COUNCIL MEETING

ATTACHMENTS UNDER SEPARATE COVER

7.00 PM, TUESDAY 19 AUGUST 2025

Waverley Council
PO Box 9
Bondi Junction NSW 1355
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Tel: 9083 8000
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ATTACHMENTS

CM/7.12/25.08 Charing Cross Streetscape Upgrade - Project Update

1 Preliminary electrical works staging plan 2
2 SP1 civil works staging plan 3
3 Civil works SP1 and SP2 general arrangements plan 4
4 SP1 civil works progress photos 12

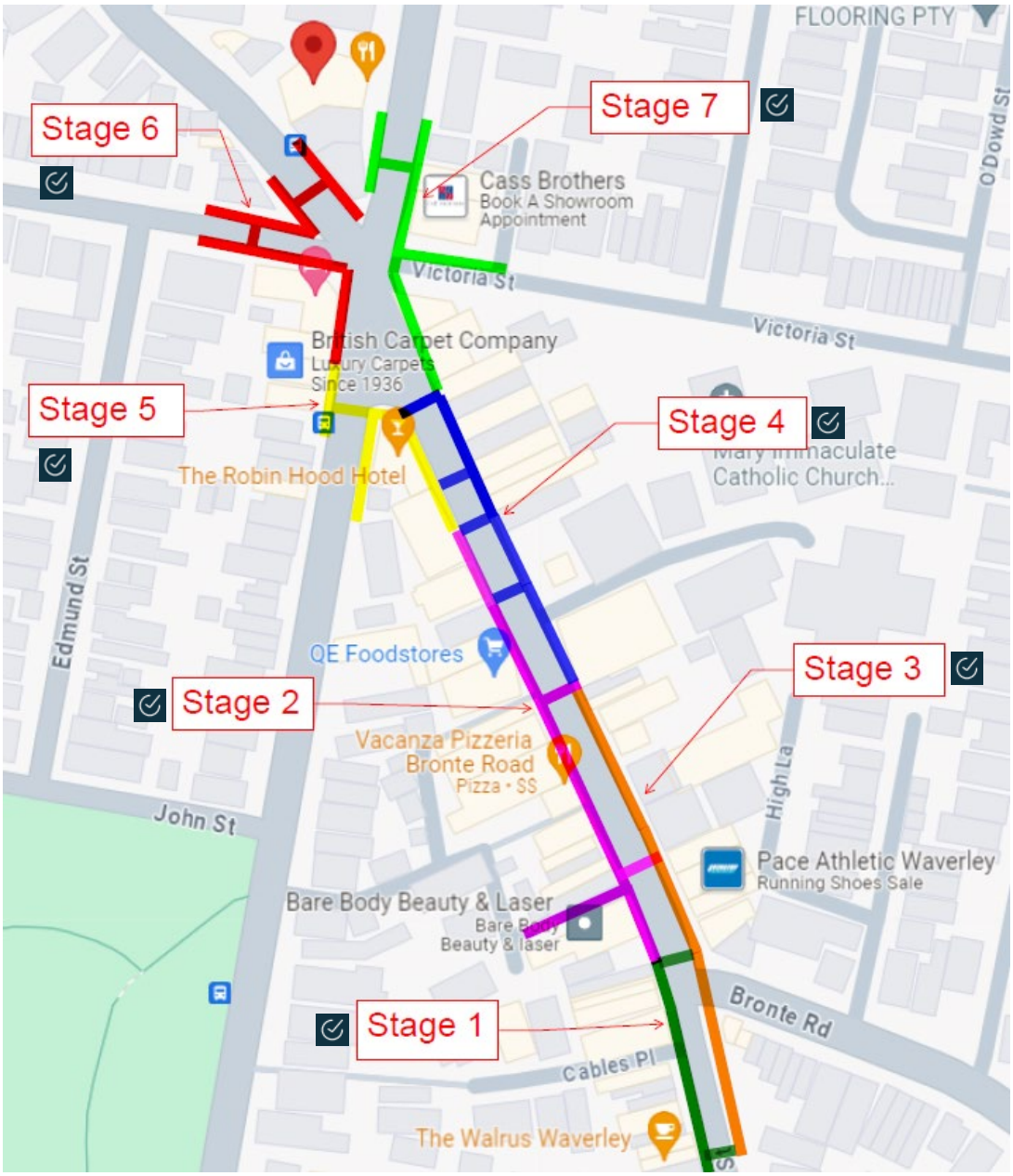
CM/7.13/25.08 Council Chambers Redevelopment - Concept Options - Exhibition

1 Options 3A, 3B and 3C 21
2 Options 1, 2 and 3 55

CM/7.14/25.08 Bronte Pool - Pump House Upgrade and Pump Replacement - Project Update

1 75% Architectural Docs 82
2 75% Hydraulic Docs 107
3 75% Structural Engineering Docs 131
4 75% Statement of Heritage Impact 140
5 75% Marine Ecology Assessment 188

PRELIMINARY ELECTRICAL WORKS STAGING PLAN



Legend:

- Works Complete
- Stage Activated
- Stage Activated

SP1 CIVIL WORKS STAGING PLAN



Legend:

- Work Complete
- Current Work
- Scheduled Work

CHARING CROSS STREETSCAPE UPGRADE

P u b l i c D o m a i n

Landscape Drawings for Construction

prepared for

WAVERLEY COUNCIL

prepared by

ep | environmental partnership

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DRAWING SCHEDULE		DEC
Drawing	Title	Issue
LANDSCAPE PLANS		
3879.NL.01	Legend & Notes	D
3879.SPP.00	Separable Portion Plan	B
3879.GA.00	General Arrangement - Overall	D
3879.GA.01	General Arrangement - Area 1	D
3879.GA.02	General Arrangement - Area 2	D
3879.GA.03	General Arrangement - Area 3	D
3879.GA.04	General Arrangement - Area 4	D

NOTES

EROSION AND SEDIMENT CONTROL
1. All work shall be generally carried out in accordance with (a) Council requirements, (b) NSW Dept of Planning and Environment - **Managing Urban Stormwater: Soils and construction**
2. The Contractor shall provide an Erosion and Sediment Control Plan for the works (prior to commencement on-site for approval by Waverley Council) at time of tender.
3. Maintain all erosion and sediment control devices to the satisfaction of the Waverley Council and the Local Authority.
4. When stormwater pits are constructed prevent site runoff entering the pits unless silt fences are erected around pits.
5. Minimise the area of site being disturbed at any one time.
6. Protect all stockpiles of materials from scour and erosion. Do not stockpile loose material in roadways, near drainage pits or in watercourses.
7. All soil and water control measures are to be put back in place at the end of each working day, and modified to best suit site conditions.
8. Control water from upstream of the site such that it does not enter the disturbed site.
9. All construction vehicles shall enter and exit the site via the temporary construction entry / exit.
10. All vehicles leaving the site shall be cleaned and inspected before leaving.
11. Maintain all stormwater pipes and pits clear of debris and sediment. Inspect stormwater system and clean out after each storm event.
12. Clean out all erosion and sediment control devices after each storm event.

SEQUENCE OF WORKS
1. Prior to commencement of excavation the following soil management devices must be installed:
1.1 Construct silt fences below the site and across all potential runoff sites.
1.2 Construct temporary construction entry / exit and divert runoff to suitable control systems.
1.3 Construct measures to divert upstream flows into existing stormwater system.
1.4 Construct sedimentation traps / basins including outlet control and overflow.
1.5 Construct turf lined swales.
1.6 Provide sandbag sediment traps upstream of existing pits.
2. Construct geotextile filter pit surround around all proposed pits as they are constructed.
3. On completion of pavement provide sand bag kerb inlet sediment traps around pits.

PROTECTION
PROTECTION OF NON-SITE AREAS:
The Contractor will be responsible for the protection of adjoining areas not within the scope of works for this stage. Appropriate protective fencing shall be provided to adjoining areas. Protective fencing must be approved by the Waverley Council prior to works commencing. Any damage to adjoining site areas shall be made good to the satisfaction of the Waverley Council at the Contractors expense.

PROTECTION OF EXISTING TREES
All existing trees must be retained and protected during all site works, unless otherwise specified. The tree protection zone (TPZ) (measured from the edge of the trees trunk) as specified on the Landscape drawings must be observed. A tree protection barrier is to be erected around the perimeter of the TPZ prior to the commencement of any site works. This barrier must be a minimum 1800mm high chain link fabric (with standard 50mm pitch) on 2400mm star pickets driven 600mm into the ground so that the fencing cannot be breached. A 600mm x 450mm prohibition sign complying with AS1319, and stating 'TREE PROTECTION ZONE – KEEP OUT' must be attached to the barrier. The barrier is to be well maintained throughout all site works until Practical Completion.
No building material storage shall be allowed to encroach within this TPZ. No form of construction work or related activity such as mixing of concrete, cutting grinding, generator storage or cleaning of tools is to be permitted within this TPZ. No activity which will cause additional soil compaction within the TPZ. All drainage run off, sediment, concrete and mortar slurry, paints and washings, toilet effluent, petroleum products and any other waste products must be prevented from entering the tree protection zone.
Any required excavation work that falls within the TPZ of any tree must use methods which allow the root system of the tree to remain preserved and intact such as hand digging methods. Any damage to any tree including roots shall be made good by an approved Arborist and the cost borne by the Contractor. Any roots greater than 25mm in diameter that is exposed within 1m of the TPZ must be cleanly cut and kept moist and the approved Project Arborist must provide an assessment prior to further works.
Trees shall not be removed, lopped or trimmed unless prior approval has been provided in writing by Council

PUBLIC ACCESS
Public access shall be restricted to works areas in accordance with OH & S plan.

EARTHWORKS
1. Refer to Earthworks Specification section in Field of Plan package by Sporteng
2. Earthworks to be carried out to the satisfaction of the Waverley Council; unsound materials are to be taken off site and disposed of legally in accordance with the site contamination management plan. The sequence for Works shall follow instructions from the Remdeial Action Plan by edp
3. Filling works as specified shall be provided to achieve standard dry density to subgrade areas suitable for overlaying use.
4. All benchmarks and control set out points should be verified by the Contractor in the field prior to the commencement of works.
5. The contractor shall coordinate the layout and installation of all hydraulic services, with setouts for landscape works (including tree planting) prior to commencement of works.
6. All setting out shall be established by the contractor who will be responsible for the accuracy of lines and levels of the finished works. If any discrepancy is found or doubt exists between setout and levels as indicated on drawings and site conditions - this shall be clarified with the superintendent's representative prior to commencement or continuation of works.
7. Immediately after completion of subgrade earthworks and at least 24 hours prior to placement of topsoil obtain the Waverley Council's written approval of earthworks levels and grades. Note: notwithstanding approval, responsibitity for the structural stability of earthworks and structures shall remain with the contractor under the terms of this contract
8. All falls are to be established as uniform grades between spot heights and contours.
9. Extent of Cut and Fill shown on drawings is indicative only.
10. Where earthworks quantities are listed in schedule of landscape prices these are indicative only - Contractor should confirm all quantities and identify any discrepancy between scheduled and the contractor measured quantities for incorporation in contract at time of tender.
11. Works as executed: Provide works as executed survey of works and levels to 0.2m contour interval.
12. Any exacavated material taken off site or imported fill is to be subject to accurate written recording and advise to Council for approval and filing
13. Stockpiling of excavated material for recycling (site won topsoil) and site filling (excavated subgrade) shall be subject to review and strategic siting. The contractor shall note that available space for site works is limited and that dual use of works areas will be required as well as a strategic approach to site works planning and scheduling.

PREPARATION NOTES
All furniture footings (eg. walls, bollard, bin, and seat footings) are to be boxed out prior to establishment of new concrete pavement subbase to allow for footings.

The Contractor shall be fully responsible for the establishment and verification of all service locations and depths prior to commencement of works and the finalisation of tree pit locations for excavation.

All setout dimensions to be taken from setout and grid lines as indicated on setout plans. All setouts to be verified on site by Superintendent prior to commencement of works.

It is the Contractor's responsibility to adjust surface pits to suit new design levels.

All existing materials to be reused are to be stored at the Contractor's depot. All other materials are to be disposed of legally at no additional cost to the Contract.

PAVEMENT
- Setout pavements as shown on plan
- All setout to be verified on site by the Waverley Council prior to commencement of works
- Paving surface to adjoin kerbs and kerb crossings flush. Refer Engineer's drawings for drainage works including ag lines to garden beds
- Existing survey boxes and marks disturbed during construction shall be replaced to new positions as directed by the Waverley Council
- All existing service pits, inspection points and valve covers conflicting with finished surface levels are to be raised or lowered as required

SETOUT
1. Setout shall be established by a surveyor using the MGA coordinates as provided on the drawings
2. Additional figured dimensions have been provided where applicable in compliment to the coordinate setout
3. Do not scale off drawings.
4. Setout alignment and levels of all paths, walls and edges for approval by the Waverley Council prior to commencement of works. If any discrepancy is found or doubt exists between setout and levels as indicated on drawings and site conditions this shall be referred to the Waverley Council with adequate notice for provision of advice prior to the continuation of works.
5. Benchmarks will be clearly marked on site by the Contractor. Benchmarks shall be maintained by the Contractor during the course of the project.
6. All setting out shall be established by the Contractor who will be responsible for the accuracy of lines and levels of finished work. If any discrepancy is found or doubt exists between setout and levels as indicated on dwgs and site conditions this shall be referred to the Waverley Council with adequate notice for provision of advice prior to the continuation of works.
7. Setout of all new tree plantings is to be verified on site by Waverley Council prior to planting. Any planting not approved by the Waverley Council may be subject to relocation at the Contractors cost.
8. Setout locations of furniture items are to be verified on site by the Waverley Council prior to the excavation o
9. Setout of all play equipment is to be verified on site by the Waverley Council prior to the excavation of footings and installation

LEVELS
1. Refer to level plans for proposed levels and falls to surface finishes
2. Establish grades as even falls between spot levels where provided or as even grades between existing points
3. Establish levels prior to works to enable review on site and approval

GENERAL CONSTRUCTION
Existing survey boxes and marks disturbed during construction shall be replaced to new positions as directed by the Waverley Council.

Do not use vibratory equipment, except for hand held machines, over the subsurface services. It is the Contractor's responsibility to ensure there is no damage to the services during the works. Replace all materials/ surface damaged to private/ public property. Ensure dated photographs are taken to kerbs and gutters to clearly indicate the existing conditions or any other structures before commencement of construction - supply one set of photographs to the Waverley Council and retain one set on site.

The Contractor is to provide temporary silt barriers such as gravel bags/roll, around all stormwater inlet pits to minimise silt and contaminants entering the stormwater lines. During construction the silt traps are to be regularly maintained and any accumulated silt and debris is to be removed from such devices to maintain at least 60% of their capacities.

All existing service access pits, inspection pits and valve covers conflicting with finished surface levels are to be raised or lowered. The Contractor is to ensure that these adjustments are undertaken in accordance with engineer's details. Confirm treatment of unknown owner covers with the Waverley Council prior to undertaking adjustment.

PLANTING
1. Any existing trees or planting areas to be retained, are to be fenced before works commence.
2. All plant material are to be inspected by Waverley Council's representatives upon delivery to the site for approval
3. Layout of tree, shrub, groundcover and native grass plantings to be setout on site for approval by Camden Council prior to commencement of works. No planting to be moved from nominated locations without written approval of the Waverley Council.
4. All shrubs, groundcovers and native grasses to be planted in a staggered pattern at spacings nominated.
5. Throughly soak all plantings prior to installation.
6. The contractor shall note requirements for plant establishment in the works specification.

LEGEND

LEGEND
Demolition
NOTES:
- **Hand excavation for preparation of proposed works adjoining existing services**
- **Contractor to note existing services in vicinity of proposed works**
- **Pot hole by hand excavation to expose existing service and verify alignment and depth**
- **After demolition, excavate/fill & fine grade as required for new works as per Landscape Architects' General Arrangement Plans and Engineers' Levels Plans**
- **Road resheeting refer Civil Engineers' drawings for details**
- **Demolish temperary light fittings as per Superintendent's instructions**

DETAIL	SYMBOL	CODE	DESCRIPTION
		DB	Demolish existing brick pavement, bedding, and flexible basecourse and remove from site
		DC	Demolish existing concrete pavement and remove from site
		DR	Demolish to full depth of existing roadway asphalt and remove from site
		DIL	Demolish existing traffic island and remove from site
		DPR	Demolish existing pram ramp and remove from site
		DKG	Demolish existing kerb & gutter
		DK	Demolish existing kerb
			Demolish existing dish drain
		DW	Demolish existing retaining wall
		DH	Demolish existing handrail / balustrade
		DF	Relocate existing fence as per General Arrangement Plans
			Lift & remove or relocate or stockpile existing furniture as per Superintendent's insturctions
		DBS	- Backed seat
		DBI	- Bin enclosure
		DBK	- Bike rack
		DPT	- Pot plant
		DIS	- Compliance Green links Signage
		DSG	Demolish existing traffic signage. Remove, stockpile or reuse as per Superintendent's insturctions
		DTL	Demolish existing traffic light. Remove, stockpile or reuse as per Superintendent's insturctions
			Pit - existing - Refer NL03 and PSE00-04 for details
		DSW	Existing drainage pit and pipe to be removed - Refer engineers' drawings for details
		DGB	Demolish existing garden bed
		MGB	Make good garden bed - remove carefully existing garden ground cover and garden soil as far as 50mm depth, cultivate existing ground and import top soil as spcified to required levels without damage roots of existing tree planting
		DT	Demolish existing turf
			Existing tree to be retained and protected
			Existing tree to be removed
			Proposed lineworks

LEGEND
Setout
Notes:
- **Coordinates System - GDA94 . Refer NL.02 for setout coordinate schedule. All setout to be confirmed on site with Superintendent prior to proceeding with works.**
- **Setout of kerb and gutter and road geometrics - refer engineers drawings**
- **Typical setout of interpretation inlays, refer detail 01/LD08**

DETAIL	SYMBOL	CODE	DESCRIPTION
	2000		Dimensions in millimetres
	+ XX-XX		MGA Setout coordinate ID for construction works. Coordinates in millimeters.
	+ XX-XX		MGA Setout coordinate ID for pavement. Coordinates in millimeters.
	+ XX-XX		MGA radius center Setout coordinate ID. Coordinates in millimeters.
	R XXXX		Radius dimensions in millimeters

LEGEND
Paving Works
NOTES:
- **Paving hatches are indicative pattern only, pavement pattern setout to be done and confirmed with superintendent on site prior to commencement of works**
- **Gradient of pavement refer engineer's drawings**

DETAIL	SYMBOL	CODE	DESCRIPTION
01/LD01		CP1	Concrete pavement (pedestrian) - honed finish
01/LD01		CP2	Concrete pavement (pedestrian) - broom finish
02/LD01		CR	Concrete pram ramp
01/LD01		CV	Concrete pavement (vehicular) - honed finish
			Concrete driveway - refer engineers drawings
01/LD02		BP1	Brick banding - stretcher bond pattern
01/LD02		BP2	Brick pavement - herringbone pattern
01/LD02		BH1	Single brick header course
01/LD02		BH2	Double bricks header course
		ASP	Asphalt pavement - refer engineers drawings
05/LD01		PRA	Porous resin aggregate
03/LD01		TM1	Tactile Marker - type 1
03/LD01		TM2	Tactile Marker - type 2 to bus zone
03/LD01		DM	Directional tactile Marker to bus zone
04/LD01			Existing pit - Refer NL03 and PSE00-04 for details
			Existing drainage pit and grate to be removed - Refer engineers' drawings for details
			New paving infill drainage junction pit cover and frame - Refer Pit Lid & Services Schedule NL.03 - Refer engineers' drawings for details
			New solid drainage junction pit cover and frame - Refer Pit Lid & Services Schedule NL.03 - Refer engineers drawings for details
			New drainage pit and grate. - Refer Pit Lid & Services Schedule NL.03 - Refer engineers drawings for details
			New drainage pit and grate to rain garden. - Refer Pit Lid & Services Schedule NL.03 - Refer engineers drawings for details
			New paving infill electrical pit cover and frame - Refer electrical enginners drawings for details

LEGEND
Construction Works

DETAIL	SYMBOL	CODE	DESCRIPTION
03/LD03		RK	Raised kerb - 150mm wide
01/LD03		SE	Steel edge
02/LD03		W	Sandstone wall - 300mm wide, 600mm high max.
01/LD04		HR	Handrail barrier
		F	Relocated existing fence
			Existing fence to be retained

LEGEND
Pits Lids and Services Works
NOTES:
- **Existing pits' dimension and location are indicative only, to be verified on site**
- **Refer NL04-NL11 for existing pits and refer engineers' drawings for proposed pits details**
- **All new pits (stormwater & electrical) should be non-gas tight**

DETAIL	SYMBOL	CODE	DESCRIPTION
04/LD01		XXX	Existing pit
		XXX	Existing drainage pit and grate to be removed - Refer engineers' drawings and DP00-DP04 for details
		P-s1	New drainage junction pit - refer Civil Engineers' drawings
		P-s2	New kerb inlet pit - refer Civil Engineers' drawings
		P-s3	New grated inlet pit - refer Civil Engineers' drawings
		P-e	New electrical pit - refer Lighting and Electrical Engineers' drawings

LEGEND
Furniture and Features

DETAIL	SYMBOL	CODE	DESCRIPTION
01/LD05		BS1	Standard street seat as per Council's Technical Manual
01/LD05		BS2	Standard street seat as per Council's Technical Manual - frame colour as specified to match the Multi-function pole colour
NOT USED			
02/LD05		BI	Bin enclosure as per Council's Technical Manual
03/LD05		BR-ex	Existing bike rack to be reused
03/LD05		BR1	Bike rack as specified to brick pavement (sub-surface fixing)
03/LD05		BR2	Bike rack as specified to concrete pavement (surface fixing)
01/LD06		SNG1/2/3/4	Signage - Urban model as per Council's Technical Manual. Signage graphic refer Heritage consultant's (Artefact) drawings
02/LD06		SNG5	Signage to pump and trough. Signage graphic refer Heritage consultant's (Artefact) drawings
01/LD06		SNG6	Signage - Urban model as per Council's Technical Manual. Signage graphic to be confirmed with Superintendent
01/LD08		INLXX	Cast bronze inlay tile - pattern graphics refer Heritage consultant's (Artefact) drawings
01/LD07			Heritage trough (grahpic indicative only)
01/LD07			Heritage pump (grahpic indicative only)

LEGEND
Softscape Works
NOTES:
- **Hand excavate tree pit adjoining existing services**
- **Contractor to note existing services in vicinity of tree plantings**
- **Pot hole by hand excavation to expose existing service and verify alignment and depth**
- **Review with superintendent to confirm positioning of tree within pit**

DETAIL	SYMBOL	CODE	DESCRIPTION
01/LD09		GB1	Garden bed type 1 (general)
02/LD09		GB2	Garden bed type 2 (tree pit garden)
		GB3	Garden bed type 3 (tree pit garden with strata Vault), refer Citygreen drawings for details. Soil types and specification as per GB2
			Proposed Strata Vault Soil Cell under pavement (indicative only) refer Citygreen drawings for details. Depth of cells to be confirmed with superintendent prior to ordering and installation
04/LD09		RB	Rain garden - Refer engineers' drawings for details
		MGB	Make good existing tree pit garden and replant
03/LD09		MT	Make good turf - allow for 50% of the area replacement
02/04/LD09			Proposed tree Plantings within GB3, refer Citygreen drawings for details. Depth of tree pits to be confirmed with superintendent prior to ordering and installation
			Existing tree to be retained
			Existing tree to be removed

LEGEND
Planting Works
NOTES:
- **Hand excavate tree pit adjoining existing services**
- **Contractor to note existing services in vicinity of tree plantings**
- **Pot hole by hand excavation to expose existing service and verify alignment and depth**
- **Review with superintendent to confirm positioning of tree within pit**

DETAIL	SYMBOL	CODE	DESCRIPTION
01/02/04/ LD09			Groundcover Plantings within GB3, refer Citygreen drawings for details
01/02/04/ LD09			Shrub Plantings within GB3, refer Citygreen drawings for details
			Proposed Strata Vault Soil Cell under pavement (indicative only) refer Citygreen drawings for details. Depth of cells to be confirmed with superintendent prior to ordering and installation
			Make good turf - allow for 50% of the area replacement
02/04/LD09			Proposed tree Plantings within GB3, refer Citygreen drawings for details. Depth of tree pits to be confirmed with superintendent prior to ordering and installation
			Existing tree to be retained
			Existing tree to be removed

ISSUE	AMENDMENT	DRAWN	DATE
D	REISSUE FOR CONSTRUCTION	ES	10/12/24
C	ISSUE FOR CONSTRUCTION	ES	18/10/24
B	ISSUE FOR ADDENDUM	ES	21/06/24
A	ISSUE FOR TENDER	ES	24/05/24
3	INTERIM SET ISSUE FOR REVIEW	ES	10/05/24
2	INTERIM SET ISSUE FOR REVIEW	ES	06/05/24
1	PRELIMINARY	ES	21/12/23

DESIGNED: ES	DATE: DEC 2024	APPROVED: AH
DRAWN: ES	DATE: DEC 2024	APPROVED: AH
CHECKED: AH	DATE: DEC 2024	APPROVED: AH

GENERAL NOTES
1. Do not scale off drawings. Follow written dimensions. If in doubt obtain written advice from the Superintendent.
2. Verify all dimensions on site.
3. Refer to legend for all symbol and code keys.
4. Read in conjunction with the specifications
5. Read in conjunction with all Civil, and Electrical Engineer drawings and specifications.
6. Read in conjunction with all associated drawings

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WAVERLEY COUNCIL

PREPARED BY:
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ABN 53 088 175 437

PROJECT:
CHARING CROSS PUBLIC DOMAIN UPGRADE

DRAWING TITLE
Legends & Notes

DATE
DEC 2024

SCALE

ISSUE
D

DRAWING NO.
3870.NL.01



ISSUE	AMENDMENT	DRAWN	DATE
B	ISSUE FOR CONSTRUCTION	ES	18/10/24
A	ISSUE FOR TENDER	ES	24/05/24
3	INTERIM SET ISSUE FOR REVIEW	ES	10/05/24
2	INTERIM SET ISSUE FOR REVIEW	ES	06/05/24
1	PRELIMINARY	ES	21/12/23

DESIGNED: ES	DATE: OCT 2024	APPROVED: AH
DRAWN: ES	DATE: OCT 2024	APPROVED: AH
CHECKED: AH	DATE: OCT 2024	APPROVED: AH

GENERAL NOTES
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2. Verify all dimensions on site.
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4. Read in conjunction with the specifications
5. Read in conjunction with all Civil, and Electrical Engineer drawings and specifications.
6. Read in conjunction with all associated drawings

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PROJECT:
CHARING CROSS PUBLIC DOMAIN UPGRADE

DRAWING TITLE
Separable Portion Plan

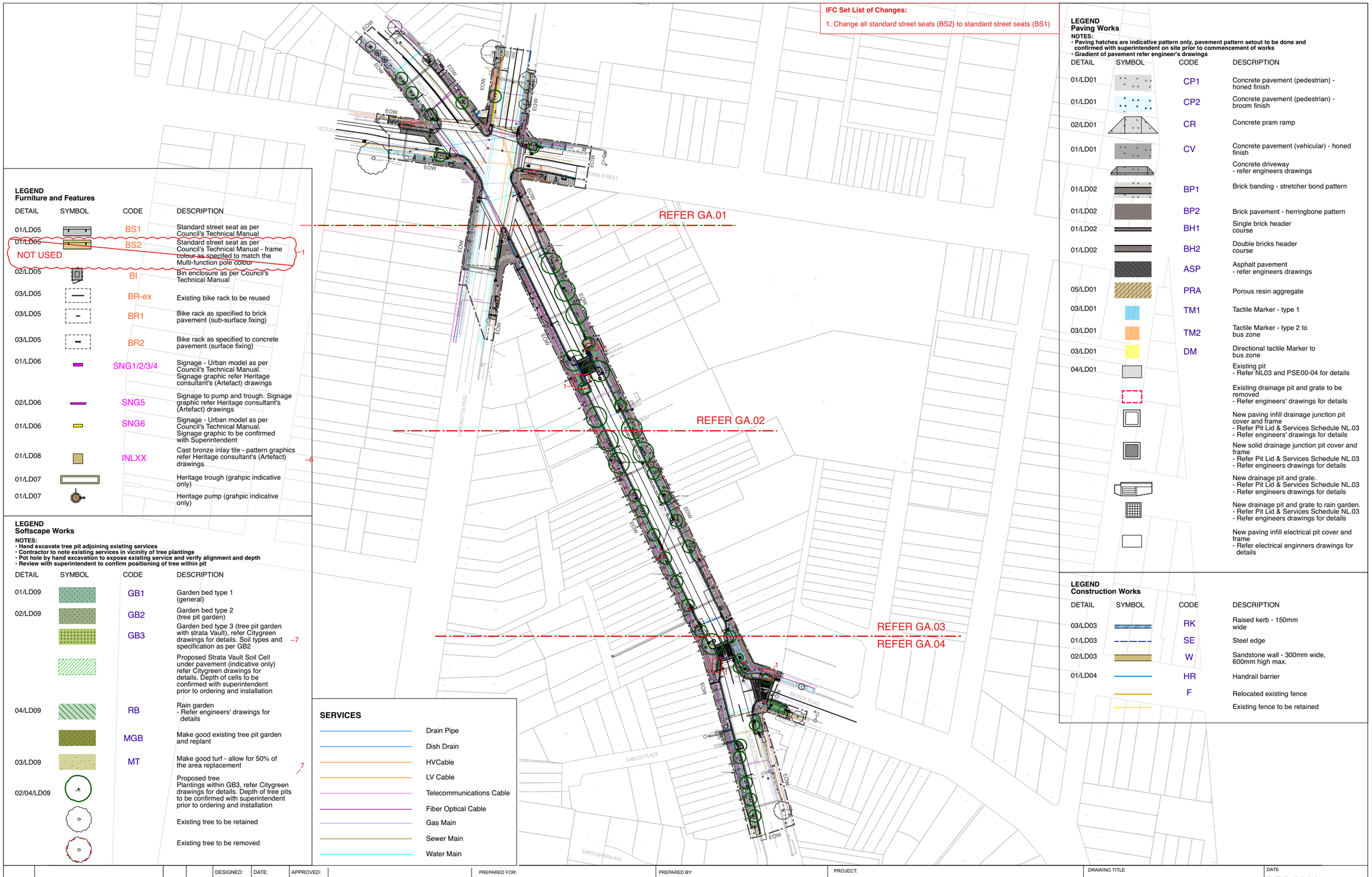
DATE
OCT 2024

SCALE
1:800 @A1
1:1600 @A3

ISSUE
B

0 10 20 30 M

DRAWING NO.
3870.SPP.00



IFC Set List of Changes:

1. Change all standard street seats (BS2) to standard street seats (BS1)

LEGEND
Furniture and Features

DETAIL	SYMBOL	CODE	DESCRIPTION
01/LD05		BS1	Standard street seat as per Council's Technical Manual
01/LD05		BS2	Standard street seat as per Council's Technical Manual - frame colour as specifed to match the Multi-function pole colour
NOT USED			
02/LD05		BI	Bin enclosure as per Council's Technical Manual
03/LD05		BR-ex	Existing bike rack to be reused
03/LD05		BR1	Bike rack as specified to brick pavement (sub-surface fixing)
03/LD05		BR2	Bike rack as specified to concrete pavement (surface fixing)
01/LD06		SNG1/2/3/4	Signage - Urban model as per Council's Technical Manual. Signage graphic refer Heritage consultant's (Artefact) drawings
02/LD06		SNG5	Signage to pump and trough. Signage graphic refer Heritage consultant's (Artefact) drawings
01/LD06		SNG6	Signage - Urban model as per Council's Technical Manual. Signage graphic to be confirmed with Superintendent
01/LD08		INLXX	Cast bronze inlay tile - pattern graphics refer Heritage consultant's (Artefact) drawings
01/LD07			Heritage trough (grahpic indicative only)
01/LD07			Heritage pump (grahpic indicative only)

