the Irving Street Brewery Buildings by Urbis in 2009.

Table 10 – Assessment against Special Elements Conservation Plan

Policy	Discussion
Policy 5. Significant views to the Chimney stack (Asset 36) and the group of Irving Street Brewery Buildings should be retained.	The proposal will not obstruct views to the heritage listed chimney stack. Views to this element are primarily from the north and west, however, the top of the stack is just visible over the Brewery Buildings from the south and is more apparent in views from the east. It is also apparent in precinct and district views. The proposal does not propose any major additions which would impact on the scale of this chimney stack, and therefore no significant views will be obstructed or dominated. The stack is only just visible above the site from the south and does not make a significant contribution to this view. Given the rooftop addition has been modulated to ensure it has no or negligible views from the south, it is considered that the view will not be impacted significantly.
Policy 6. The Brewery Yard (Asset 52) should always be discernible as open space. Appropriate interpretation should be included in this area to identify its function as part of the former brewery operations and potential archaeological remains of the Military gardens and earlier periods in the vicinity.	There are minor additions proposed to the Brewery Building that extend into the Brewery Yard space, including an external fire stair well and a new ground floor lobby structure. These additions will not prevent the understanding of the Brewery Yard as open space. Site landscaping is proposed to complement the brewery buildings and to create a forecourt to the buildings.
Policy 7. The remaining Irving Street Brewery Buildings (Assets 22, 23, 26, 30 and 36) should be retained and conserved as a significant group. The curtilage of this group should be respected and new buildings should not directly abut these buildings.	The proposal has considered the Brewery Buildings assets as a whole, and the design has been developed to reinforce their significance as an important and intrinsically linked group of buildings. There are no new buildings proposed as part of this proposal, only minor additions assessed above. The existing curtilage of the Brewery Buildings is being retained.
Policy 8. Impact on areas identified by Godden Mackay Logan (2006B) in their archaeological assessment of the entire CUB as having high archaeological significance should be avoided. If proposed works involve excavation for new buildings, structures or services, the archaeological potential of the area and potential	GML heritage undertook an Archaeological Assessment of the site in 2006 (refer to discussion at Section 5). Although the site was identified as having archaeological potential (high or moderate levels) for potential remains associated with the Military Gardens and the early residential site development, the report concluded that the Brewery Buildings precinct had low to nil archaeological potential due to the extent of disturbance.

Policy	Discussion
impact on archaeological relics should be assessed by a qualified archaeologist. The appropriate consent authority should be consulted and the appropriate permits obtained.	Further to this, the Brewery Yard is substantially disturbed following the construction of the tri-generation plant below ground level in 2015. The subject proposal will not involve substantial amounts of excavation, requiring only for lift pits and localised excavation for services and stairs. Having regard to GML's previous assessment, and the limited excavation required, the proposal is unlikely to result in adverse impacts to the potential archaeological resource.
Policy 11. All fans and vents fitted to windows and doors on the external façades should be removed from all Irving Street Brewery buildings, which will coincide with their adaptive reuse. Windows should have elements reinstated to match those existing on the façade, including form, size and materials of glazing, sills, bars and lintels. Reinstatement of doors where elements are removed, should complement those existing in fabric, size and location.	The schedule of conservation works includes replacement of infilled or altered windows. The subject proposal also includes insertion of louvres into a small number of existing window openings for the provision of ventilation and other services. The location of louvres is limited to the secondary facades and no louvres/ services are proposed within the principal southern façade. The proposed louvres will fit wholly within window sections and will be balanced so as not to impact on the symmetry of the façade. The proposed louvres have an industrial quality consistent with the heritage character of the place and will not impact on the buildings.
Policy 13. Any openings in building facades as a result of removal of metal or concrete external additions, such as the concrete walkway on the south façade of building 22 or the metal walkway on the east façade of buildings 22, 25 and 30, should have openings made good with brickwork and windows to match those on the façade.	A separate conservation schedule has been prepared in conjunction with SSDA conditions of consent. Façade renewal includes removal of identified intrusive elements and reinstatement of the original fenestration where it has been infilled or significantly altered. This includes removal of the central opening to the southern façade between the second and third floors, and reinstatement of 2 windows and reinstatement of central windows and details to the northern façade of building 22, as shown on the submitted architectural drawings. Samples are to be provided to the project heritage consultant to approve profiles and finishes.
Policy 14. Bricked-up windows on all building façades should be reinstated to match elements of existing openings. These should match in regards to size, materials and form.	As detailed above (refer policy 11 discussion) the conservation works include reinstatement of infilled or lost windows in accordance with the window typology set in the schedule of conservation works. In accordance with the previous consent, new windows will be constructed of aluminium. Samples are to be provided to the project heritage consultant to approve profiles and finishes.
Policy 18. Face brickwork to the external brewery buildings and chimney should not be painted or covered with any finish.	The external brickwork and stonework will remain unpainted.
Policy 26. Corrugated metal additions on the exterior roof of buildings 23 and 30 (both two-storey	The roof additions to Building 30 have been subsequently replaced with the tri-generation plant cooling towers.

Policy	Discussion
in height) should be retained and conserved along with all internal brewery equipment. These additions can be painted to complement building façade or roof if required. The building and the additions should retain their industrial character.	The roof of Building 23 is proposed to be demolished to facilitate additional floor space and levels. This will result in the loss of the gabled roof truss frame and cladding, corrugated roof additions and any internal remnant equipment. This is not consistent with the CMP however the loss is necessitated by the proposed roof addition
Policy 27. The roof of buildings 22 and 23 should not be changed in regards to its form and should not have any additional floors.	The proposal has been developed to enable a viable adaptive reuse and function for the place. Without the addition of floor area to the upper levels of Buildings 22/23, the overall viability of the project would be degraded, and there would be no mechanism for the adaptive re-use, conservation and future use of the place. The roof addition has been designed to mitigate visual impacts, with the addition partly obscured behind the parapet and with the form modulated to limit visibility in principal eastern and southern elevations, such that views are negligible or nil. Whilst the addition will be apparent in views to the northern façade, this is a secondary elevation and the proposed addition will not dominate the building or compromise the significant character. Further detail regarding the proposed new roof additions is contained at Section 7.1.2.
Policy 28. The roof of buildings 26 and 30 can be changed in regards to its form and can have additional floors. Additions should be no more than two-storeys in height and should not adversely impact on any significant fabric. Additions on the roof of building 30 should allow the roof housing of the hoppers to be read as a separate addition, and should be set back on the west elevation.	No additions to the roof form of Building 26 are proposed and the original gabled truss roof is retained. The retention serves to mitigate the loss of the building 22/23 roof form. As discussed above, the roof of Building 30 was replaced with the construction of the tri-generation plant cooling towers.
Policy 31. All floors and columns within buildings 22 and 26 were altered in the 1980s with the new fitout. The existing concrete floors and columns can be removed and replaced if required without adversely impacting upon any significance fabric.	The proposal aligns with this policy. It is proposed to remove the existing internal concrete structure and replace with floating floors to enable future occupation consistently across all buildings.
Policy 33. All eight malt silos (nos. 1-8) and equipment nos. 9, 10, 11, 12 and 13 on the ground floor and associated equipment in the basement of building 23 should be retained, conserved, interpreted and visible as part of any new works.	As set out in section 7.1.5, the previous approval allowed for the demolition of 6 of the 8 concrete silos, with the 2 easternmost silos being retained, along with the retention of the pyramidal funnel forms at the base of all 8 silos on the ground floor. It was also further proposed to retain the associated plant equipment on the two easternmost silos as a complete picture of the former structure and providing interpretation of the function. It was also proposed in the stage 1 scheme to adaptively reuse upper concrete silo sections of the retained pair for a fire stair,

Policy	Discussion
	however further structural investigations have determined that this use is not feasible for structural reasons. The current proposal therefore seeks to further reduce the extent of the silos, retaining the two concrete silos on the first floor only and removing the silos on the upper floors. Structural engineers have advised that the silos are not able to be retained from a construction perspective and it is proposed to rebuild part of this silo structure on the new Level 1 to provide accessible and meaningful interpretation of this former use. On the ground level, the pyramidal form of the funnels at the base of the silos will be rebuilt, at a slightly raised ceiling height to facilitate use of the floor (the present floor to ceiling heights restrict the use and occupation of the space). The proposed fire stair and lift at the northwest corner of the space will mean that only 5 of the 8 funnels will be interpreted, however the full extent remains legible, communicated by the retention of the full extent of the southern funnels and the extent of the interpretation of the two easternmost funnels, which were replicated across the remaining 6 silos. Interpretation zones are also provided on the basement, ground and first floors incorporating display of significant objects. It is appreciated that the proposal further impacts on fabric that is acknowledged as being of high heritage significance and which is regarded as rare, however the proposed adaptive reuse of the building is critical for its ongoing conservation and the proposal still provides for a meaningful heritage interpretation and built form response.
Policy 35. The reinforced concrete silos (nos. 1-8) on the first, second, third and fourth floor of building 23 are encased by concrete walls. These eight silos are repetitive in regards to their form and fabric. Not a lot will be achieved by keeping all eight of the reinforced concrete malt silos. Malt silos nos. 4 and 8 are directly associated with equipment nos. 9-12 and 13 on these floors and these two silos in their entirety should be retained as a group as a minimum to interpret the exceptional fabric (as shown in Figure 18 below). This will allow for the adaptive reuse of the space within malt silos nos. 1-3 and 5-7 within building 23. Figure 18 – Retention of malt silos and associated equipment (as shaded) 	See above discussion (policy 33 and section 7.1.5). Silos nos. 4 and 8 are the easternmost silos and are reinterpreted in the subject proposal. Equipment designated numbers 9-12 on the plan at left are retained and interpreted.

Policy	Discussion
Policy 37. If all eight malt silos are not able to be retained, conserved and interpreted as part of the adaptive reuse of this building (which is the preferred heritage option), then reinforced concrete silos 1, 2, 3, 5, 6 and 7 in building 23 may be removed without damaging or affecting the elements of the silos to be retained on the ground floor and basement. Following removal of these elements, this space can be adaptively reused.	Refer above discussion. Removal of these silos was subject to the previous SSDA.
Policy 38. If reinforced concrete silos 1, 2, 3, 5, 6 and 7 on all levels of building 23 are removed, the windows on these levels can be reinstated to match those on the façade.	The windows on this façade are being reinstated as per this policy. Reinstatement was subject to the previous consent and the subject proposal is consistent with this.
Policy 39. The former office space on the ground floor of building 23, between the two driveways, can be adaptively reused. New window openings can be reinstated on the north façade of the ground floor where this office space is located if required, however any non-original openings should be contemporary and not match those existing on the façade.	Complies. This former office space is being adaptively reused, and the northern windows reinstated.
Policy 42. All equipment in the basement of building 23 should be retained as it is of exceptional significance. However, if change is proposed in the basement, such as new services, the most significant equipment should be retained (following a professional assessment). Any removed equipment should be interpreted. Changes in the basement should not adversely impact upon or visually obscure any of the retained brewery equipment or road hopper.	The previous consent allowed for the majority of fabric in the basement level of Building 23 to be removed. However, it is proposed to provide a heritage display area on the Basement Level, visible through a glazed walkway on the Ground Floor, looking down into the lower former structure of the malt silos. The basement interpretation will be able to be read in conjunction with the ground floor funnels and continues these elements. The remainder of the Basement Level will be used for services and plant. With consideration for the proposal as a whole, this is considered the most appropriate location for the storage of services and plant equipment, and the impact on equipment and existing fabric is therefore considered acceptable. The proposal also frees up the ground floor for public uses.
Policy 43. The entrance to the basement of building 23 is original but the metal stairs and door have little significance and can be altered. Any changes to the stair or door should allow ongoing access to any retained significant machinery in the basement. Consideration should be given to allowing some of the basement equipment to be visible.	This fabric is proposed to be removed and access to the Basement Level will be via a new stairwell. Level changes are proposed, including lifting the height of the funnels to make the ground floor a habitable space. However, the machinery associated with the two easternmost silos is retained and conserved and will be elevated on a small plinth. The glass floor to the basement will ensure that the funnel and plant will be able to be read in association with the basement conveyor and associated elements.

Policy	Discussion
Policy 44. On the second floor, equipment nos. 9, 10, 11 and 12 incorporates the timber malt silo bins that should be retained in their entirety, conserved and interpreted as part of any changes to building 23. Adaptive reuse of any adjacent space should not visually obscure retained elements.	The timber bins are likely to be unable to be retained and interpreted due to hazardous materials and to facilitate the adaptive reuse. Where possible, samples of some equipment and plant will be salvaged and reused within the building in accordance with the Interpretation Strategy and further detailed design development.
Policy 45. On the first, third and fourth floors, equipment nos. 9, 10, 11 and 12 incorporates metal chutes that should be retained in their entirety, conserved and interpreted as part of any changes to building 23. Adaptive reuse of any adjacent space should not visually obscure retained elements.	Where possible, samples of some equipment and plant will be salvaged and reused within the building in accordance with the Interpretation Strategy and further detailed design development.
Policy 46. On the first floor of building 23 equipment no. 13 consists of a metal probe, which should be retained, conserved and interpreted as part of any changes to the building. Adaptive reuse of any adjacent space should not visually obscure retained elements.	Where possible, samples of some equipment and plant will be salvaged and reused within the building in accordance with the Interpretation Strategy and further detailed design development.
Policy 47. On the second floor of building 23 the green dust control equipment, adjacent to the timber bins (nos. 9-12), should be retained, conserved and interpreted as part of any changes to the building. Adaptive reuse of any adjacent space should not visually obscure retained elements.	Where possible, samples of some equipment and plant will be salvaged and reused within the building in accordance with the Interpretation Strategy and further detailed design development.
Policy 48. The brewery machinery above the existing goods lift in building 23 has moderate significance. If the goods lift is proposed to be removed, it is unlikely this machinery could be interpreted separately, and should be considered for removal also.	The lift and machinery are proposed to be removed, consistent with this policy.
Policy 49. The original timber beams above the fourth floor in building 23 should be retained, conserved and remain visible as part of the building's adaptive reuse.	The proposed roof additions and internal structural works do not permit the retention of the timber beams. The additional floor area is required to facilitate a viable reuse and it is considered that the proposed works strike an appropriate balance between conservation of heritage fabric and allowing for an appropriate and viable long term adaptive reuse.
Policy 50. Brewery machinery and equipment on upper levels 5A, 5B and 5C of building 23 (above the fourth floor) should be retained, conserved, visible and interpreted as part of the building's adaptive reuse. This includes the original timber stairs and railing, timber floors and ceilings. Adaptation may be required to meet BCA standards and should be undertaken with further heritage advice.	Where possible, samples of some equipment and plant will be salvaged and reused within the building in accordance with the Interpretation Strategy and further detailed design development. As detailed above, the proposal does not permit insitu retention due to the proposed roof addition and alterations to the internal structure.

Policy	Discussion
Policy 63. Future uses of the Irving Street Brewery buildings should not have an adverse effect on the overall heritage significance of the place and should not adversely impact or visually obstruct any elements or archaeology identified as having exceptional or high significance in Table 5 of this report.	The proposal provides for a base-build standard for a commercial use tenant. It is understood that an educational use is being considered, and will be subject to a separate fitout application. Whilst the proposed education use is supported, any deviation from this commercial use may also trigger future services upgrade requirements and will require a separate and additional development application. The former brewery function was made redundant with the 2005 closure of the brewery and adaptive reuse is critical to the ongoing conservation of the significant building. The proposed education use facilitates public access to the significant building and ensures its ongoing and meaningful contribution to the urban precinct. It is noted that the proposed reuse necessitates intervention to the significant building and fabric (including some elements of high significance such as the silos and hoppers), however, this is to provide for a viable reuse. The proposal has been designed to respond to the industrial and heritage character of the building.
Policy 65. Alterations and additions internally to the existing buildings are allowed where it will not have an adverse impact on the overall significance of the place or on fabric identified as having exceptional or high significance in Section 5 of this report. Changes that reduce the significance of the place should be reversible and be reversed when circumstances permit.	Generally internal works comprise of the removal of existing structure and construction of new floors. The majority of the internal structure is later and / or modified concrete structure, of no heritage significance, and is not required to be retained on heritage grounds. Its removal and replacement with new 'floating floors' as proposed, will not have a detrimental heritage impact. The proposal does impact on significant fabric, with works including further removal of the silos and associated plant, removal of one of the three coal hoppers and works to the façades in conjunction with modifications to the stair hall and revision to floor levels. The proposal has been assessed in more detail in section 7.1 and reference should be made to that section in addition to assessment above. The significant elements of the buildings will be retained or adequately interpreted, while enabling the development of a functional space for future occupation. The proposed internal works are supported from a heritage perspective. Detailed design development should be undertaken in conjunction with a qualified heritage consultant to ensure fabric removal is undertaken appropriately.
Policy 66. New work such as additions or alterations to the existing Irving Street Brewery buildings should not detract from the place's overall heritage significance and should be identifiable as new work. Restoration of existing elements, such as removal of vents from windows and replacement with	A careful balance of conservation and modern intervention has been achieved with the current proposal, which seeks to provide a feasible outcome for the use of the space, but also embraces and celebrates the site's history through interpretation and retention of significant fabric.