LEGEND
Softscape Works

NOTES:
- Hand excavate tree pit adjoining existing services
- Contractor to note existing services in vicinity of tree plantings
- Pot hole by hand excavation to expose existing service and verify alignment and depth
- Review with superintendent to confirm positioning of tree within pit

DETAIL	SYMBOL	CODE	DESCRIPTION
01/LD09		GB1	Garden bed type 1 (general)
02/LD09		GB2	Garden bed type 2 (tree pit garden)
		GB3	Garden bed type 3 (tree pit garden with strata Vault), refer Citygreen drawings for details. Soil types and specification as per GB2
			Proposed Strata Vault Soil Cell under pavement (indicative only) refer Citygreen drawings for details. Depth of cells to be confirmed with superintendent prior to ordering and installation
04/LD09		RB	Rain garden - Refer engineers' drawings for details
		MGB	Make good existing tree pit garden and replant
03/LD09		MT	Make good turf - allow for 50% of the area replacement
02/04/LD09			Proposed tree Plantings within GB3, refer Citygreen drawings for details. Depth of tree pits to be confirmed with superintendent prior to ordering and installation
			Existing tree to be retained
			Existing tree to be removed

SERVICES

- Drain Pipe
- Dish Drain
- HVCable
- LV Cable
- Telecommunications Cable
- Fiber Optical Cable
- Gas Main
- Sewer Main
- Water Main

LEGEND
Paving Works

NOTES:
- Paving hatches are indicative pattern only, pavement pattern setout to be done and confirmed with superintendent on site prior to commencement of works
- Gradient of pavement refer engineer's drawings

DETAIL	SYMBOL	CODE	DESCRIPTION
01/LD01		CP1	Concrete pavement (pedestrian) - honed finish
01/LD01		CP2	Concrete pavement (pedestrian) - broom finish
02/LD01		CR	Concrete pram ramp
01/LD01		CV	Concrete pavement (vehicular) - honed finish
			Concrete driveway - refer engineers drawings
01/LD02		BP1	Brick banding - stretcher bond pattern
01/LD02		BP2	Brick pavement - herringbone pattern
01/LD02		BH1	Single brick header course
01/LD02		BH2	Double bricks header course
		ASP	Asphalt pavement - refer engineers drawings
05/LD01		PRA	Porous resin aggregate
03/LD01		TM1	Tactile Marker - type 1
03/LD01		TM2	Tactile Marker - type 2 to bus zone
03/LD01		DM	Directional tactile Marker to bus zone
04/LD01			Existing pit - Refer NL03 and PSE00-04 for details
			Existing drainage pit and grate to be removed - Refer engineers' drawings for details
			New paving infill drainage junction pit cover and frame - Refer Pit Lid & Services Schedule NL.03 - Refer engineers' drawings for details
			New solid drainage junction pit cover and frame - Refer Pit Lid & Services Schedule NL.03 - Refer engineers drawings for details
			New drainage pit and grate. - Refer Pit Lid & Services Schedule NL.03 - Refer engineers drawings for details
			New drainage pit and grate to rain garden. - Refer Pit Lid & Services Schedule NL.03 - Refer engineers drawings for details
			New paving infill electrical pit cover and frame - Refer electrical enginners drawings for details

LEGEND
Construction Works

DETAIL	SYMBOL	CODE	DESCRIPTION
03/LD03		RK	Raised kerb - 150mm wide
01/LD03		SE	Steel edge
02/LD03		W	Sandstone wall - 300mm wide, 600mm high max.
01/LD04		HR	Handrail barrier
		F	Relocated existing fence
			Existing fence to be retained

ISSUE	AMENDMENT	DRAWN	DATE
D	REISSUE FOR CONSTRUCTION	ES	10/12/24
C	ISSUE FOR CONSTRUCTION	ES	18/10/24
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A	ISSUE FOR TENDER	ES	24/05/24
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2	INTERIM SET ISSUE FOR REVIEW	ES	06/05/24
1	PRELIMINARY	ES	21/12/23

DESIGNED: ES	DATE: DEC 2024	APPROVED: AH
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6. Read in conjunction with all associated drawings

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ABN 53 088 175 437

PROJECT:
CHARING CROSS PUBLIC DOMAIN UPGRADE

DRAWING TITLE
General Arrangement Plan - Overall

DATE
DEC 2024

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ISSUE
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DRAWING NO.
3870.GA.00

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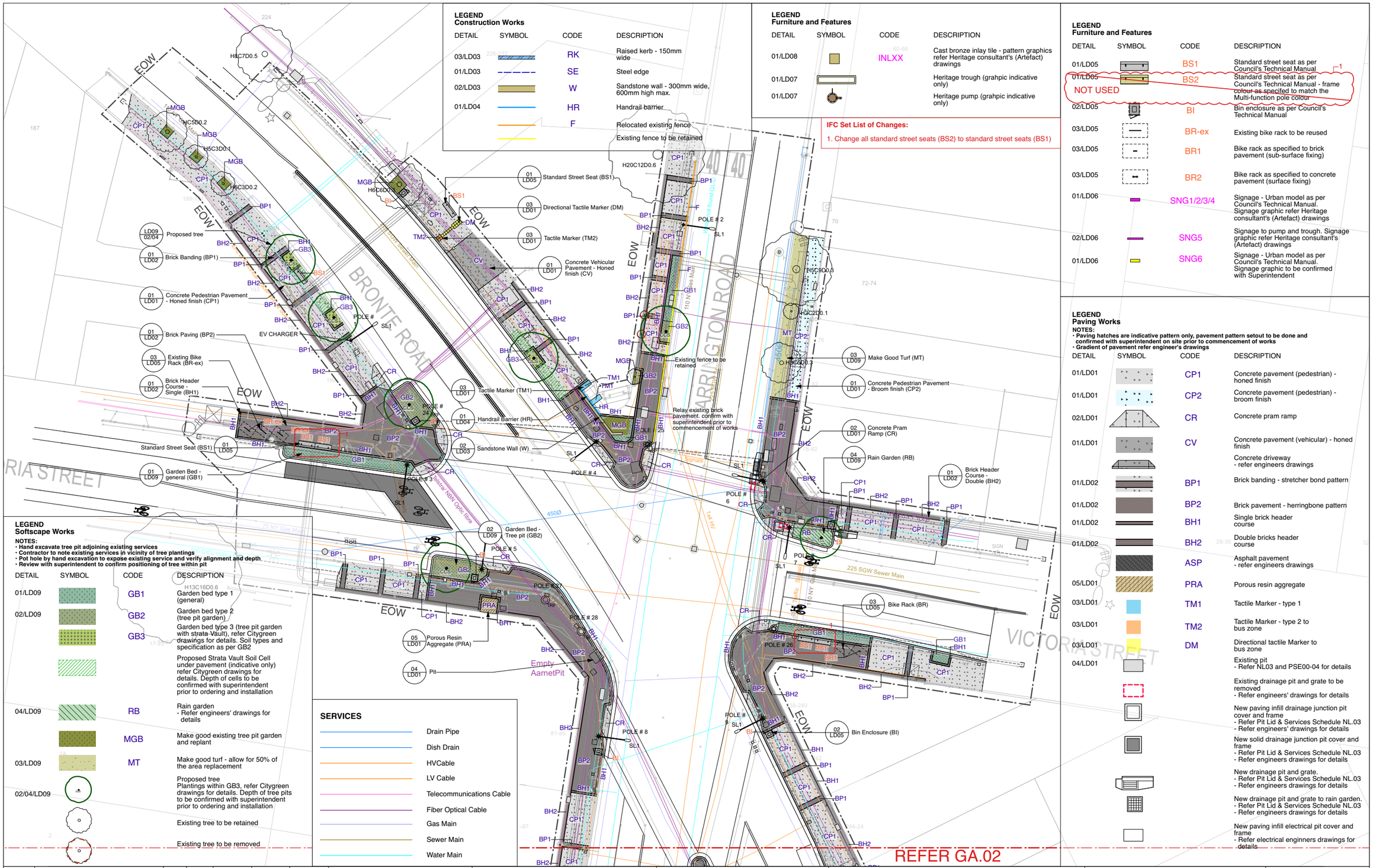

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PROJECT: CHARING CROSS PUBLIC DOMAIN UPGRADE

DRAWING TITLE: General Arrangement Plan - Area 1

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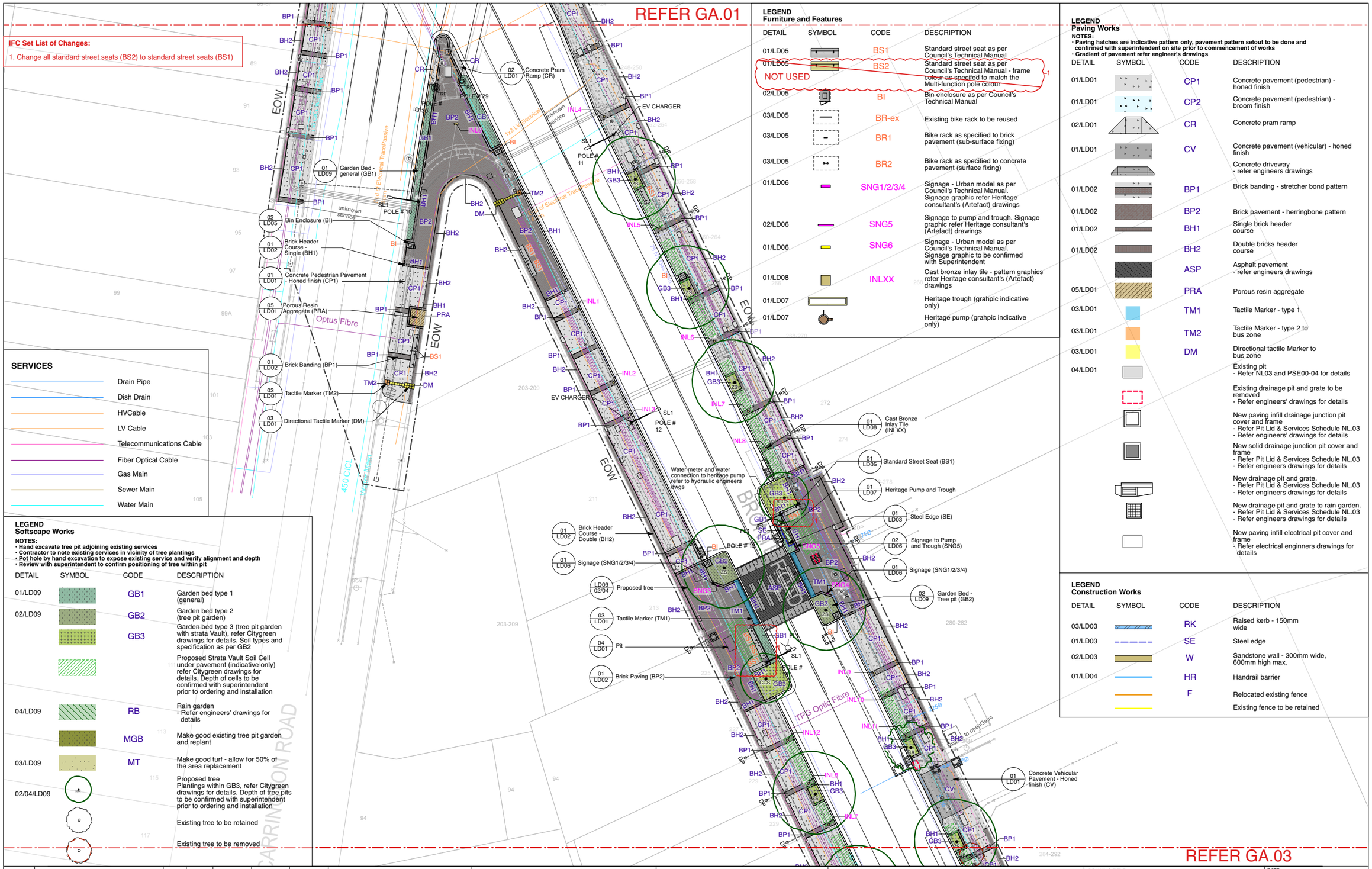
DRAWING NO.: 3870.GA.01


REFER GA.01
IFC Set List of Changes:
1. Change all standard street seats (BS2) to standard street seats (BS1)
SERVICES
Drain Pipe
Dish Drain
HVCable
LV Cable
Telecommunications Cable
Fiber Optical Cable
Gas Main
Sewer Main
Water Main
LEGEND
Softscape Works
NOTES:
• Hand excavate tree pit adjoining existing services
• Contractor to note existing services in vicinity of tree plantings
• Pot hole by hand excavation to expose existing service and verify alignment and depth
• Review with superintendent to confirm positioning of tree within pit
DETAIL SYMBOL CODE DESCRIPTION
01/LD09 GB1 Garden bed type 1 (general)
02/LD09 GB2 Garden bed type 2 (tree pit garden)
GB3 Garden bed type 3 (tree pit garden with strata Vault), refer Citygreen drawings for details. Soil types and specification as per GB2
Proposed Strata Vault Soil Cell under pavement (indicative only) refer Citygreen drawings for details. Depth of cells to be confirmed with superintendent prior to ordering and installation
04/LD09 RB Rain garden - Refer engineers' drawings for details
MGB Make good existing tree pit garden and replant
03/LD09 MT Make good turf - allow for 50% of the area replacement
02/04/LD09 Proposed tree Plantings within GB3, refer Citygreen drawings for details. Depth of tree pits to be confirmed with superintendent prior to ordering and installation
Existing tree to be retained
Existing tree to be removed
LEGEND
Furniture and Features
DETAIL SYMBOL CODE DESCRIPTION
01/LD05 BS1 Standard street seat as per Council's Technical Manual
01/LD05 BS2 Standard street seat as per Council's Technical Manual - frame colour as specified to match the Multi-function pole colour
NOT USED
02/LD05 BI Bin enclosure as per Council's Technical Manual
03/LD05 BR-ex Existing bike rack to be reused
03/LD05 BR1 Bike rack as specified to brick pavement (sub-surface fixing)
03/LD05 BR2 Bike rack as specified to concrete pavement (surface fixing)
01/LD06 SNG1/2/3/4 Signage - Urban model as per Council's Technical Manual. Signage graphic refer Heritage consultant's (Artefact) drawings
02/LD06 SNG5 Signage to pump and trough. Signage graphic refer Heritage consultant's (Artefact) drawings
01/LD06 SNG6 Signage - Urban model as per Council's Technical Manual. Signage graphic to be confirmed with Superintendent
01/LD08 INLXX Cast bronze inlay tile - pattern graphics refer Heritage consultant's (Artefact) drawings
01/LD07 Heritage trough (grahpic indicative only)
01/LD07 Heritage pump (grahpic indicative only)
LEGEND
Paving Works
NOTES:
• Paving hatches are indicative pattern only, pavement pattern setout to be done and confirmed with superintendent on site prior to commencement of works
• Gradient of pavement refer engineer's drawings
DETAIL SYMBOL CODE DESCRIPTION
01/LD01 CP1 Concrete pavement (pedestrian) - honed finish
01/LD01 CP2 Concrete pavement (pedestrian) - broom finish
02/LD01 CR Concrete pram ramp
01/LD01 CV Concrete pavement (vehicular) - honed finish
Concrete driveway - refer engineers drawings
01/LD02 BP1 Brick banding - stretcher bond pattern
01/LD02 BP2 Brick pavement - herringbone pattern
01/LD02 BH1 Single brick header course
01/LD02 BH2 Double bricks header course
ASP Asphalt pavement - refer engineers drawings
05/LD01 PRA Porous resin aggregate
03/LD01 TM1 Tactile Marker - type 1
03/LD01 TM2 Tactile Marker - type 2 to bus zone
03/LD01 DM Directional tactile Marker to bus zone
04/LD01 Existing pit - Refer NL03 and PSE00-04 for details
Existing drainage pit and grate to be removed - Refer engineers' drawings for details
New paving infill drainage junction pit cover and frame - Refer Pit Lid & Services Schedule NL.03 - Refer engineers' drawings for details
New solid drainage junction pit cover and frame - Refer Pit Lid & Services Schedule NL.03 - Refer engineers drawings for details
New drainage pit and grate. - Refer Pit Lid & Services Schedule NL.03 - Refer engineers drawings for details
New drainage pit and grate to rain garden. - Refer Pit Lid & Services Schedule NL.03 - Refer engineers drawings for details
New paving infill electrical pit cover and frame - Refer electrical enginners drawings for details
LEGEND
Construction Works
DETAIL SYMBOL CODE DESCRIPTION
03/LD03 RK Raised kerb - 150mm wide
01/LD03 SE Steel edge
02/LD03 W Sandstone wall - 300mm wide, 600mm high max.
01/LD04 HR Handrail barrier
F Relocated existing fence
Existing fence to be retained
REFER GA.03
Optus Fibre
TPG Optic Fibre
Water meter and water connection to heritage pump refer to hydraulic engineers dwgs
BROUGHTON ROAD
CARRINGTON ROAD
EOW
Garden Bed - general (GB1)
Bin Enclosure (BI)
Brick Header Course - Single (BH1)
Concrete Pedestrian Pavement - Honed finish (CP1)
Porous Resin Aggregate (PRA)
Brick Banding (BP1)
Tactile Marker (TM2)
Directional Tactile Marker (DM)
Concrete Pram Ramp (CR)
Brick Header Course - Double (BH2)
Signage (SNG1/2/3/4)
Proposed tree
Tactile Marker (TM1)
Pit
Brick Paving (BP2)
Cast Bronze Inlay Tile (INLXX)
Standard Street Seat (BS1)
Heritage Pump and Trough
Steel Edge (SE)
Signage to Pump and Trough (SNG5)
Garden Bed - Tree pit (GB2)
Concrete Vehicular Pavement - Honed finish (CV)
GENERAL NOTES
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3. Refer to legend for all symbol and code keys.
4. Read in conjunction with the specifications
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PREPARED FOR:
WAVERLEY COUNCIL
PREPARED BY:
ep environmental partnership
Level 3 Suite 3.01 22-36 Mountain Street Ultimo 2007
Ph: (02) 9281 7007
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ABN 53 088 175 437
PROJECT:
CHARING CROSS PUBLIC DOMAIN UPGRADE
DRAWING TITLE
General Arrangement Plan - Area 2
DATE
DEC 2024
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ISSUE
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DRAWING NO.
3870.GA.02
0 5 10 M
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REFER GA.02

LEGEND
Paving Works

NOTES:
- Paving hatches are indicative pattern only, pavement pattern setout to be done and confirmed with superintendent on site prior to commencement of works
- Gradient of pavement refer engineer's drawings

DETAIL	SYMBOL	CODE	DESCRIPTION
01/LD01		CP1	Concrete pavement (pedestrian) - honed finish
01/LD01		CP2	Concrete pavement (pedestrian) - broom finish
02/LD01		CR	Concrete pram ramp
01/LD01		CV	Concrete pavement (vehicular) - honed finish
			Concrete driveway - refer engineers drawings
01/LD02		BP1	Brick banding - stretcher bond pattern
01/LD02		BP2	Brick pavement - herringbone pattern
01/LD02		BH1	Single brick header course
01/LD02		BH2	Double bricks header course
		ASP	Asphalt pavement - refer engineers drawings
05/LD01		PRA	Porous resin aggregate
03/LD01		TM1	Tactile Marker - type 1
03/LD01		TM2	Tactile Marker - type 2 to bus zone
03/LD01		DM	Directional tactile Marker to bus zone
04/LD01			Existing pit - Refer NL03 and PSE00-04 for details
			Existing drainage pit and grate to be removed - Refer engineers' drawings for details
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LEGEND
Construction Works

DETAIL	SYMBOL	CODE	DESCRIPTION
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LEGEND
Furniture and Features

DETAIL	SYMBOL	CODE	DESCRIPTION
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01/LD05		BS2	Standard street seat as per Council's Technical Manual - frame colour as specifed to match the Multi-function pole colour
			NOT USED
02/LD05		BI	Bin enclosure as per Council's Technical Manual
03/LD05		BR-ex	Existing bike rack to be reused
03/LD05		BR1	Bike rack as specified to brick pavement (sub-surface fixing)
03/LD05		BR2	Bike rack as specified to concrete pavement (surface fixing)
01/LD06		SNG1/2/3/4	Signage - Urban model as per Council's Technical Manual. Signage graphic refer Heritage consultant's (Artefact) drawings
02/LD06		SNG5	Signage to pump and trough. Signage graphic refer Heritage consultant's (Artefact) drawings
01/LD06		SNG6	Signage - Urban model as per Council's Technical Manual. Signage graphic to be confirmed with Superintendent
01/LD08		INLXX	Cast bronze inlay tile - pattern graphics refer Heritage consultant's (Artefact) drawings
01/LD07			Heritage trough (grahpic indicative only)
01/LD07			Heritage pump (grahpic indicative only)

LEGEND
Softscape Works

NOTES:
- Hand excavate tree pit adjoining existing services
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04/LD09		RB	Rain garden - Refer engineers' drawings for details
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SERVICES
- Drain Pipe
- Dish Drain
- HVCable
- LV Cable
- Telecommunications Cable
- Fiber Optical Cable
- Gas Main
- Sewer Main
- Water Main

IFC Set List of Changes:
1. Change all standard street seats (BS2) to standard street seats (BS1)

REFER GA.04

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D	REISSUE FOR CONSTRUCTION	ES	10/12/24
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ABN 53 088 175 437

PROJECT:
CHARING CROSS PUBLIC DOMAIN UPGRADE

DRAWING TITLE
General Arrangement Plan - Area 3

DATE
DEC 2024

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DRAWING NO.
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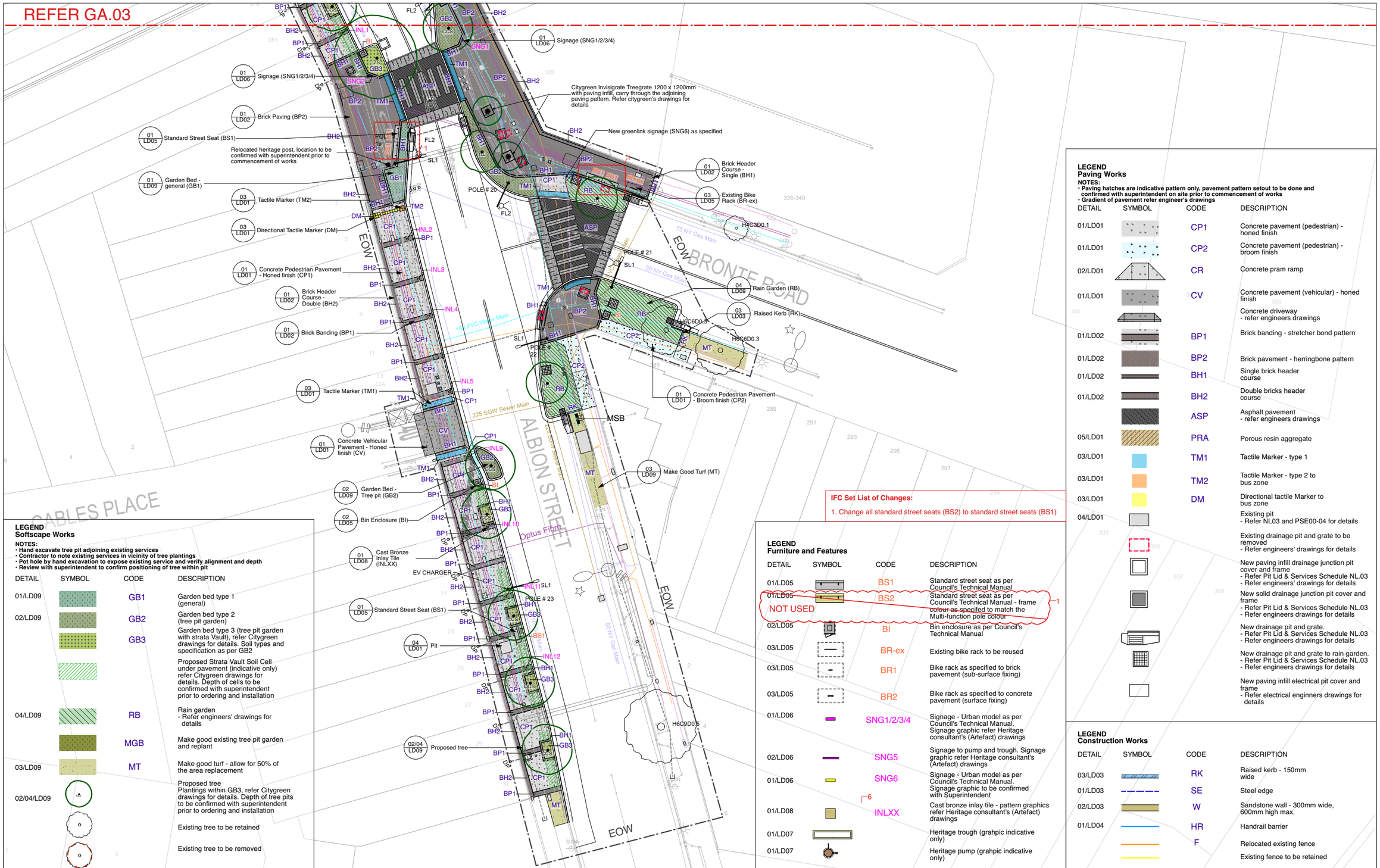

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LEGEND
Construction Works

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ABN 53 088 175 437

PROJECT:
CHARING CROSS PUBLIC DOMAIN UPGRADE

DRAWING TITLE
General Arrangement Plan - Area 4

DATE
DEC 2024

SCALE 1:200 @A1 1:400 @A3

ISSUE D

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DRAWING NO.
3870.GA.04



Agenda Item 7_Attachment 4 - SP1 Civil Works Progress Photos


WAVERLEY
PHARMACY
Bonanza Thai
CHARING CROSS
MediADVICE
PHARMACY
RayWhite
3091
Every hour
3,000 Australians
face being homeless

Photo 2


BOTTLE SHOP
BOTTLE SHOP
DRY CLEANERS
PHARMACY
CHARING CROSS
T: 9389 3092
PMC
PMC

Photo 3



Photo 4


40
ROAD WORK
ALBION ST
BRONTE RD
GIVE WAY
PHARMACY
DRY CLEANERS
CHARING CROSS
MediADVICE
PHARMACY
KRYFIX
PROACTIVE SOLUTIONS
1800 425 3
NEIGHBOURHOOD CELLARS
BOTTLE SHOP
MADE FOR MOUTHS

Photo 5


UYÊN
michiru higginbotham
BOTTLE SHOP
YRC 585
PEUGEOT
ERL·960

Photo 6


Bonanza Thai Restaurant
DINE IN & TAKE AWAY
PHARMACY
CHARING CROSS
T: 9389 3092
DRY CLEANERS
NEIGHBOURHOOD CELLARS
BOTTLE SHOP
www.ca-i.com.au
DLY-68G
25

Photo 7


maths words
Maths & English Tuition
UYÊN
Photo 8


EASTERN
Eastern Suburbs Legion Club
ENTRANC
LEGION CLUB
GARAGE DOORS 9315 7055
ALL ZAPPAS
PROXIMITY PLUMBING
PROXIMITY PLUMBING
PROXIMITY PLUMBING
SALE
bathroom life
Photo 9

CHROFI | WAVERLEY COUNCIL

Head Design
Consultancy Services
Waverley Council
Chambers
Redevelopment

Concept Options
08 August 2025



TABLE OF CONTENTS

01 Return Brief

02 Options

03 Appendix

Acknowledgement of country

CHROFI respectfully acknowledges the Traditional Owners of Waverley, the Gadigal People of the Eora Nation. We pay our respects to elders past, present and emerging.

This is, was and always will be Aboriginal land.

CHROFI | WAVERLEY COUNCIL

Strategic Context

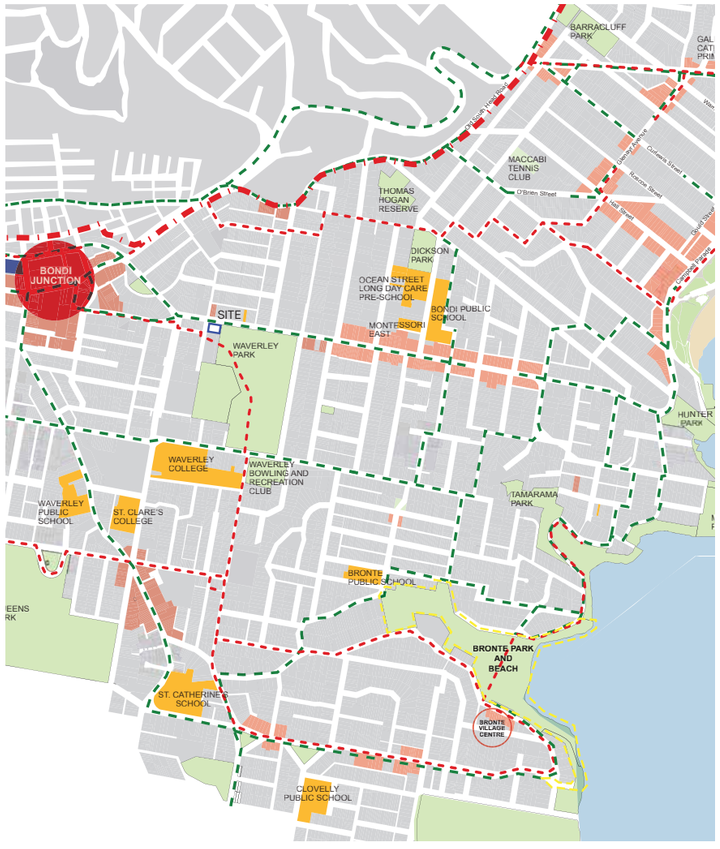
Waverley Park Plan of Management 2024

The Waverley Plan of Management provides a strategic framework to guide the sustainable use, improvement, maintenance and management of public land.

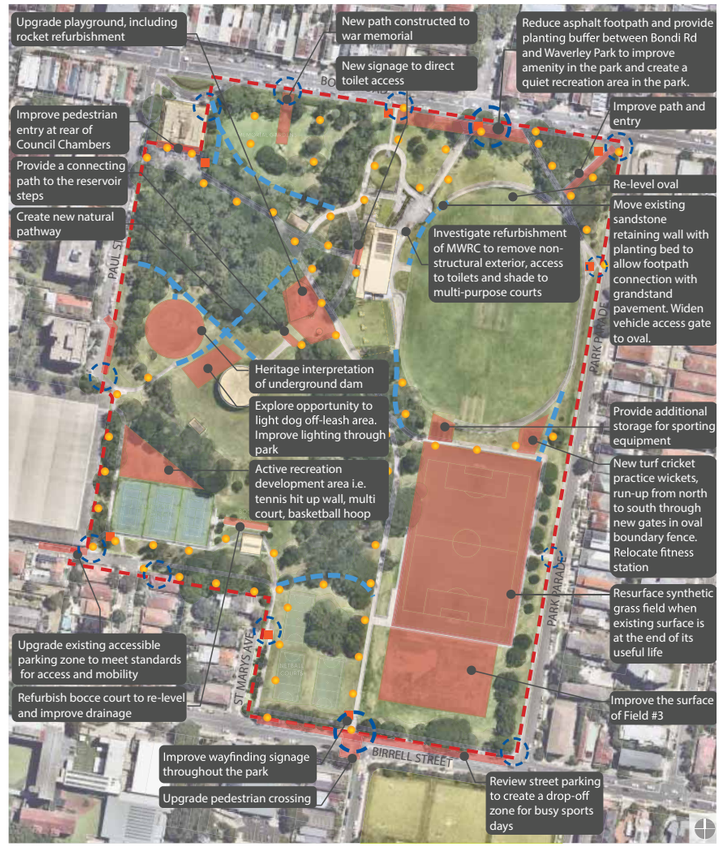
The plan provides directions and identifies important actions to achieve what is envisioned for the land. These directions and actions are formed through research and consultation with the community to identify an approach to sustainable future use and management of the site.

Key take aways:
- No Net Loss of Park Area: Should the project extend into the Sydney Water Easement, the design must ensure no net loss of parkland. This can be achieved by incorporating additional planting and usable open space around the site to offset any encroachment by the building.

- Improved Pedestrian Access at Rear of Council Chambers: The current pedestrian pathway terminates at the car park, creating a conflict zone between vehicles and pedestrians. This safety concern is compounded by poor signage and limited wayfinding. The project should address this by enhancing pedestrian access and legibility at this key entry point.



From Waverley Park Plan of Management 2024



From Waverley Park Plan of Management 2024

Needs Assessment Report

Bondi Junction Civic Heart - Needs Assessment Report

The Bondi Junction Civic Hear Needs Assessment Report has been undertaken to support and inform the early planning stages for the development of a new 'Civic Heart' for Bondi Junction, by Waverley Council.

The needs assessment has been useful to identify community needs in the Waverley LGA for a range of community facilities and services and Council needs for civic and administrative facilities. A focus for this assessment has been to identify, not only those facilities and services 'needed', but those that will contribute to the creation of a vibrant and activated site.

Key take aways:
We understand the document focuses on new development in Bondi Junction; however, due to its proximity to our site and its broader recommendations for addressing community infrastructure shortfalls, it has helped inform the brief for the Waverley Council Chambers project.

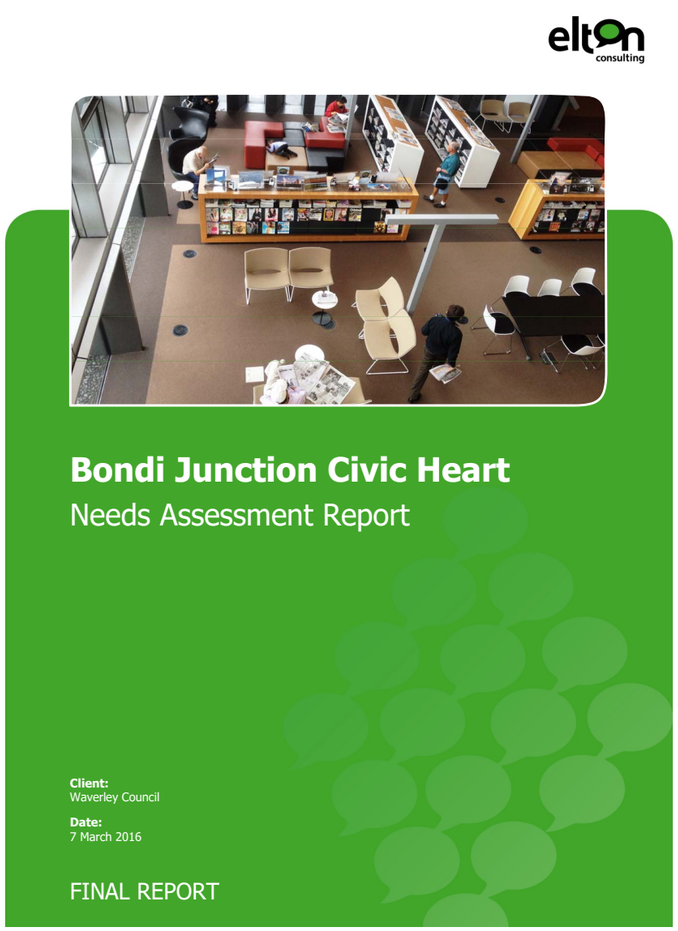


Table 1: Summary of key components and floor areas

Category	Facility	Approximate size/floor area
Priority components	Community space: Multipurpose meeting, activity and training space (incorporating seniors centre) suitable for a range of uses and user groups	1,970sqm
	Internal public meeting and gathering space/ 'community living room'/ main foyer, concierge, gallery/exhibition space and tourist information service	500sqm
	Public open space (e.g. town square and/or village green)	To be determined through site planning and building design
	Council Chambers	80sqm
	Civic function space/public gallery May also function as a multipurpose performance space if a specialist theatre/performing arts facility is not provided (refer 'Potential components' – 'Theatre/performing arts facility' below)	500sqm Will require additional floor area, if required to function as a multipurpose performance space, to accommodate required supporting amenities
Potential components	Community space: Community service provision space – permanent offices	To be based on existing service provision space and future input from service providers Floor area requirements for Civic Heart will be dependent on future determination regarding services to be accommodated Opportunities may also exist to relocate and consolidate existing services currently housed in a range of Council-owned facilities into a services hub (e.g. on existing Council Chambers site on Bondi Road)
	Indoor sports facility	900sqm per multipurpose court
Other components	Additional community space	An additional gap of 1,108sqm was identified in this study. It is recommended this be addressed through the provision of additional multipurpose meeting and activity space on other sites considered as part of this study (e.g. on the existing Council Chambers site) or in future projects

Relevant extracts from Table 1 in Bondi Junction Civic Heart - Needs Assessment Report

Request for Quotation

RFQ 2532 – Waverley Council Chambers Redevelopment

Waverley Council's Request for Quotation outlined a design brief that should include the following requirements which have been identified in consultation with project stakeholders. It further states that the Head Consultant may identify additional requirements and/ or changes to the requirements through investigations and design development that are achievable within the current budget.

Waverley Council's RFQ requested the following two concept options be provided;

Option 1:
- Multipurpose recreational community facility **excluding** council chambers.

Option 2:
- Multipurpose recreational community facility **including** council chambers.

Facility	Indicative GFA*	Intent	Other Considerations
COMMUNITY AREA (OPTION 1 + OPTION 2)			
Flexible Civic Function Space/Community Hall/ Sports Hall	To be determined through design	Flexible hall to accommodate sports court / community functions & events with adjacent kitchen and large storage space	A space with a sense of grandeur, that is welcoming and reflects Waverley Community
Meeting Rooms / Club Rooms	To be determined through design	Variety of flexible spaces for meetings, trainings, exercise etc for public with potential licensing to sporting organisation.	Functional spaces that meet the needs of local sporting groups
Community Rooms	To be determined through design	Hireable spaces for the community	Operable walls to allow for flexibility. May be integrated with Civic Function Space or Meeting Rooms.
Administrative Office	To be determined through design	Accommodate 8-10 staff, including print/scan area, for sporting organisation.	
Café	To be determined through design	Public café with seating, with an opportunity to improve the park interface from the western side.	A space for informal meetings.
Amenities, Changing Rooms, Showers, Lockers	To be determined through design	Facilities required to support use of sports hall, including first aid room.	
Functional Requirements – Circulation, Kitchenettes, Lift, Storage, Comms Room, Cleaner's Room	To be determined through design	Clear Wayfinding throughout the building. Functional Circulation based on Community Needs	
COUNCIL CHAMBERS (OPTION 2)			
Council Chambers	80sqm	Accommodate Public Council Meetings	A space with a sense of grandeur, that is welcoming and reflects Waverley Community
Public Gallery	To be determined through design	Public area for up to 50 people viewing public Council Meetings, adjacent to a large storage space.	Flexible space
Council Supper Space with Commercial Kitchen	70sqm	Adjacent to Chambers	Also used for functions

Facility	Indicative GFA*	Intent	Other Considerations
SITE AND LANDSCAPE (OPTION 1 + OPTION 2)			
Additional Car Parking	To be determined through design	Potential for additional parking adjoining the rear carpark at South with provision for accessible car parking, Electric Vehicles (EV) parking, improved and separated pedestrian/cyclists' access to the park.	Public Carparks to access building and the park as Community benefits
Existing Car Park	To be determined through design	Improve pedestrian entry at the rear of the Council Chambers building to ensure they are welcoming and easily accessible.	The Council car park to the south is used as a major pedestrian entry to the park. Conflicts between pedestrians and vehicles is poorly managed.
Public Open Space	To be determined through design	A public forecourt or foyer area at the North with a strong connection to the War Memorial and Memorial Garden in Waverley Park.	Relationship to street and park. Connection to the building.
Transport & Bike Parking	To be determined through design	Design that improves transport issues along Bondi Road with accessible and public drop off zones. Provision for undercover bike parking area with bike racks.	Best-Practice Facility. Removal of existing bin/bike shed, located near Council Car park, on Sydney Water Easement.
Waste Storage	To be determined through design	Improved access for waste collection trucks. New waste storage facility with provision of collection from Paul Street.	Removal of existing bin/bike shed, located near Council Car park, on Sydney Water Easement.

Table 2 from RFQ 2532 - Waverley Council Chambers Redevelopment – Head Consultancy Services

Brief and Project Requirements

The proposed facilities outlined in this Return Brief have been informed by community consultation, review of the project background, relevant sports association standards, benchmarking studies, and internal consultation. The facility and area allocations included are provisional and intended to guide Council in shaping the project brief and overall direction for the site. Final area requirements and associated costings will be further refined through ongoing consultation and more detailed planning in later project phases, some of which fall outside the current project scope.

At the beginning of this phase of work, the total project budget was set at $18 million, encompassing both design and construction. It was understood that this was the maximum allowable budget and included all costs associated with building works, public domain improvements, professional fees, authority approvals (including development applications), and a 15% contingency.

In subsequent work and internal discussions, the budget has been expanded to include several programs that were previously excluded due to cost constraints. Note, following Council's feedback the options presented in this document exceed the initial project budget, prioritizing an enhanced offering for the community.

RFQ Brief

Flexible Sports Facilities

Cafe

Adaptable Community Rooms

Public Open Space

Meeting Rooms

Administrative Offices

Council Chambers

Additional Carparking

Transport and Bike Parking

Amenities

Club Rooms

Public Gallery

Council Supper Space

Commercial Kitchen

Internal Consultation

Flexible Multiuse Court

Flexible Synthetic Sports Pitch

Cricket Nets

Volleyball Court

Netball Court

Pickleball Court

Floorball Court

Boxing Facilities

Futsal Pitch

Flexible Community Spaces

Cafe

Engagement with the Memorial Gardens

Meeting Rooms

Adaptable Council Function Space

Council Chambers

Additional Carparking

Amenities

Colocated Sports Facilities

The following outlines suggested co-located sports facilities, organised within key functional areas to support integrated and efficient use of space.



Full Multipurpose Hardcourt

1 x Basketball Court

1 x Netball Court

5 x Cricket Nets (Larger Court Required)

4 x Badminton Courts

3 x Pickleball Courts

1 x Indoor Hockey Pitch

2 x Volleyball Courts

1 x Floorball Court



Multipurpose Rooms

Pilates Classes

Seniors Fitness Groups

Yoga

Boxing Classes

Strength and Fitness Training

Gym

Tai Chi

Dance Classes

Community Facilities



Multipurpose Community Rooms

Larger Community Events

Gallery Space

Music Classes

Art Classes

Storytime Sessions

Youth Groups

Mental Health Sessions

Training Workshops

Parenting Classes

Mens Group

Womans Group



Meeting Rooms

Hireable Meeting Space

Community Workshops

Support Groups

Study Groups

Tutoring

Council Meetings

Community Meetings

Public Information Sessions

Co-working Space

Sports Club Meetings



Public Outdoor Space

Handball Courts

Table Tennis

Public Plaza

Outdoor Seating

School Holiday Activities

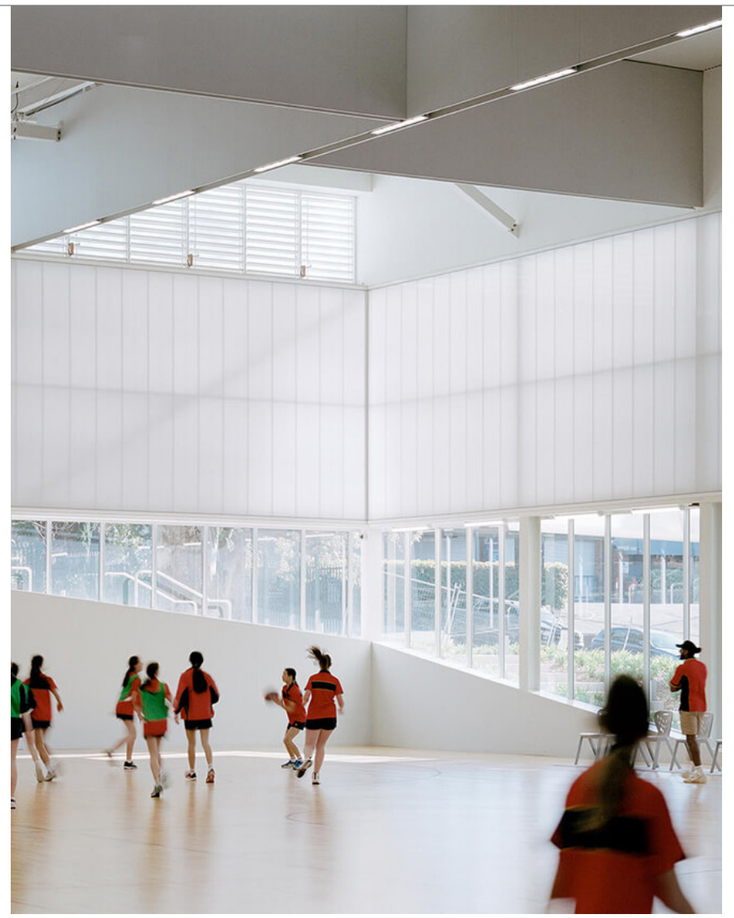
*Not currently allowed for in budget, however suggestions of possible uses of outdoor space provided for better activation and integration with existing park infrastructure

Vision

The vision is to transform this strategic site into a **vibrant landmark** that **unites street and park** — a bold, welcoming gateway to Waverley.

Drawing on the active uses of the park the building will support a wide range of uses, delivering a **multi-cultural recreational community centre** that meets the diverse needs of the local community.















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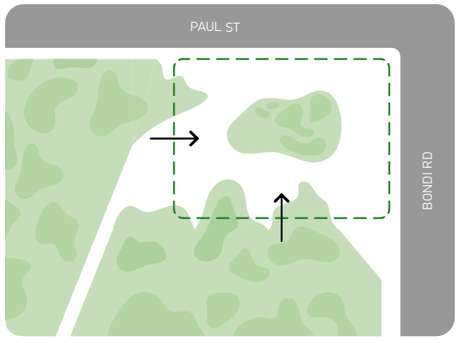
Waverley Council Chambers Redevelopment

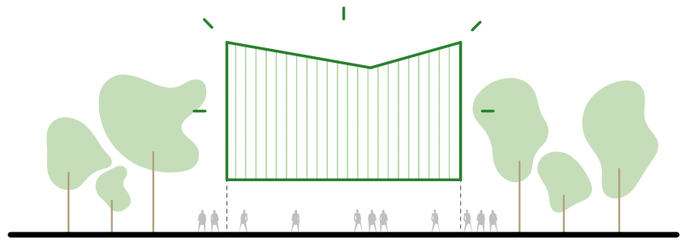
Design Principles



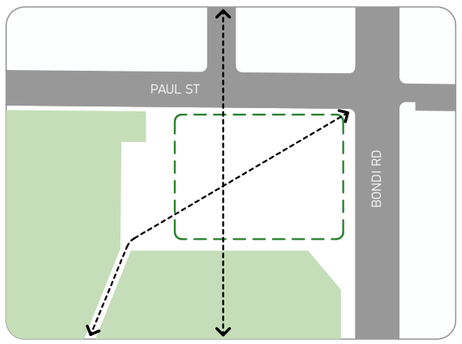
Gateway Site



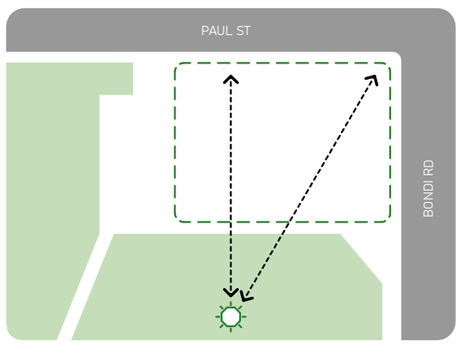
Improve Connection with the Park



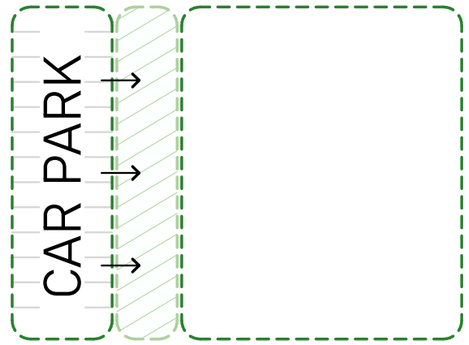
Architectural Public Attractor



Improve Site Connectivity



Strengthen Relationship with Memorial



Improve Parking



OPTION 3A

FULL MULTIPURPOSE COURT

CIVIC HALL - BASKETBALL - NETBALL - VOLLEYBALL - PICKLEBALL - BADMINTON - CRICKET NETS

FLEXIBLE COMMUNITY ROOMS
CAFE

Option 3A

PROGRAM

- Full Multipurpose Court
  - 1 x Basketball
  - 1 x Netball
  - 1 x Volleyball
  - 4 x Badminton
  - 3 x Pickleball
  - 5 x Cricket Nets
- Flexible Community Rooms
- Cafe

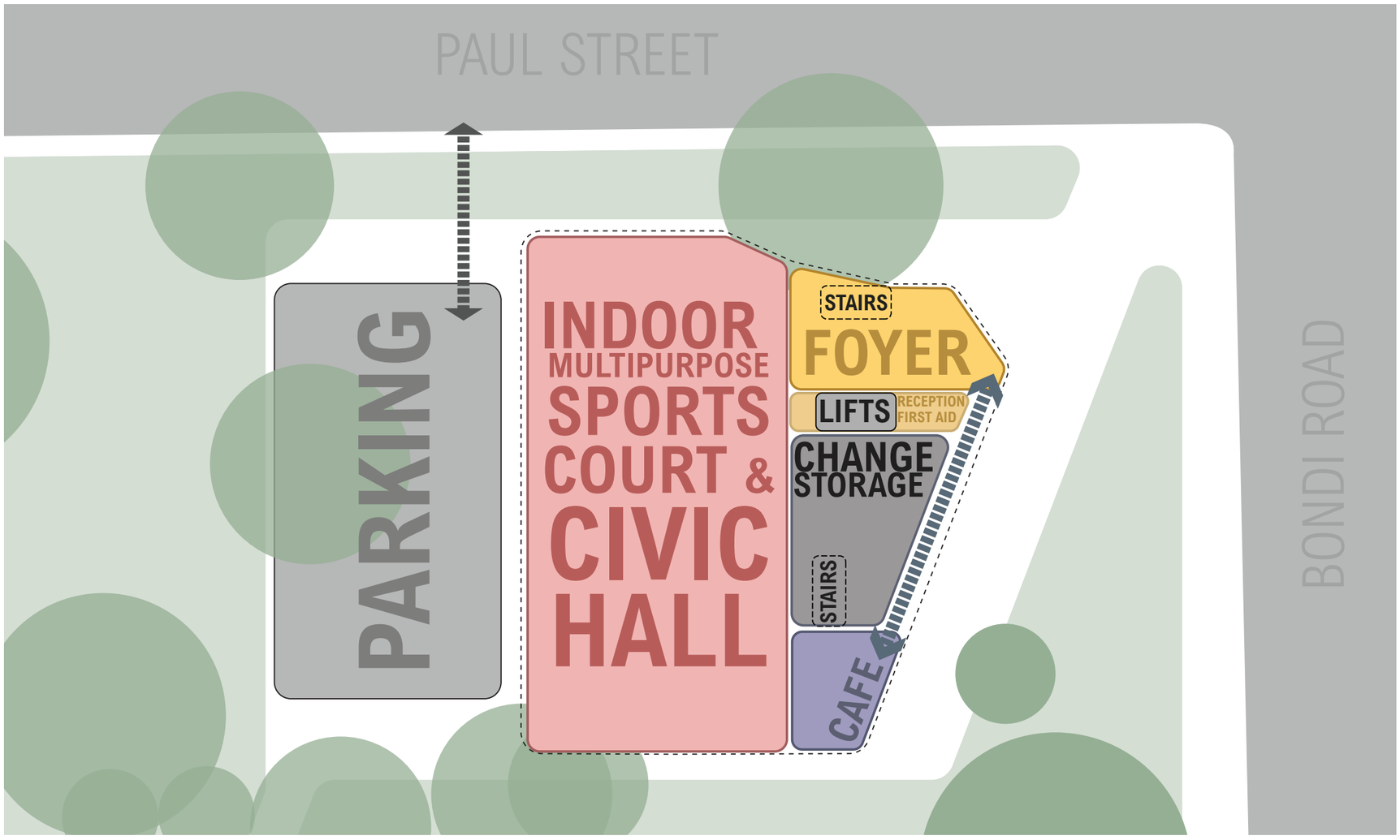
GFA
2259m²
(Permissible GFA 3380m²)

PUBLIC DOMAIN UPGRADES
1800m²

BUILDING HEIGHT
13.8m
(Permissible Building Height 20m)

Existing Building Height 17.5m

TOTAL COST
$25,978,500



Waverley Council Chambers Option 3A - Ground Floor N

Waverley Council Chambers Redevelopment

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Option 3A

PROGRAM

- Full Multipurpose Court
  - 1 x Basketball
  - 1 x Netball
  - 1 x Volleyball
  - 4 x Badminton
  - 3 x Pickleball
  - 5 x Cricket Nets
- Flexible Community Rooms
- Cafe

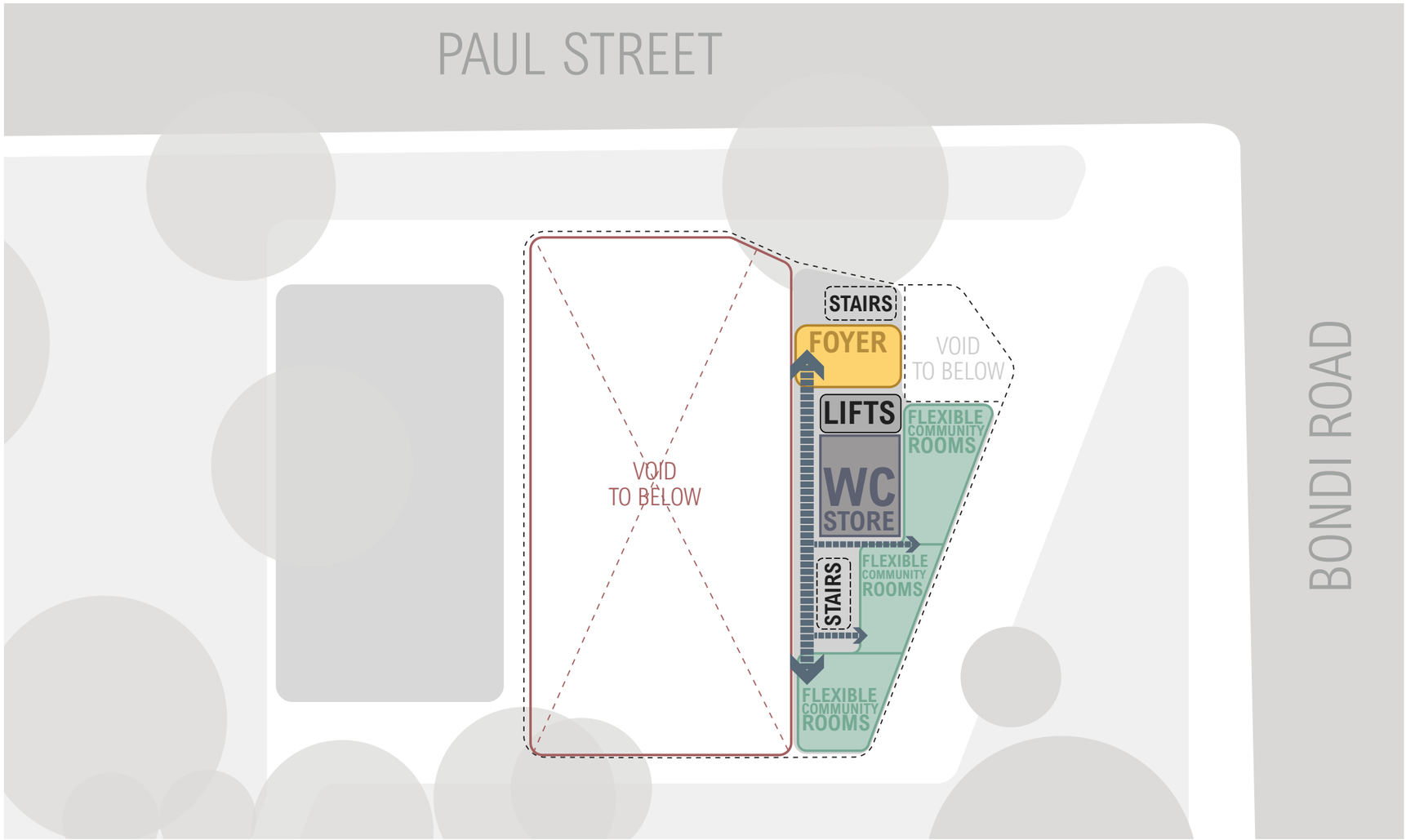
GFA
2259m²
(Permissible GFA 3380m²)

PUBLIC DOMAIN UPGRADES
1800m²

BUILDING HEIGHT
13.8m
(Permissible Building Height 20m)

Existing Building Height 17.5m

TOTAL COST
$25,978,500



Waverley Council Chambers Option 3A - Level 1 N

Waverley Council Chambers Redevelopment

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Option 3A

PROGRAM

- Full Multipurpose Court
  - 1 x Basketball
  - 1 x Netball
  - 1 x Volleyball
  - 4 x Badminton
  - 3 x Pickleball
  - 5 x Cricket Nets
- Flexible Community Rooms
- Cafe

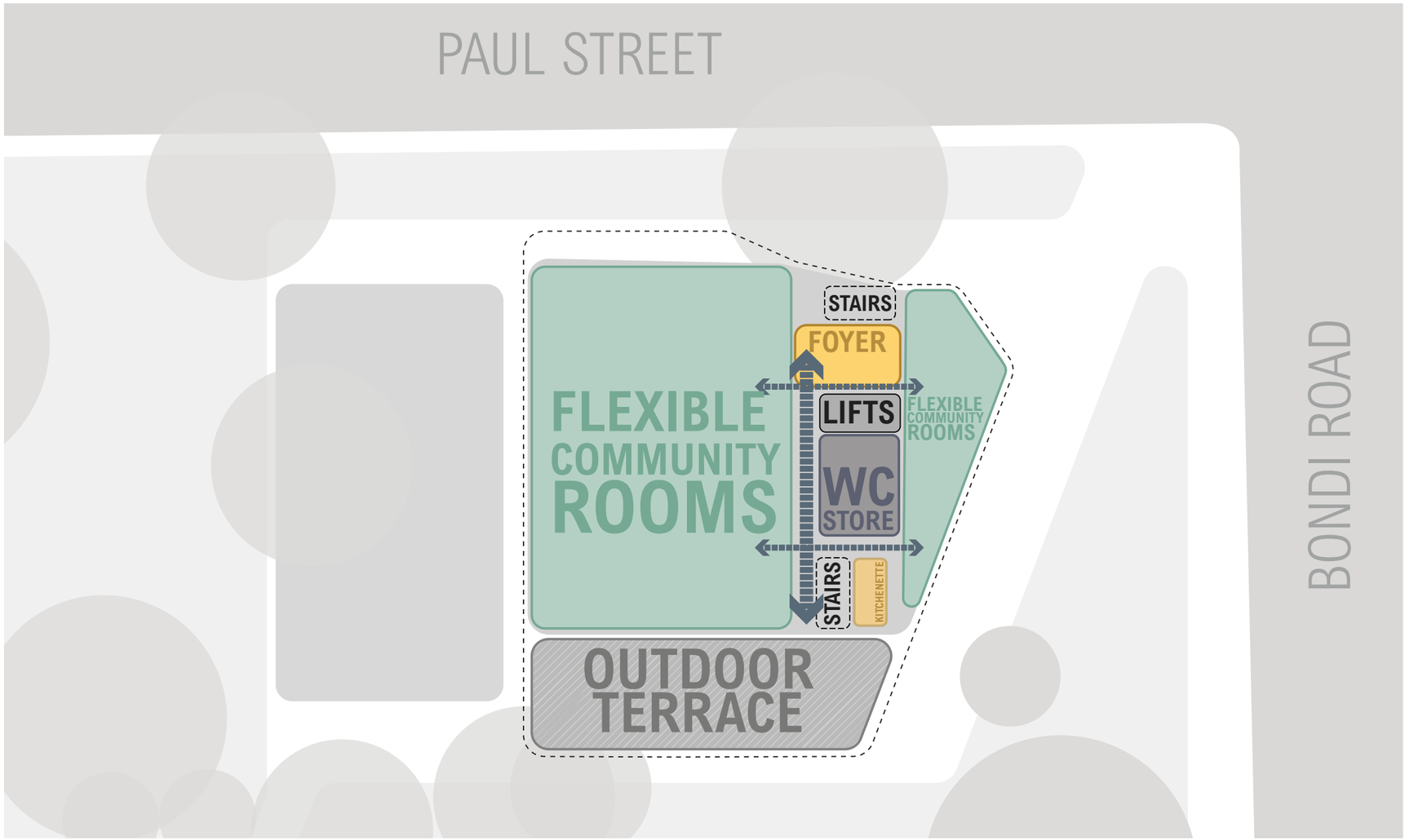
GFA
2259m²
(Permissible GFA 3380m²)

PUBLIC DOMAIN UPGRADES
1800m²

BUILDING HEIGHT
13.8m
(Permissible Building Height 20m)