Policy	Discussion
new materials to match, should still be identifiable as new works. Minimal replacement of original fabric should occur and it should be repaired if possible.	Rather than diminishing the heritage of the City of Sydney, the subject proposal seeks to enhance the heritage values of the Brewery Buildings by enabling the future occupation of the space, and providing a new phase of use for the site. The proposal will allow the Brewery Buildings to be an integrated, accessible part of the Central Park precinct. Proposed additions are apparent as new work, responding to the architectural language and materiality of the tri-gen plant addition and the robust industrial character of the heritage item.
Policy 69. Any new buildings proposed on the site should not intrude on the integrity the existing Irving Street Brewery buildings. The original (c. 1912) Brewery buildings, chimney and yard should be read as a significant group.	There are no new buildings proposed, only minor additions which have been designed to be subservient to the original buildings. As such, the proposal will not obscure the presentation of the Brewery Buildings as a unified group of buildings.
Policy 70. The two driveways on the ground floor of buildings 22 and 23 should not be enclosed with a solid non-transparent surface. They are original access ways from Irving Street to the brewery yard, and should either be retained as open access points or enclosed with a contemporary finish that allows views from Irving Street to the brewery yard.	On the ground floor, within Building 23, there are currently two open former cart drives. These were the original 'in' and 'out' vehicular access points for the Brewery Buildings. It is proposed retain these openings as is, with the western-most cart drive being glazed to create an interior space, and the eastern-most cart drive being enclosed by a bi-fold metal gate and ramped internally, to provide a main point of entry for the building. This adaptation is considered reasonable as vehicular access is no longer a viable use for these spaces, and it will allow the users of this space to experience this significant feature of the building. Proposed glazing and gate enclosures allow the former open character of the cart-ways to be interpreted. Details of the proposed fixing and interface of new materials and the significant stonework should be considered in the detailed design and provided to the project heritage consultant for approval.
Policy 71. The existing openings from Balfour Street to the brewery yard on the ground floor west and east façade of building 26 can be modified, however removal of further original brickwork should not be undertaken. Following removal of metal roller doors, new openings can be contemporary if their design does not detract from the significance of the group of Brewery buildings. Any new brickwork should match existing and original bricks should be reused where possible.	The larger openings are being retained, with fixed and operable glazed insertions to provide for access and light. This is a sympathetic solution to these former access openings, and has been adopted along the whole of the eastern façade. Proposed new openings are sympathetic to the proportions of original fenestration.
Policy 72. The access points on the ground floor west and east façade of building 30, one to the brewery yard and the other to Balfour Street, are later additions to this building and can either be enclosed by contemporary materials or retained as openings.	The larger openings are being retained, with fixed and operable glazed insertions to provide for access and light. This is a sympathetic solution to these former access openings, and has been adopted along the whole of the eastern façade. Proposed

Policy	Discussion
Policy 73. New openings may be added on the west and east facades of building 30, so long as they complement the form and size of other openings along the east and west façades of buildings 22 and 26. Contemporary doors and windows may be considered if their design does not detract from the significance of the buildings. The building archaeology illustrating the height increase and change in use should not be affected and should be interpreted as part of any changes. There is more flexibility to provide new openings on the new north façade of building 30, as this was never an external wall.	new openings are sympathetic to the proportions of original fenestration. The proposal retains the larger openings approved with stage 1. This is a sympathetic solution and has been adopted along the whole of the eastern façade. Proposed new openings are sympathetic to the proportions of original fenestration and façade bays. The northern façade does not currently exist, and is an open shell. The former internal wall was demolished in conjunction with the construction of the trigen plant. The proposal modifies the full height glazed façade approved with the stage 1 application, for structural reasons, associated with the extension of the floor plates. The proposed façade has no further impact than the present façade approval. This is proposed to be full-height glazing, allowing a contemporary approach to this side of the building, and providing façade activation and views into the building.
Policy 74. Any consideration for mezzanine levels on the fourth floor of building 23 should not obstruct the view or remove any of the original timber roof trusses or original corrugated metal interior roofing. These original building elements should be visible and interpreted as part of any redevelopment of the site.	See previous discussion regarding the removal of Building 23's internal structure and proposed roof additions.
Policy 75. Additional floors may be added within the internal space of building 30 so long as the overall significance of the building or any internal elements are not adversely affected and the scale of the three coal hoppers remains visible and legible.	Floating floors are proposed throughout Building 30 to align with the floor levels throughout the remainder of the place. These new floors provide additional floor space to facilitate a viable new use, but also provide for interpretation of and interaction opportunities with the former coal hoppers being retained. The hoppers are able to be viewed from below and immediately adjacent, on the proposed bridge. The proposed removal of the central hopper has been assessed above.
Policy 78. Additions on the roof of buildings 23 and 22 should be limited to new services setback from the roofline and not additional floor space (unless within existing roof structure). These buildings have been altered internally as brewing operations changed, however their façades and height have remained relatively intact.	Roof additions are proposed to the length of Buildings 22 and 23, as assessed in section 7.1.2 and above. Additions are proposed to facilitate a viable reuse and have been designed to mitigate impacts to fabric and significant views and also to respond to the contemporary architectural language of the trigen addition. The proposed addition is considered sympathetic in its form and materiality and enables retention of principal views to the southern elevation as the addition is almost wholly concealed.
Policy 79. The offices at the western end of the ground floor of building 22 can be altered. These offices have been altered with changes to brewing operations and no longer function as office spaces.	This area has been stripped and is proposed for adaptive reuse, with a new floating floor, and also accommodates one of the proposed new internal lifts. There are no heritage impacts identified in relation to this work. The proposed adaptation of the

Policy	Discussion
Any alterations or additions in this area should not encroach on the two driveway access points from Irving Street to the brewery yard (Asset 52), and should not adversely affect the heritage significance of buildings 22 or 23 or any elements assessed having exceptional or high significance.	cart ways allows the original external form and character to remain legible.
Policy 80. The goods lift within building 23 has low significance and can be recorded and removed. Consideration can be given to installing a new lift within this space, however new lifts and stairs should be avoided within other areas of building 23 due to the significant fabric to be retained.	A new fire stair and lift is proposed to the north west corner of Building 23. Refer to previous discussion regarding the location of these additions and internal works generally throughout Building 23 at Section 7.1.1, 7.1.3 and 7.1.3 of this report.
Policy 81. The brick stairwell (25) with concrete reinforced slabs keying into original face brickwork of adjacent buildings 26 and 22 should be recorded and removed as it has been assessed as an intrusive element. The original brick and sandstone arch on the eastern façade, adjoining buildings 22 and 26 should be retained. The stairwell addition does not abut or join with this arch.	The existing stairwell will be replaced with a new structure to facilitate access to the proposed roof addition and having regard to the alterations to the floor levels. As assessed in section 7.1, the external form and materiality is consistent with the original, retaining the inset form, which enables the original facades and return elements to be read. Detailed design of the stair should be undertaken in conjunction with heritage advice and with careful consideration for heritage fabric within the stair, to minimise intervention to significant elements and where possible to allow for reinstatement of lost detailing. The new stair should be offset from the wall where possible to mitigate impacts on fabric. Whilst it will be higher in scale than the existing stair well, materiality and setbacks will mitigate this visual impact.
Policy 82. The requirement for new lifts, stairs or plant equipment within the existing Irving Street Brewery buildings should be limited to buildings 22 and 26, and the north section of building 30, so as to avoid the impact on fabric of exceptional or high significance. If required, building 25 could be considered for retention to provide space for new services.	Refer to Sections 7.1.3 and 7.1.6 of this report regarding the insertion of new services throughout the Brewery Buildings, including stairs and lifts. Proposed stairs and lifts largely comply with this policy, with new stairs being located within buildings 22 and 26. A new stair is also proposed at the northwest corner of building 23, which does impact on the extent of interpretation of the silos on the ground floor. This is assessed in section 7.1.5. It is considered that the extent of the retained funnels allows for the interpretation of the original extent, particularly when coupled with other interpretation elements.
Policy 83. The requirement for new services should not impact upon significant fabric of the Irving Street Brewery buildings, both internally and externally. New services proposed to be located on the roof of any existing building should be setback from the edge and should not adversely impact significant fabric or views.	See above discussion (refer to section 7.1 above). Roof services are limited, with consideration for the proposed roof additions.
Policy 85. The site should have an interpretation strategy prepared prior to development	Urbis prepared a Heritage Interpretation Strategy for the whole of the former Carlton United Brewery site (July 2009) and a

Policy	Discussion
of the site. The interpretation strategy should be applied across the entire former CUB site, including retained and new buildings and other site elements.	subsequent strategy was prepared for the subject Brewery Buildings: <i>Heritage Interpretation Strategy: Irving Street Brewery Buildings and Yard, Former Carlton and United Brewery site, 26 Broadway, Chippendale, NSW, July 2012.</i> That latter document was prepared with consideration for a former use and is no longer applicable. A preliminary interpretation strategy has been prepared for this application, in accordance with the SEARs, and building on the previous strategies. This report is included in this report at Appendix A.
Policy 86. All signage should to be retained and conserved in-situ on all retained Irving Street Brewery buildings. This applies to internal and external signage both relating to brewery operations and other site operations (e.g. painted signs, parking signs, operational signs, safety signs), as it is considered to be one of many effective interpretation means.	Any significant historic painted signage associated with the brewery function will be retained and conserved. Any movable signage will be salvaged for reuse in conjunction with the heritage interpretation strategy and further detailed design. Signage should be used to best effect and may be installed within the proposed interpretation zones.
Policy 89. The open space at the southern end of the ground floor of building 23 should not have any structural additions that would visually obscure any retained malt silos and associated elements. It is strongly recommended that space on the ground floor of building 23 is used for interpretation of the former function of these buildings, and the adjacent equipment of exceptional significance to be retained.	See discussion regarding the malt silos at Section 7.1.5 of this report and further discussions above.
Policy 90. With the adaptive reuse of building 30, internal space should adequately allow for interpretation of the retained three coal hoppers.	See discussion regarding the hoppers at Section 7.1.4 of this report.

7.5. SUMMARY ARCHAEOLOGICAL IMPACT ASSESSMENT

Reference should be made to the historical and Aboriginal Archaeological Assessments in section 5 of this report.

7.5.1. Aboriginal Archaeological Impact Assessment

It has been concluded that the accumulated impacts associated with the ongoing post-Contact development and occupation of the site are likely to have extensively disturbed and/or destroyed the Aboriginal archaeological resource that may have formerly been present on the site. Aboriginal Archaeological potential is therefore assessed as low to nil.

The subject proposal will not involve substantial amounts of excavation, requiring works typically in conjunction with services such as for lift pits and localised excavation for services and stairs.

Having regard to the highly disturbed nature of the site and the limited nature of the proposed excavation, the proposal is unlikely to result in adverse impacts to the Aboriginal archaeological resource.

7.5.2. Historical Archaeological Impact Assessment

The Brewery Yard is considered to be substantially disturbed following the construction of the tri-generation plant below ground level in 2015 and potential is assessed as nil. Buildings 22 and 23 were previously regarded as disturbed due to the construction of the maltings and filtration buildings, which included excavation for substantial basements. There has also been further disturbance to building 30, in conjunction with the construction of the trigen plant.

The subject proposal will not involve substantial amounts of excavation, requiring works typically in conjunction with services such as for lift pits and localised excavation for services and stairs.

Having regard to GML's previous assessment, and the limited excavation required, the proposal is unlikely to result in adverse impacts to the potential historical archaeological resource.

8. CONCLUSION AND RECOMMENDATIONS

The proposal has been assessed herein and it is concluded that the works will not result in an adverse heritage impact to the place or the heritage listed chimney which forms part of the site.

While the proposal includes a high degree of fabric modification and alteration, the overall design and mitigation of impact where possible has resulted in an acceptable level of heritage impact. Practical solutions to the ongoing occupation of these buildings have been carefully considered with regard to minimising adverse impacts, whilst looking for ways to celebrate and interpret the history of the place. A careful balance of conservation and modern intervention has been achieved with the current proposal, which seeks to provide a feasible outcome for the adaptive reuse of the space, but also embraces and celebrates the site's history through interpretation and retention of significant fabric.

Rather than diminishing the heritage of the City of Sydney, the subject proposal seeks to enhance the heritage values of the Brewery Buildings by enabling the future occupation of the space, and providing a new phase of use for the site. The proposal will allow the Brewery Buildings to be an integrated, accessible part of the Central Park precinct.

The proposal has been developed with design excellence at the forefront. The design has been undertaken by Tzannes Architects, who are responsible for the design of the tri-generation cooling tower atop Building 30 of the Brewery Buildings. This first stage of the Brewery building renewal was internationally recognised and Tzannes were the recipients of the 2016 Chicago Athenaeum International Architecture Award, and the 2016 UNESCO Heritage Award for New Design in Heritage Contexts for this work, as well as the Lachlan Macquarie Award for Heritage at the 2015 National Architecture Awards. This SSDA proposal sees the continuation of high quality architectural design and innovative approaches on the Brewery Building project.

The Brewery Buildings not only form part of the Central Park precinct, they are the historic centrepiece of this urban environment, and the last remaining physical representations of the site's significant brewing history and the former industrial buildings on the site. The buildings must be adapted for future use not only to prevent their physical deterioration, but to provide an important central element within the public domain of the Central Park precinct.

Aboriginal and Historic Archaeological potential has been assessed as low to nil and with consideration for the highly disturbed nature of the site as well as the minimal nature of the proposed excavation, the proposed works are unlikely to impact on the archaeological resource.

The proposal is supported from a heritage perspective and is recommended for approval subject to recommendations as outlined below.

8.1. RECOMMENDATIONS

- A heritage consultant should be engaged to provide input and advice throughout the detailed design development of the proposal for construction and implementation. The heritage consultant should be involved in the resolution of works affecting significant facades and fabric including (but not limited to):
 - o Conservation and Maintenance works.
 - o Detailed design of Interpretation elements and reuse of salvaged items.
 - o Materials and finishes for new work and alterations.
 - o Detailed design of windows to ensure consistency with the window schedule and typologies defined in the schedule of conservation works.
 - o Detailed design of new door openings and gates and interface with significant stone and brickwork.
 - o The interface between the significant facades and new additions (including the new stair and heritage facades of buildings 22 and 26)
 - o Any demolition/ removal of significant elements (such as the central coal hopper).
 - o Detailed design of rainwater goods.

- Opportunities for reinstatement of details on the former facades which are now encased by Building 25 (stairwell) should be explored in conjunction with a qualified heritage consultant, and should be subject to further design development.
- Where appropriate, the form and concrete walls of the malt silos should be retained against the internal face of the external walls of Building 23 to assist with the interpretation of this element. This should be subject to further detailed design in conjunction with a qualified heritage consultant.
- Conditions of consent should require the implementation of an Interpretation Strategy in accordance with the preliminary strategy in Appendix A and relevant previous strategies.
- Conditions of consent should require the implementation of the revised Schedule of Conservation Works prepared by Urbis.

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APPENDIX A INTERPRETATION PLAN

HERITAGE INTERPRETATION PLAN BREWERY BUILDINGS

URBIS

URBIS STAFF RESPONSIBLE FOR THIS REPORT WERE:

Director	Stephen Davies, B Arts Dip Ed, Dip T&CP, Dip Cons Studies, M.ICOMOS		
Associate Director	Fiona Binns, B Arts, M Arts (Curatorial Studies)		
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1. INTRODUCTION

1.1. BACKGROUND

Urbis has been engaged by IP Generation Pty Ltd to prepare the following Heritage Interpretation Plan. The Strategy is appended to a Heritage Impact Statement prepared for a State Significant Development Application. Reference should be made to that document for further background on the site, specifically section 2 Site Description and section 3 Historical Overview.

1.2. METHODOLOGY

This Interpretation is intended to inform and guide collaborative Interpretation planning with stakeholders and relevant parties. The Strategy has been prepared in accordance with relevant guidelines and relevant policy as outlined below.

1.2.1. Heritage Guidelines and the Burra Charter

Heritage conservation seeks to sustain the values of heritage landscapes, places and objects, individually and collectively, so that the community and visitors can continue to appreciate, experience and learn from them and about them, and so that they can be passed on to future generations.¹ Interpretation is an integral part of the experience of significant heritage places and the conservation and management of heritage items and is relevant to other aspects of environmental and cultural management and policy. Interpretation also incorporates and provides broad access to historical research and analysis.²

This Interpretation Plan has been prepared in accordance with the *NSW Heritage Manual*, the NSW Heritage Branch *Interpreting Heritage Places and Items: Guidelines* (August 2005) and the NSW Heritage Branch's *Heritage Interpretation Policy* (endorsed by the Heritage Council August 2005). The general philosophy and process adopted is guided by the Australia ICOMOS *Burra Charter 1999*.

The Burra Charter defines interpretation as “all the ways of presenting the *cultural significance* of a place” and it may be a combination of the treatment of the fabric; the use of and activities of the place; and the use of introduced material (Article 1.17).

Interpretation should provide and enhance understanding of the history, significance and meaning of the building. Interpretation should respect and be appropriate to the cultural significance of the building (Article 25).