Existing Building Height 17.5m

TOTAL COST
$25,978,500



Waverley Council Chambers Option 3A - Level 2 N

Waverley Council Chambers Redevelopment

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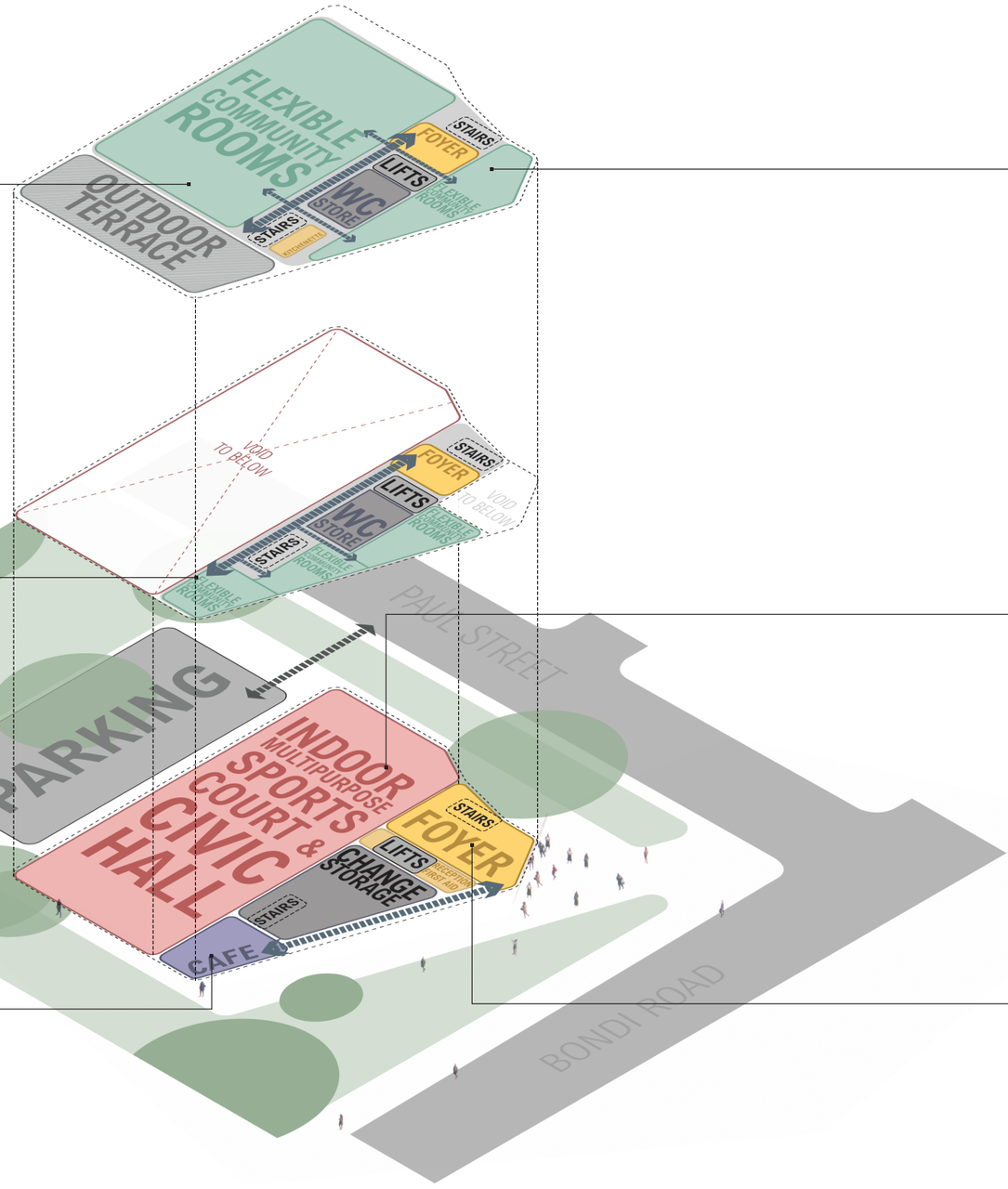







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Waverley Council Chambers Option 3A - Isometric Plan

Waverley Council Chambers Redevelopment



Option 3A - Isometric Concept Visualisation



OPTION 3B

FULL MULTIPURPOSE COURT

CIVIC HALL - BASKETBALL - NETBALL - VOLLEYBALL - PICKLEBALL - BADMINTON - CRICKET NETS

FLEXIBLE COMMUNITY ROOMS
CAFE

Option 3B

PROGRAM

- Full Multipurpose Court
  - 1 x Basketball
  - 1 x Netball
  - 1 x Volleyball
  - 4 x Badminton
  - 3 x Pickleball
  - 5 x Cricket Nets
- Flexible Community Rooms
- Cafe

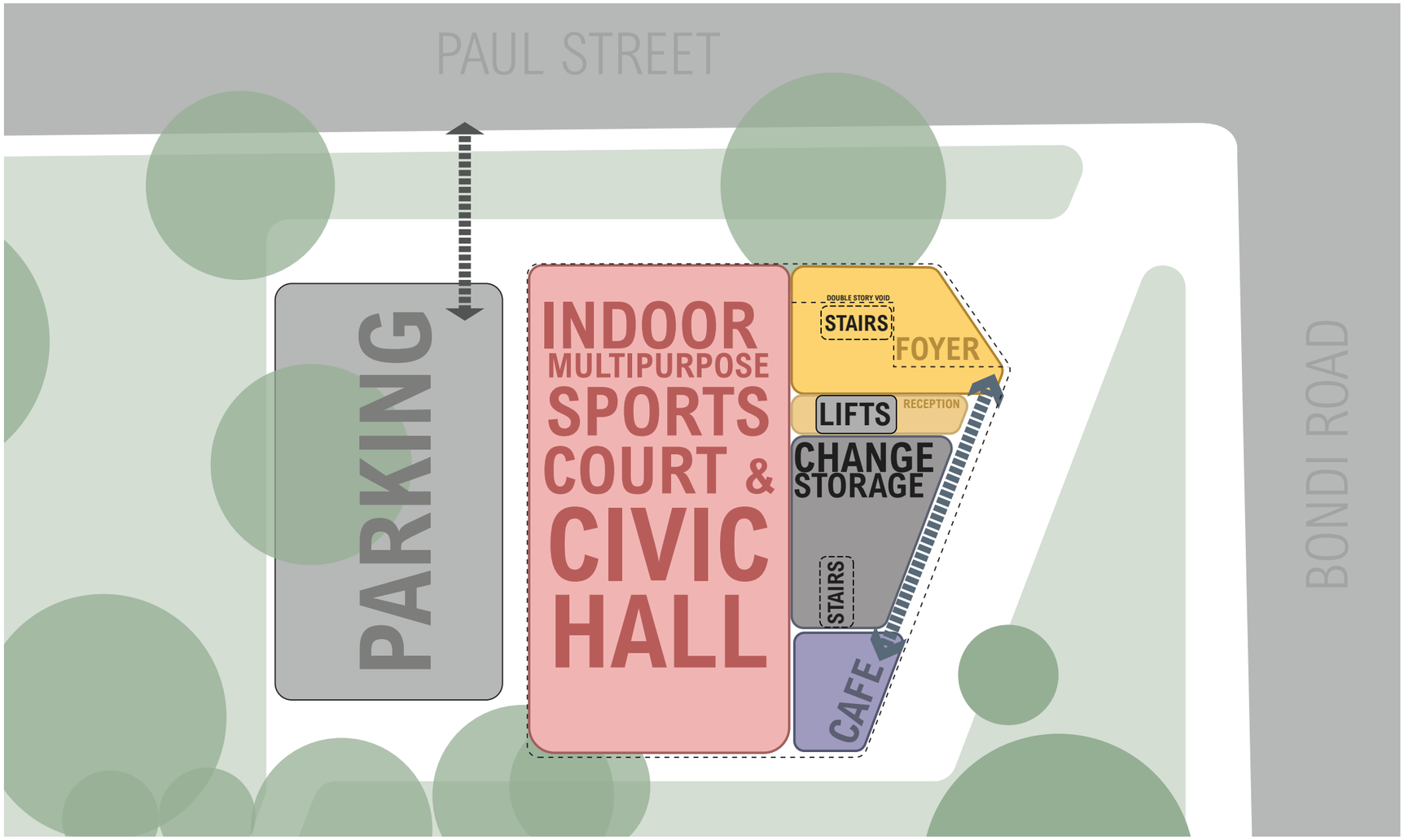
GFA
2933m²
(Permissible GFA 3380m²)

PUBLIC DOMAIN UPGRADES
1800m²

BUILDING HEIGHT
17.8m
(Permissible Building Height 20m)

Existing Building Height 17.5m

TOTAL COST
$33,729,500



Waverley Council Chambers Option 3B - Ground Floor N

Waverley Council Chambers Redevelopment

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Option 3B

PROGRAM

- Full Multipurpose Court
  - 1 x Basketball
  - 1 x Netball
  - 1 x Volleyball
  - 4 x Badminton
  - 3 x Pickleball
  - 5 x Cricket Nets
- Flexible Community Rooms
- Cafe

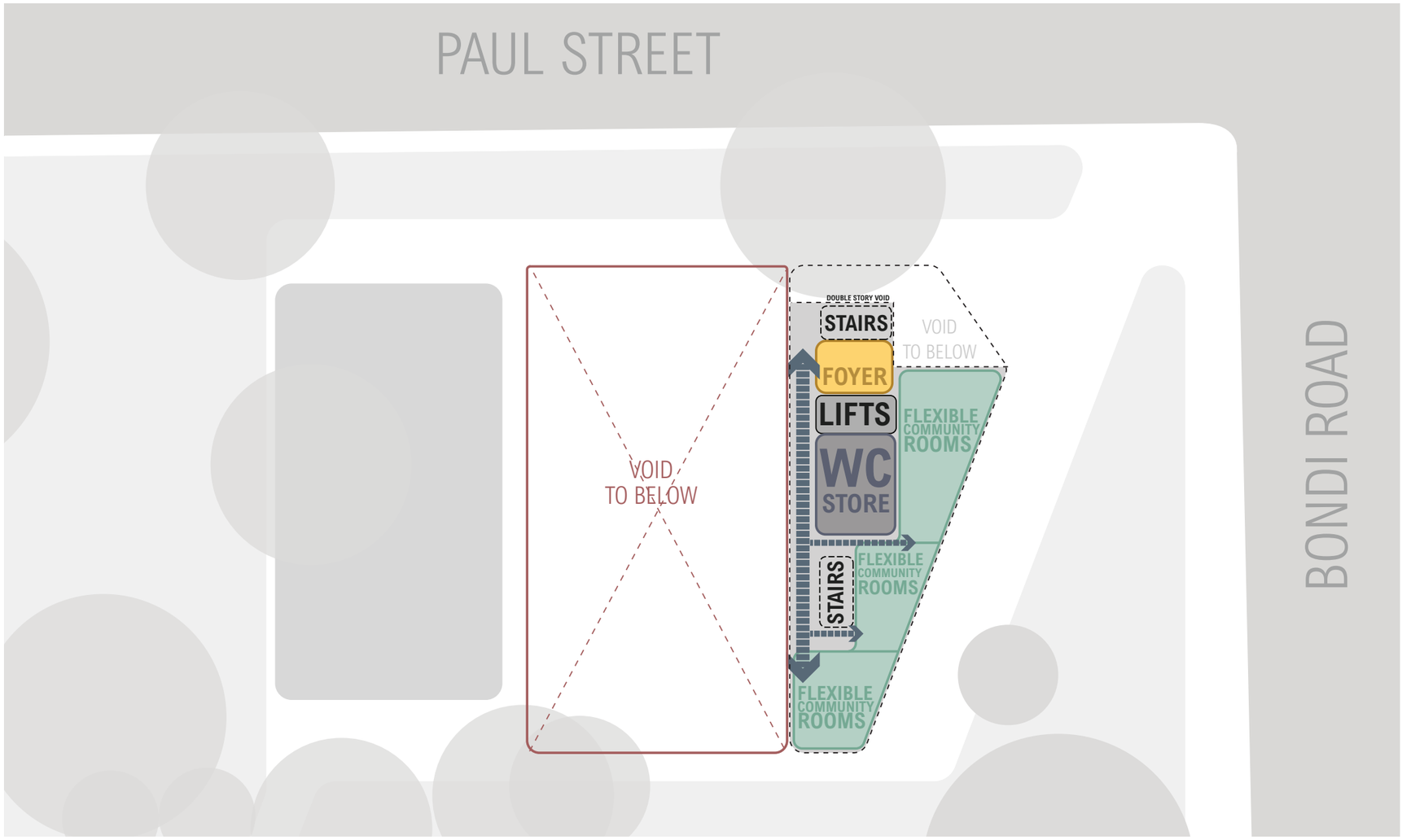
GFA
2933m²
(Permissible GFA 3380m²)

PUBLIC DOMAIN UPGRADES
1800m²

BUILDING HEIGHT
17.8m
(Permissible Building Height 20m)

Existing Building Height 17.5m

TOTAL COST
$33,729,500



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Waverley Council Chambers Option 3B - Level 1 N

Waverley Council Chambers Redevelopment

Option 3B

PROGRAM

- Full Multipurpose Court
  - 1 x Basketball
  - 1 x Netball
  - 1 x Volleyball
  - 4 x Badminton
  - 3 x Pickleball
  - 5 x Cricket Nets
- Flexible Community Rooms
- Cafe

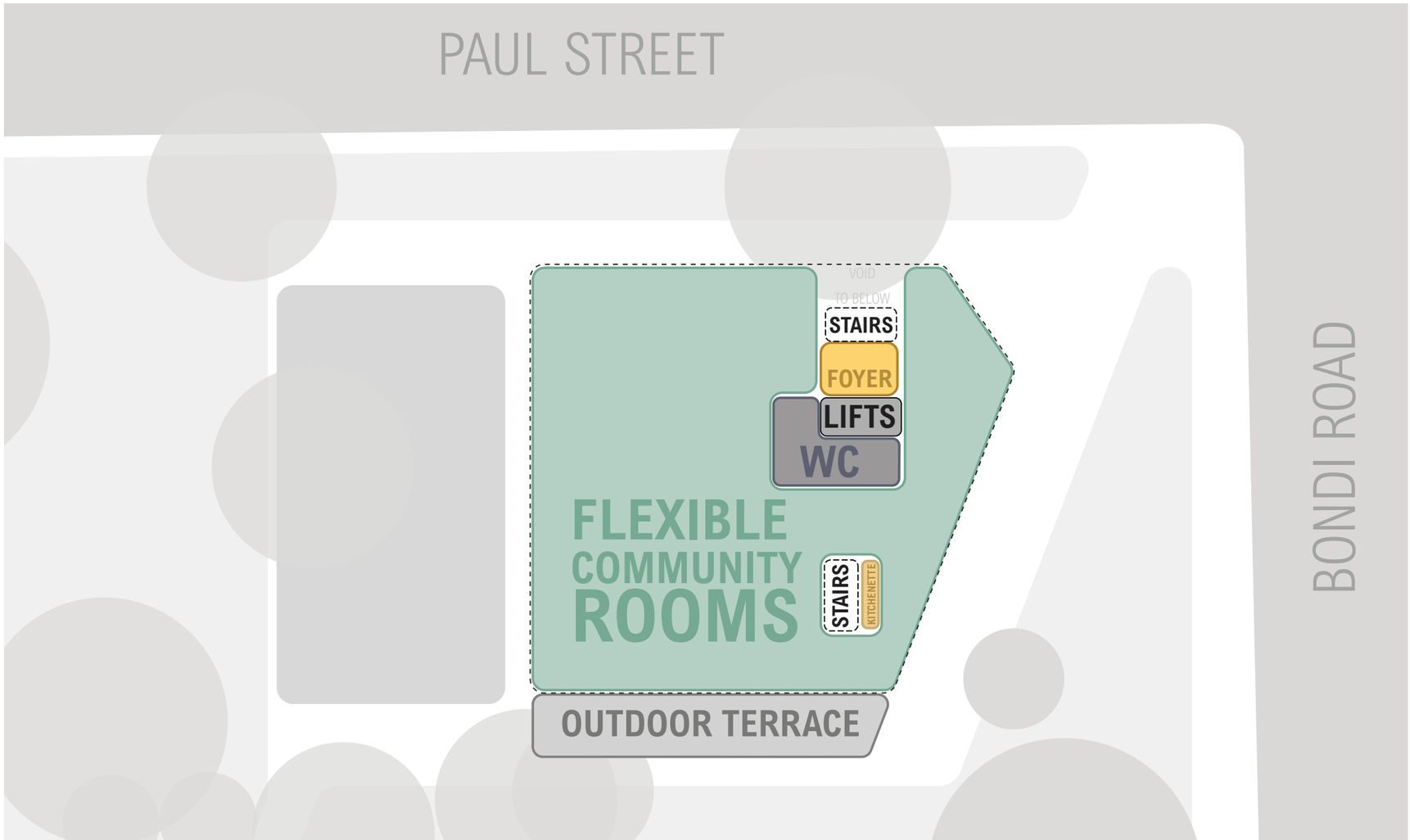
GFA
2933m^2
(Permissible GFA 3380m^2)

PUBLIC DOMAIN UPGRADES
1800m^2

BUILDING HEIGHT
17.8m
(Permissible Building Height 20m)

Existing Building Height 17.5m

TOTAL COST
$33,729,500



Waverley Council Chambers Option 3B - Level 2 N

Waverley Council Chambers Redevelopment

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Option 3B

PROGRAM

- Full Multipurpose Court
  - 1 x Basketball
  - 1 x Netball
  - 1 x Volleyball
  - 4 x Badminton
  - 3 x Pickleball
  - 5 x Cricket Nets
- Flexible Community Rooms
- Cafe

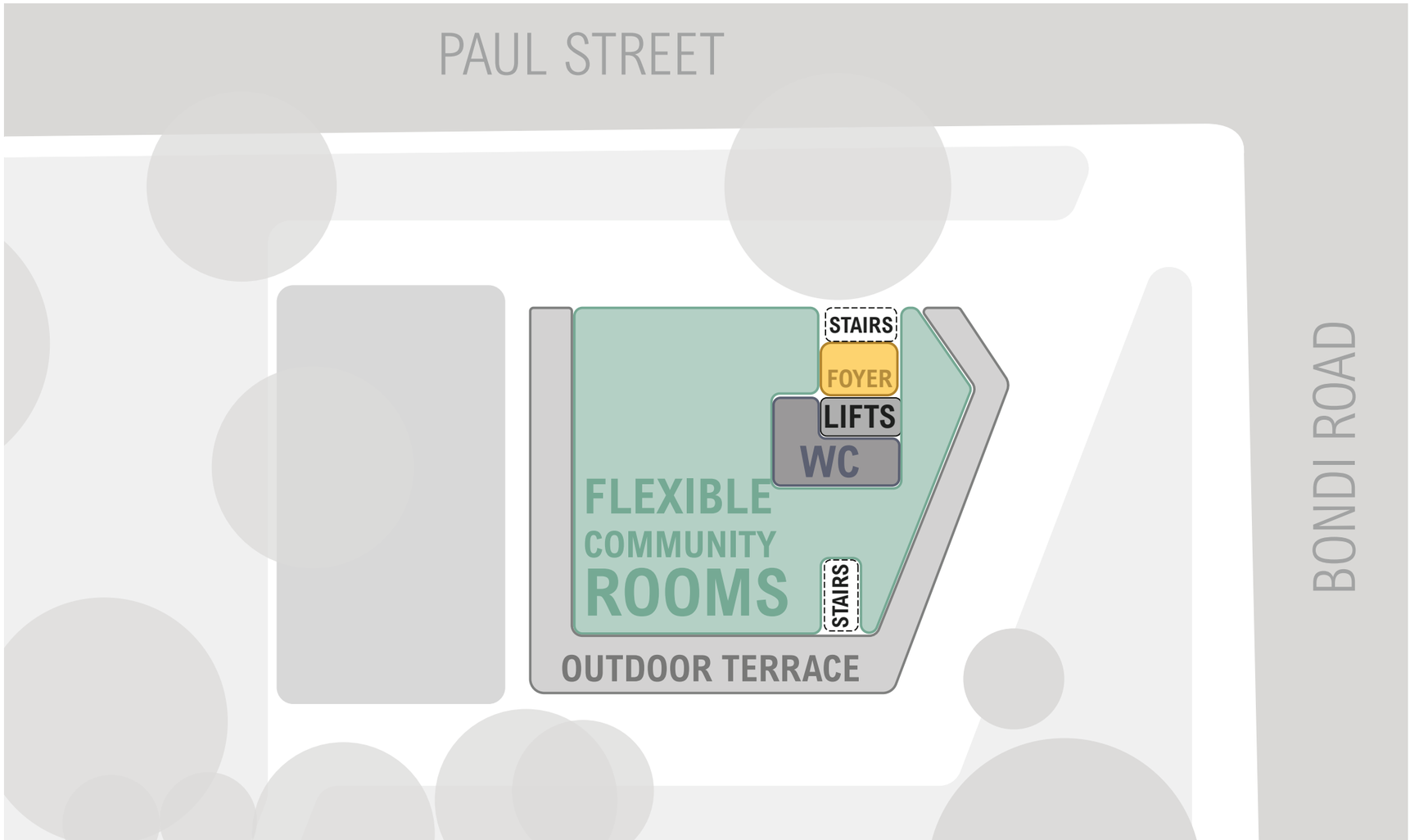
GFA
2933m^2
(Permissible GFA 3380m^2)

PUBLIC DOMAIN UPGRADES
1800m^2

BUILDING HEIGHT
17.8m
(Permissible Building Height 20m)

Existing Building Height 17.5m

TOTAL COST
$33,729,500



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Waverley Council Chambers Option 3B - Level 3 N

Waverley Council Chambers Redevelopment













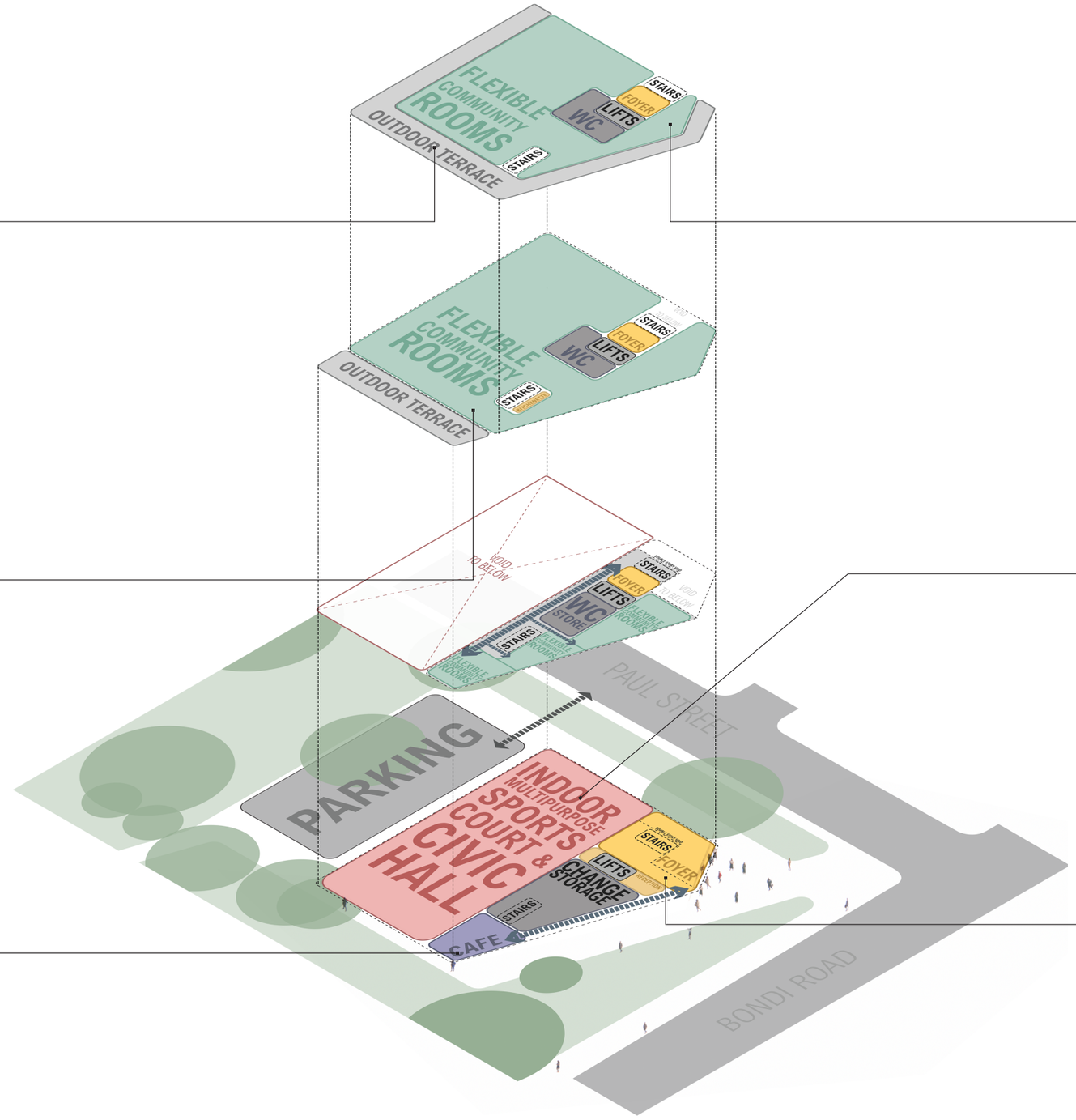

Waverley Council Chambers Option 3B - Isometric Plan

Waverley Council Chambers Redevelopment

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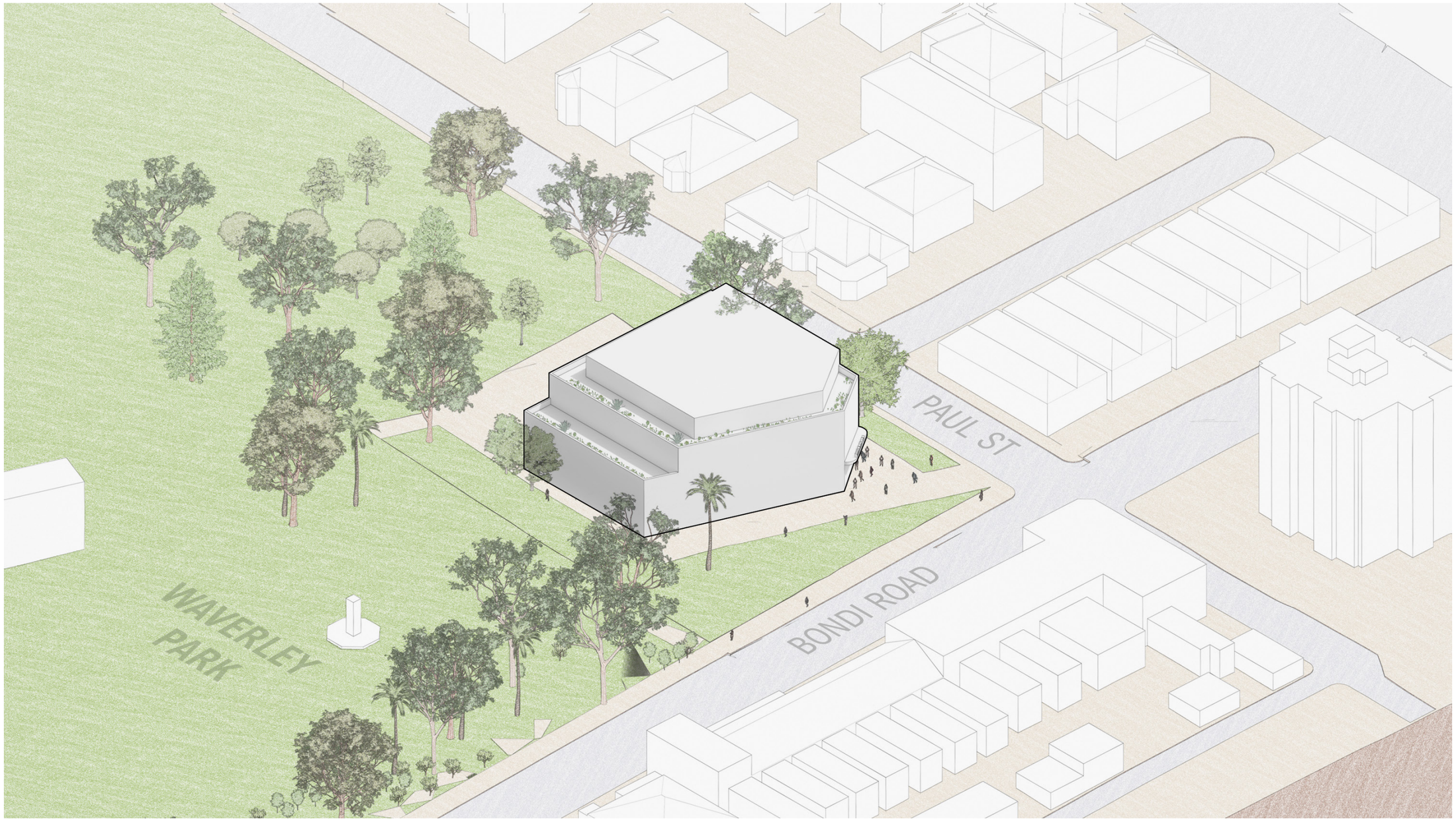


Option 3B - Isometric Concept Visualisation



OPTION 3C

FULL MULTIPURPOSE COURT

CIVIC HALL - BASKETBALL - NETBALL - VOLLEYBALL - PICKLEBALL - BADMINTON - CRICKET NETS

FLEXIBLE COMMUNITY ROOMS
CAFE

Option 3C

PROGRAM

- Full Multipurpose Court
  - 1 x Basketball
  - 1 x Netball
  - 1 x Volleyball
  - 4 x Badminton
  - 3 x Pickleball
  - 5 x Cricket Nets
- Flexible Community Rooms
- Cafe

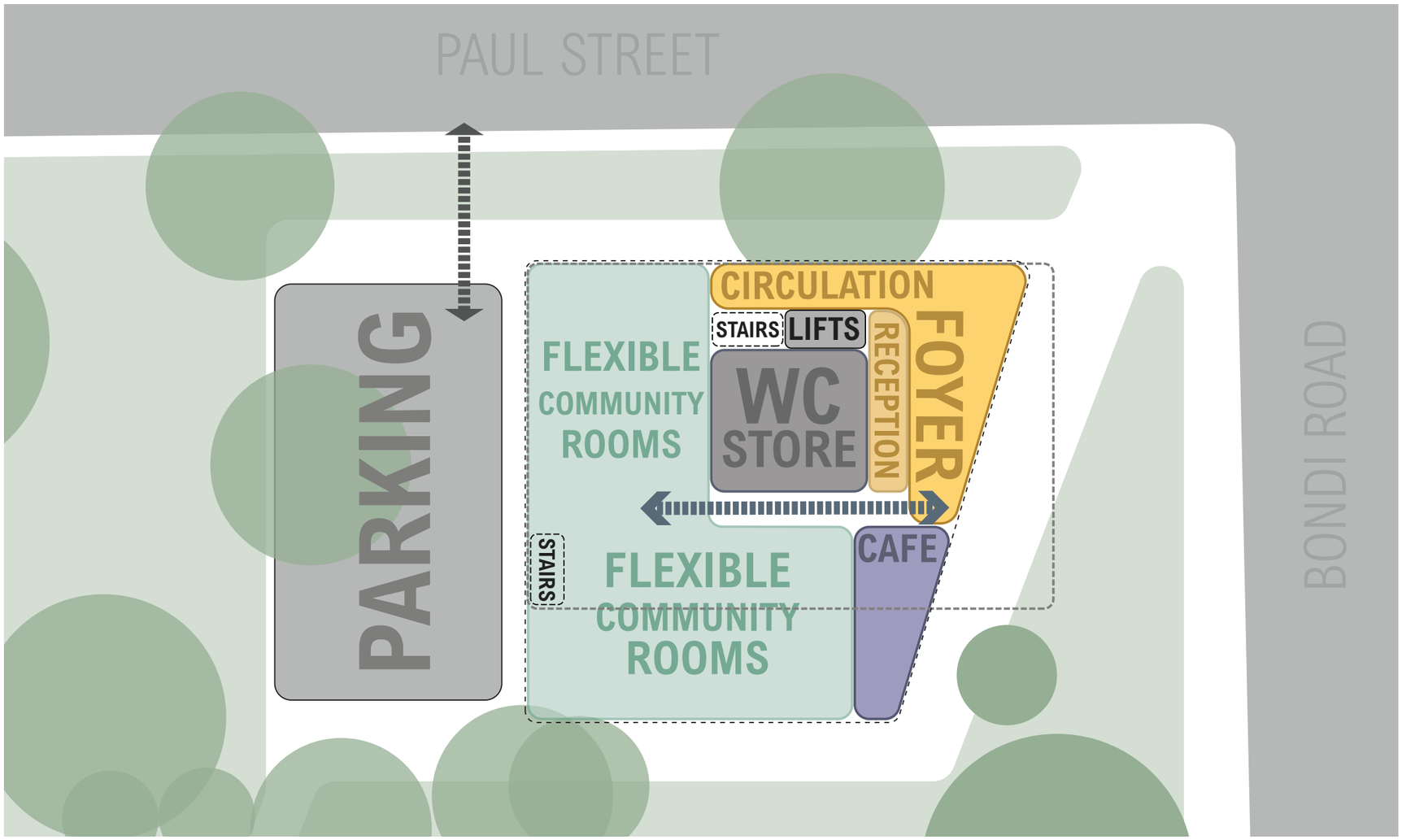
GFA
2836m²
(Permissible GFA 3380m²)