The NSW Heritage Branch *Interpreting Heritage Places and Items: Guidelines* lists the following best practice “ingredients” for interpretation:

- 1) Interpretation, People and Culture – Respect for the special connections between people and items
- 2) Heritage Significance and Site Analysis – Understand the item and convey its significance
- 3) Records and Research – Use existing records of the item, research additional information and make these publicly available (subject to security and cultural protocols)
- 4) Audiences – Explore, respect and respond to the identified audience
- 5) Themes – Make reasoned choices about themes, stories and strategies
- 6) Engaging the Audience – Stimulate thought and dialogue, provoke response and enhance understanding
- 7) Context – Research the physical, historical, spiritual and contemporary context of the item, including related items, and respect local amenity and culture
- 8) Authenticity, Ambience and Sustainability – Develop interpretation methods and media which sustain the significance of the items, its character and authenticity

¹ NSW Heritage Branch, Department of Planning, Heritage Information Series, Heritage Interpretation Policy, August 2005, pg 2.

² Ibid 3

- 9) Conservation Planning and Works – Integrate interpretation in conservation planning and in all stages of a conservation project
- 10) Maintenance, Evaluation and Review – Include interpretation in the ongoing management of an item; provide for regular maintenance, evaluation and review
- 11) Skills and Knowledge – Involve people with relevant skills, knowledge and experience
- 12) Collaboration – Collaborate with organisations and the local community

1.2.2. Relevant Policies and Recommendations

There have been a variety of reports prepared for the site and this report is informed by previous policy and documentation as outlined below.

1.2.2.1. Heritage Interpretation Strategy 2009

This report details the recommendations of the 2009 Interpretation Strategy prepared by Urbis for the whole of the Carlton United Brewery site.

In addition to identifying interpretive themes (refer Section 3.2) the 2009 report made a number of recommendations with regard to potential interpretation in the Brewery Buildings. The intent of the 2009 report was that the buildings would form a focal point for the interpretation over the whole site. It acknowledged however that the scheme and use of the buildings had not yet been finalised and the previous scheme (2009) dedicated space for community uses/ library link and interpretation on the ground level which is no longer proposed.

The strategy recommended inclusion of the following interpretive media:

- Creation of an Interpretive Centre/ Exhibition Space. The Centre should aim to:
 - Chart the history of brewing on the site and site expansion. Identify and interpret the original Kent Brewery and Yard.
 - Interpret the process of brewing and the production process at various points around the site (e.g. the malting precinct, laboratory, administrative precincts etc.).
 - Interpret the social/ workers history including the variety of work (brewing, admin and all associated trades) and the changing production and technologies in brewing, workplace reforms/ unions/ strike action- workplace safety/ staff bars, the concept of the “honeypot” and the wet and dry workplace and the more recent history of the take over and subsequent break up of the site.
 - Incorporate audio and video – day broken by whistles, oral histories and sounds of brewery utilised on the oral history sound track and video of tank and audio from the PHM of coopers working (from the 1980s).
 - Incorporate significant archaeological finds associated with the Brewery Yard where available and where appropriate.
 - Incorporate salvaged objects.
 - Opportunity to incorporate objects borrowed from the Powerhouse Museum (in consultation).
 - Provide storage for copies of past reports (including archaeological, archival and conservation reports) perhaps in association with library link?
 - “Haunted maltings” (from oral history).
 - “Workers wall” – recording names and/ or messages from the former Brewery workers
 - Scan books so they can be “read” electronically.
- Interpret the use and function of retained significant internal fabric, such as the coal hoppers and malt silos, as part of the brewing process. Interpretation could be quite minimal and undertaken in association with the proposed interpretation in the ground floor Interpretive Centre. Other retained fabric, including original instructional signage in the brewery buildings is regarded as self interpreting.

- There is potential to use salvaged materials in other ways, for example there is an opportunity to reuse salvaged tanks in interpretation perhaps as an info / interpretation kiosk, either outside or in the interpretation centre (dependent upon size and scale of the salvaged objects).
- It is recommended that the Lighting Strategy should consider specialist lighting of the Irving Street Brewery to highlight the buildings as the heart and focus of the redeveloped Brewery site. Lighting could focus on the tower element, which has been an identifiable element in the Ultimo/ Chippendale skyline.

The report also made the following more general recommendations relevant to the Brewery Buildings and Yard, which are excluded from the brief of this report:

- Create a Heritage Walk that:
 - Interprets key sites and remaining heritage buildings and features as well as the evolution of the site and the process of brewing around the site. At a minimum, the Heritage walk should interpret key sites. The heritage walk should also identify and interpret the former Kent Brewery and Yard as well as archaeological features (in particular the ovoid drain and underground tank under former building 13A). The walk should also interpret the former street patterns on the site and the alignment of Broadway. There is an opportunity for laneways and streetscapes to accentuate former spatial arrangements, subdivisions and settings. Opportunity to incorporate images of lost street views (e.g. views of Broadway prior to the road widening and former terraces on Irving Street.) The heritage walk may also tie into the public art and architectural aspects of the new development. More than one “walk” may be devised in association with different themes.
 - Incorporates plaques/ signage on associated sites.
 - Incorporates traditional and contemporary media, utilising signage, soundscapes and podcasts and/ or WiFi technology.
 - Provides downloadable heritage brochures/ walking map available on the website.
- Recommend participation in specific open days throughout the year and in association with heritage groups. This may include but should not be limited to:
 - Sydney Open, the bi-annual festival that unlocks the doors of some of Sydney’s most prestigious locations and showcases the best of Sydney’s architecture.
 - Support for a program of temporary art events, coinciding with Sydney festivals such as the Festival of Sydney, the Sydney Film Festival, the Live Lanes Project and the new Vivid Sydney.
 - Open days in association with ongoing archaeological program of works.

1.2.2.2. Heritage Interpretation Strategy: Irving Street Brewery Buildings and Yard, Former Carlton and United Brewery Site, Chippendale, NSW, July 2012

The strategy was prepared in conjunction with consent for the application for adaptive reuse of the Brewery Buildings (MP10_0217). The application was approved by the Minister for Planning and Infrastructure subject to conditions of consent, including provision of the Heritage Interpretation Strategy.

Condition B5 - Heritage Interpretation Plan states:

A Heritage Interpretation Plan for the Block 4B Brewery Buildings and Yard must be prepared and submitted to and approved by Council, prior to any Construction Certificate being issued.

The Heritage Interpretation Plan must detail how information on the history and significance of the Brewery Buildings and yard will be provided for the public and make recommendations regarding public accessibility, signage and lighting. Public art, details of the heritage design, the display of selected artefacts are some of the means that can be used.

Condition E10 for MP10_0217 further required the full implementation of the strategy prior to the issue of the Occupation Certificate.

Condition E10 - Heritage Interpretation Plan states:

Prior to the issue of an Occupation Certificate, the Interpretation Plan for the Block 4B Brewery Buildings and Yard must be implemented to the satisfaction of the City of Sydney Council’s own Heritage Specialist.

The Strategy the strategy sought to enhance the enjoyment and understanding of the site, its history and significant values, guided by the significance of the site and having regard for its intended use, and subsequent audiences. The strategy made recommendations regarding content and media of the interpretation, as well as nominating potential locations for interpretive installations.

The strategy was limited to interpretation of the remaining Irving Street Brewery Buildings and was consistent with the identified themes and recommendations of the whole of site strategy as detailed in section 1.2.2.1. The Strategy also considered policies set out in the Special Element Conservation Plan, prepared by Urbis (2009). This report considers the recommendations of this report, with regard to the present proposal and likely uses/ access.

1.2.2.3. Public Art Strategy

“Public Art Strategy: Expressing the Soul of the past and the Spirit of the Future”, 25/05/09 was prepared by Jennifer Turpin and Michaelie Crawford for Frasers Broadway. The strategy identified public art opportunities in the Brewery Precinct as outlined below.³ Detail design and use of the Brewery buildings has evolved and the public art strategy is currently subject to review as some of the previously recommended actions are regarded as impractical. For instance, the recommended silo installation is not feasible under the current approval.

- External Glass Façade - The large glass façade that is proposed to replace the current internal wall on the northern face in building 30 of Block 4b presents an opportunity for a significant integrated architectural-scale artwork. This work might be inspired by the brewing process itself and develop the notion of process as an idea to consider transformative organic and industrial processes of aggregation, disintegration, fermentation and more generally of alchemical transformation, fluidity, flux and change. Interwoven with these ideas could be the trace of the Military Gardens organic cycle of growth and decay, its irrigation, crops and harvest.
- Internal Silos - The two remaining internal silos within building 23 fronting Irving Street run vertically through the building from the ground to the top floor and provide a wonderful opportunity for an art installation with the possible combination of light, sound and movement. The environmental design engineers Lincolne Scott are considering the adaptive reuse of these silos for a passive cooling of the building. Their requirements to puncture holes in the silo structures and create air flow could interact with an art installation to create both visibility and movement and would not be impeded by the addition of sound and light elements.
- Brewery Yard - The Brewery Yard is a site of significance in its relationship to both brewing processes and to the trigeneration plant located beneath it. A work here would focus on ideas related to the phenomena of energy itself and take inspiration from the processes and products of the trigeneration plant. It would not however attempt to be explanatory or educative. An art installation here would respond to the landscape and architectural design of the yard. The artist would be required to interface or collaborate with the designers of the precinct in the development of their work. The work may not be substantially material but could rather engage the more ephemeral qualities of light, sound, electro-magnetism or mist. A work here would have particular importance in the activation of the space both day and night and the flow of movement between the park, brewery yard and Blocks 1 & 4a's through-site links. This location would also have high visibility from above within the surrounding buildings.
- A number of opportunities exist for an artist to design and to collaborate with the lighting designers to develop a particular area of the lighting design as a permanent public art installation. Locations include:
 - The specialist lighting of the Irving Street Brewery and or chimney.

1.2.3. Other Background Reports

In addition to the 2009 Strategy, the following reports for the CUB site have also been reviewed:

- An Oral History of Kent Brewery, Historical Research and Oral History. Mary Ann Hamilton and Sue Andersen. For Carlton and United Breweries (NSW) Pty Ltd. August 2004.
- Conservation Management Plan by Noel Bell Ridley Smith and Partners (2005).

³ Jennifer Turpin Studio, 2009, Frasers Broadway Public Art Strategy, Expressing the soul of the past and the spirit of the future, pg 9 and 12

- Archaeological Assessment by Godden Mackay Logan (2006).
- Heritage Impact Statement – Concept Plan by Godden Mackay Logan (2006).
- Heritage Impact Statement – Site Demolition and Recycling by Godden Mackay Logan (2007).
- Salvage and Retention Survey by Godden Mackay Logan (2007).
- Heritage Impact Statement – Amended Concept Plan by Urbis (2008).
- Heritage Impact Statement – Blocks 1 and 4 by Urbis (2009).
- Former Carlton and United Brewery Site, Special Element Conservation Plan: Irving Street Brewery Buildings and Yard, (Asset No.s 22, 23, 25, 26, 30, 36 and 52), 26 Broadway, Chippendale, prepared by Urbis June 2009.

1.3. OBJECTIVES

Interpretation is an essential part of the heritage conservation process. The active interpretation of heritage places supports the recognition and understanding of a site's significance.

The implemented interpretation strategy will make the cultural and historic significance of the Brewery Buildings readily apparent to all who visit or are involved with the site. In accordance with the above methodology, the strategy intends to enhance the enjoyment and understanding of the site, its history and significant values. The strategy will be guided by the significance of the site, having regard for its intended use, and subsequent audiences. It is intended that the strategy will make recommendations regarding content and media of the interpretation, as well as nominating potential locations for interpretive installations.

Subsequent to the provision of this strategy, Urbis has been engaged to prepare a detailed Heritage Interpretation Brief, outlining content, text, images and/or ephemera to be utilised in the interpretation.

1.4. AUTHOR IDENTIFICATION

The following report has been prepared by Fiona Binns (Associate Director). Unless otherwise stated, all drawings, illustrations and photographs are the work of Urbis.

1.5. LIMITATIONS

The brief of this strategy was to interpret only the remaining Irving Street Brewery Buildings. This report follows provision of an Interpretation Strategy for the whole of the Frasers Broadway site, and is consistent with the identified themes and recommendations of that report.

This Strategy forms part of a staged program of works to deliver the interpretation of the Irving Street Brewery Buildings. Urbis has been engaged to provide detailed design of interpretive media as part of stage 2 works for compliance with the conditions of the Occupation Certificate (as detailed in Section 1.1 above) and also to assist with production and finally, installation of the interpretive media in conjunction with graphic and other designers.

Some archaeological works have been undertaken at the site, however details of finds have not been made available. It is recommended that finds be utilised in interpretation however this is subject to the availability and significance of finds.

Where images have been recommended for use in interpretive media, permission to use the images must first be obtained from the copyright holder. This is to be undertaken prior to implementation of works.

2. THE PROPOSAL

This strategy has been prepared to accompany a State Significant Development Application (SSDA) for works to the Irving Street Brewery Buildings and Yard. The Strategy considers the proposed works and the proposed use of the site in the development of Interpretation media, themes and content. The Proposal includes conservation and retention of significant brewery-specific elements and reuse of salvaged items and specific interpretation zones have been nominated in the SSDA (refer to plans provided in section 3). It is intended that interpretation will be subject to further detailed design and development as set out in section 4.1.

2.1. THE CENTRAL PARK CONCEPT PLAN

The Site is located on land that forms part of the Central Park (Carlton United Brewery) Concept Plan MP 06_0171. The Concept Plan establishes the importance of the Brewery Yard site within the precinct. The Site encompasses several of the major heritage buildings in the precinct as well as the Central Park Thermal Plant trigeneration facility. The existing heritage buildings address Chippendale Green and are bounded on the east by the north-south pedestrian and cycle link connecting Chippendale to Broadway.

Within the site boundary the Concept Plan designates building heights, publically accessible spaces and GFA. The Brewery Yard forecourt within the north-west portion of the site is planned as publically accessible, privately owned space, whilst a publically accessible through site link intersects the southern block.

In addition to the Concept Plan a Part 3A Project Application (MP 10_0217) was approved on 15 May 2012 for the alterations to and adaptive reuse of the Brewery Yard buildings. The approval included two construction stages, being:

- Stage 1: construction of associated plant related to the approved Central Thermal Plant including cooling towers and metal enclosure to the roof of the Old Boiler House, external chimney flues, reuse of chimney stack and stairs and air ducts in Brewery Yard.

SSD conditions of consent required conservation works to the buildings and a schedule of conservation works was prepared by Urbis, which has recently been revised. Conditions also required preparation of an Interpretation Strategy, which is superseded by this strategy.

- Stage 2: partial demolition of some existing building fabric and the adaptive reuse of the Brewery Yard buildings providing 6,386m² of GFA.

This consent has been acted upon and the first stage has been constructed in accordance with the consent, completed in 2014. Should the subject SSDA be approved, Stage 2 would be relinquished.

2.2. THE SUBJECT PROPOSAL/ NEW WORK

The following has been summarised from the Design Report prepared by Tzannes Associates and submitted with the subject Development Application.

The proposed new work follows conservation, restoration and adaptation principles established by the 2014 works. New elements are a direct expression of its function adapted to the particular form and character of the heritage building. The use of metalwork for new additions sympathetically contrasts the heritage masonry of the existing building and reflects the more contemporary industrial legacy of the building's adaptation over time.

The proposed new work comprises five major elements:

- a new roof form and addition comprising two new floor levels
- a new glazed northern façade (modified but similar to that previously approved)
- reorganisation of floor levels internally to allow for additional mezzanine floors
- a distinct new egress stair to the west (off the northern façade) and
- a new entrance lobby facing onto Brewery Yard (west elevation)

The brewery buildings will be tenanted and educational uses are being considered.

The new roof form to the south building creates additional learning space and follows the building's tradition of a landscape of roofs which was extended by the Central Thermal Plant rooftop addition. The roof form and skylights are designed to ensure sun access to Chippendale Green and act as lightwells to bring natural light to the internal spaces. The proposal is also sensitive to the heritage building form as the visual impacts are minimised from the park, with little to no visibility of the proposed roof addition.

A new glazed facade to the north ties in with the architectural language of the Central Thermal Plant above and establishes a relationship with the materiality of the adjacent residential buildings. The north east corner of the site is the first view of the Brewery Yard site on approach from Broadway. The union of the old and new is apparent, with the glazed facade on the north and heritage brickwork to the east presenting a powerful expression of the building's adaptive reuse. The new horizontal element in the north facade is designed to align with the existing parapet in the east facade to express the relationship between the new addition and the existing fabric. The integrity of the relation between the existing and the new fabric is expressed in the relationship of the new built form with the existing parapet on the east facade. Within this northern building new floors have been introduced to provide floor-to-ceiling heights suited to a university building. In the southern block (building 22) a proposed mezzanine at level 2 breaks up the former industrial space to be re-appropriated as learning spaces.

The new egress stair in the Brewery Yard integrates existing structures in the yard, including escapes from and ventilation to the below ground plant spaces, into the one built form element and directly expresses its function as a stair in the space. It utilises a simple industrial detail language of metalwork which again connects the architecture to its more contemporary industrial legacy.

The proposal retains significant elements of fabric which are critical to the interpretation of the sites former brewing function and allow for built form interpretation, including remnants of the malt silos and associated malting equipment, and coal hoppers. The proposal also identifies interpretation zones within main foyer and public zones which may include interpretation signage, display of salvaged items, signage and/ or display of archaeological artefacts as guided by the strategy set out in section 3 and subject to detailed design development.



Figure 1 – Photomontage showing proposed stair and roof additions to building 22/23

Source: Tzannes Associates Dec 2018



Figure 2 – Photomontage showing the principal southern façade and demonstrating the negligible visibility of the proposed rooftop additions to building 22/23

Source: Tzannes Associates Dec 2018



Figure 3 – Photomontage showing the view of the northeast corner from Broadway, with the new northern façade and openings to the ground floor eastern façade. The trigen plant is existing.

Source: Tzannes Associates Dec 2018

3. INTERPRETATION PLAN

3.1. AUDIENCE PROFILE

Interpretation aims to reveal meanings and connections. To effectively achieve this, interpretation is predicated on identifying audiences and using appropriate media. It is important to identify specific audiences so that interpretation responds to audience needs and motivations and also takes into consideration literacy levels, disability, gender, ethnicity and age. The 2009 Interpretation Strategy provided audience analysis for the broader strategy and the whole of site development.

The Irving Street Brewery Buildings have historical significance as the last remaining industrial buildings on the former CUB site, providing tangible evidence of the history of the brewing process. The proposed adaptive reuse of the buildings for education uses will provide a focal point for the redeveloped site and provide previously unprecedented public access to the former industrial buildings.

It is envisioned that the main visitors to the site may fall into the following categories:

- Students/ owners/ occupants of the Brewery Buildings.
- Residents/ owners and occupants of the various commercial and residential Central Park towers.
- Visitors for commercial purposes.
- Visitors for recreational purposes including retail users (this will include a large student community and local workers).
- Recreational / tourism (international, interstate, and metropolitan visitors).
- Students and academics attending neighbouring educational facilities including the University of Technology (UTS), the University of Notre Dame, Sydney Institute of Technology and the University of Sydney.
- General public, workers and residents of nearby suburbs, particularly Chippendale, Ultimo and Haymarket and people who work in and around the CBD/ Essential city workers.
- Special interest groups such as heritage, art and architecture enthusiasts and learning audiences including primary, secondary, tertiary, life-long learners.
- Commuters (pedestrian) / through traffic (pedestrian).
- Former Brewery employees.

The site's proximity to education and employment centres and transport hubs including Central Station will encourage a broad visitor base. Visitors to Sydney predominantly stay in the Sydney LGA and much of the City's visitor accommodation is located within the CBD and Ultimo Pyrmont.⁴

The Brewery has a high profile with local Sydney residents and workers and the redevelopment of the site has been the subject of much media coverage, public interest and comment. However, while people may be familiar with the site and its former use, the majority of users (perhaps with the exception of special interest groups and former employees) will probably not be familiar with the detailed history and functions. It is important that the interpretation facilitate an understanding of the site's significance, use and history, on a variety of levels.

The interpretation also needs to consider the permanent residents and regular users/ occupants, it should not be visually or otherwise intrusive and should permit residents to discover and interact with the interpretation over time and on various levels.

⁴ Ibid 3

3.2. THEMATIC ANALYSIS

3.2.1. NSW Historical Themes

The following themes were recognised in the CMP 2005 as being represented by the whole of the former Carlton and United Brewery site. They are listed in the table below.

Table 1 – Historical Themes recommended in the CMP 2005.

Theme	Description
Environment (naturally evolved)	The site is located across the former Blackwattle Creek, now contained within a storm water channel. The creek provided a critical resource to early activities, in the area. The installation of the storm water system drastically changed the local environment of the 'Blackwattle Swamp'.
Aboriginal Cultures and Interaction	Aboriginal cultural interaction may be evident, but the Archaeological Assessment finds that the site is unlikely to contain substantial evidence of Aboriginal occupation based on predicated model of short term visitation, ie. low-lying boggy mud flats surrounding creek line.
Land Tenure	The site is associated with early non-urban uses of Sydney and the subsequent suburbanisation of Chippendale, prompted by its proximity to Sydney and Parramatta Road. Its housing is associated with residential speculation in the first decades of the nineteenth century. The site provides evidence of early subdivision patterns, roads and lanes, including those subsequently incorporated within the site.
Townships	The site provides evidence of expansion of the perimeter of Sydney's earliest settlement for industrial and suburban development and the subsequent expansion of large scale industries into surrounding suburban areas, including a microcosm of streets, lanes, houses and pubs plus early industrial bridges.
Transport	The site provides evidence of the importance of locating industry in close proximity to transport routes, being located on the main colonial transport route between Sydney and Parramatta.
Industry	The site demonstrates the sequence of constant change within the brewing industry in New South Wales from 1834 to the present, as the brewery grew from a small colonial business to an international company. The site is an example of one of the last remaining large scale industrial sites in Sydney.
Labour	The site provides evidence of processes of industrialisation, labour and working conditions, and how these have changed throughout the nineteenth and twentieth centuries.
Agriculture	The site has associations with early agricultural activities, including the Military Gardens, Coopers Paddock and other early land grants/large estates.
Domestic Life	The expansion of the brewery absorbed numerous residential properties, which developed in this area following subdivision of the large land grants in the c1830s.
Commerce	The brewery was itself a commercial enterprise but the site also incorporates a number of former commercial enterprises, eg hotels/shops.

Theme	Description
Technology	The site has been continuously used for brewing since the first half of the nineteenth century, and its buildings and machinery have changed and been replaced in line with technical, statutory and consumer requirements and with changes to the production, packaging and sale of beer.
Defence	The site has early associations with the Military Garden and was used for food processing for the armed forces in the Second World War.
Housing	The site provides evidence of the evolution of terrace housing from early Victorian to the Edwardian period in the Chippendale area.
Leisure	The local hotels on the site are associated with leisure activities, being used as meeting places and a focus for workers and residents in the area.
Persons	The site has strong associations with the Tooth family over three generations. Individual precincts and buildings have associations with prominent architectural firms of the early to mid-twentieth century including Spain and Cosh, Robertson and marks, Halligan and Wilson, and Copemen, Lemont and Keesing.

3.2.2. Interpretation Themes

The significance of the Kent / Carlton United Brewery site is certainly multifaceted and the 2009 Interpretation Strategy identified a number of themes relevant to the site, based on the extant built fabric, the documented history of the site and available resources and its identified significance. The thematic analysis was also informed by the NSW State Historical themes.

The following themes were identified:

- Aboriginal Cultures and Interaction (c.5000BP-c.1788).
- Pre Contact Landscape – the natural environment (pre European environment).
- The Pre-Brewery Landscape (1788-1834).
- Residential Development, Industries, Slums and Resumptions.
- The Kent Brewery - the Brewing Giant/ Expansion and Redevelopment. (1835-2004).
- Industrial Sydney.
- Contemporary architecture.
- Sustainability.

With consideration for the identified significance of the Brewery Buildings and the broader recommendations of the 2009 strategy⁵, it is intended that the Irving Street Brewery Buildings provide a focal point for the interpretation of the significant brewing history and functions of the site. Accordingly, the 2012 Irving Street Brewery Strategy recommended that heritage interpretation in this area principally consider the nominated themes defined below.

The Kent Brewery – The Brewing Giant/Expansion and Redevelopment (1835-2004).

Prior to its closure, the Carlton United Brewery (former Kent Brewery) was the oldest and longest running brewery in Sydney and the significant 170-year span of the sites operation should be interpreted, including the historic development and expansion of the site and brewing processes and technology through to the decommissioning of the Brewery. The Irving Street Brewery Buildings reflect expansion of the plant in the

⁵ Urbis 2009:Table 1: pp29-36

early 20th century (constructed in 1912) and stand as the only remaining buildings directly related to the industrial function of the site. As such, it is important that they interpret the function of the site as a whole. The site should also be considered within the broader context of industry in the colony, competition in the brewing industry, the introduction of the tied house system and the effects of legislation and the Liquor Act.

Any interpretation should also consider the site's association with the prominent Tooth family and the strong social and working history of the site in association with former CUB workers. Research suggests that this was a family oriented company, with many employees giving long service. The information obtained during the site's operation provides evidence of processes of industrialisation, labour and working conditions, and how these have changed throughout the nineteenth and twentieth centuries.



Figure 4 – Kent Brewery Yard.

Source: MAAS, 86/3501



Figure 5 – Broadway before the street widening, c. 1930. Illustrating the location of the Irving Street Brewery Building.

Source: MAAS, 86/3262-1

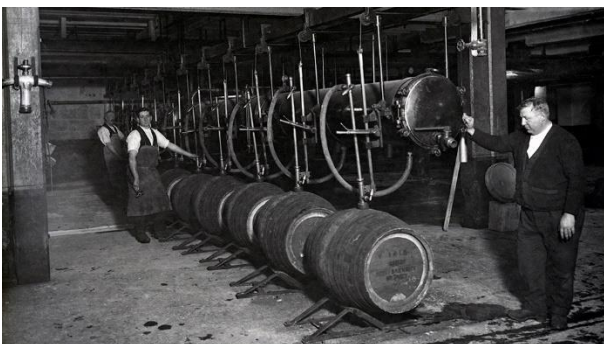


Figure 6 – Barrels in the Kent Brewery in 1922.

Source: Australian National University, Tooth and Company Exhibition.



Figure 7 – Delivery motors parked in Kent Brewery 1922.

Source: Australian National University, Tooth and Company Exhibition.



Figure 8 – Vats of beer at Kent Brewery.

Source: Kent Brewery Workers, *Kents Early Days*,
http://kentbreweryworkers.com/Photoalbum_contents.aspx?Albumid=5.

Industrial Sydney

The site demonstrates the sequence of constant change within the brewing industry in New South Wales from 1834 to the present, as the brewery grew from a small colonial business to an international company. The site is an example of one of the last remaining large scale industrial sites in Sydney.

The site provides evidence of the importance of locating industry in close proximity to transport routes, being located on the main colonial transport route between Sydney and Parramatta.

The site should be considered in the context of other industrial development including the Brisbane Distillery to the west of the Kent Brewery site, and industry in Chippendale and nearby Ultimo and Pyrmont including the CSR, the city iron works and Fife's Iron Foundry, the Anchor and Flour Mills and the Wool Stores.



Figure 9 – Part of the City of Sydney & Suburbs, 1855. Illustrating the brewery site.

Source: City of Sydney Archives, Map 1.



Figure 10 – Aerial view over Chippendale c.1940s.

Source: City of Sydney Archives, 045\045289

Residential Development, Industries, Slums and Resumptions

The site is associated with the suburbanisation of Chippendale, prompted by its proximity to Sydney and Parramatta Road. Its housing is associated with residential speculation in the first decades of the nineteenth century and as noted above in the discussion of the State heritage themes, the site also provides evidence of expansion of the perimeter of Sydney's earliest settlement for industrial and suburban development, and the subsequent expansion of large scale industries into surrounding suburban areas, including a microcosm of streets, lanes (including those subsequently incorporated within the site), houses and pubs.

The subject brewery buildings replaced residential terraces and other smaller scale commercial development along Irving Street. Interpretation should document and illustrate the former residential context of the subject site and surrounds, the history of change and expansion on the site and the evolution of terrace housing from early Victorian to the Federation period in the Chippendale area. This should include, though not be limited to, the 1830s' subdivision of the obsolete Military Garden, the subdivision of Druiitt's land and the 1840s' development of the Kensington Estate, Cooper's paddock and Cooper's Rookery and the subsequent development of Cooper's paddock in the 1870s, Council's early 20th century slum resumptions and the resumption of land along the Parramatta road frontage for road widening on Broadway. The purchase of adjoining properties in the surrounding area of Chippendale and along Broadway by the Brewery, as a land bank for future development, continued up into the last decades of the twentieth century and the gradual subsuming of the residential areas by the expanding Brewery should also be interpreted.

Any significant archaeological findings associated with the residential and early industrial components of the site should be incorporated into the interpretation.



Figure 11 – Cnr Kensington and Regent Street, Chippendale, 1910.

Source: City of Sydney, Archives NSCA CRS 51/2836



Figure 12 – Corner of Outram and Kensington Streets Chippendale, 1910.

Source: City of Sydney, Archives NSCA CRS 51/2839



Figure 13 – Road Resurfacing on Irving Street with Kent Brewery in the distance.

Source: City of Sydney 069/069719

3.3. RESOURCES

This report and subsequent detailed development of Interpretation briefs should consider the following resources and repositories:

- The site itself, including its extant built fabric, salvaged artefacts and ephemera.
- The extensive archaeological resource. Various archaeological excavations have been undertaken across the CUB site, including the Brewery Yard, and have revealed remains of the former site occupation and artefacts have been recovered and catalogued.
- The Powerhouse Museum Archive (the Museum are the custodians of the former Tooth and Co. Museum which was on the site until the 1980s).
- The Noel Butlin Archive, (which includes business records spanning from 1841-1985).
- The City of Sydney Archives Collection (which includes plans, rates and assessment books, published materials and more than 100 Development and Building Application files).
- Published materials.
- Oral history undertaken by Mary Anne Hamilton and Susan Anderson for Carlton and United Breweries prior to the closure and sale of the site (August 2004).
- Published materials.
- Various professional reports prepared for the site, incorporating Conservation Management Plans, Archaeological Assessments, Heritage Impact statements, Demolition and Dilapidation reports, and archival recordings.

3.4. STAKEHOLDER ENGAGEMENT

In developing content of the heritage interpretation as part of further detailed design, there is an opportunity to liaise with former Brewery Workers (should a representative group be able to be identified) to enhance and build on interpretation and social history narratives.

3.5. HERITAGE INTERPRETATION

This framework has been prepared to facilitate the integration of interpretation into the forward planning, management and conservation of Brewery Buildings and as an indication of the general proposed media. The following recommendations are intended as a precursor to developing detailed interpretation briefs.

3.5.1. Built Form Interpretation

“Every built form is a system of connecting links. Architecture, in this context, is the application of a number of spatial and temporal metaphors projected from bodily based experiences.”⁶ Interpretation in the built form thus refers to the treatment of the built form (being existing and adaptively reused buildings, new structures and streetscape elements) to interpret the sites significant values. A built form interpretive strategy is generally a subtler response which emphasises and compliments the more overt interpretive media. Built form interpretation can be used to interpret specific events, uses, former structures and subdivision patterns as well as cultural uses and activities including Aboriginal narratives.

The proposed adaptive reuse of the Brewery Buildings has involved initial design development to facilitate interpretation of significant built elements and features. This provides an opportunity to directly interpret the previous industrial function of the buildings and their operational equipment. The proposal includes retention of identified significant elements and built form interpretation responses including:

- Retention and display of two of the extant three coal hoppers within building (30) (pictured at Figure 17 and indicated on the plan at Figure 22) and provision of associated signage/ and or other explanatory interpretation media

⁶ Snodgrass and Coyne, pg 201

- Retention and conservation of fixed “Tooth and Co” signage on the principal southern façade and any early/ original painted signage elements.
- Display of signage relating to brewery operations and other site operations (e.g. operational and safety signs).

The proposal also includes partial retention of the silo structures and malt processing equipment within building 23, including:

- reconstructive interpretation of two of the eight original malt silos (level 1) (refer Figure 20) and associated plant (to be determined, e.g. the probe). The reconstructed silos will be rebuilt to match the original,
- partial retention of remnant fabric and finishes from the demolished silos on the western and northern walls of building 23,
- reinterpretation of the chamfered rectangular form of the silos at the ceiling level on levels 3 and 4 (refer to Figure 21),
- reconstruction and reinterpretation of five of the former eight funnels on the ground level (refer to the part plan at Figure 19),
- retention of the associated chutes/ equipment on the two easternmost silos (refer to Figure 14),
- partial retention of the conveyor and associated funnels in the basement area (refer to Figure 16) and construction of a glass floor on the ground level to enable views of the basement equipment and interpretation in conjunction with the ground floor elements (refer to plans shown at Figure 18 and Figure 19).
- provision of associated signage and explanatory media



Figure 14 – Malt Silos 1, 2, 3, 4, 5, 6, 7 and 8 (metal equipment and base of reinforced concrete silos) (all) in building 23 (ground floor/ level 1).

Source: Urbis, 2018



Figure 15 – Associated plant adjacent to the silos (to be retained and displayed in situ) (building 23 level 1/ ground floor)

Source: Urbis, 2018



Figure 16 – The basement conveyor and associated plant, part of which is to be retained and displayed via the viewing panel in the ground floor

Source: Urbis, 2018



Figure 17 – One of the three coal hoppers within Building 30.