PUBLIC DOMAIN UPGRADES
1800m²

BUILDING HEIGHT
16m
(Permissible Building Height 20m)

Existing Building Height 17.5m

TOTAL COST
$33,181,200



Waverley Council Chambers Option 3C - Ground Floor N

Waverley Council Chambers Redevelopment

CHROFI | WAVERLEY COUNCIL

Option 3C

PROGRAM

- Full Multipurpose Court
  - 1 x Basketball
  - 1 x Netball
  - 1 x Volleyball
  - 4 x Badminton
  - 3 x Pickleball
  - 5 x Cricket Nets
- Flexible Community Rooms
- Cafe

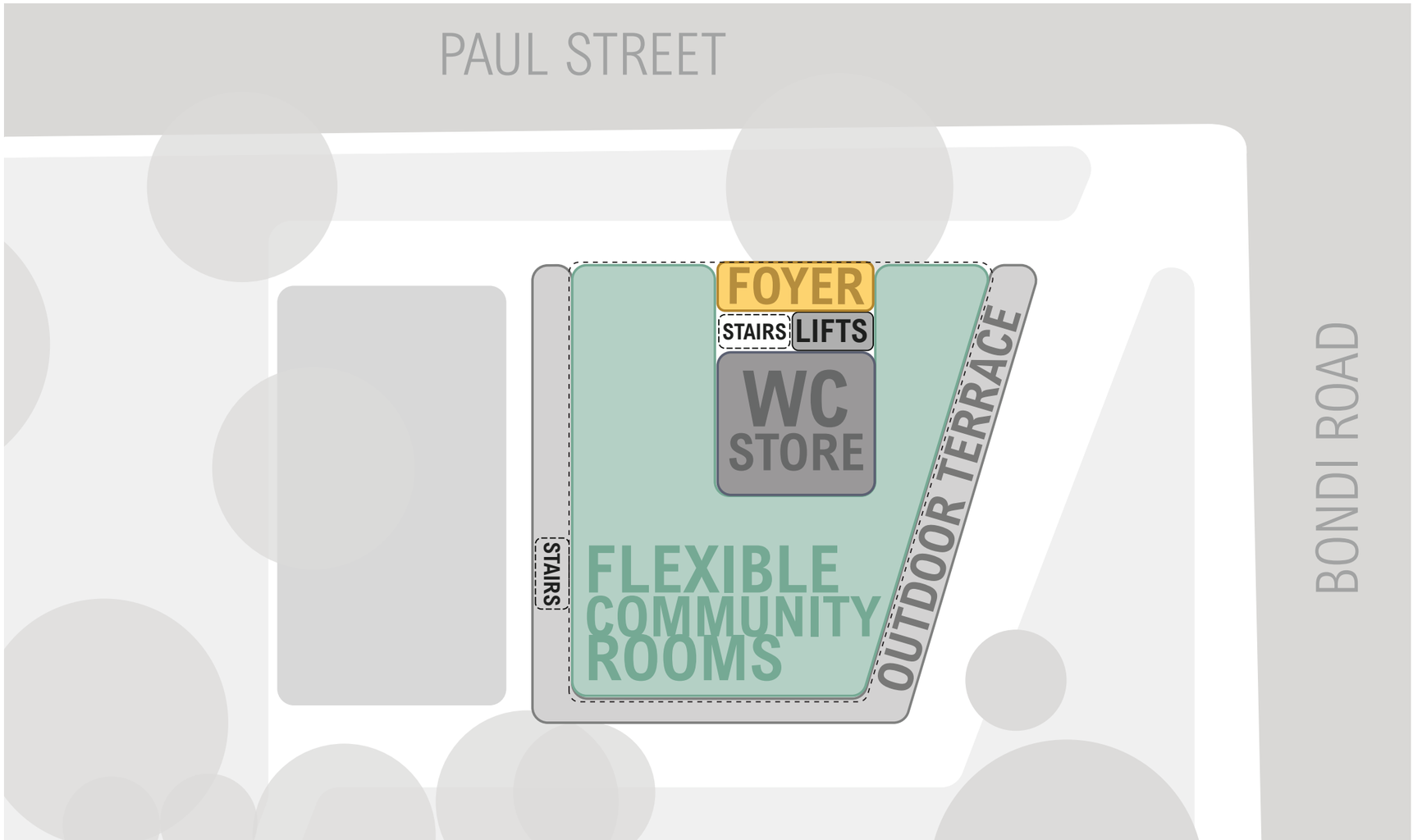
GFA
2836m²
(Permissible GFA 3380m²)

PUBLIC DOMAIN UPGRADES
1800m²

BUILDING HEIGHT
16m
(Permissible Building Height 20m)

Existing Building Height 17.5m

TOTAL COST
$33,181,200



Waverley Council Chambers Option 3C - Level 1 N

Waverley Council Chambers Redevelopment

CHROFI | WAVERLEY COUNCIL

Option 3C

PROGRAM

- Full Multipurpose Court
  - 1 x Basketball
  - 1 x Netball
  - 1 x Volleyball
  - 4 x Badminton
  - 3 x Pickleball
  - 5 x Cricket Nets
- Flexible Community Rooms
- Cafe

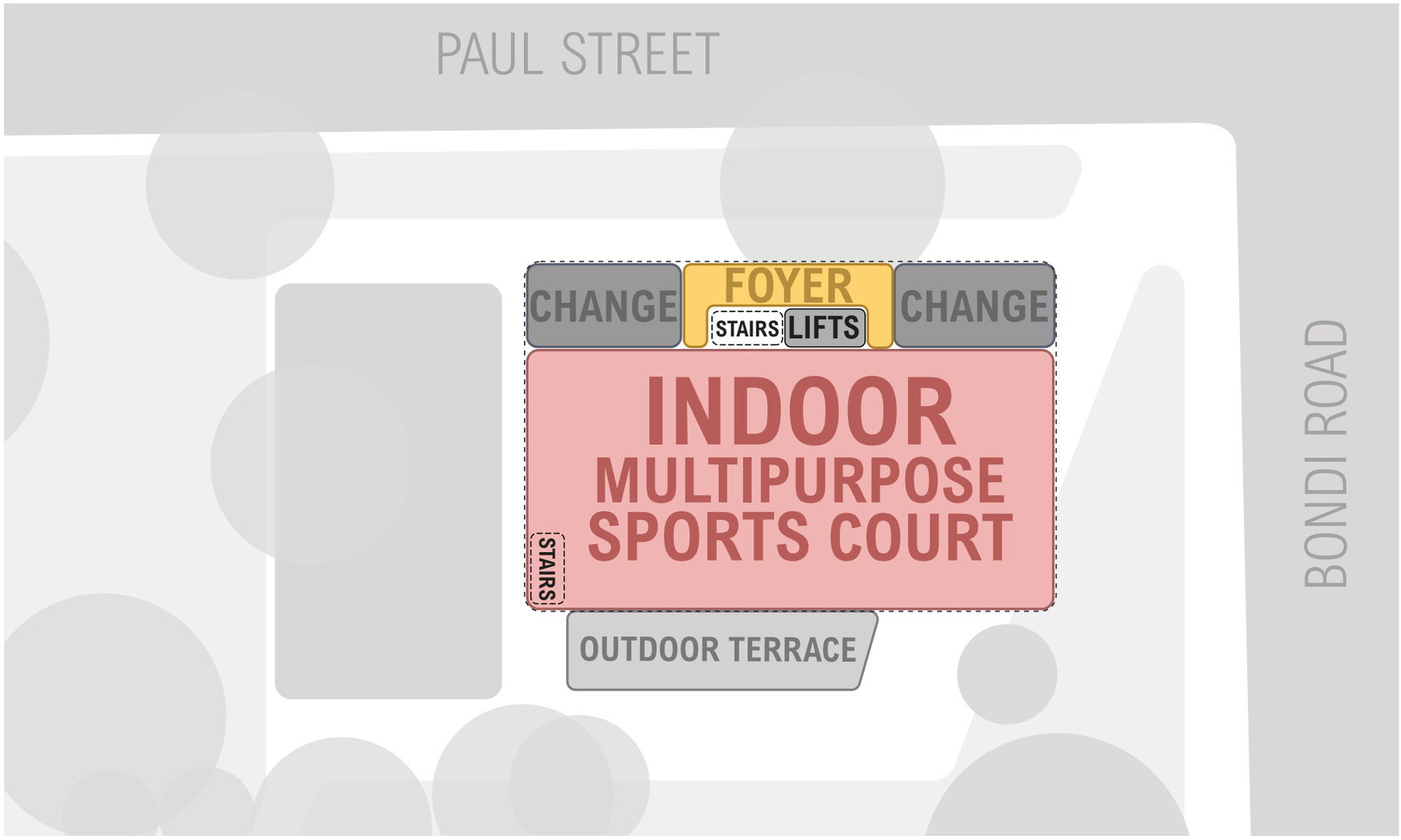
GFA
2836m²
(Permissible GFA 3380m²)

PUBLIC DOMAIN UPGRADES
1800m²

BUILDING HEIGHT
16m
(Permissible Building Height 20m)

Existing Building Height 17.5m

TOTAL COST
$33,181,200



Waverley Council Chambers Option 3C - Level 2 N

Waverley Council Chambers Redevelopment

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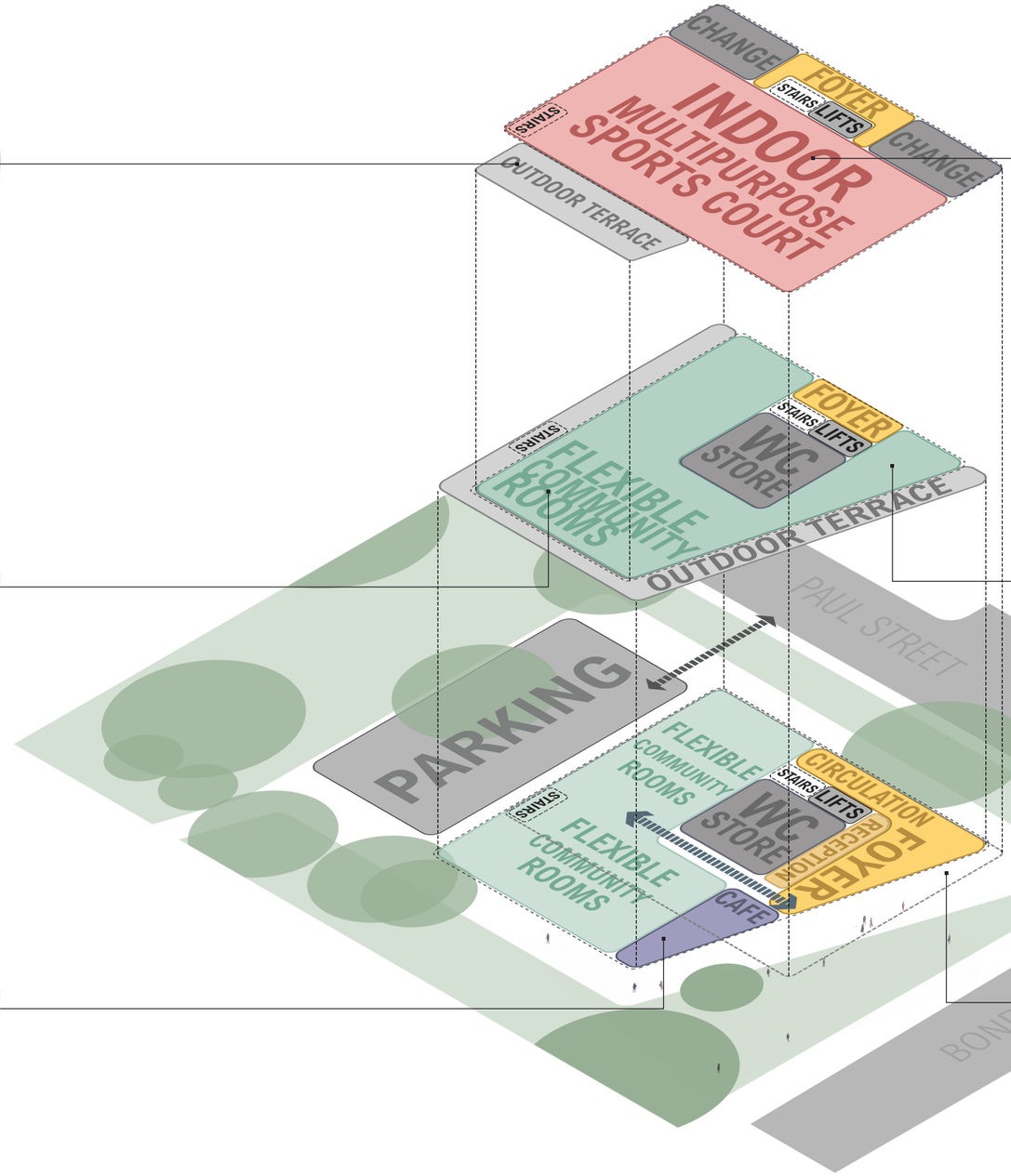







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Waverley Council Chambers Option 3C - Isometric Plan

Waverley Council Chambers Redevelopment



Option 3C - Isometric Concept Visualisation

Appendix

Option 3A

	Program	Area (m2)	# Rooms	Total M2	Sub Total	Notes
Indoor Facilities						
	Indoor Sports Courts					
	Multipurpose Court	677	1	677		Allows for 1x Basketball, 1 x Netball, 1 x Volleyball, 4x Badminton, 3 x Pickleball, 5x Cricket Nets Includes compliant runoffs for all games, except reduced runoff for Netball. No allowance for spectator or Team Benches
					677	
	Amenities					
	Male WC	20	2	40		
	Female WC	20	2	40		
	3 x Access WC	6	3	18		
	Parents Rooms	20	1	20		
	Change Room (showers and Lockers)	37.5	2	75		Allow for WC
					193	
	Community Facilities					
	Flexible Community Rooms	810	1	810		Allowance for operable walls to form larger rooms as per need
					810	
	Front of House ad Supporting Infrastructure					
	Foyer	100	1	100		
	Lobby	40	2	80		
	Reception	10	1	10		
	Venue Office	20	1	20		Allows for storage and meeting space
	Café	30	1	30		
	Café Kitchen	20	1	20		
	First Aid	15	1	15		
					275	
	Ancillary					
	Hardcourt Storage	50	1	50		
	Storage - Community Rooms	15	1	15		
	Cleaners	5	1	5		
	Plant	60	1	60		
	Comms Room	8	1	8		
	Bike Storage	10	1	10		
	Waste	15	1	15		
	Circulation	200	1	200		
					363	
	TOTAL BUILDING AREA				**2318**	
Outdoor Upgrades						
	Public Domain Upgrades	1800	1	1800		Allowance for redoing the existing carpark, paving and planting around the site

Option 3B

	Program	Area (m2)	# Rooms	Total M2	Sub Total	Notes
Indoor Facilities						
	Indoor Sports Courts					
	Multipurpose Court	677	1	677		Allows for 1x Basketball, 1 x Netball, 1 x Volleyball, 4x Badminton, 3 x Pickleball, 5x Cricket Nets Includes compliant runoffs for all games, except reduced runoff for Netball. No allowance for spectator or Team Benches
					677	
	Amenities					
	Male WC	20	3	60		
	Female WC	20	3	60		
	3 x Access WC	6	4	24		
	Parents Rooms	20	1	20		
	Change Room (showers and Lockers)	40	2	80		Allow for WC
					244	
	Community Facilities					
	Flexible Community Rooms	1410	1	1410		Allowance for operable walls to form larger rooms as per need
					1410	
	Front of House ad Supporting Infrastructure					
	Foyer	100	1	100		
	Lobby	40	3	120		
	Reception	10	1	10		
	Venue Office	10	1	10		Allows for storage and meeting space
	Café	30	1	30		
	Café Kitchen	20	1	20		
	First Aid	15	1	15		
					305	
	Ancillary					
	Hardcourt Storage	50	1	50		
	Storage - Community Rooms	15	1	15		
	Cleaners	5	1	5		
	Plant	60	1	60		
	Comms Room	8	1	8		
	Bike Storage	10	1	10		
	Waste	15	1	15		
	Circulation	200	1	200		
					363	
	TOTAL BUILDING AREA				**2999**	
Outdoor Upgrades						
	Public Domain Upgrades	1800	1	1800		Allowance for redoing the existing carpark, paving and planting around the site

Option 3C

	Program	Area (m2)	# Rooms	Total M2	Sub Total	Notes
Indoor Facilities						
	Indoor Sports Courts					
	Multipurpose Court	677	1	677		Allows for 1x Basketball, 1 x Netball, 1 x Volleyball, 4x Badminton, 3 x Pickleball, 5x Cricket Nets Includes compliant runoffs for all games, except reduced runoff for Netball. No allowance for spectator or Team Benches
					677	
	Amenities					
	Male WC	20	2	40		
	Female WC	20	2	40		
	3 x Access WC	6	3	18		
	Parents Rooms	20	1	20		
	Change Room (showers and Lockers)	45	2	90		Allow for WC
					208	
	Community Facilities					
	Flexible Community Rooms	1230	1	1230		Allowance for operable walls to form larger rooms as per need
					1230	
	Front of House ad Supporting Infrastructure					
	Foyer	170	1	170		
	Lobby	40	3	120		
	Reception	10	1	10		
	Venue Office	10	1	10		Allows for storage and meeting space
	Café	30	1	30		
	Café Kitchen	20	1	20		
	First Aid	15	1	15		
					375	
	Ancillary					
	Hardcourt Storage	50	1	50		
	Storage - Community Rooms	15	1	15		
	Cleaners	5	1	5		
	Plant	60	1	60		
	Comms Room	8	1	8		
	Bike Storage	10	1	10		
	Waste	15	1	15		
	Circulation	200	1	200		
					363	
	TOTAL BUILDING AREA				**2853**	
Outdoor Upgrades						
	Public Domain Upgrades	1800	1	1800		Allowance for redoing the existing carpark, paving and planting around the site

CHROFI | WAVERLEY COUNCIL

Head Design
Consultancy Services
Waverley Council
Chambers
Redevelopment

Presentation to
Council
24 July 2025



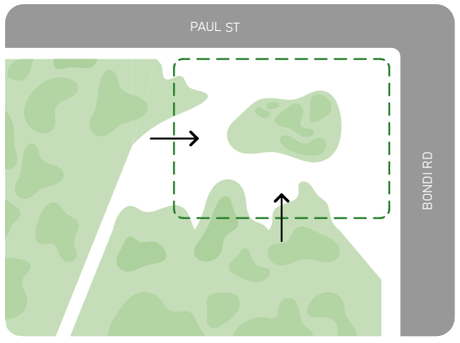
DRAFT


BONDI JUNCTION
BONDI ROAD
BONDI BEACH
HERITAGE CONSERVATION AREA
TWO STORY TERRACES
DALLEY STREET
PAUL STREET
WAVERLEY PARK MEMORIAL GARDENS
WAVERLEY PARK
Site Boundary
Significant Trees

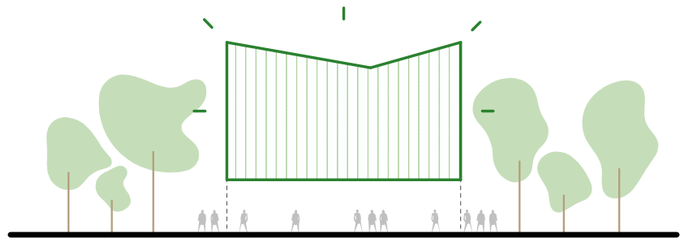
Design Principles



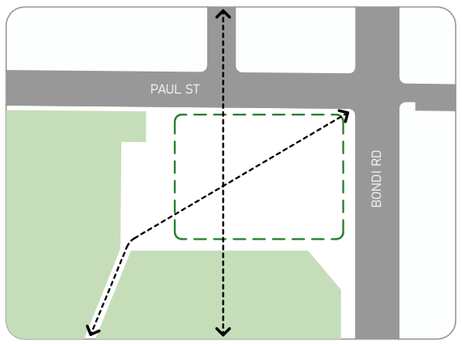
Gateway Site



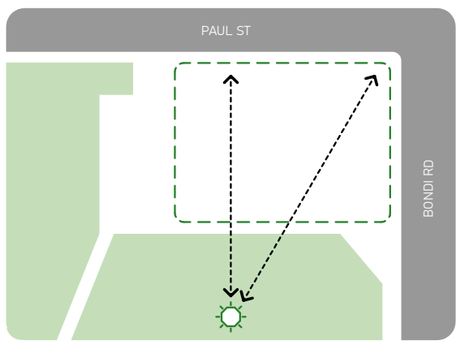
Improve Connection with the Park



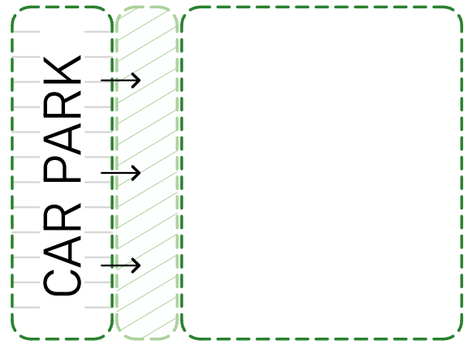
Architectural Public Attractor



Improve Site Connectivity



Strengthen Relationship with Memorial



Improve Parking

Vision

The vision is to transform this strategic site into a **vibrant landmark** that **unites street and park** — a bold, welcoming gateway to Waverley.

Drawing on the active uses of the park the building will support a wide range of uses, delivering a **multi-cultural recreational community centre** that meets the diverse needs of the local community.

OPTION 01

FULL MULTIPURPOSE COURT
MULTIPURPOSE ROOM
CLUB ROOM / MEETING ROOM
CAFE

TOTAL COST
$17,947,904

OPTION 02

HALF MULTIPURPOSE COURT
COUNCIL CHAMBERS
MULTIPURPOSE ROOM
CLUB ROOM / MEETING ROOM
CAFE

TOTAL COST
$18,164,080

OPTION 03

FULL MULTIPURPOSE COURT
OPEN PLAN OFFICE SPACE
MULTIPURPOSE ROOM
CLUB ROOM / MEETING ROOM
CAFE

TOTAL COST
$26,122,694



OPTION 01

FULL MULTIPURPOSE COURT

BASKETBALL - NETBALL - VOLLEYBALL - PICKLEBALL - BADMINTON

MULTIPURPOSE ROOM
CLUB ROOM / MEETING ROOM
CAFE

Option 1

PROGRAM

- Full Multipurpose Court
  - 1 x Basketball
  - 1 x Netball
  - 1 x Volleyball
  - 4 x Badminton
  - 3 x Pickleball

- **Multipurpose Room**
- **Meeting Rooms / Club Rooms**
- **Cafe**

GFA
1465m^2
(Permissible GFA 3380m^2)

PUBLIC DOMAIN UPGRADES
1800m^2

BUILDING HEIGHT
12m
(Permissible Building Height 20m)

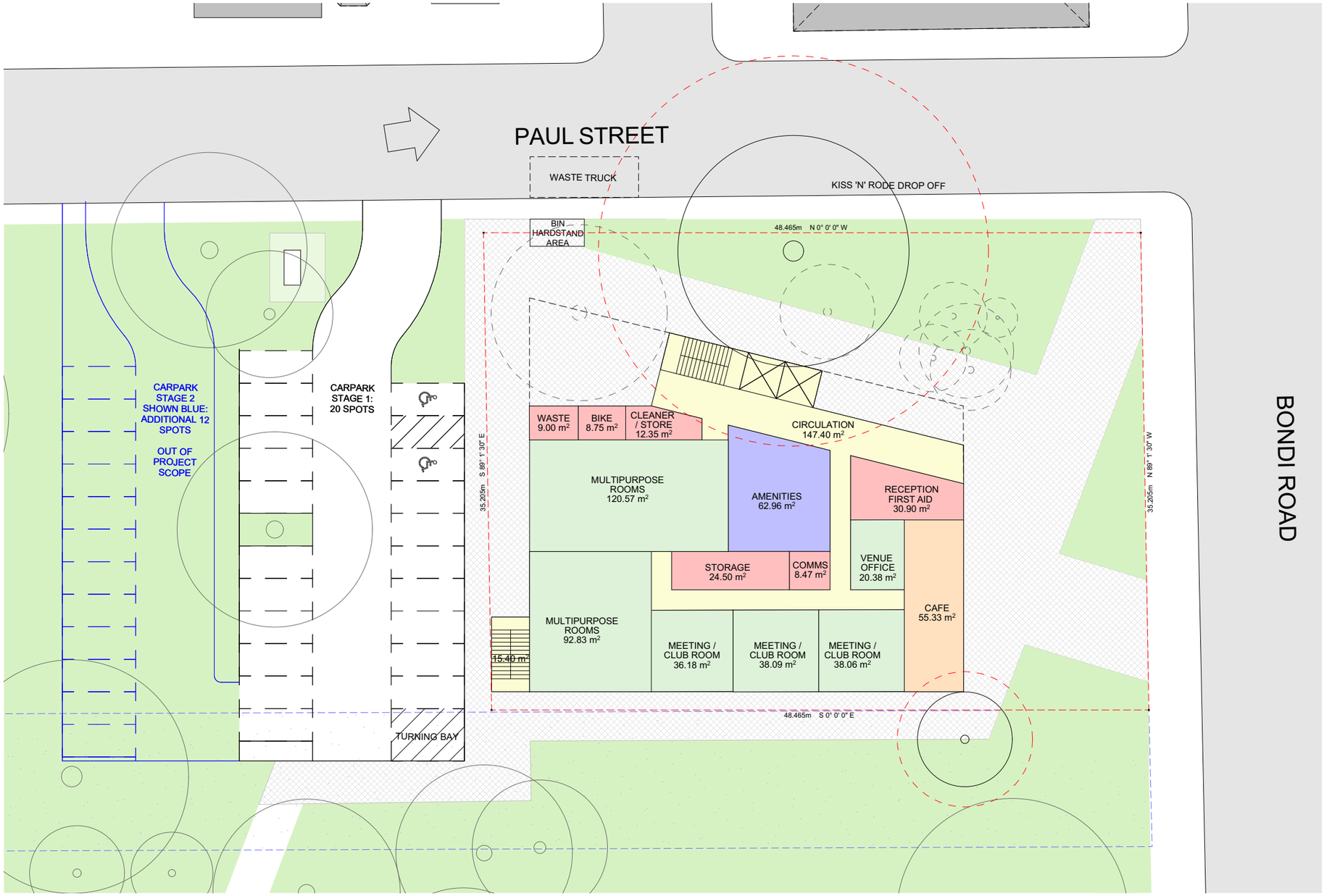
COST SUMMARY

Indoor Facility
$13,163,219

Public Domain
$707,338

Fees + Contingency
$4,077,348

TOTAL COST
$17,947,904



Waverley Council Chambers 1:300 @A3 Option 1 - Ground Floor N

Option 1

PROGRAM

- **Full Multipurpose Court**
  - **1 x Basketball**
  - **1 x Netball**
  - **1 x Volleyball**
  - **4 x Badminton**
  - **3 x Pickleball**

- Multipurpose Room
- Meeting Rooms / Club Rooms
- Cafe

GFA
1465m^2
(Permissible GFA 3380m^2)

PUBLIC DOMAIN UPGRADES
1800m^2

BUILDING HEIGHT
12m
(Permissible Building Height 20m)

COST SUMMARY

Indoor Facility
$13,163,219

Public Domain
$707,338

Fees + Contingency
$4,077,348

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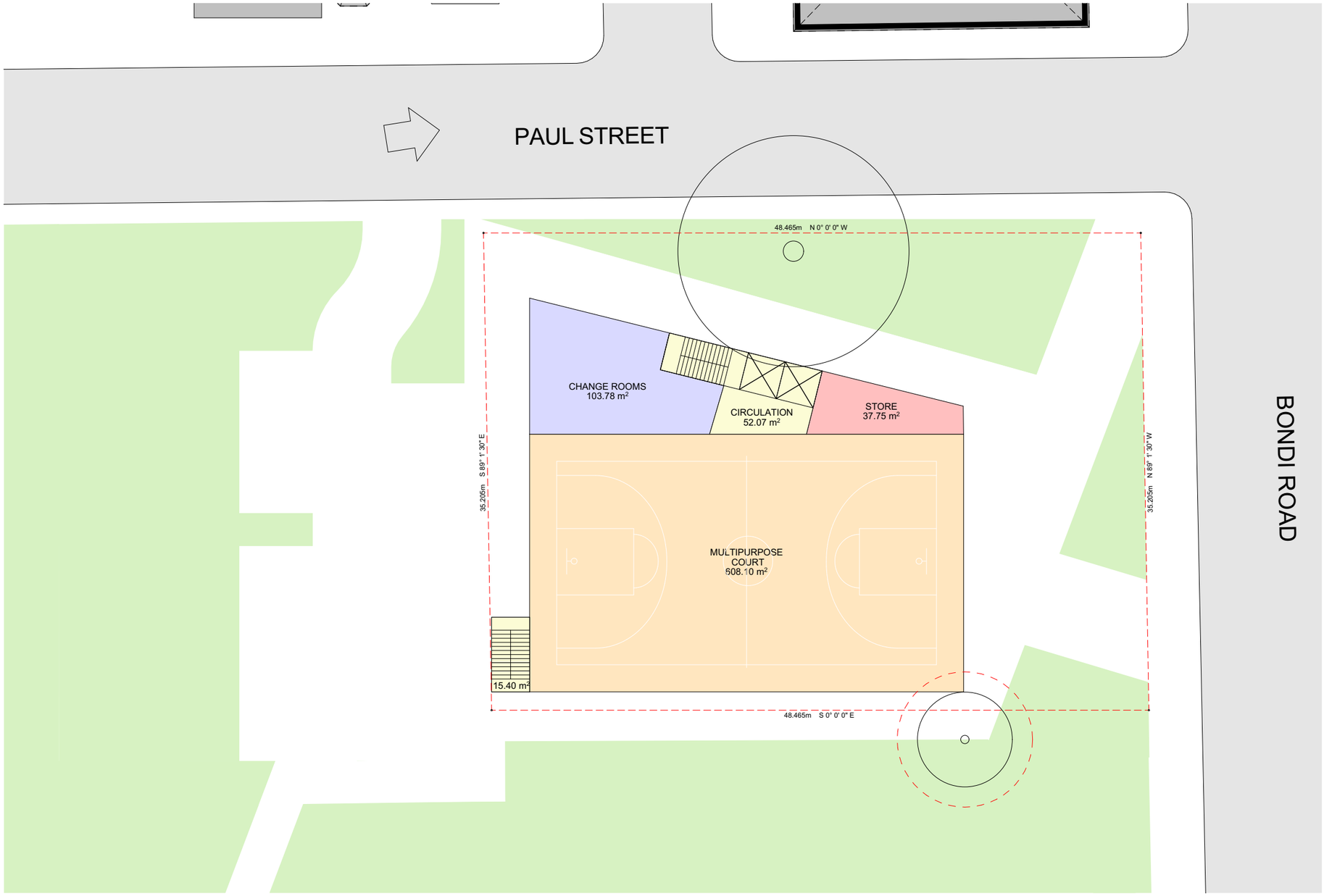
$17,947,904



Waverley Council Chambers 1:300 @A3 Option 1 - Level 1 N

Option 1

PROGRAM

- Full Multipurpose Court
  - 1 x Basketball
  - 1 x Netball
  - 1 x Volleyball
  - 4 x Badminton
  - 3 x Pickleball