Source: Urbis, 2012

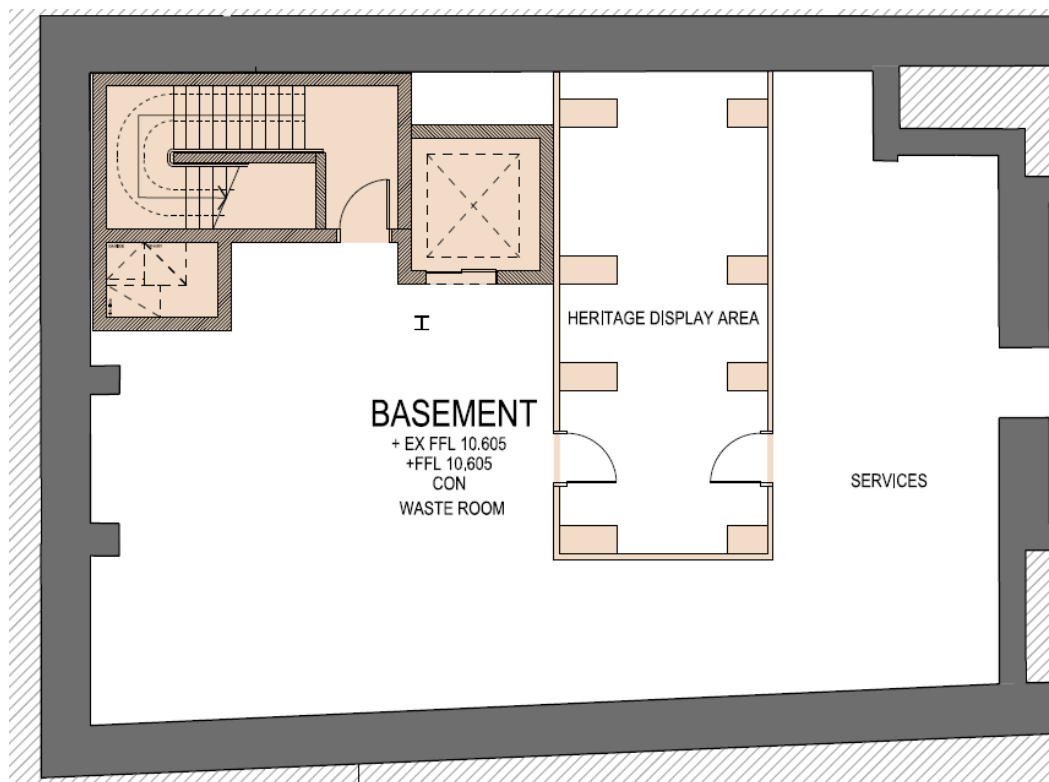


Figure 18 – Part plan of the proposed basement level showing heritage display area (visible through glass floor on ground level pictured at Figure 19)

Source: Tzannes, "Basement 1 Floor Plan", Drawing no. DA 1101, Revision A.

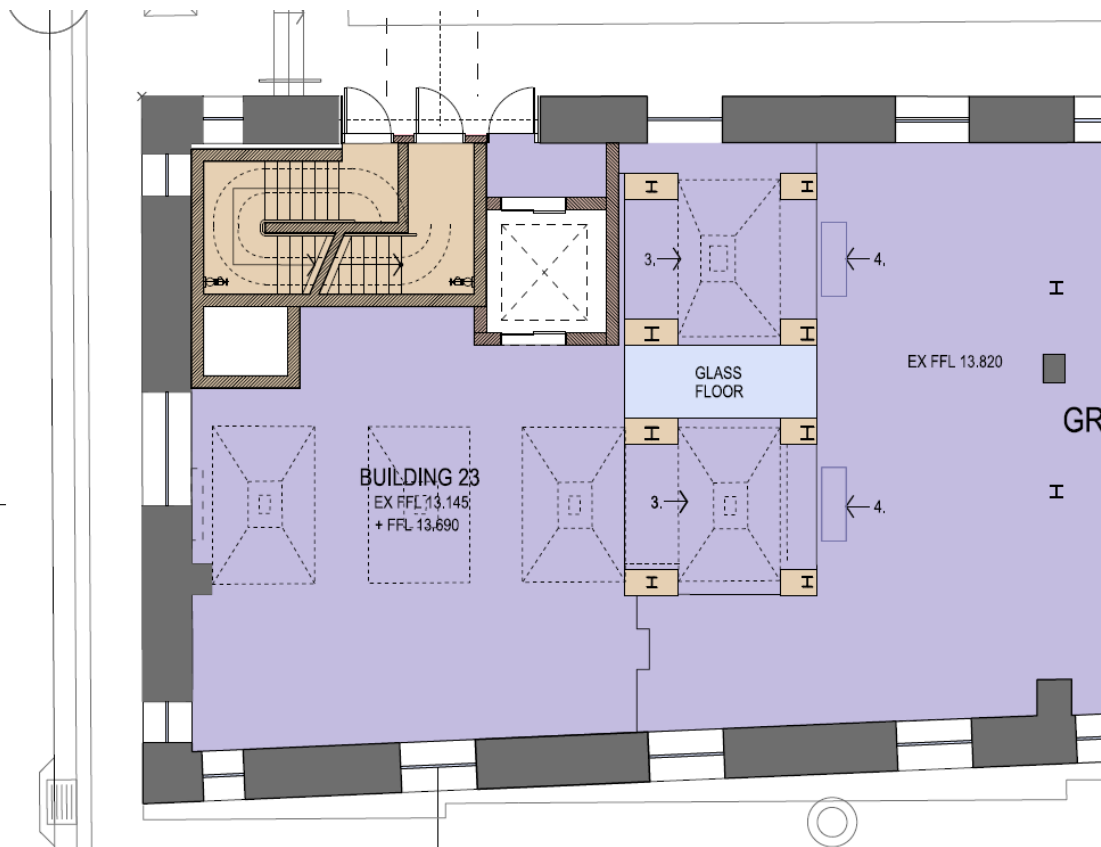


Figure 19 – Part plan of proposed ground floor showing glass floor (enabling views to the associated basement plant) and indicating 5 of the reconstructed silo funnels

Source: Tzannes, "Ground Floor Plan", Drawing no. DA 1102, Revision A.

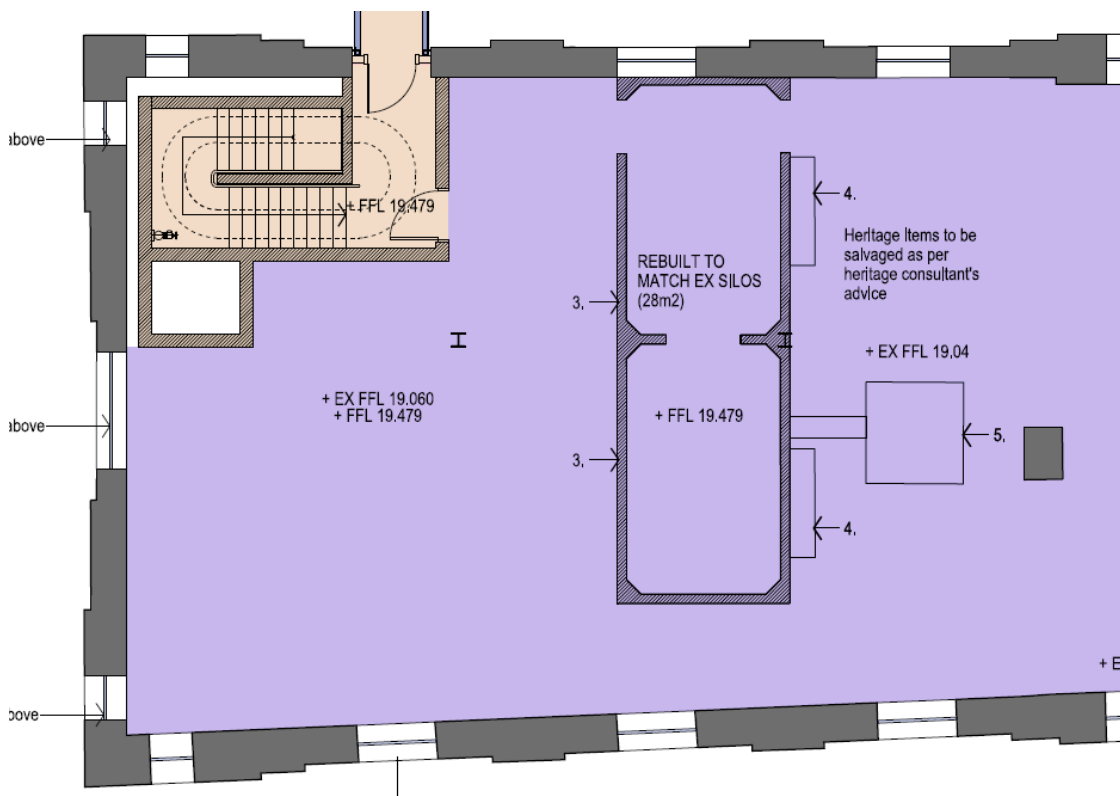


Figure 20 – Part plan of proposed level 1 illustrating reconstruction of malt silos and location of interpretative equipment.

Source: Tzannes, "Level 1 Floor Plan", Drawing no. DA 1103, Revision A.

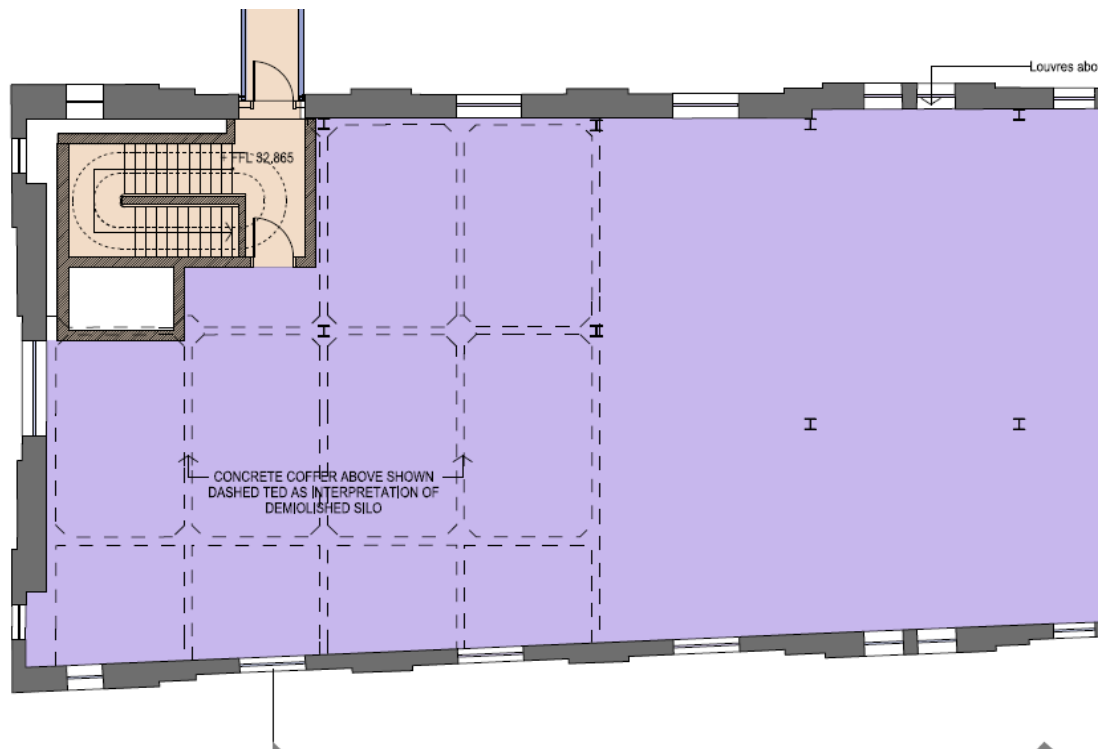


Figure 21 – Part plan of proposed level 4 illustrating the reinterpretation of 5 of the 8 former hoppers in the ceiling (proposed on levels 3 and 4)

Source: Tzannes, "Level 4 Floor Plan", Drawing no. DA 1106, Revision B.

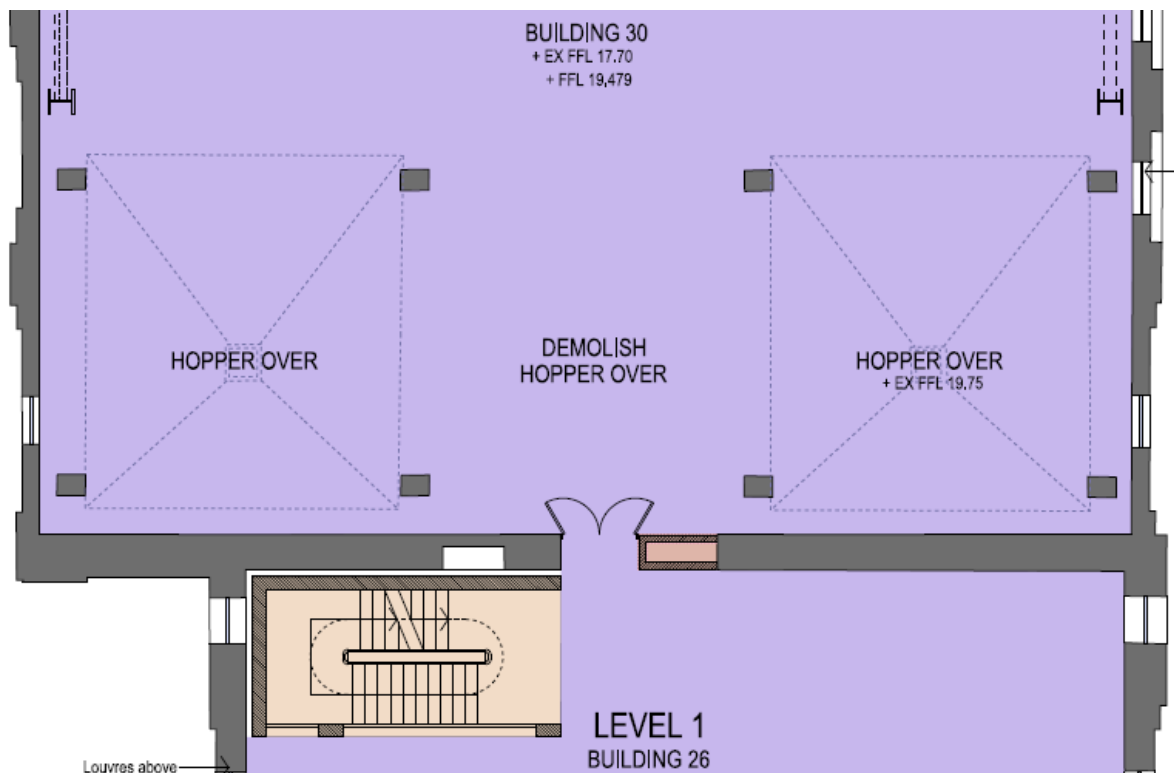


Figure 22 – Part plan of proposed level 1 illustrating retention of two of the three hoppers.

Source: Tzannes, "Level 1 Floor Plan", Drawing no. DA 1103, Revision A.

As set out in section 2.1 above, the previously approved stage 1 of the SSDA (MP 10_0217) also incorporates conservation of the significant facades and features which enhances passive interpretation of the buildings and their former industrial function. Conservation works are defined in the Schedule of Conservation works (revised in 2018) and include:

- General repair and restoration of facades, including face brickwork and sandstone elements, as well as copper rainwater goods
- General repair and conservation of original Tooth and Co signage elements (including building signage and logos)

3.5.2. Interpretation Display/ Signage Zones

Prior to its closure, the Carlton United Brewery (former Kent Brewery) was the oldest and longest running brewery in Sydney and the significant 170-year span of the site's operation should be interpreted. As the only remaining industrial buildings on the site, the Brewery Buildings provide a poignant reminder of that former function. It is proposed to include interpretive display areas throughout the buildings to facilitate retention and display of salvaged artefacts and obsolete equipment as well as relevant archaeological remains. A primary interpretation zone has been included on the ground floor adjacent to the entrance foyer (as shown on the plan at Figure 23 with secondary zones identified on the upper floors, including level 5 (refer to the plan at Figure 24). Additional zones may be located within lobby and tenancy areas, or in conjunction with significant in-situ items (such as the coal hoppers as detailed above), subject to detailed design.

The interpretation zones will address the nominated themes as set out in section 3.2.2 and may include:

- The significant expansion and development of the whole of the Brewery site (1835-2005), identifying the original Kent Brewery and Yard.
- Interpret the process of brewing and the production process at various points around the site (e.g. the malting precinct, laboratory, administrative precincts etc.).
- Specific interpretation of the former functions of the extant buildings 22, 23, 26, 30 & 36 and the function of retained equipment (e.g. the malt silos).
- Changing brewing processes and technology.
- The broader context of industry in the colony, competition in the brewing industry, the introduction of the tied house system and the effects of legislation and the Liquor Act.
- The site's association with the prominent Tooth family.
- The strong social and working history of the site in association with former brewery workers including changing work practices (e.g. the concept of the "honeypot" and the wet and dry workplace).
- Former residential occupation of the Irving Street Brewery site.

Content and media for the interpretation zones are subject to detailed design however may include:

- Fixed signage.
- Incorporation of audio and video (where available and subject to copyright provisions) and other mixed media, utilising the oral history of the site and other resources as set out in section 3.3 above and considering further stakeholder liaison (refer also to section 3.5.2.1).
- Incorporation and display of significant archaeological finds associated with the Brewery Yard (or other relevant interpretation themes) where available and where appropriate.
- Incorporation and display of salvaged objects (refer to section 3.5.2.2 below).

It is recommended that public access be provided to the ground floor display area (as the primary interpretation zone) to facilitate access to the interpretation. Interpretation on the upper floors may be restricted to tenancy users, however still serves to interpret the former brewing function of the place.