- Multipurpose Room
- Meeting Rooms / Club Rooms
- Cafe

GFA
1465m^2
(Permissible GFA 3380m^2)

PUBLIC DOMAIN UPGRADES
1800m^2

BUILDING HEIGHT
12m
(Permissible Building Height 20m)

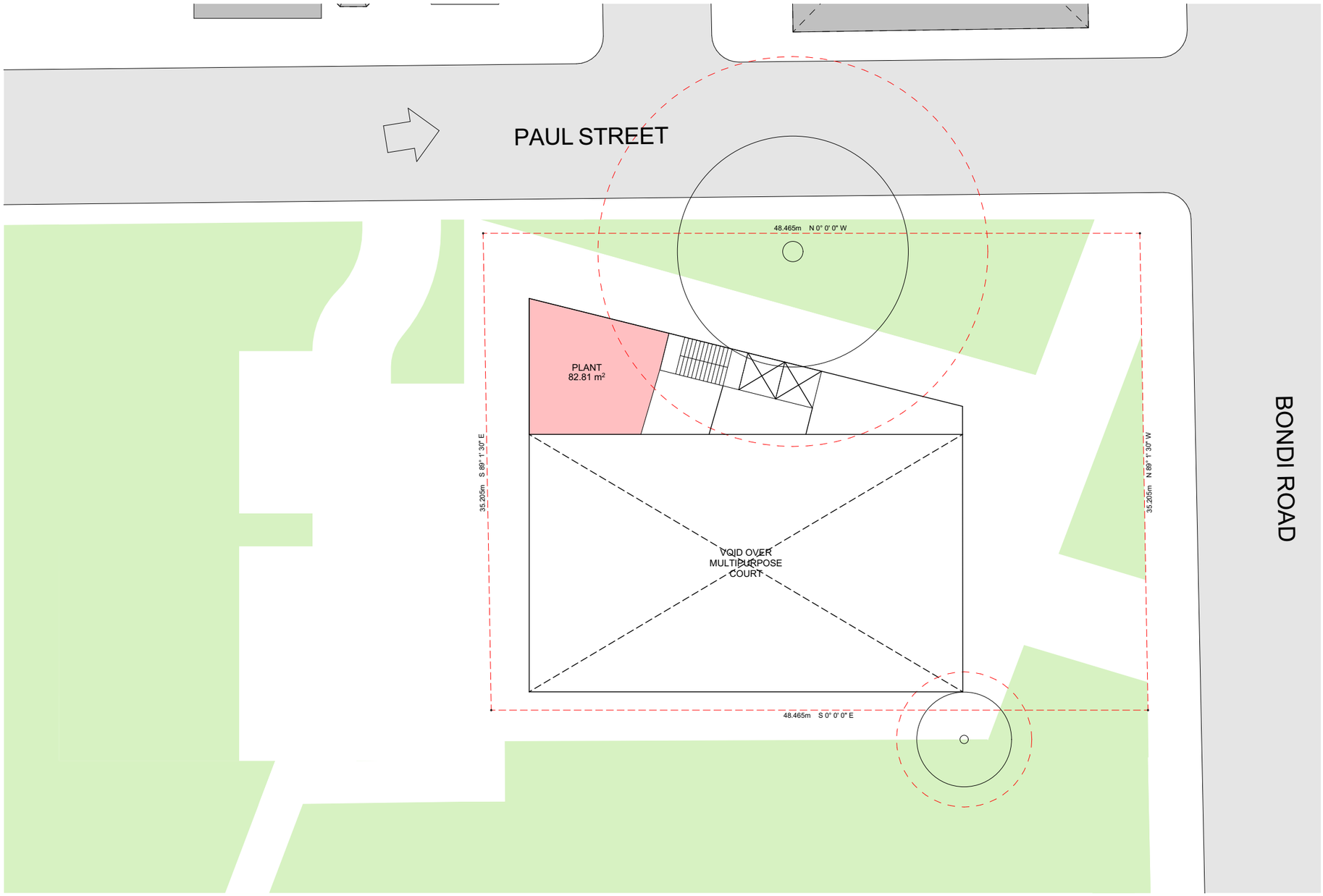
COST SUMMARY

Indoor Facility
$13,163,219

Public Domain
$707,338

Fees + Contingency
$4,077,348

TOTAL COST
$17,947,904



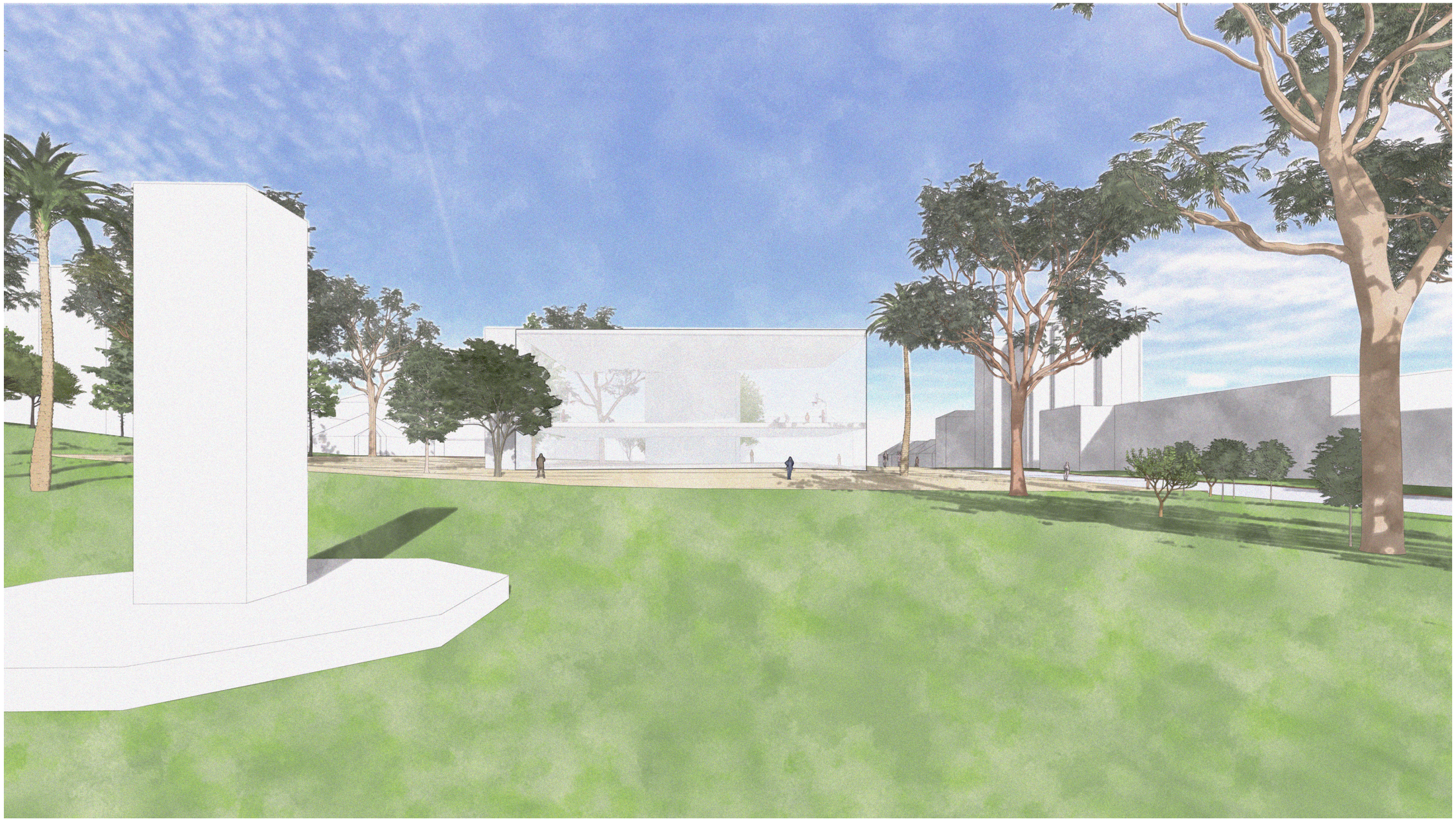
Waverley Council Chambers 1:300 @A3 Option 1 - Level 2 N



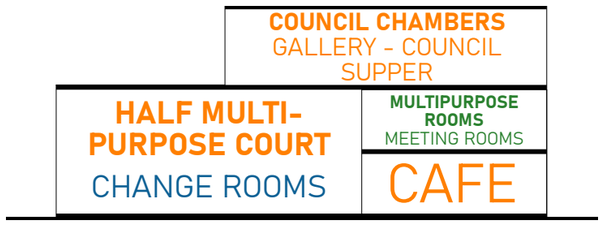
Option 1 - Concept Visualisation Bondi Road



Option 1 - Concept Visualisation Bondi Road



Option 1 - Concept Visualisation Waverley Park



OPTION 02

HALF MULTIPURPOSE COURT

HALF BASKETBALL - HALF NETBALL - PICKLEBALL - BADMINTON

COUNCIL CHAMBERS
MULTIPURPOSE ROOM
CLUB ROOM / MEETING ROOM
CAFE

Option 2

PROGRAM

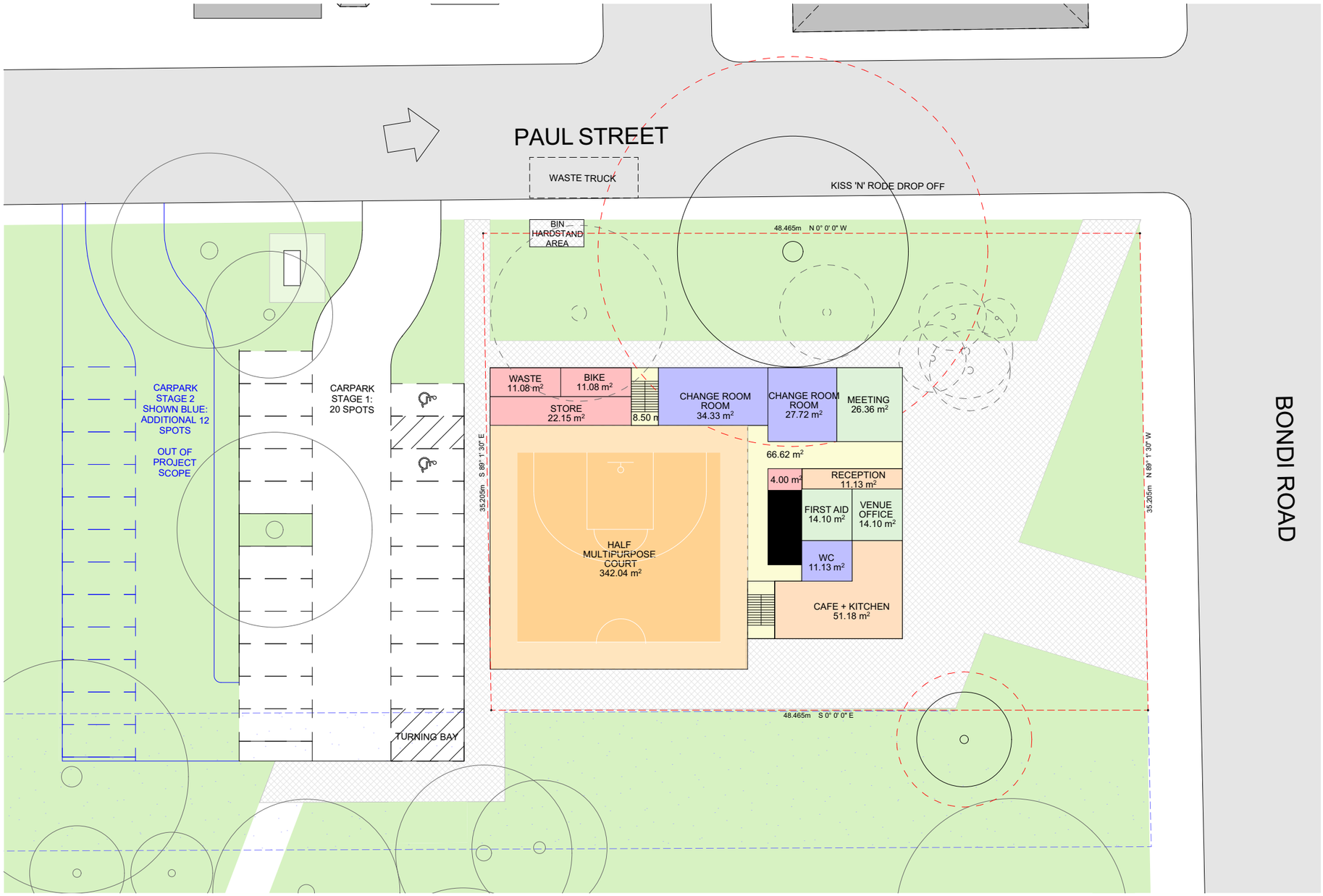
- **Half Multipurpose Court**
  - **1 x Half Basketball**
  - **1 x Half Netball**
  - **2 x Badminton**
  - **1 x Pickleball**

- Council Chambers
- Gallery
- Council Supper
- Multipurpose Room
- **Meeting Rooms / Club Rooms**
- **Cafe**

GFA
1391m^2
(Permissible GFA 3380m^2)

PUBLIC DOMAIN UPGRADES
1800m^2

BUILDING HEIGHT
12m
(Permissible Building Height 20m)



Waverley Council Chambers 1:300 @A3 Option 2 - Ground Floor N

COST SUMMARY

Indoor Facility
$13,342,698

Public Domain
$711,838

Fees + Contingency
$4,109,543

TOTAL COST
$18,164,080

Option 2

PROGRAM

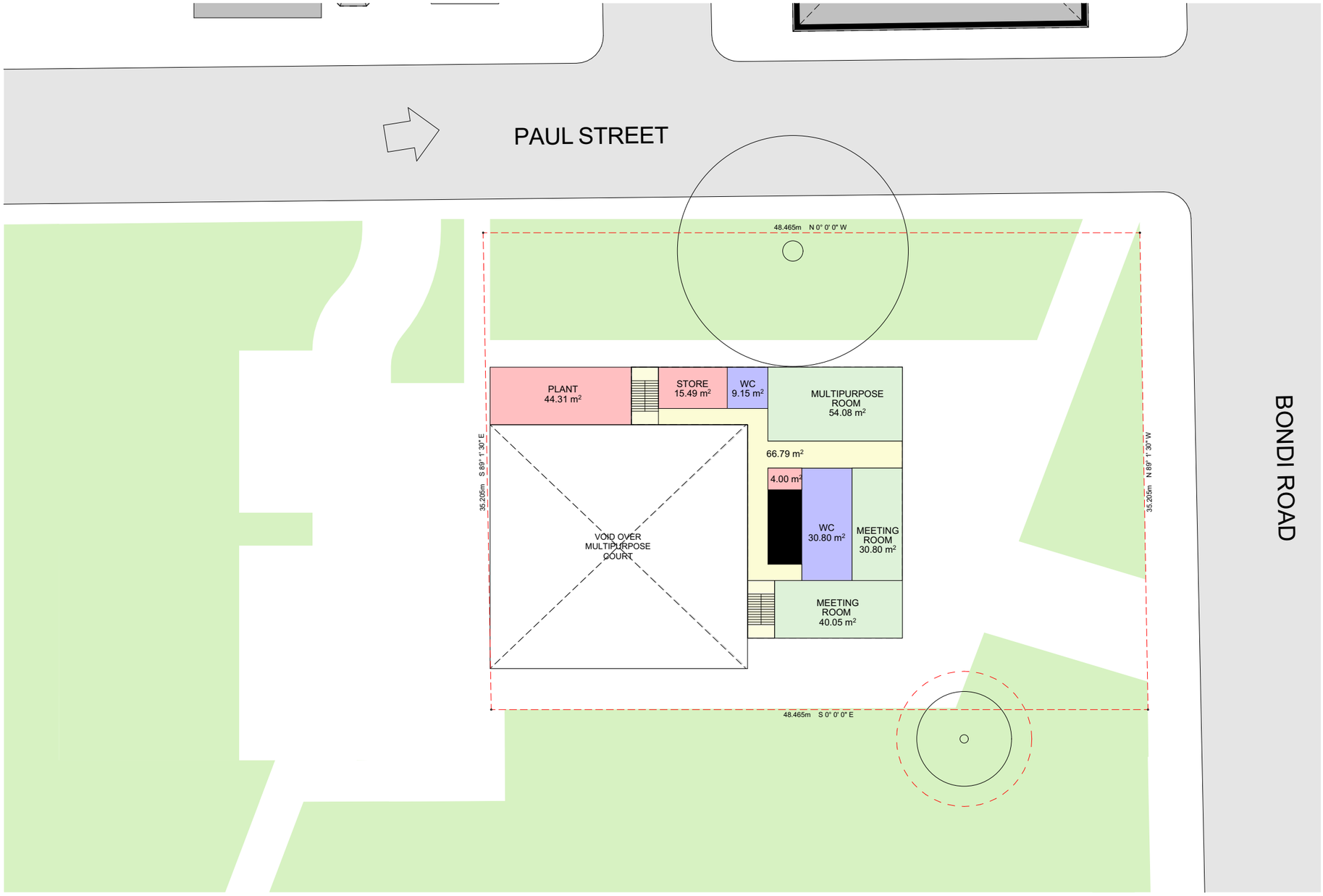
- Half Multipurpose Court
  - 1 x Half Basketball
  - 1 x Half Netball
  - 2 x Badminton
  - 1 x Pickleball

- Council Chambers
- Gallery
- Council Supper
- **Multipurpose Room**
- **Meeting Rooms / Club Rooms**
- Cafe

GFA
1391m^2
(Permissible GFA 3380m^2)

PUBLIC DOMAIN UPGRADES
1800m^2

BUILDING HEIGHT
12m
(Permissible Building Height 20m)



Waverley Council Chambers 1:300 @A3 Option 2 - Level 1 N

COST SUMMARY

Indoor Facility
$13,342,698

Public Domain
$711,838

Fees + Contingency
$4,109,543

TOTAL COST
$18,164,080

Option 2

PROGRAM

- Half Multipurpose Court
  - 1 x Half Basketball
  - 1 x Half Netball
  - 2 x Badminton
  - 1 x Pickleball

- **Council Chambers**
- **Gallery**
- **Council Supper**
- Multipurpose Room
- **Meeting Rooms / Club Rooms**
- Cafe

GFA
1391m^2
(Permissible GFA 3380m^2)

PUBLIC DOMAIN UPGRADES
1800m^2

BUILDING HEIGHT
12m
(Permissible Building Height 20m)

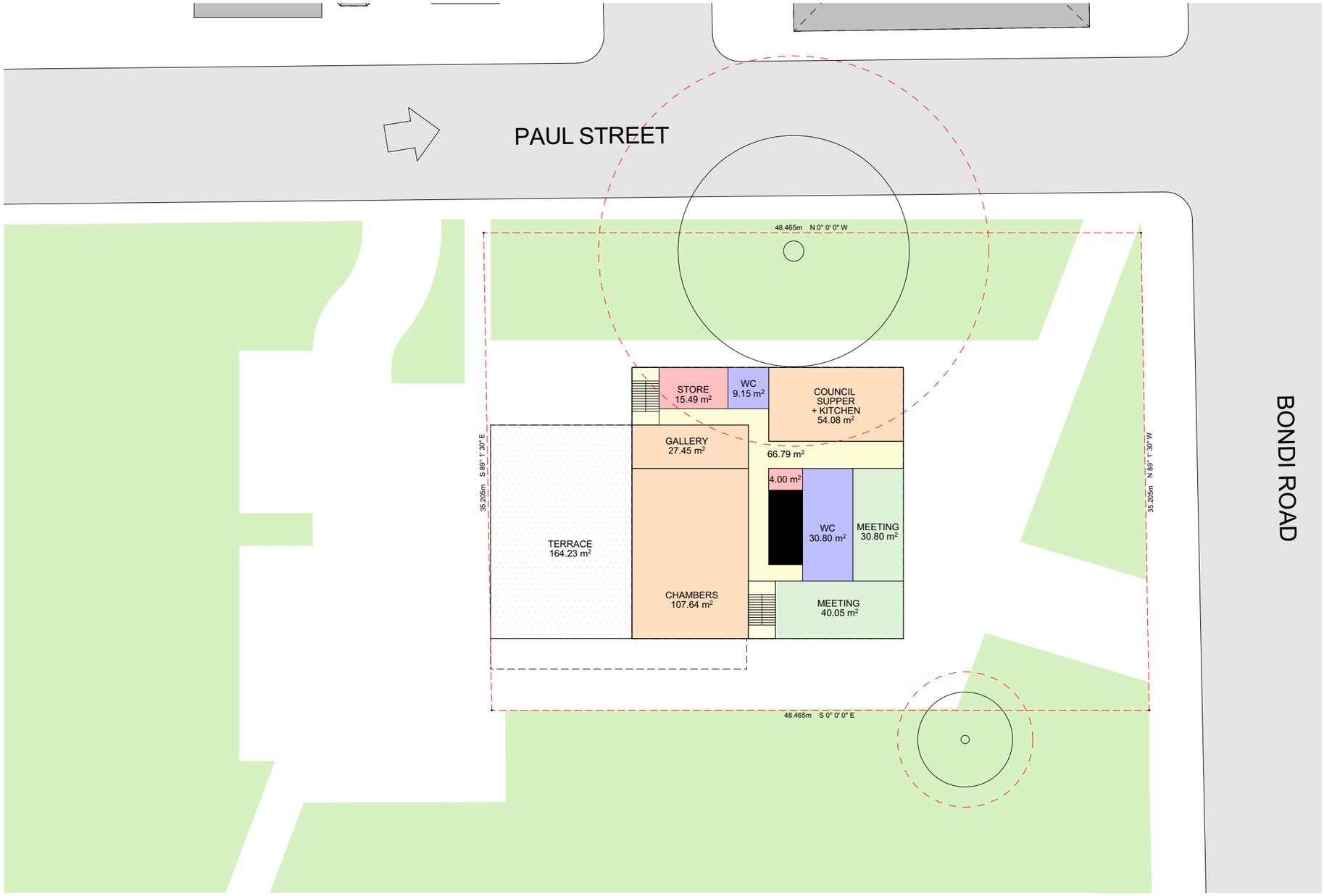
COST SUMMARY

Indoor Facility
$13,342,698

Public Domain
$711,838

Fees + Contingency
$4,109,543

TOTAL COST
$18,164,080



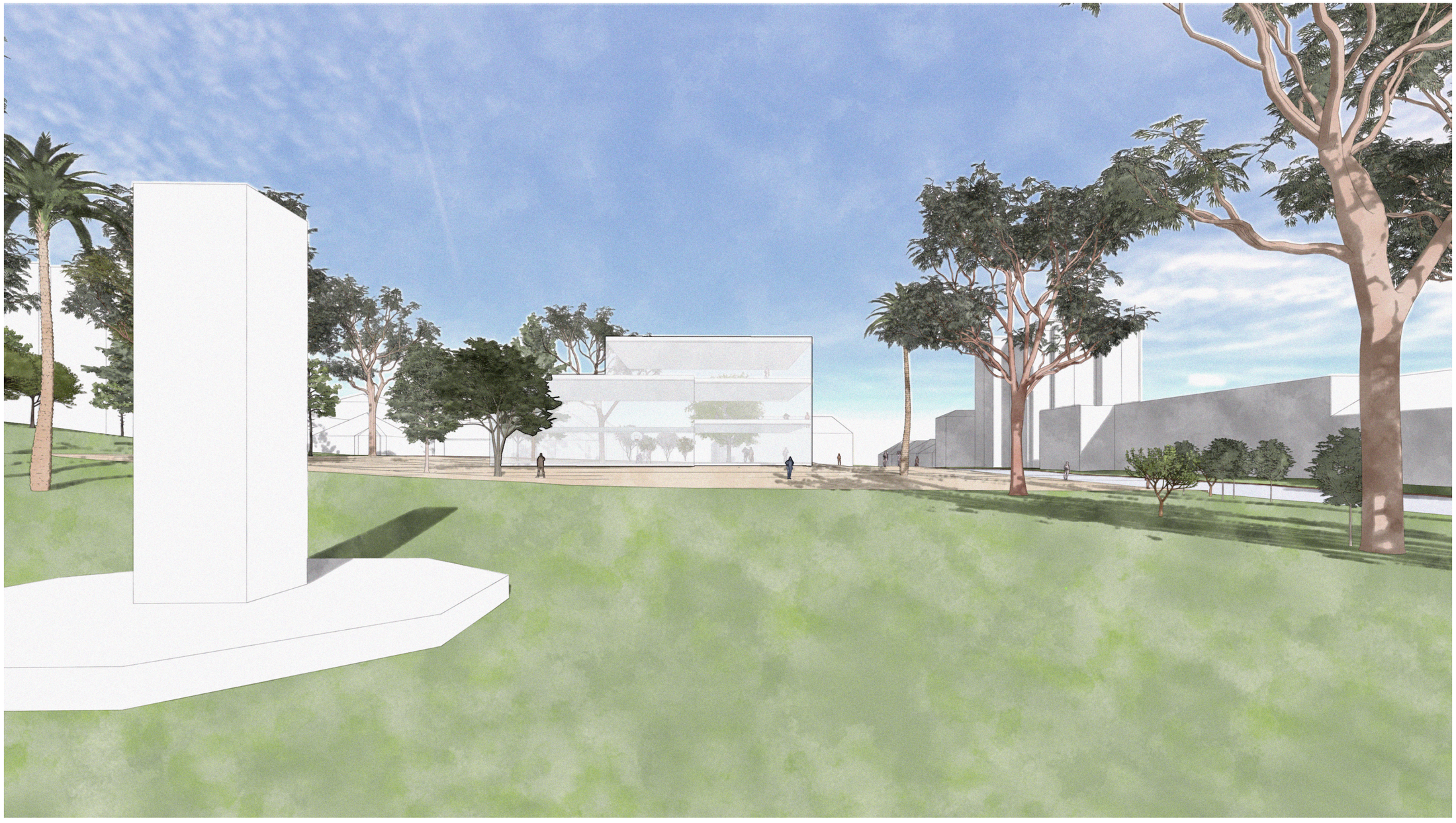
Waverley Council Chambers 1:300 @A3 Option 2 - Level 2 N



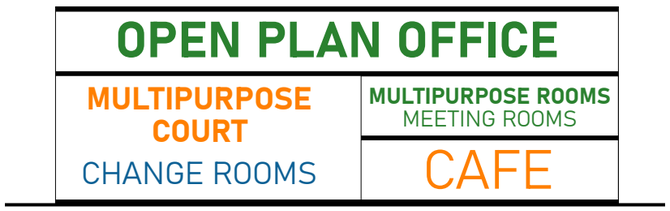
Option 2 - Concept Visualisation Bondi Road



Option 2 - Concept Visualisation Bondi Road



Option 2 - Concept Visualisation Waverley Park



OPTION 03

FULL MULTIPURPOSE COURT

BASKETBALL - NETBALL - CRICKET - VOLLEYBALL - PICKLEBALL - BADMINTON

OPEN PLAN OFFICE SPACE
MULTIPURPOSE ROOM
CLUB ROOM / MEETING ROOM
CAFE

Option 3

PROGRAM

- **Full Multipurpose Court**
  - **1 x Basketball**
  - **5 x Roll Out Cricket Nets**
  - **1 x Netball**
  - **1 x Volleyball**
  - **4 x Badminton**
  - **3 x Pickleball**

- Open Plan Office Space
- Multipurpose Room
- Meeting Rooms / Club Rooms
- **Cafe**

GFA
2453m^2
(Permissible GFA 3380m^2)

PUBLIC DOMAIN UPGRADES
1000m^2

BUILDING HEIGHT
12m
(Permissible Building Height 20m)

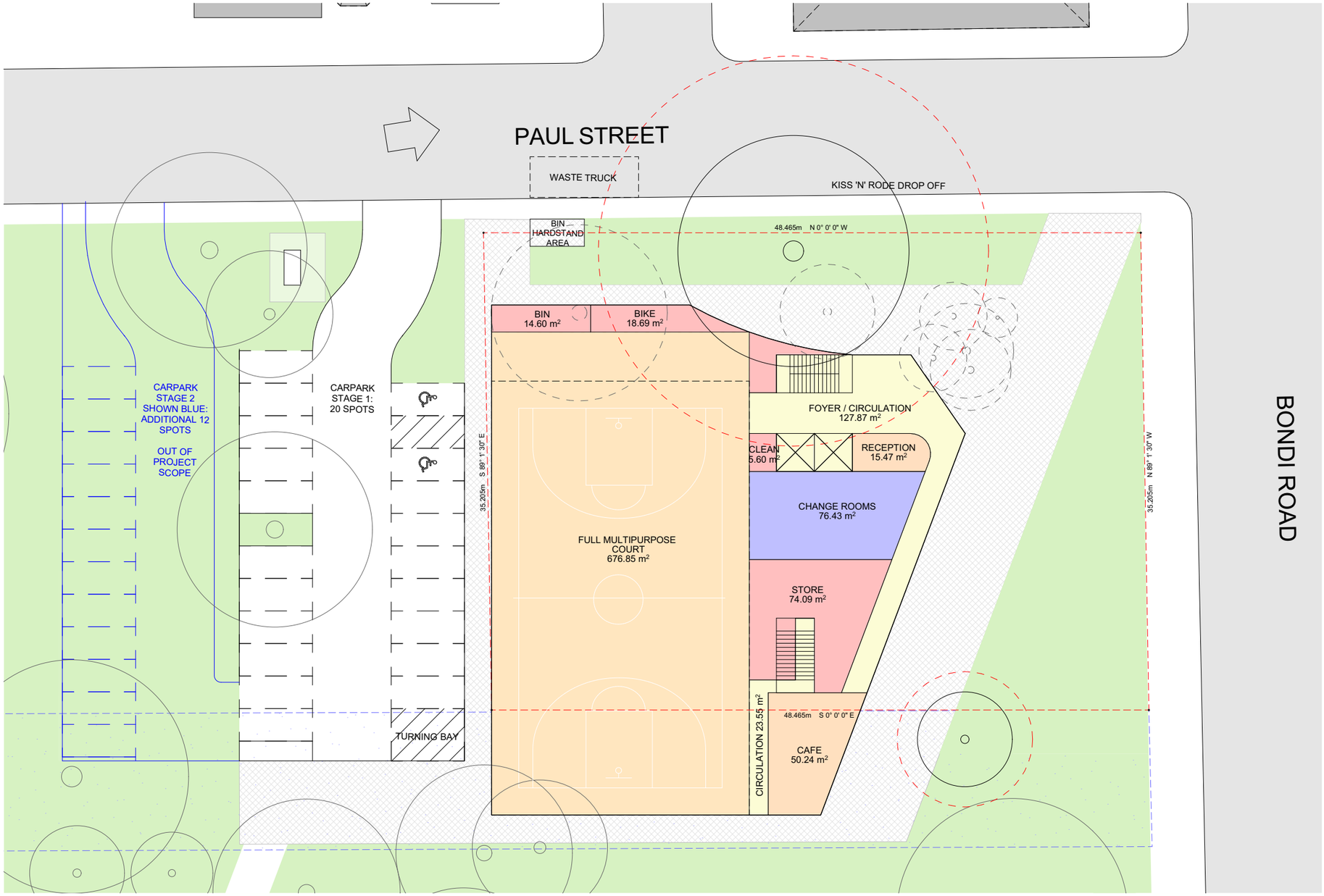
COST SUMMARY

Indoor Facility
$19,823,388

Public Domain
$706,564

Fees + Contingency
$5,592,742

TOTAL COST
$26,122,694



Waverley Council Chambers 1:300 @A3 Option 3 - Ground Floor N

Option 3

PROGRAM

- Full Multipurpose Court
  - 1 x Basketball
  - 5 x Roll Out Cricket Nets
  - 1 x Netball
  - 1 x Volleyball
  - 4 x Badminton
  - 3 x Pickleball