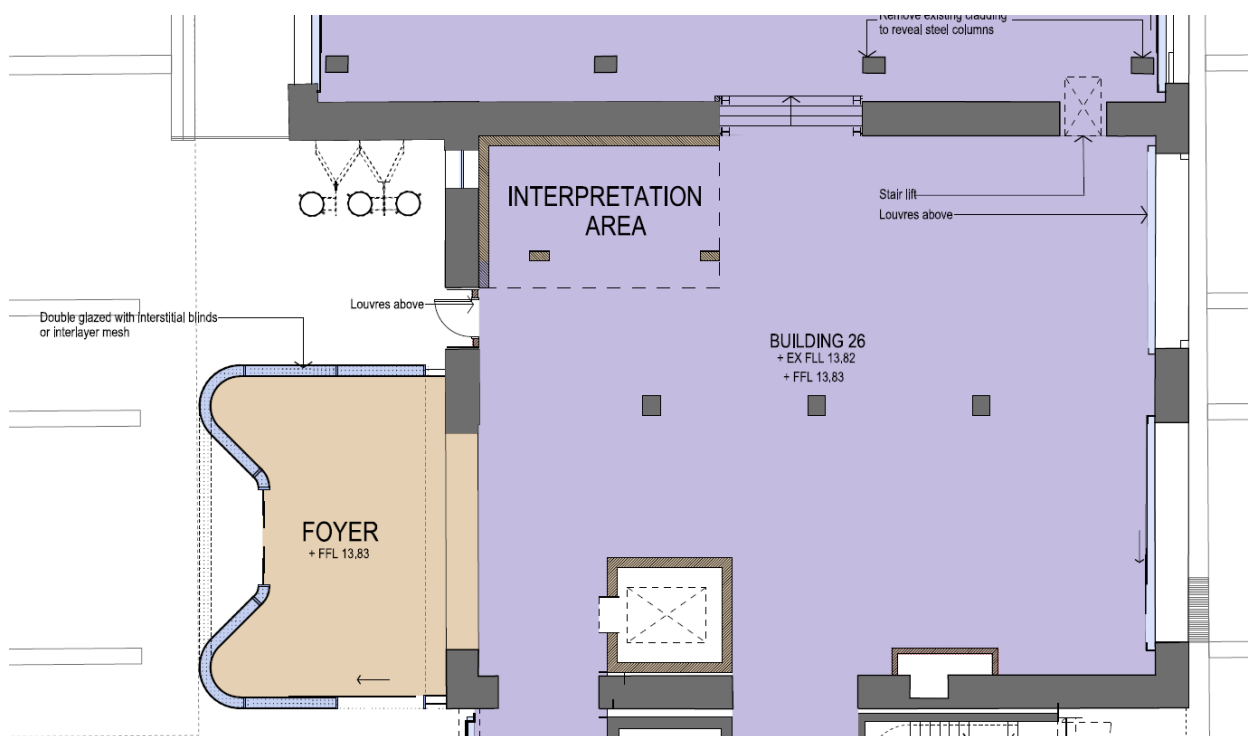


Figure 23 – Part plan of proposed ground floor illustrating potential interpretation area.

Source: Tzannes, “Ground Floor Plan”, Drawing no. DA 1102, Revision A.

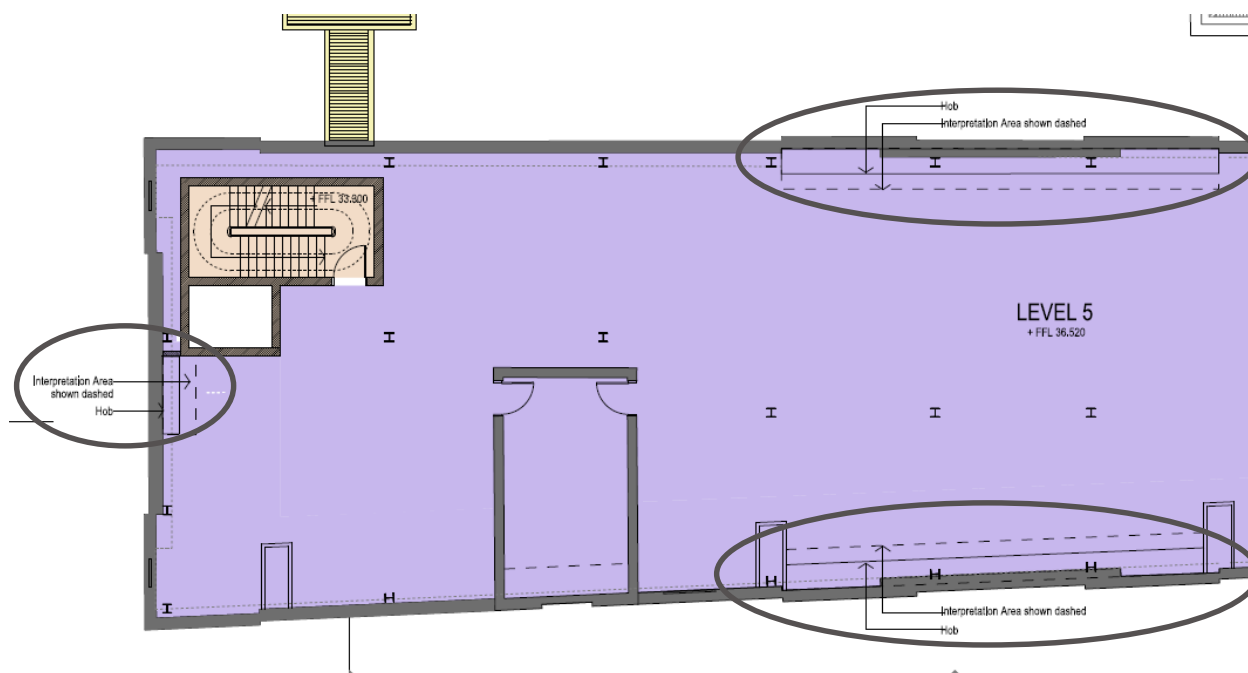


Figure 24 – Part plan of proposed level 5 illustrating three of four identified potential interpretation zones.

Source: Tzannes, “Level 5 Floor Plan”, Drawing no. DA 1107, Revision B.

3.5.2.1. Provision of Audio Visual Interactive display/touchscreens

Due to the volume of available content and the limitations of the interpretation zones (being within a public foyer space), interpretation may consider incorporating interactive multimedia display. This may include including touchscreen technology and passive or interactive audio (push button or motion sensor). The media provides for inclusion of a larger volume of information while enabling an interactive and individual interpretation experience. The medium allows for a less obtrusive form of sharing information than standard signage and further provides for a more targeted level of interaction between the content and the user.

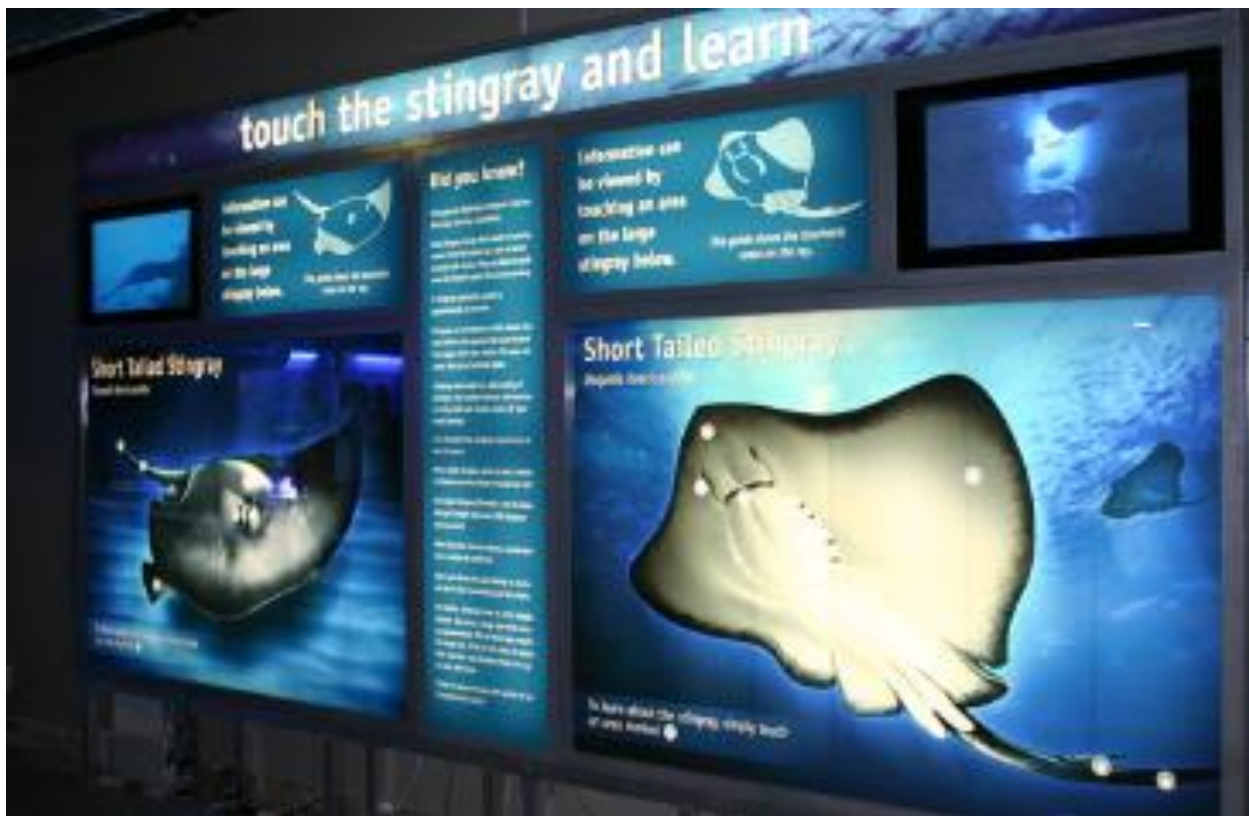


Figure 25 – Sample touchscreen showing interactive display

Source: The complete package, <http://www.pac.co.nz/pages/sermuseum.htm>.

3.5.2.2. Reuse of salvaged objects and artefacts

A Salvage Report was undertaken by Godden Mackay Logan (CUB Frasers Broadway Demolition and Recycling- Salvage and Retention Survey Dec 2007) which identified and nominated a number of objects to be salvaged including internal and external fixtures, fittings and movable elements for salvage and/ or retention. Items were selected based on heritage significance, interpretive value and potential for inclusion in an Arts Plan⁷. That study was reviewed by Urbis in 2013 and identified the remaining items and those able to be reused for building materials or in conjunction with public art and interpretation. Some items have been flagged for use elsewhere in the precinct.

The salvaged objects are from various site buildings and incorporate, though are not limited to, small objects and ephemera from signage (warning, operational and safety), doors, windows, architectural elements (including ceramic tiling, copper rainwater heads, sandstone kerbing, sandstone and brick arches, steel railings, spiral stairs and timber roof trusses), machinery and machinery parts to larger objects such as storage tanks/ cylinders and hoppers. There are also a number of items nominated for salvage in situ in buildings that are being retained including the subject brewery building. A number of items unable to be retained in situ within the brewery buildings are also being salvaged and considered for reuse elsewhere within the building (e.g. displayed within the interpretation zones identified above).

The former Carlton United Brewery site has also been subject to extensive archaeological investigation including within the area of the Brewery Yard. Artefacts should be reviewed and those items suitable for display and relevant to the interpretation of the brewery function should be incorporated for display and interpretation at the Irving Street Brewery.

There is an opportunity to incorporate salvaged objects and artefacts in conjunction with signage and media within the interpretation display areas. Objects should also be made available for use by artists and in

⁷ Godden Mackay Logan, CUB Frasers Broadway Demolition and Recycling – Salvage and Retention Survey, report prepared for Frasers Broadway Pty Ltd December 2007, pg 1.

- A selection of signage (warning, operational and safety signage salvaged from various buildings on the site).
- Larger machinery and equipment associated with the brewing functions of the site as set out in the 2013 revision to the Salvage Strategy.
- Equipment and machinery associated with the maltings which is unable to be retained in situ, such as the timber bins and other equipment.
- Archaeological artefacts relevant to the significant brewing function or recovered from the former Yard and other CUB site locations (where appropriate).

It is proposed to include historic marker(s) to aid in the interpretation of the site. The plan shown below (Figure 26) nominates two potential locations for historic markers.



The design of historic markers should be consistent with other such markers on the site whilst also having regard for the proposed development. Signage materials may include brass, stainless steel, anodised aluminium, other sheet metals or glass, subject to detailed graphic design and heritage advice and compliance with conservation advice and the Conservation Management Plan for the building group.

It is intended that the markers interpret the significance and use of the buildings as well as the redevelopment and adaptive reuse of the Brewery Buildings (e.g. use of the chimney and yard areas for trigeneration plant). The markers may also guide the audiences to more comprehensive interpretation such as the proposed area of display/ signage within the ground floor lobby.



Figure 27 – Sample plaque at Paramount Studios Surry Hills incorporating the corporate logo and text

Source: Photograph taken by Urbis.



Figure 28 – Sample plaque in ground signage at Parramatta Justice Precinct.

Source: Photograph taken by Urbis.

3.5.4. Provision of a “Workers’ Wall”

The Brewery Buildings were at the heart of the site physically; they represent the core of the industrial processes taking place on the site, and have significance for the working population at the brewery from 1912 to 2005. Beyond that, the buildings are representative of the site’s 170-year brewing history.

The Brewery workforce was made up of skilled and unskilled people from Brewers, Laboratory staff and Engineers to tradesman, Electricians, Plumbers and Fitters and Turners as well as craftsmen working on site, such as Coppersmiths, Blacksmiths and Coopers. Trades Assistants, Storemen, Drivers and Security personnel were integral to the production and distribution of beer. Very little work had to be outsourced and the Kent Brewery according to accounts was a very active workplace, very much a city within a city⁸.

Tooth and Co. had a long tradition of being a family oriented company that looked after its employees. Several generations of the same family often worked for the Brewery and a good percentage of the Tooth ‘family’, especially in production, were migrants.

It is proposed to incorporate a ‘workers’ wall’ at the site to commemorate the strong social history of the Brewery. It is proposed to locate the wall within the entry from Irving Street. The location interprets the former entry point for the workers to the former Brew House and Silos.

Detailed design of the ‘workers’ wall’ should consider the following:

- Inclusion of names of former site workers.
- Inclusion of historical images depicting workers.
- Inclusion of quotes/ anecdotes from the Oral History and/ or any subsequent stakeholder engagement.
- Use of soundscapes/ mixed media – for instance, playing recordings of the oral history/ other anecdotes from stakeholder engagement or general sounds associated with the brewing function, at fixed times during the day, e.g. timed to be consistent with the former beer break times.

⁸ Hamilton and Anderson, 2004: 27

- Reuse of salvaged elements relevant to the staffing/ social history of the place.

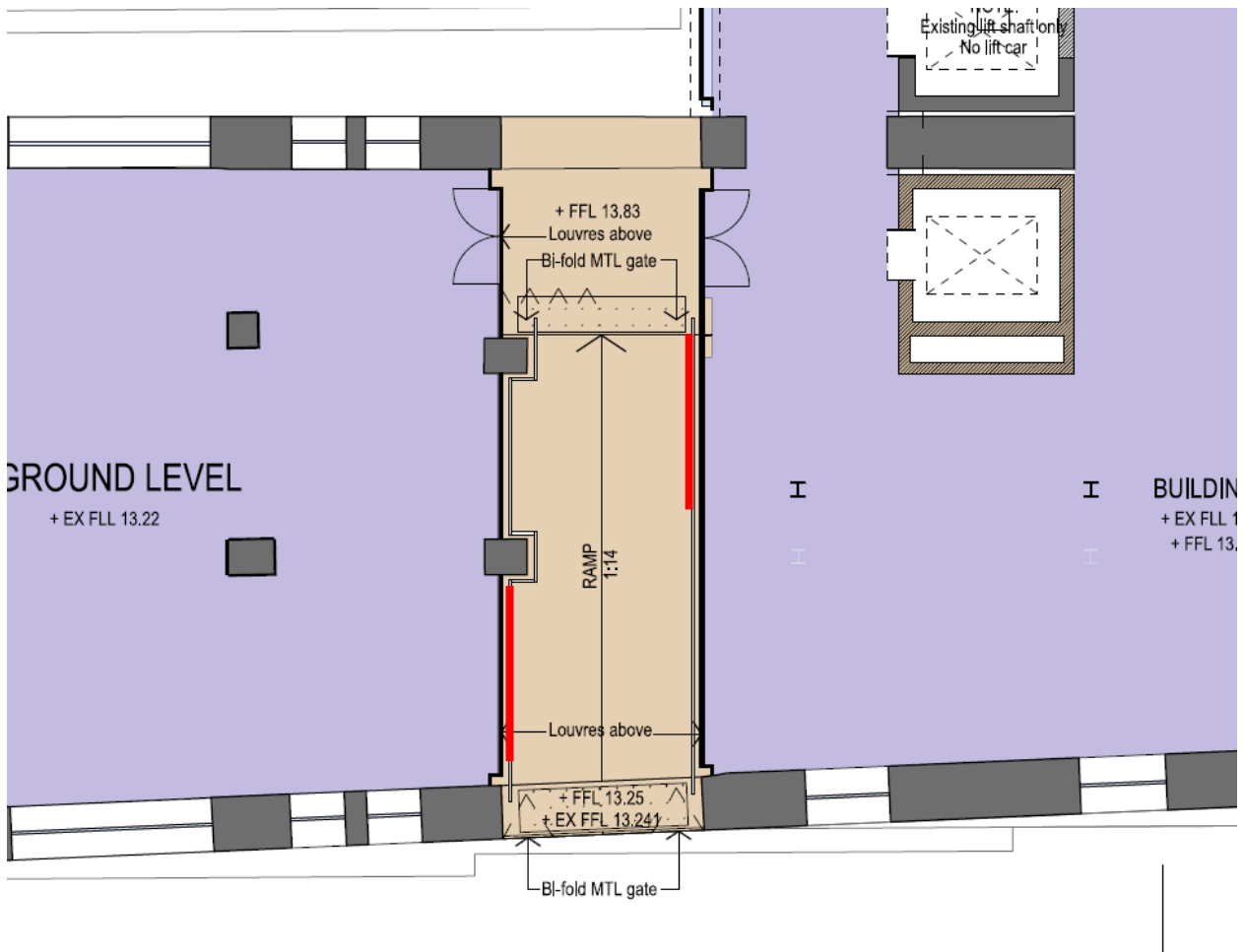


Figure 29 – Part of ground floor plan illustrating in red potential location for worker's wall.

Source: Tzannes, "Ground Floor Plan", Drawing no. DA 1102, Revision A.



Figure 30 – The National Maritime Museum "Welcome Wall".

Source: Department of Immigration and Citizenship, http://www.immi.gov.au/about/reports/access-equity/2008/html/case_studies/welcome_wall.htm.

3.5.5. Inclusion of historic information on the Central Park website

Additional historical information has already been included on the Central Park website, facilitating access to a broader audience. The website includes historical information and images in conjunction with the existing heritage link. There is however an opportunity to incorporate further information e.g. how the site was used, brewing functions across the site, highlighting some of the artefacts from the archaeological investigations, profiling former workers etc.

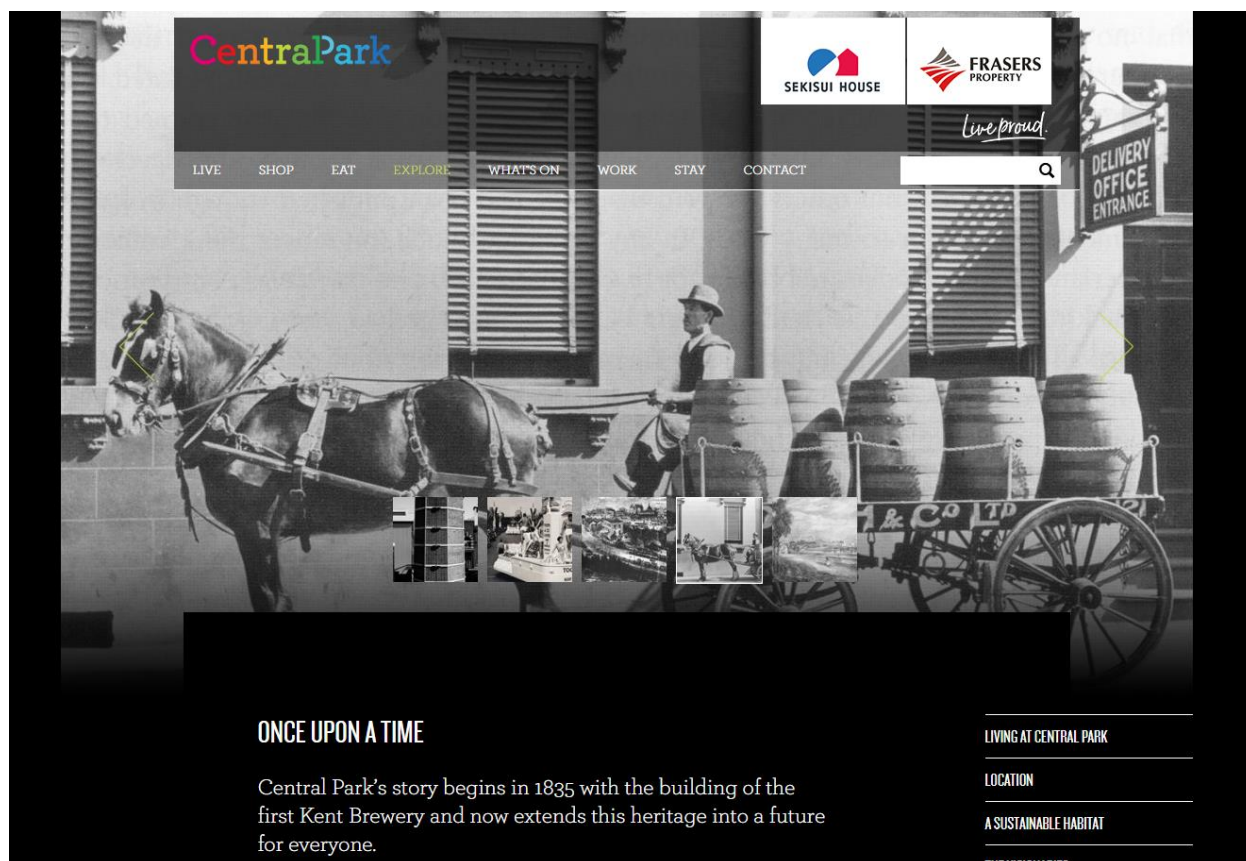


Figure 31 – The Central Park website.

Source: Central Park, <https://www.centralparksydney.com/explore/chippendale-a-rich-heritage>.

3.5.6. Lighting Strategy

The 2009 Interpretation Strategy recommended specialist lighting be undertaken for the Brewery Buildings to highlight the buildings as the heart and focus of the redeveloped Brewery site. Specialist lighting may consider the following elements:

- The Chimney Stack, which has been an identifiable element in the Ultimo/ Chippendale skyline.
- Spot lighting of significant signage, e.g. the Tooth and Co Irving Street signage and/ or significant façade features.
- Spot lighting of significant internal features such as the coal hoppers (30) and silos (23).

Any fixtures for lighting should be subject to conservation advice and be consistent with the recommendations of the SECP (2009).

3.5.7. Public Art

Frasers Broadway engaged Australia's pre-eminent public artists Michaelie Crawford and Jennifer Turpin (Jennifer Turpin Studios) to provide a Public Art Strategy for the whole of the site ("Frasers Broadway Public Art Strategy: Expressing the Soul of the past and the Spirit of the Future", 25/05/09). The strategy recommended a number of permanent artworks intended to artistically interpret such themes as the process and phenomena of the precinct's exemplary sustainable energy strategy, the memory and expansion of the brewing empire and the ongoing influence of fluids and liquids in its transformative water stories. In conjunction with the strategy, a major public art piece has been installed in the Main Park. 'Halo' is a wind activated kinetic sculpture by Jennifer Turpin and Michaelie Crawford.



Figure 32 – "Halo" by Jennifer Turpin and Michaelie Crawford – installed in the Main Park.

Source: City of Sydney, <http://www.cityartsydney.com.au/artwork/halo/>.

In addition to the permanent works, the Brewery buildings have provided a focal point for a program of temporary artworks during the building works. The 'Artists In Residence' program operated from 2011 and incorporated works such as 'Local Memory' by Brook Andrew, which documented some of the people who have lived, worked and witnessed change on the brewery site and Mikala Dwyer's 'Windwatcher', the kinetic sculpture which used the heritage-listed Irving Street Brewery's iconic 54-metre tall chimney as a plinth.

The Irving Street Brewery Buildings provide a prime location for place making interpretive public art and the provision of further works (permanent and/ or temporary) within and affecting the brewery Buildings is currently subject to development. The previous strategy made some recommendation regarding a permanent art piece for the brewery buildings however we understand that the potential artwork is being reviewed. The following recommendations are noted:

- There is an opportunity for Public Art to interpret the important industrial function of the site and its social history.
- Proposed public art affecting heritage buildings, infrastructure and/ or salvaged items should be undertaken in conjunction with heritage advice and should have regard for the heritage significance of the place and

Salvaged items should be made available for use by artists where required and where appropriate (subject to other strategies and significance/ required conservation of the item or artefact).

3.5.8. Education and Community Programs

In line with the 2009 Interpretation Strategy, there is an opportunity to enhance the interpretation of the building by providing for increased access to the buildings. This can be achieved through participation in specific open days and festivals throughout the year and in association with heritage groups including (but not limited to):

- Sydney Open, the bi-annual festival that unlocks the doors of some of Sydney's most prestigious locations and showcases the best of Sydney's architecture;
- Support for a program of temporary art events, coinciding with Sydney and other festivals such as the Festival of Sydney, the Sydney Film Festival, the Live Lanes Project, the new Vivid Sydney and the National Trust heritage festival;
- Support for open days or tours in association with organisations such as the National Trust, The Australian Institute of Architects and other heritage interest groups; and
- Involvement in education and community programs;

There is an opportunity to include access to the former malt silos building (23) including the basement and upper floors and the coal hoppers in building 30, in any program of tours within the Brewery Buildings, as the area is of exceptional significance and has only limited public access on the upper floors due to the proposed commercial uses.

4. CONCLUSION AND RECOMMENDATIONS

The recommended strategy provides for a variety of active and passive forms of interpretive media including;

- Built form interpretation and conservation of fabric;
- Development of interpretative display areas within the Brewery Building, incorporating signage, display and multimedia;
- Provision of a “Workers’ Wall” to commemorate and acknowledge the social history of the site;
- Provision of historic markers
- Specialist lighting of iconic and significant built features;
- Public Art; and
- Involvement in community open days and Sydney festivals.

It is recommended that this Strategy is implemented as part of staged development of the Brewery Buildings. It is further recommended that the Strategy is approved by the consent authority and its recommendations incorporated into consent conditions.

The report considers the provision of the 2009 Interpretation Strategy for the whole of the Frasers Broadway site, and the 2012 strategy for the brewery buildings.

This Strategy forms part of a staged program of works to deliver the interpretation of the Irving Street Brewery Buildings.

4.1. NEXT STEPS

Interpretation is an integral part of delivery of the site and further work is required to develop and implement interpretation as detailed below:

- 1) Confirm appropriate media and locations for interpretation.
- 2) Develop content and detailed briefs for specific interpretation media, as part of the staged delivery of the site in consultation with relevant designers, architects, engineers, archaeologists and other consultants and stakeholders to ensure media that is integrated into the overall design response to the site and public domain.
- 3) Undertake liaison with the consent authorities to achieve final approval prior to implementing the strategy.
- 4) Implement Interpretation in conjunction with specialists including (but not limited to) interpretive designer, graphic designers and manufacturers/fabricator.

The above will need to be incorporated into project and construction programming with final delivery required to be implemented in conjunction with conditions of consent/ Occupation certificates.

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APPENDIX A FURTHER RECOMMENDATIONS AND POLICIES RELATING TO HERITAGE INTERPRETATION OF THE BREWERY BUILDINGS AND YARD.

5.3. CONSERVATION MANAGEMENT PLAN BY NOEL BELL RIDLEY SMITH AND PARTNERS (2005).

The 2005 CMP (adopted by the Heritage Council of NSW) contains a large number of policies devised to guide the management of interpretation at the former CUB site. Relevant policies are listed below.

(25) Interpretation of Original Kent Brewery and Brewery Yard

Any future site development should include adequate and appropriate identification and interpretation of the original Kent Brewery site and Brewery Yard (c1865 configuration).

(40) Former Kent Brewery Yard

Development in the vicinity of the former Kent Brewery Yard (c1865 configuration) should provide appropriate interpretation as an historic reminder of the early brewery complex.

(50) Interpretation of Industrial Artefacts

Appropriate samples of industrial artefacts should be retained, appropriately conserved and used to interpret the industrial history of the site as part of future adaptation works.

E.7 Interpretation

(63) Preparation of an Interpretation Strategy

An Interpretation Strategy for the site should be prepared based on the identified resources, analysis, assessment of significance and policies of this CMP and associated documents.

(64) Interpretation of Social Values

The Interpretation Strategy for the site should include measures for interpreting and presenting the social values and associations of the site and its various components.

(65) Interpretation Methods

The Interpretation Strategy should identify the nature and location of interpretative material, features, and related measures for the site and items, as well as the principles for determining appropriate content and media.

(66) Interpretation of Research Material

Research material used for and/or referred to in this CMP should be collected and referenced to facilitate its further use, including in the Interpretation Strategy.

5.4. HERITAGE IMPACT STATEMENT – CONCEPT PLAN BY GODDEN MACKAY LOGAN (2006)

The heritage impact statement notes the following:

10.5 Interpretation

Opportunities should be provided within the proposed redevelopment for the interpretation of the site's history, built fabric, industrial heritage and archaeology. An Interpretation Strategy/Plan should be developed as part of the first stage of the design development process.

Selective retention and re-use of a number of significant heritage buildings, streets and other elements that express the industrial heritage of the site and its associated fine grained residential edges should be undertaken to engage with residents, workers and visitors to the site. The proposed interpretation strategy should focus on 'clusters' of retained buildings (particularly the Irving Street Brewery complex) as interpretation and possibly activity centres, and should also utilise opportunities for the interpretation of vanished or obscured elements within the landscape (eg the Blackwattle Creek stormwater channel).

The Interpretation Strategy/Plan for the site would utilise a range of media and other devices, including signage, brochures, plaques, and other, more innovative media. The interpretative approach should also consider information or other resources (eg physical remains, components of brewery plant and other artefacts) that may become available as a result of physical investigation of the site.

10.6.6 Interpretation

An Interpretation Strategy/Plan is to be developed for the site, and implemented through the development stages of the project. The topics will include (but not be restricted to):

- brewery workers' experiences;*
- the Irving Street Brewery complex and the brewery yard;*
- the origins and historic evolution of retained buildings and their settings;*
- significant built elements that have been removed and/or substantially modified;*
- retained items of industrial heritage significance and how these related to past processes;*

and

- retained items of movable heritage, particularly furniture, fittings (etc) retained in their original/existing locations.*

- Interpretation of the site is to focus on 'clusters' of retained heritage buildings (particularly the Irving Street Brewery complex and yard) as interpretation centres, and the development of these buildings is to provide for interpretation media and installations as a key component of their reuse.*

- As part of any archaeological investigation of the site, provision is to be made for interpretative signage, media releases and information leaflets to coincide with physical investigation of the site. During the investigations, open days and guided tours (by trained interpreters) are to be arranged to provide insight into the history of the site and process of archaeology.*

- A range of publications, both paper-based and digital (available from a website), is to be prepared to provide further insight into the history and heritage of the site, including a simple illustrated brochure for prospective resident and other interested visitors.*

- Development of the site is to be preceded by, and undertaken in concert with, focused tours, open days and other events that are accessible to the public.*

Specific interpretation recommendations for the Irving Street Brewery Yard by Godden Mackay Logan (2006:137) included:

The yard of the Irving Street Brewery offers an important opportunity for engaging & innovative interpretation of the history and processes of brewing at the site. In this new 'public' space, conservation and interpretation requirements should be the primary focus. The interpretation should be 'hard-edged', large scale & confronting to visitors—so as to convey notions of the size and industrial activity on the site. Original building fabric and real artefacts from the site should feature prominently. Interpretative lighting & projection of digital media might be considered.

5.5. FORMER CARLTON AND UNITED BREWERY SITE, BROADWAY ARCHAEOLOGICAL ASSESSMENT AND RESEARCH DESIGN BY GODDEN MACKAY LOGAN (2006)

The Archaeological Assessment recommends the following:

7.3.3 Interpretation

Provision should be made for the interpretation of known archaeological features and other archaeological features if or when they are revealed. The site's Interpretation Strategy/ Plan should consider (and incorporate, where relevant) the results of any physical investigation of the site.



BRISBANE

Level 7, 123 Albert Street
Brisbane QLD 4000
Australia
T +61 7 3007 3800

MELBOURNE

Level 12, 120 Collins Street
Melbourne VIC 3000
Australia
T +61 3 8663 4888

PERTH

Level 14, The Quadrant
1 William Street
Perth WA 6000
Australia
T +61 8 9346 0500

SYDNEY

Level 23, Darling Park Tower 2
201 Sussex Street
Sydney NSW 2000
Australia
T +61 2 8233 9900

22. APPENDIX 6

22.1 OPERATIONAL WASTE MANAGEMENT PLAN

The Brewery Yard (Central Park Chippendale) Operational Waste Management Plan

NOVEMBER 2021



**WASTE AUDIT AND
CONSULTANCY SERVICES**

Level 21 / 133 Castlereagh Street
Sydney, NSW 2000

Telephone (02) 9199 4521
www.wasteaudit.com.au

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1 Introduction

This Waste Management Plan (WMP) has been prepared on behalf of Johnstaff to accompany a Development Application for the Brewery Yard located at Central Park, Chippendale. The development will be a Class 9B building and used for retail and commercial purposes with associated infrastructure.

This development will comprise:

- Commercial Tenancies – 4,352 m²
- Food & Beverage Tenancies – 906 m²

Waste audit and management strategies are recommended for new developments to provide support for the building design and promote strong sustainability outcomes for the building. All recommended waste management plans will comply with council codes and any statutory requirements.

To assist building management in achieving effective waste and recycling management, this waste management plan has three key objectives:

- i. **to minimise the environmental impacts of the operations of the development** – this will be achieved by ensuring maximum diversion of waste from landfill; correct containerisation and transport of materials; correct segregation of materials into appropriate management streams; awareness among tenants of waste avoidance practices.
- ii. **to minimise the impact of the management of waste within the development on local residents** – this will be achieved by ensuring waste is managed so as to avoid odour and litter and collected during suitable times.
- iii. **to ensure waste is managed so as to reduce the amount landfilled and to minimise the overall quantity generated** – this will be achieved by implementing systems that assist tenants to segregate appropriate materials that can be recycled; displaying signage in all relevant areas to remind and encourage avoidance and recycling to staff; and through associated signage in the commercial areas to reinforce these messages.