- Open Plan Office Space
- **Multipurpose Room**
- **Meeting Rooms / Club Rooms**
- Cafe

GFA
2453m^2
(Permissible GFA 3380m^2)

PUBLIC DOMAIN UPGRADES
1000m^2

BUILDING HEIGHT
12m
(Permissible Building Height 20m)

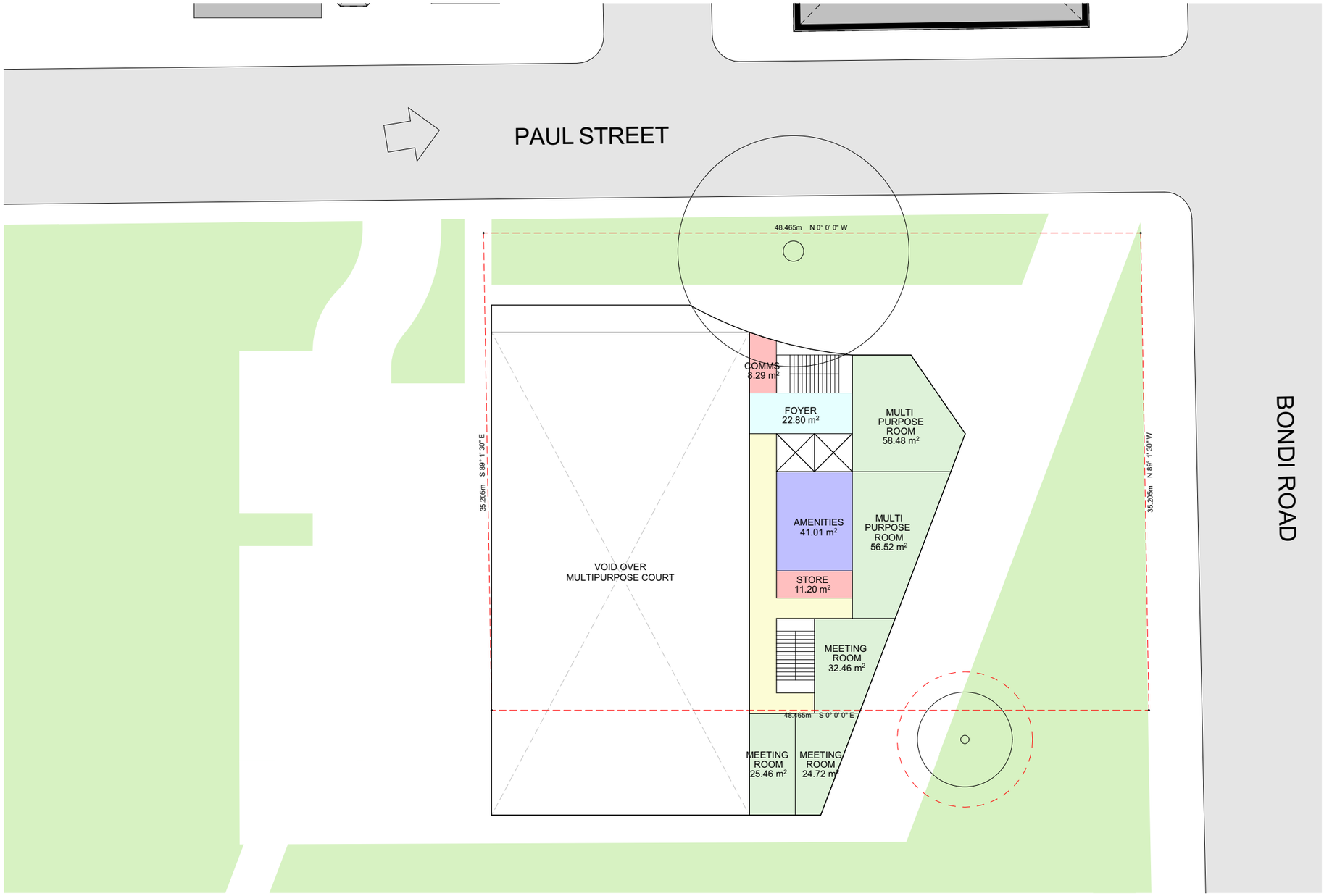
COST SUMMARY

Indoor Facility
$19,823,388

Public Domain
$706,564

Fees + Contingency
$5,592,742

TOTAL COST
$26,122,694



Waverley Council Chambers 1:300 @A3 Option 3 - Level 1 N

Option 3

PROGRAM

- Full Multipurpose Court
  - 1 x Basketball
  - 5 x Roll Out Cricket Nets
  - 1 x Netball
  - 1 x Volleyball
  - 4 x Badminton
  - 3 x Pickleball

- **Open Plan Office Space**
- Multipurpose Room
- Meeting Rooms / Club Rooms
- Cafe

GFA
2453m^2
(Permissible GFA 3380m^2)

PUBLIC DOMAIN UPGRADES
1000m^2

BUILDING HEIGHT
12m
(Permissible Building Height 20m)

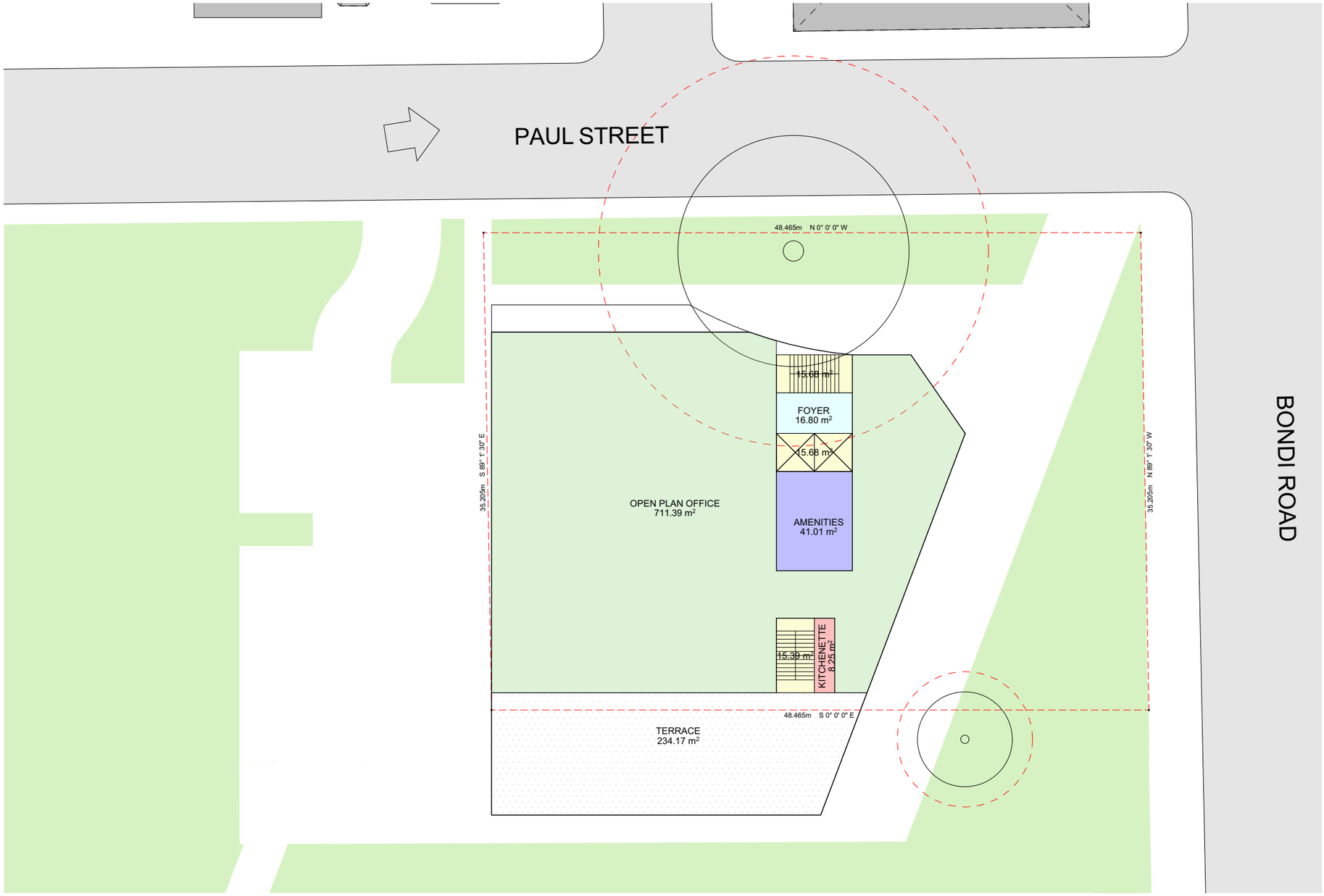
COST SUMMARY

Indoor Facility
$19,823,388

Public Domain
$706,564

Fees + Contingency
$5,592,742

TOTAL COST
$26,122,694



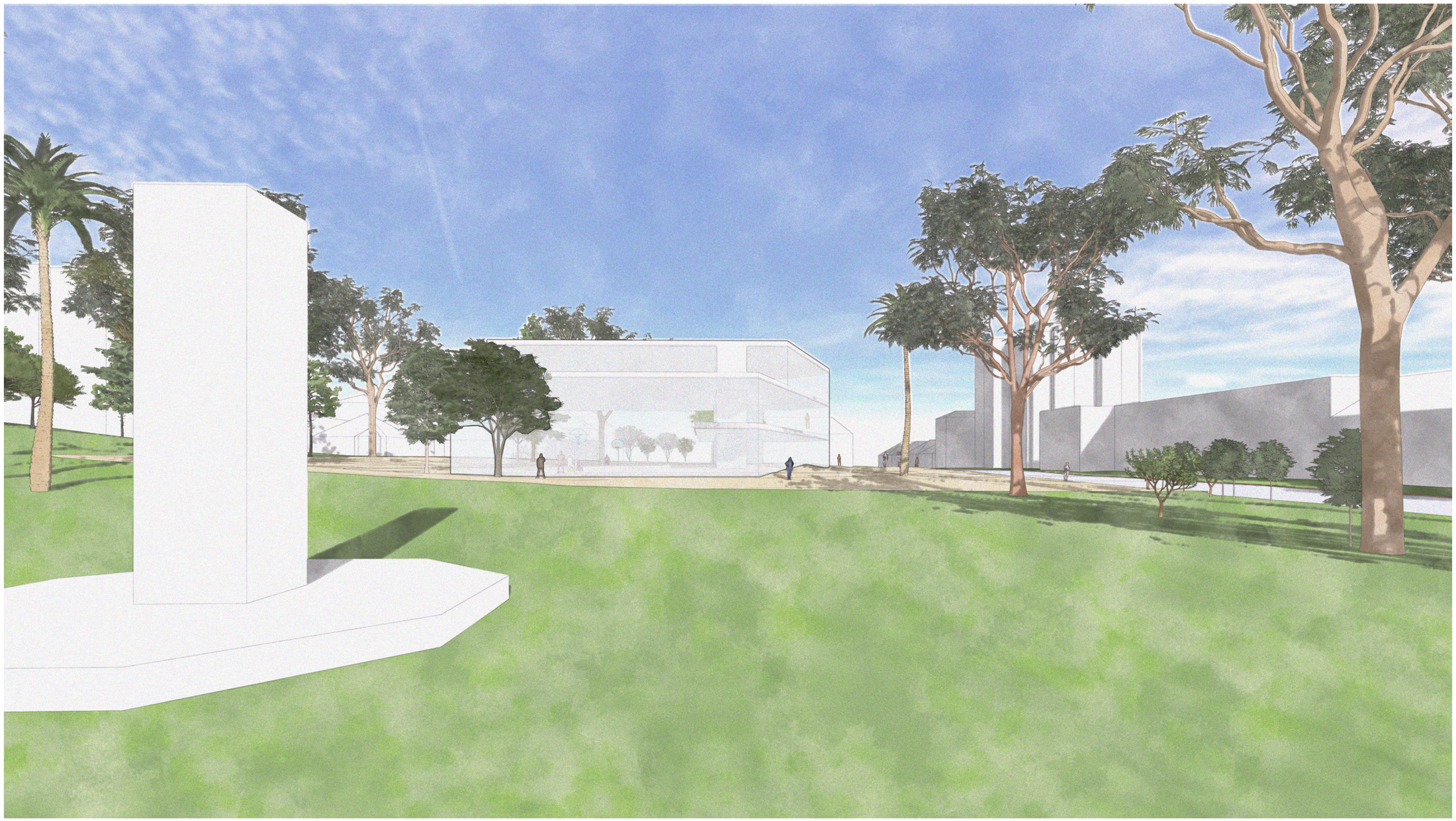
Waverley Council Chambers 1:300 @A3 Option 3 - Level 2 N



Option 3 - Concept Visualisation Bondi Road



Option 3 - Concept Visualisation Bondi Road



Option 3 - Concept Visualisation Waverley Park

OPTION 01

FULL MULTIPURPOSE COURT
MULTIPURPOSE ROOM
CLUB ROOM / MEETING ROOM
CAFE

GFA
1465m^2

BUILDING HEIGHT
12m

Indoor Facility
$13,163,219

Public Domain
$707,338

Fees + Contingency
$4,077,348

TOTAL COST
$17,947,904

OPTION 02

HALF MULTIPURPOSE COURT
COUNCIL CHAMBERS
MULTIPURPOSE ROOM
CLUB ROOM / MEETING ROOM
CAFE

GFA
1391m^2

BUILDING HEIGHT
12m

Indoor Facility
$13,342,698

Public Domain
$711,838

Fees + Contingency
$4,109,543

TOTAL COST
$18,164,080

OPTION 03

FULL MULTIPURPOSE COURT
OPEN PLAN OFFICE SPACE
MULTIPURPOSE ROOM
CLUB ROOM / MEETING ROOM
CAFE

GFA
2453m^2

BUILDING HEIGHT
12m

Indoor Facility
$19,823,388

Public Domain
$706,564

Fees + Contingency
$5,592,742

TOTAL COST
$26,122,694

DRAWING SCHEDULE

1000 COVERSHEET
1010 CONTEXT PLAN
1020 SITE & STAGING PLAN
1100 PUMPHOUSE EXISTING FLOOR & ROOF PLANS
1101 PUMPHOUSE DEMOLITION FLOOR & ROOF PLANS
1102 PUMPHOUSE FLOOR & ROOF PLANS
1103 PUMPHOUSE REFLECTED CEILING PLAN
1200 PUMPHOUSE SECTIONS
1201 PUMPHOUSE SECTIONS
1202 PUMPHOUSE ELEVATIONS
1203 PUMPHOUSE ELEVATION
1204 PUMPHOUSE ELEVATION
1300 PUMPHOUSE DETAILS
1600 CONCRETE SETOUT PLAN
2100 STAIR & UPPER PATH EXISTING FLOOR PLAN
2101 STAIR & UPPER PATH DEMOLITION FLOOR PLAN
2102 STAIR & UPPER PATH FLOOR PLAN
2200 STAIR SECTIONS
2201 STAIR SECTIONS
2202 STAIR SECTIONS
2203 STAIR ELEVATIONS
2300 STAIR DETAILS
2301 STAIR DETAILS
2400 STAIR EXCAVATION SETOUT
2600 STAIR CONCRETE SETOUT PLAN

NOTES

REFER TO ACCOMPANYING ARCHITECTURAL SPECIFICATION

SHOP DRAWINGS TO BE PROVIDED FOR ALL DOOR & METAL FABRICATION ITEMS, ALLOW 7 DAYS FOR APPROVAL BY ARCHITECT

VERIFY ALL DIMENSIONS ON SITE AND RESOLVE ANY DISCREPANCIES WITH ARCHITECT PRIOR TO MANUFACTURE

ALL BUILDING ELEMENTS ARE TO BE INSTALLED PER MANUFACTURERS WRITTEN DIRECTIONS

ALL WORKS TO BE IN ACCORDANCE WITH THE PROJECT APPROVALS

BUILDER TO PROVIDE SAMPLES AS NOTED IN THE DRAWINGS AND SPECIFICATIONS

FINISHES AND ABBREVIATIONS

CL	CENTRE LINE
CN1	GREY CEMENT CONCRETE - LIGHTLY GROUND OFF FORM OR MECHANICAL TROWEL FINISH TO ACHIEVE CONSISTENT 'SALT & PEPPER' APPEARANCE, FINISH WITH MULTI-MATTE SEALER
CN2	AS ABOVE WITH SAND COLOURED OXIDE
CN3	AS CN3 WITH MUROBOND MUROWASH PAINT FINISH TO INTERIOR FACE, COLOUR TBC
G1	CLEAR GLASS TO AS
JT	JOINT
ME	MESH GRATING PANELS
SS	316 GRADE STAINLESS STEEL WITH LINISHED FINISH
TM	SELECT GRADE HARDWOOD TIMBER WITH PAINT FINISH
UNO	UNLESS OTHERWISE NOTED
X	SUFFIX DENOTES EXISTING TO BE RETAINED

SERVICES

- EXISTING ELECTRICAL SWITCHBOARD
- WP DOUBLE GENERAL PURPOSE OUTLET (WATERPROOF)
- LED BATTEN LIGHT
- SWITCH
- S SMOKE DETECTOR
- HOSE COCK



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RV	DATE	ISSUE	BY	APP
P1	31.07.24	50% DD REVIEW	TM	AP
P2	07.02.24	DRAFT FOR REF	TM	AP

PROJECT NO.:
5658

PROJECT:
SOUTH BRONTE PUMP AND PUMPHOUSE RENEWAL

CLIENT:
WAVERLEY COUNCIL

DRAWING:
COVERSHEET

DRAWING NO: CD-1000

ISSUE: P2



01
-
CONTEXT PLAN
1:250 @ A3 / 1:125 @ A1

GENERAL NOTES

IT IS THE RESPONSIBILITY OF THE BUILDER TO COMPLY WITH ALL CONDITIONS OF APPROVAL.

PROVIDE TEMPORARY & PERMANENT SUPPORT, SECURITY & WEATHER PROTECTION TO WORK SITE FOR THE DURATION OF THE WORKS. PROTECT ALL AREAS/ SURFACES TO BE RETAINED AND MAKE GOOD ANY DAMAGE TO MATCH ORIGINAL AS SOON AS PRACTICABLE.

REMOVE ALL REDUNDANT STRUCTURES, SERVICES, FIXTURES & FITTINGS.

SERVICES NOTES

INSPECT EXISTING SERVICES & UPGRADE ONLY IF SCOPED IN DOCUMENTS OR REQUIRED FOR CODE/ AUTHORITY COMPLIANCE.

BUILDER IS TO OBTAIN ANY NECESSARY APPROVALS, PERMITS, FEE PAYMENTS.

REMOVE ALL REDUNDANT SERVICES, FIXTURES & FITTINGS.

SERVICES ARE SHOWN INDICATIVELY ONLY. BUILDER IS TO UNDERTAKE A DIAL BEFORE YOU DIG SEARCH & ANY NECESSARY SITE INVESTIGATIONS TO CONFIRM EXTENT AND LOCATION OF SERVICES.

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0 2.5 5M @ A3

PROJECT NO.:
5658
PROJECT:
SOUTH BRONTE PUMP AND PUMPHOUSE RENEWAL
CLIENT:
WAVERLEY COUNCIL

DRAWING:
CONTEXT PLAN

DRAWING NO: CD-1010
ISSUE: P2

STAGING NOTES

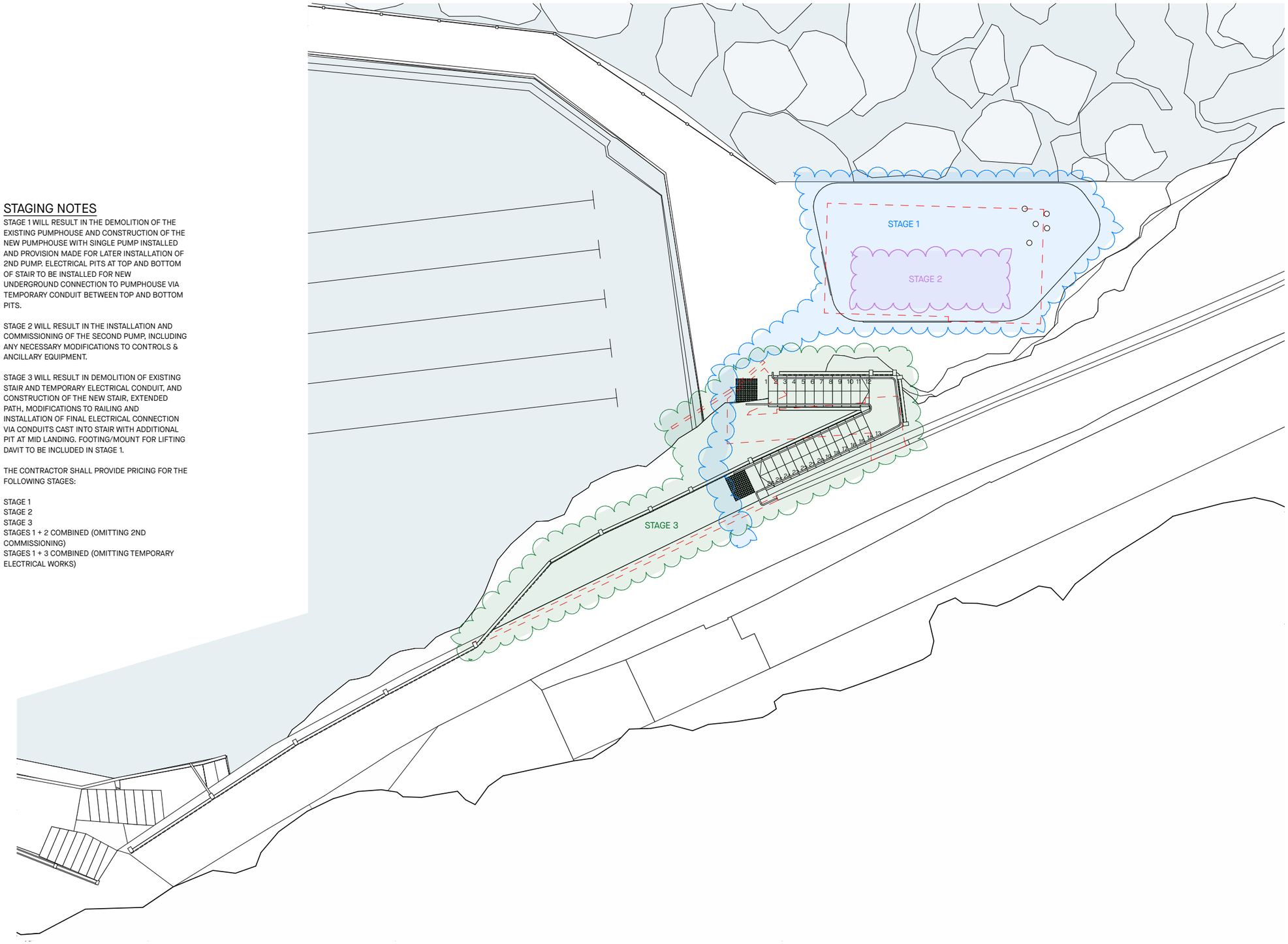
STAGE 1 WILL RESULT IN THE DEMOLITION OF THE EXISTING PUMPHOUSE AND CONSTRUCTION OF THE NEW PUMPHOUSE WITH SINGLE PUMP INSTALLED AND PROVISION MADE FOR LATER INSTALLATION OF 2ND PUMP. ELECTRICAL PITS AT TOP AND BOTTOM OF STAIR TO BE INSTALLED FOR NEW UNDERGROUND CONNECTION TO PUMPHOUSE VIA TEMPORARY CONDUIT BETWEEN TOP AND BOTTOM PITS.

STAGE 2 WILL RESULT IN THE INSTALLATION AND COMMISSIONING OF THE SECOND PUMP, INCLUDING ANY NECESSARY MODIFICATIONS TO CONTROLS & ANCILLARY EQUIPMENT.

STAGE 3 WILL RESULT IN DEMOLITION OF EXISTING STAIR AND TEMPORARY ELECTRICAL CONDUIT, AND CONSTRUCTION OF THE NEW STAIR, EXTENDED PATH, MODIFICATIONS TO RAILING AND INSTALLATION OF FINAL ELECTRICAL CONNECTION VIA CONDUITS CAST INTO STAIR WITH ADDITIONAL PIT AT MID LANDING. FOOTING/MOUNT FOR LIFTING DAVIT TO BE INCLUDED IN STAGE 1.

THE CONTRACTOR SHALL PROVIDE PRICING FOR THE FOLLOWING STAGES:

STAGE 1
STAGE 2
STAGE 3
STAGES 1 + 2 COMBINED (OMITTING 2ND COMMISSIONING)
STAGES 1 + 3 COMBINED (OMITTING TEMPORARY ELECTRICAL WORKS)



01 - SITE & STAGING PLAN
1:100 @ A3 / 1:50 @ A1

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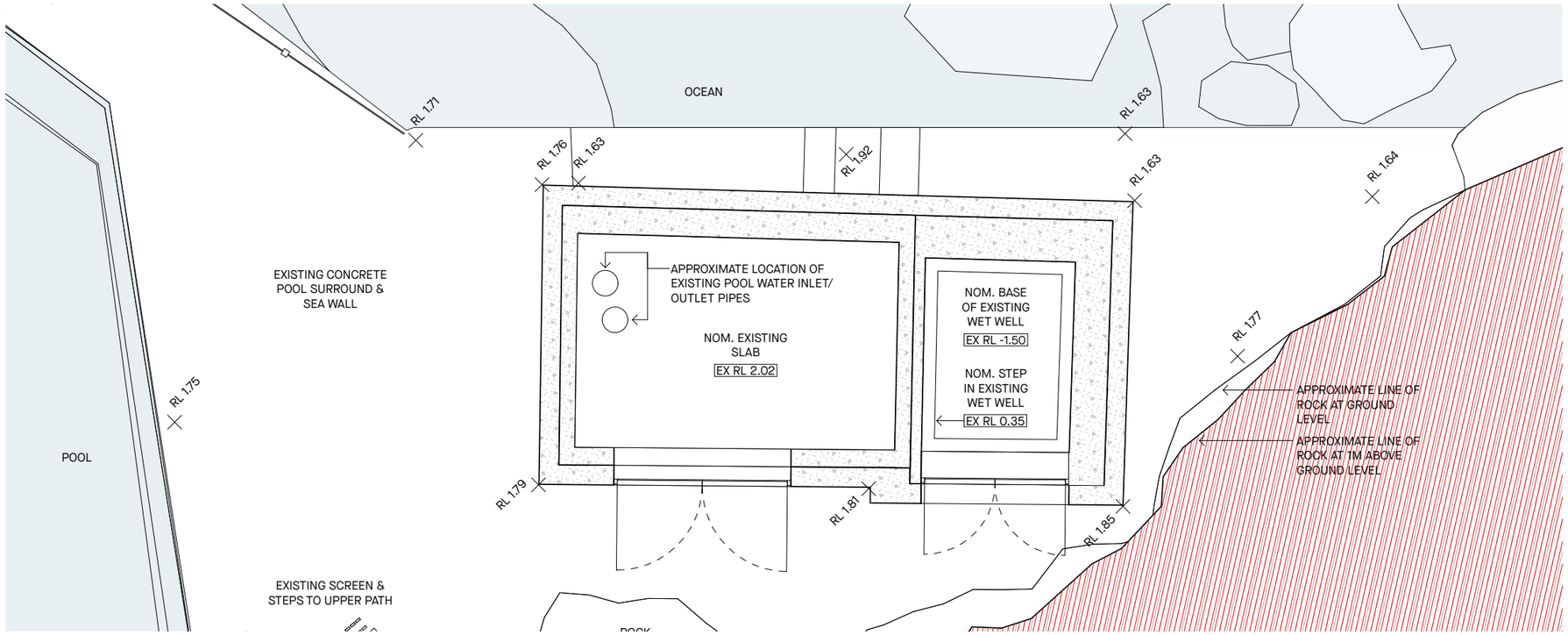
0 1 2M @ A3

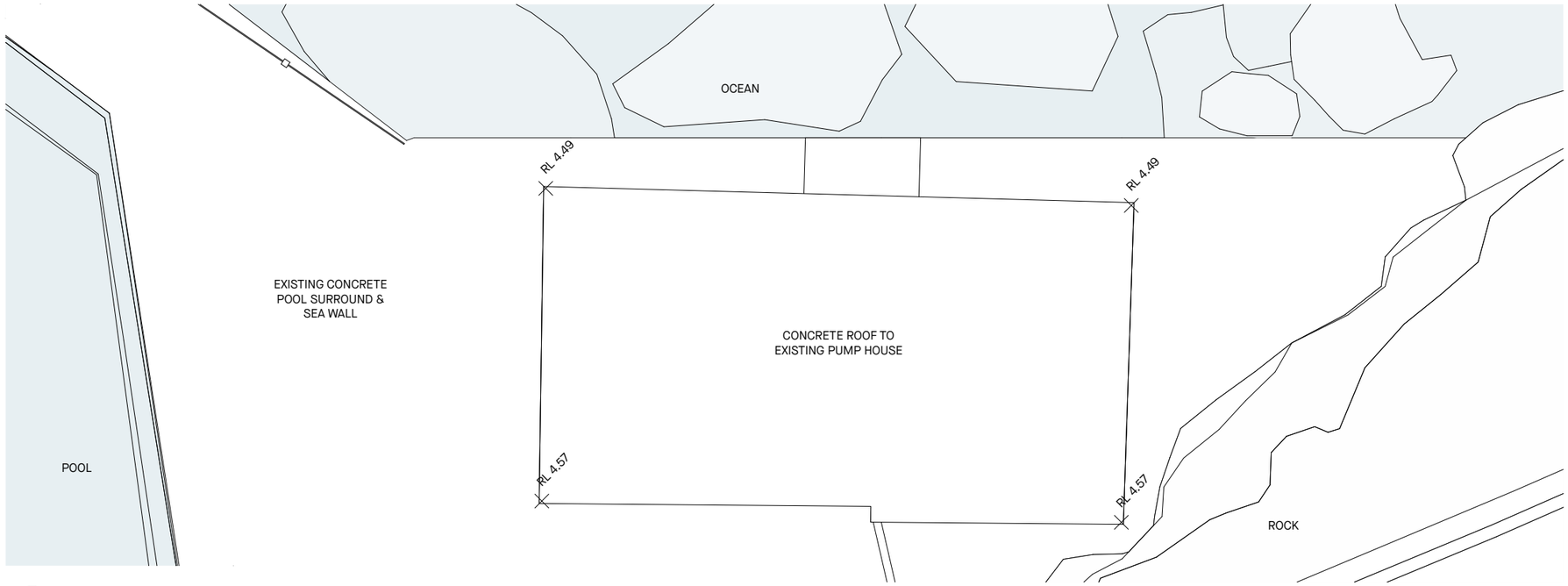
PROJECT NO.:
5658
PROJECT:
SOUTH BRONTE PUMP AND PUMPHOUSE RENEWAL
CLIENT:
WAVERLEY COUNCIL