This Plan has been developed with reference to the City of Sydney's *Guidelines for Waste Management in New Developments, 2018*, and other Authority's requirements in the development of the waste estimates and related requirements. In addition, industry data for the development profile has also been referred to.

2 Waste Generation

2.1 Waste Streams

Based on the development profile, the following waste streams would be expected:

- General waste
- Commingled recycling (including paper & cardboard recycling)
- Organics

Ongoing management of wastes will also apply to identification of other waste/recyclables and if so identified, appropriate management strategies will be implemented – focussed on reducing materials to landfill.

2.2 Waste Generation Estimates

Based on averages for quantity of waste generated and composition as determined by industry data (ie., data/information provided by WACS' waste audits conducted in a broad range of sectors) as well as consideration of the waste generation rates as detailed in the City of Sydney "*Guidelines for Waste Management in New Developments, 2018*", it is estimated that the development will generate a total of 25,647 litres of waste and recyclables per week. The estimated weekly generation volumes are:

- Commercial – 3,264 litres waste, 5,440 litres recyclables per week and 1,088 litres of organics
- Retail (F&B) – 4,530 litres waste and 9,060 litres recyclables per week and 2,265 litres of organics

Note that the estimations for waste generation have been based on floor space as required by the City of Sydney. In addition, as there will be a compactor for general waste, the volume for that stream has been reduced by 50% for the total litres per week.

2.3 Waste Management System

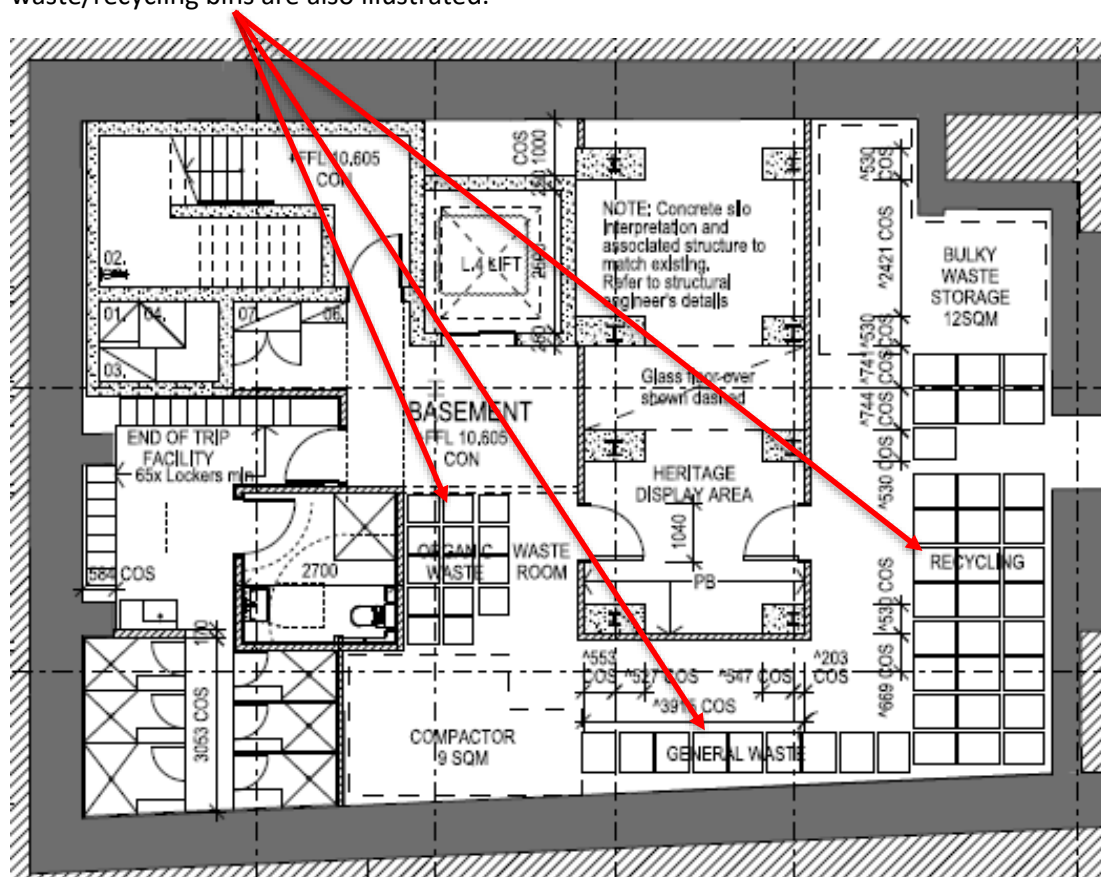
Based on the volume of waste/recyclables generated and the twice weekly collection service for waste and weekly for recyclables, the following table illustrates the number of bins per stream and associated footprint. Note also that the volume for general waste has been reduced by 50% due to the use of a garbage compactor.

Waste/recycling bin and storage requirements

Waste Stream	Bin Type	No. of Bins	Clearance Frequency (week)	Capacity - Litres (weekly)	Estimated volume / weekly (litres)	Footprint per bin (m2)	Total Footprint
General Waste	240	9	2	4,320	3,897	0.44	3.96
Recycling	240	31	2	14,880	14,500	0.44	13.64
Organics	120	14	2	3,360	3,353	0.28	3.92
TOTAL		54		22,560	21,750		21.5

Note that 240 litre Mobile Garbage Bins have been selected to allow for ease of movement throughout the development.

The following illustrates the location of the waste (bin) room. Indicative positions of the waste/recycling bins are also illustrated.



The design of the waste room is approximately 68.0 m². As indicated above, there is a requirement for bins of 21.5 m². An allowance of 30% is recommended so this results in a space requirement of 28.62 m².

In addition, an allowance should be made for the compactor for the general waste as well as for placing waste into it. While there are several models on the market, as a general rule, coupling the compactor with a carousel is an efficient means of managing this stream. This would require a footprint of approximately 9.0 m².

These bin, compactor and carousel requirements (along with the 30% allowance), results in a need to allow 37.62 m². Given the waste room is 68.0 m², this allows an additional 20.9 m² for the bulky wastes, contingencies and transporting bins through the room.

2.4 Waste Storage Room Design

All storage areas will be constructed in accordance with the Council's and Department of Environment and Climate Change NSW *Better Practice Guide for Waste Management in Multi-Unit Dwellings 2008*.

The waste and recycling bins will be colour coded and clearly signed. Each stream will be located in a designated area. This will assist in easy identification of correct bins by cleaners and tenants.

Photographs 1 & 2 - Examples of waste room colour coding



The waste room will contain the following to minimise odours, deter vermin, protect surrounding areas, and make it a user-friendly and safe area:

- waste room floor to be sealed;
- waste room walls and floor surface is flat and even;
- all corners coved and sealed 100mm up, this is to eliminate build-up of dirt;
- a water facility with hose cock be provided for washing the bins;
- any waste water discharge from bin washing must be drained to sewer in accordance with the relevant water board;
- tap height of 1.6m;

- storm water access preventatives (grate);
- all walls painted with light colour and washable paint;
- equipment electric outlets to be installed 1700mm above floor levels;
- the room must be mechanically ventilated;
- light switch installed at height of 1.6m;
- waste rooms must be well lit (sensor lighting recommended);
- all personnel doors are hinged and self-closing;
- waste collection area must hold all bins – bin movements should be with ease of access;
- conform to the Building Code of Australia, Australian Standards and local laws; and
- childproofing and public/operator safety shall be assessed and ensured.

Occupational Health and Safety issues such as slippery floors in waste rooms and the weight of the waste and recycling receptacles will need to be monitored. Cleaners will monitor the bin storage area and will attend to all spills immediately, as they occur.

2.5 Waste Management System

Appendix A contains illustrations of bins (and other waste management equipment) that could be used for the management of waste/recycling bins within the development – these are designed to both assist in segregation as well as to promote safe work practices for bin movement(s). The pictures provide examples of the different options for equipment such as MGB, tugs for transporting bins, trolley unit and a wheelie-safe trolley.

Signage will be a crucial element of the waste management system. Appendix B contains examples of signage. These are the type of signs that should be used throughout the development and waste storage area(s).

Waste and recycling collection services will be provided by a commercial waste contractor (TBA). Utilising a commercial waste contractor affords the building management greater flexibility regarding collection schedules and the appropriate collection frequencies will be determined in consultation with the waste contractor once appointed – however once operational, collection schedules may need to be adjusted accordingly depending on actual waste generation.

Building management will be responsible for ensuring that contracts with waste/recycling contractors are in place for all tenancies prior to them commencing operations. Contractual arrangements with the appointed contractor will detail the timing and processes for collections.

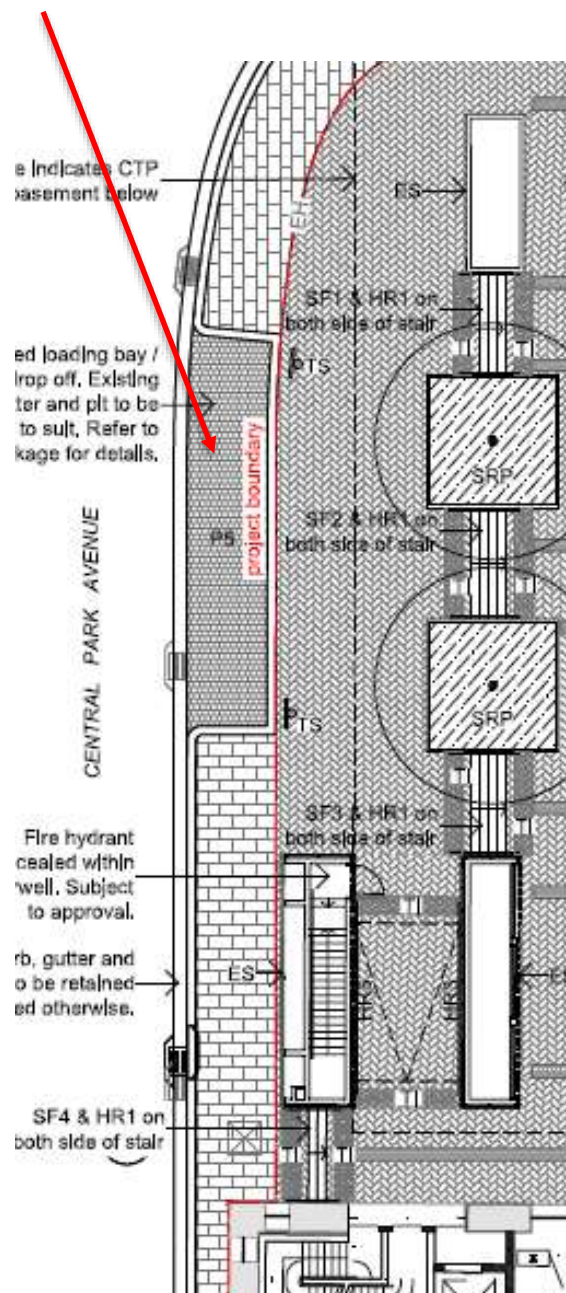
In addition, contracts with the appointed waste/recycling contractors will specify that all waste service collection arrangements must be conducted in accordance with the City's Waste Policy – Local Approvals Policy for Managing Waste in Public Places (2017).

Collection times will be discussed with the contractor and these will be so scheduled to avoid peak traffic times as well as to not disrupt the amenity of neighbouring developments. Once the commercial waste contractor has been appointed agreed servicing times will be communicated to the City of Sydney.

Waste and recycling bins will be serviced by the appointed contractor directly from the waste storage room – no bins will be left on the kerbside prior to, and post collection.

The waste collection vehicle will park in an area that has been agreed upon with the City of Sydney so as to minimise the distance the waste contractor has to move bins as well as to ensure that this movement is undertaken safely.

This location is illustrated below and is the designated loading bay within the forecourt area.



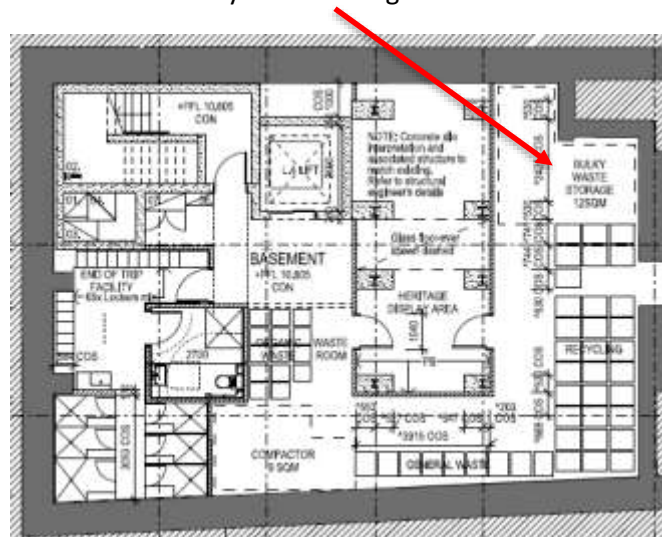
Collection of bins from waste storage areas and moving to where collection vehicles are parked is a process that the waste contractors have developed appropriate procedures for.

All areas will be designed so as to allow effective segregation of recyclables. These areas will be provided with sufficient bins to allow for effective segregation of wastes/recyclables. This will include:

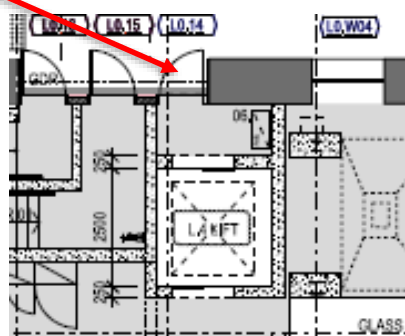
- General waste
- Comingled recycling (including paper/cardboard)
- Organics

Appointed cleaners will be responsible for transporting waste and recyclables from the office areas to the waste storage room.

Bins will be transported to the storage area by the lift as indicated¹. The diagram below also shows the location of the bulky waste storage area.



Access to this lift will be from the ground floor. Cleaners/tenants will access the lift from the door as indicated.



¹ The heritage display area is contained with gyprock walls. Should maintenance staff require entry to the heritage zone, then they will need to go through the waste room not the other way around. The bulky store is accessible through the waste area not the heritage display area.

Bins will be transported to the door (and thus lift), from outside of the ground floor.

Bins transported to the waste room will be left, and replacement bins then taken to the relevant level and/or tenancy.

The waste will be compacted by cleaning staff only. No tenant will be allowed to compact waste and this will be controlled by the provision of locking systems to prevent unauthorised use of this equipment. There will also be a lock on the storage area so that only authorised personnel can access it. The responsibility for this will be with building management.

To ensure that wastes and recyclables are managed correctly (ie., deposited into the correct container) tenants will be provided with information on the proper disposal of wastes and recyclables – that is correct segregation requirements.

In addition:

- General waste bins will be distinguished by having a red lid, the commingled recycling bins have a yellow lid and the organics a lime green lid.
- In keeping with best practice sustainability programs, all waste areas and waste and recycling bins will be clearly differentiated through appropriate signage and colour coding to Australia Standards to reflect the materials contained.
- Cleaners will also have included in the contract the above responsibilities as well as having the responsibility for ensuring that all bins are maintained in a hygienic condition at all times.
- Cleaning staff will also liaise with the development management to ensure that all signage is maintained in good readable condition and when necessary replaced.

3 Waste Management Education

All tenants will receive information regarding the waste collection systems including how to use the system, which items are appropriate for each stream and collection times. Appropriate signage and updated information will also be provided, as well as receiving feedback on issues such as contamination of the recycling stream or leakage of the recyclables into the general waste. Facilities management will have the responsibility for these tasks.

All waste receptacles will be appropriately signed and additional room signage is usually provided from most waste contractors during implementation of the waste contract. Examples of signage are included in Appendix B.

It is recommended that all signs should:

- Clearly identify the waste/recycling stream;
- Use correct waste/recycling stream colour coding;
- Identify what can and cannot be disposed of in the receptacle; and
- Include highly visual elements to accommodate for individuals from non-English speaking backgrounds.
- As part of the staff induction and welcoming process, a waste and recycling toolkit will be provided. This toolkit will include the details of each of the systems in place; acceptance criteria for each stream and how each stream is managed.

An active waste monitoring program will be employed. The waste and cleaning contracts will ensure that contractors actively participate in the waste reduction program for the site and meet regularly to identify performance and new opportunities for diversion and avoidance.

4 Ongoing Management

Having suitable systems in place is only one element of an effective waste management system. Compliance by all stakeholders is essential.

Cleaners are a key element in the effectiveness of the systems in place. Prior to acceptance of the cleaning contract, the contractor will be required to demonstrate how the management of waste and recycling will be carried out so as to ensure that segregated materials are placed in the correct systems.

This process will be agreed and a training program implemented by the cleaning contractor to ensure full understanding by all cleaners. The cleaning supervisor and site management throughout the term of the contract will carry out monitoring of the system.

In addition, cleaners will be required to feed back to site management any non-compliance issues they observe during their cleaning activities. This may include contamination of recycling, non-participation in the recycling system, or missing or damaged bins. In this way issues can be promptly dealt with by management.

Appendix A – Waste Management Equipment

The following diagrams illustrate colours and sizes of different bins that could be used within the development.

Figure 1 – MGB bin



Figure 2 – MGB bin



Figure 3 – Indicative size of MGB



Figures 4, 5, 6 and 7 – Bin movers and tugs





Appendix B – Example Signage