DRAWING:
SITE & STAGING PLAN

DRAWING NO: CD-1020
ISSUE: P2



01 - PUMPHOUSE EXISTING FLOOR PLAN
1:50



02 - PUMPHOUSE EXISTING ROOF PLAN
1:50

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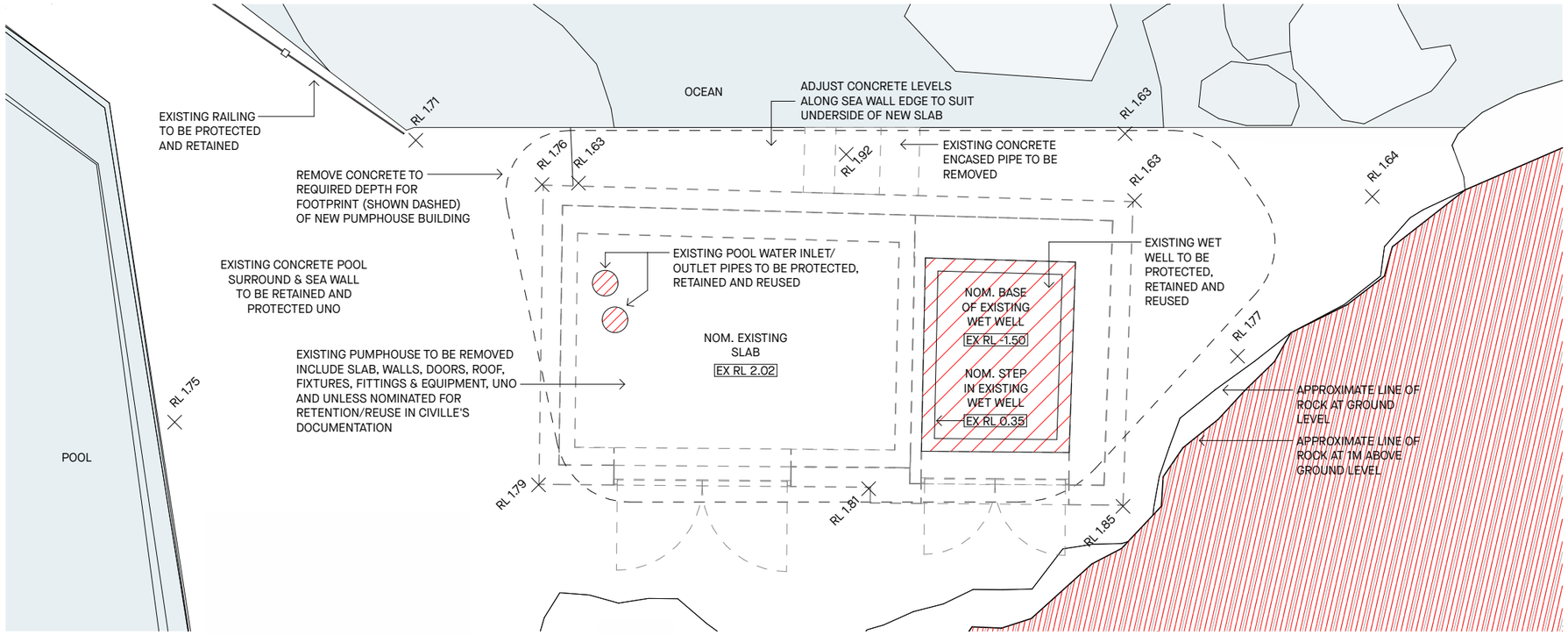
0 0.5 1M @ A3

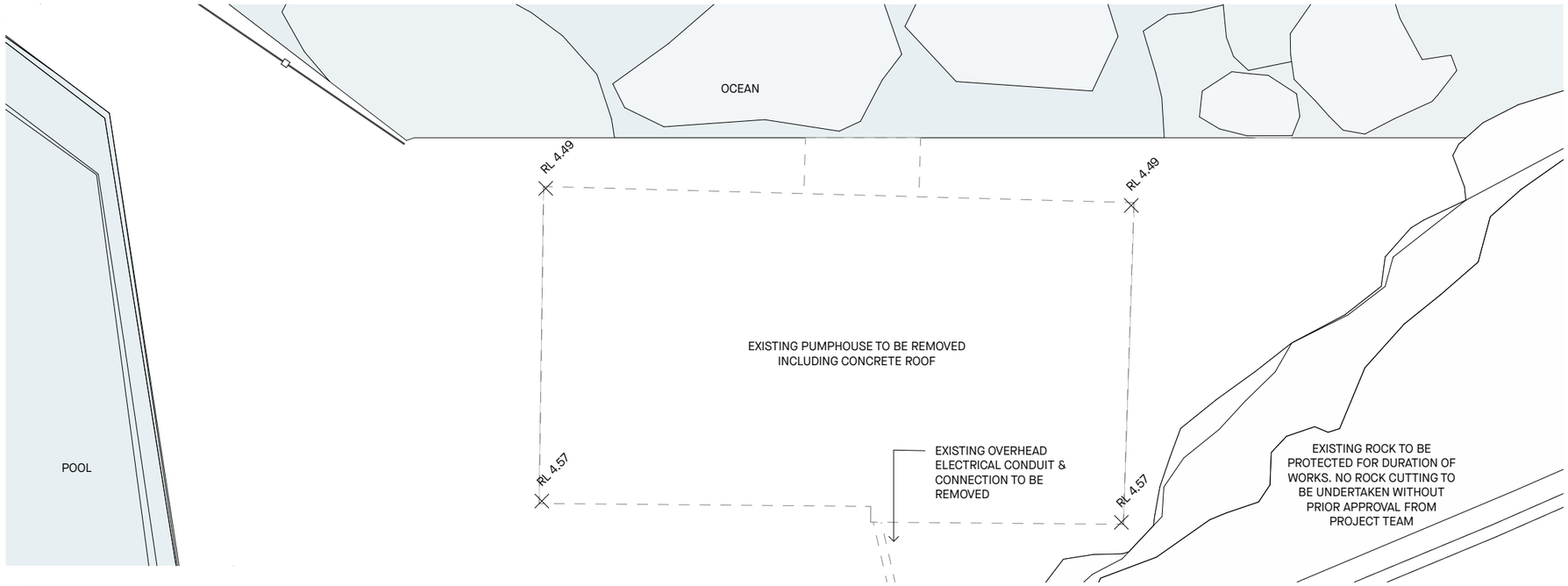
PROJECT NO.:
5658
PROJECT:
SOUTH BRONTE PUMP AND PUMPHOUSE RENEWAL
CLIENT:
WAVERLEY COUNCIL

DRAWING:
PUMPHOUSE EXISTING FLOOR & ROOF PLANS

DRAWING NO: CD-1100
ISSUE: P2



01 - PUMPHOUSE DEMOLITION FLOOR PLAN
1:50 @ A3 / 1:25 @ A1



02 - PUMPHOUSE DEMOLITION ROOF PLAN
1:50 @ A3 / 1:25 @ A1

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0 0.5 1M @ A3

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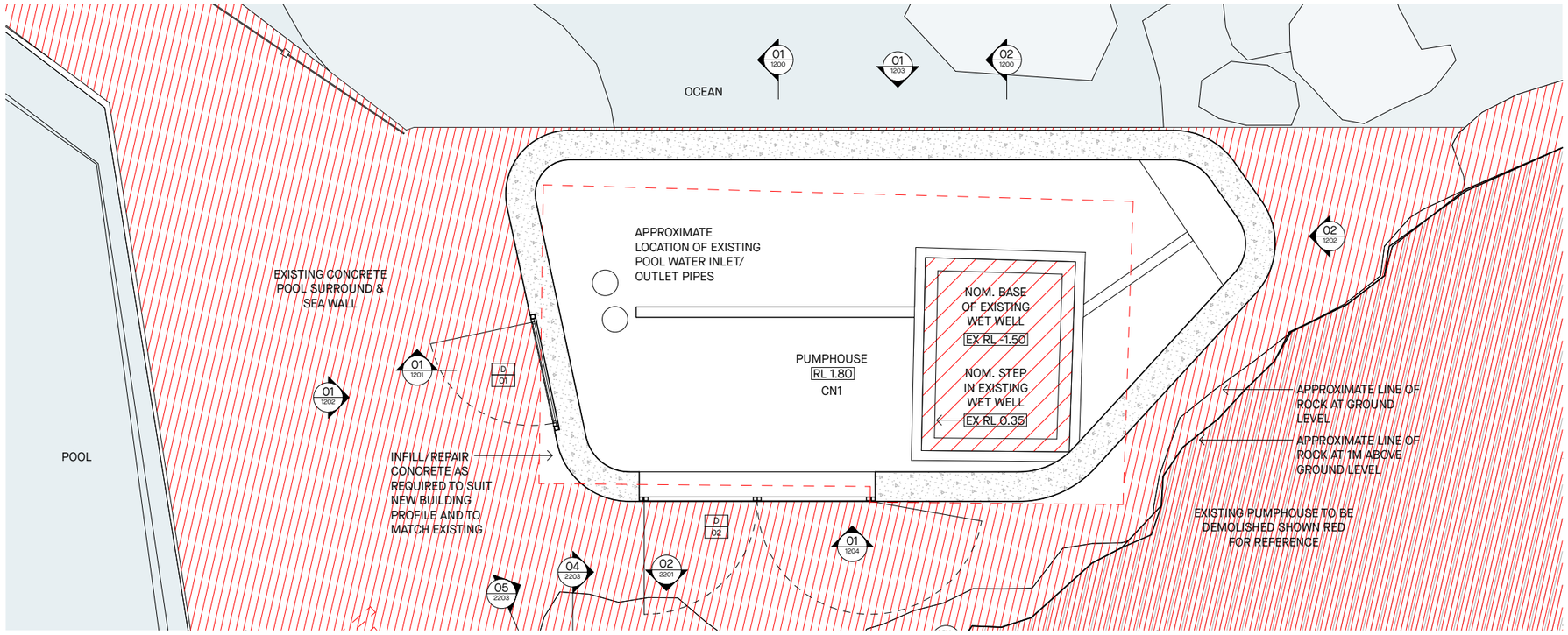
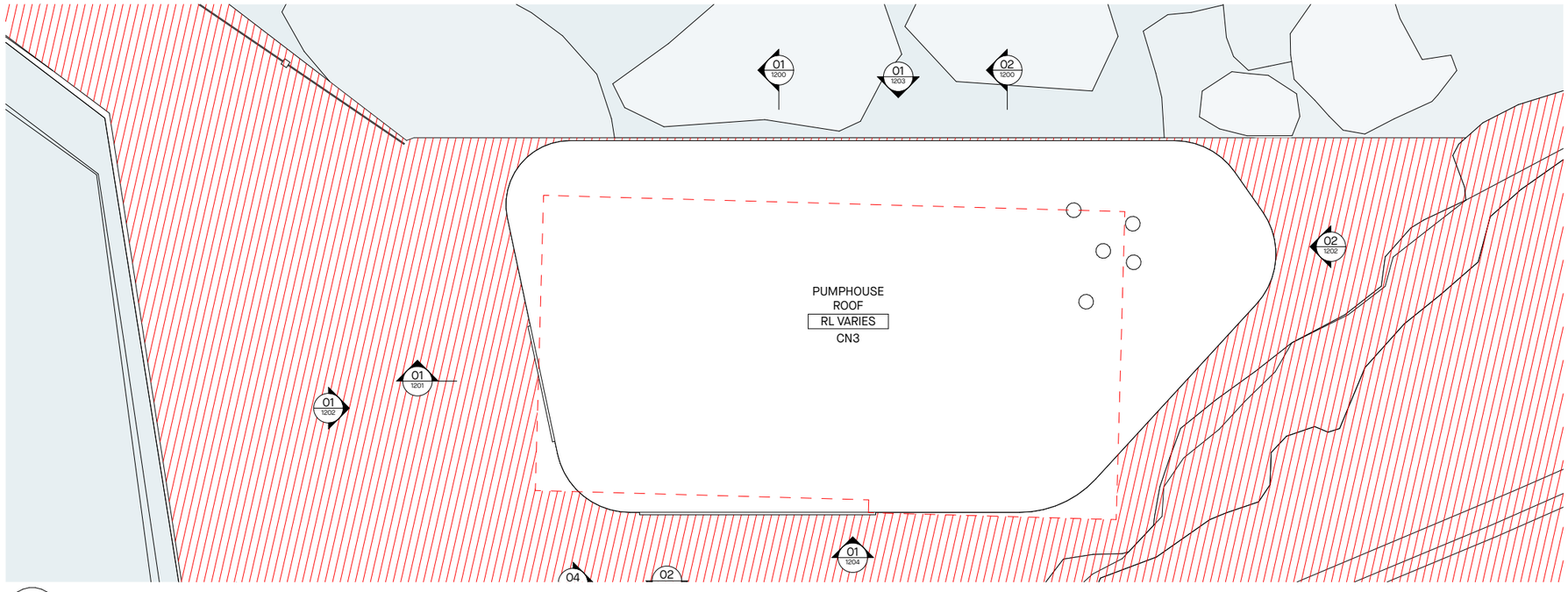
CLIENT:
WAVERLEY COUNCIL

DRAWING:
PUMPHOUSE DEMOLITION FLOOR & ROOF PLANS

DRAWING NO: CD-1101
ISSUE: P2



01 / - PUMPHOUSE FLOOR PLAN
1:50 @ A3 / 1:25 @ A1



02 / - PUMPHOUSE ROOF PLAN
1:50 @ A3 / 1:25 @ A1

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0 0.5 1M @ A3

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PROJECT:
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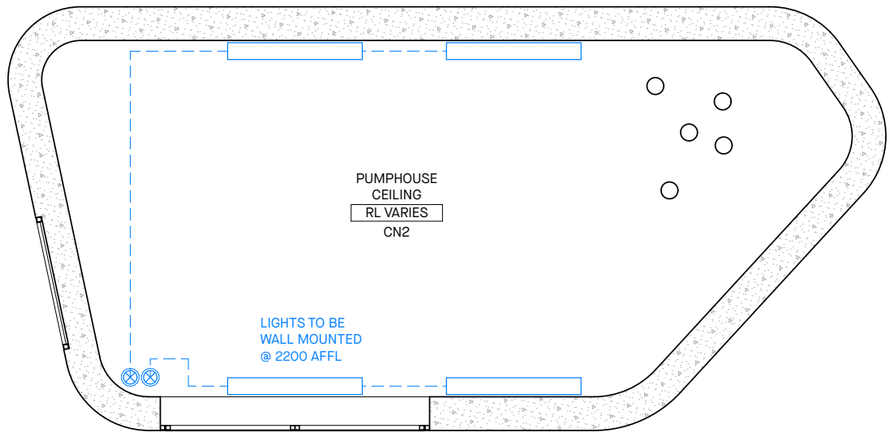
CLIENT:
WAVERLEY COUNCIL

DRAWING:
PUMPHOUSE FLOOR & ROOF PLANS

DRAWING NO: CD-1102
ISSUE: P2



01
-
PUMPHOUSE REFLECTED CEILING PLAN
1:50 @ A3 / 1:25 @ A1

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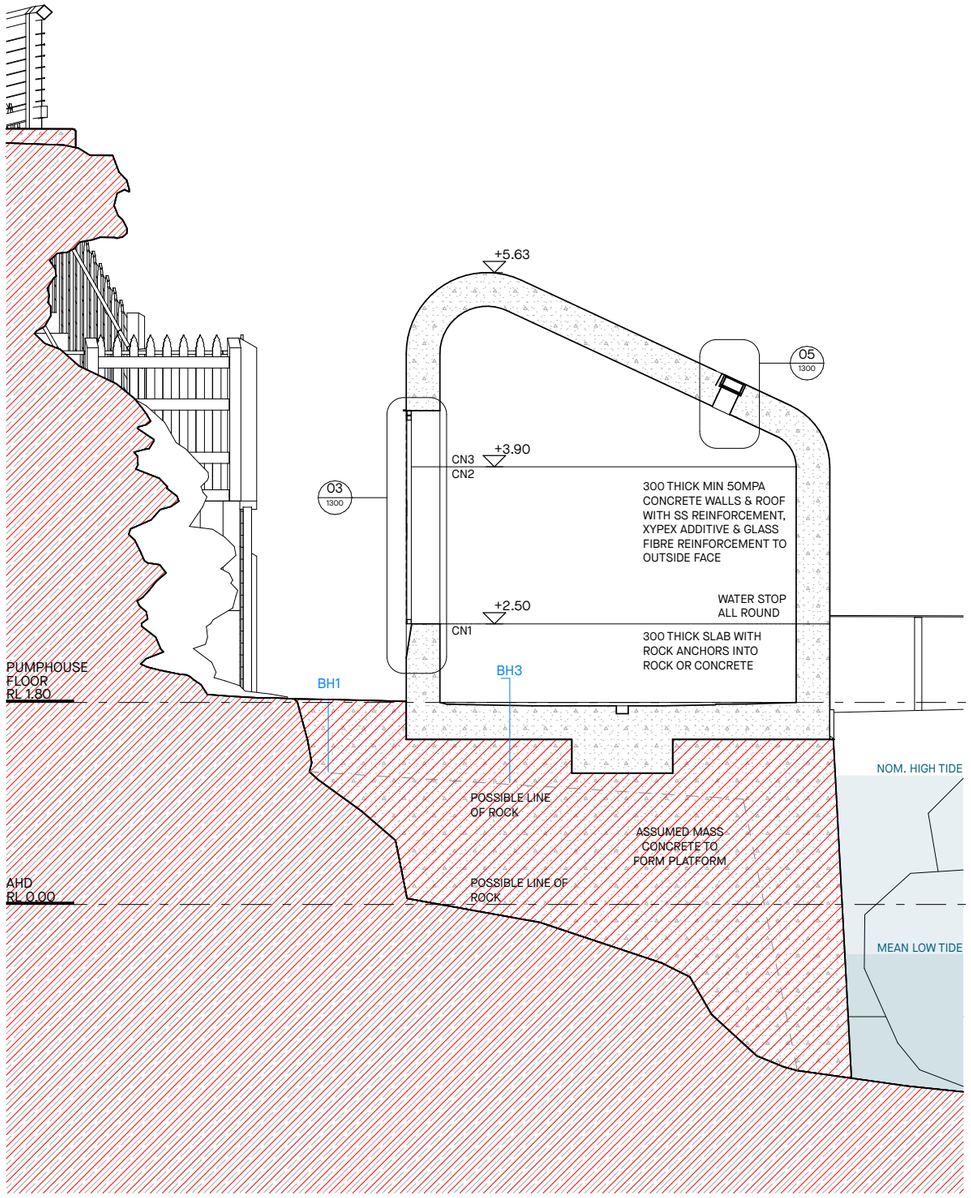
P2	07.02.24	DRAFT FOR REF	TM	AP

0 0.5 1M @ A3

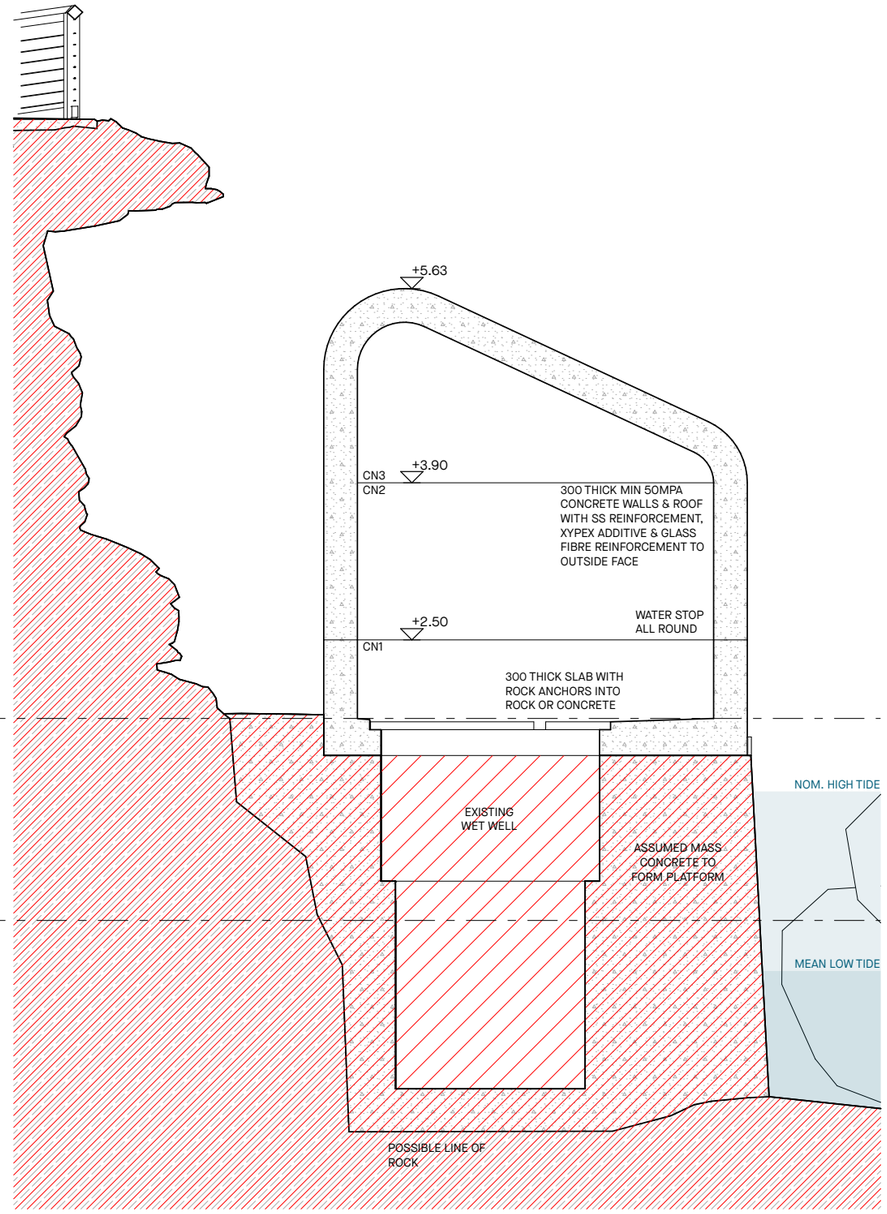
PROJECT NO.:
5658
PROJECT:
SOUTH BRONTE PUMP AND
PUMPHOUSE RENEWAL
CLIENT:
WAVERLEY COUNCIL

DRAWING:
PUMPHOUSE REFLECTED CEILING
PLAN

DRAWING NO: CD-1103
ISSUE: P2



01 - PUMPHOUSE CROSS SECTION
1:50 @ A3 / 1:25 @ A1



02 - PUMPHOUSE CROSS SECTION
1:50 @ A3 / 1:25 @ A1

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0 0.5 1M @ A3

PROJECT NO.:
5658

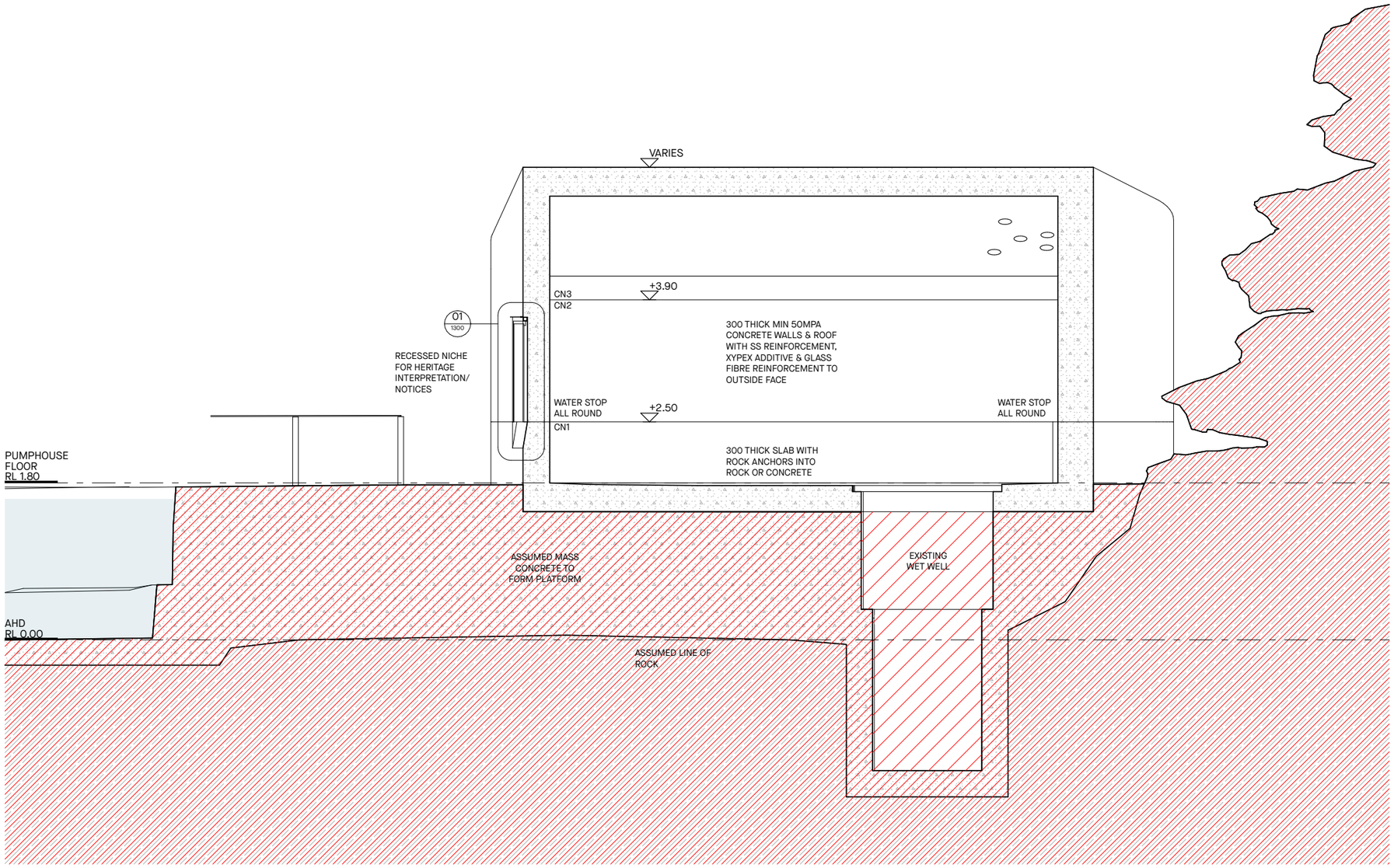
PROJECT:
SOUTH BRONTE PUMP AND PUMPHOUSE RENEWAL

CLIENT:
WAVERLEY COUNCIL

DRAWING:
PUMPHOUSE SECTIONS

DRAWING NO: CD-1200

ISSUE: P2



01
-

PUMPHOUSE LONG SECTION
1:50 @ A3 / 1:25 @ A1

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0 0.5 1M @ A3

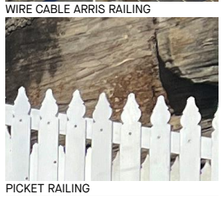
PROJECT NO.:
5658
PROJECT:
SOUTH BRONTE PUMP AND
PUMPHOUSE RENEWAL
CLIENT:
WAVERLEY COUNCIL

DRAWING:
PUMPHOUSE SECTIONS

DRAWING NO: CD-1201
ISSUE: P2

MATERIALS SCHEDULE


WIRE CABLE ARRIS RAILING


PICKET RAILING

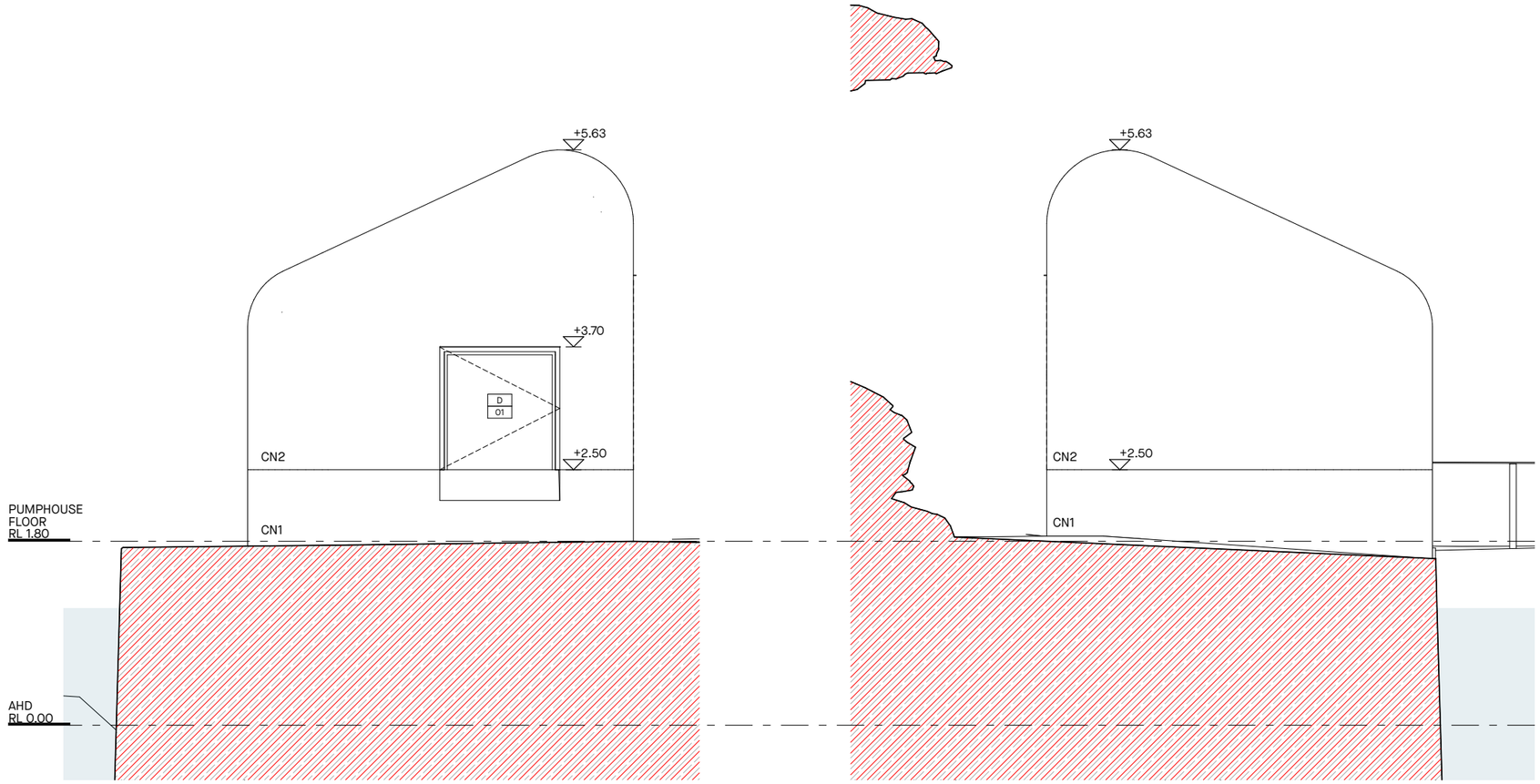

SS - STAINLESS STEEL


CN3 - PAINTED INTERIOR TO CN2


CN2 - SAND OXIDE CONCRETE


CN1 - GREY CONCRETE


CNX - EXISTING CONCRETE PAVEMENT



01 - NORTH ELEVATION
1:50 @ A3 / 1:25 @ A1

02 - SOUTH ELEVATION
1:50 @ A3 / 1:25 @ A1

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0 0.5 1M @ A3

PROJECT NO.:
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PROJECT:
SOUTH BRONTE PUMP AND PUMPHOUSE RENEWAL
CLIENT:
WAVERLEY COUNCIL

DRAWING:
PUMPHOUSE ELEVATIONS

DRAWING NO: CD-1202
ISSUE: P2

PANOV—
SCOTT

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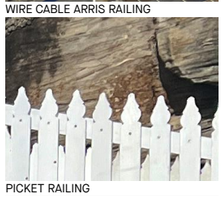
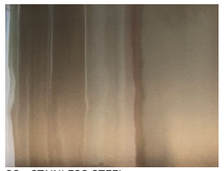
MATERIALS SCHEDULE


WIRE CABLE ARRIS RAILING


PICKET RAILING

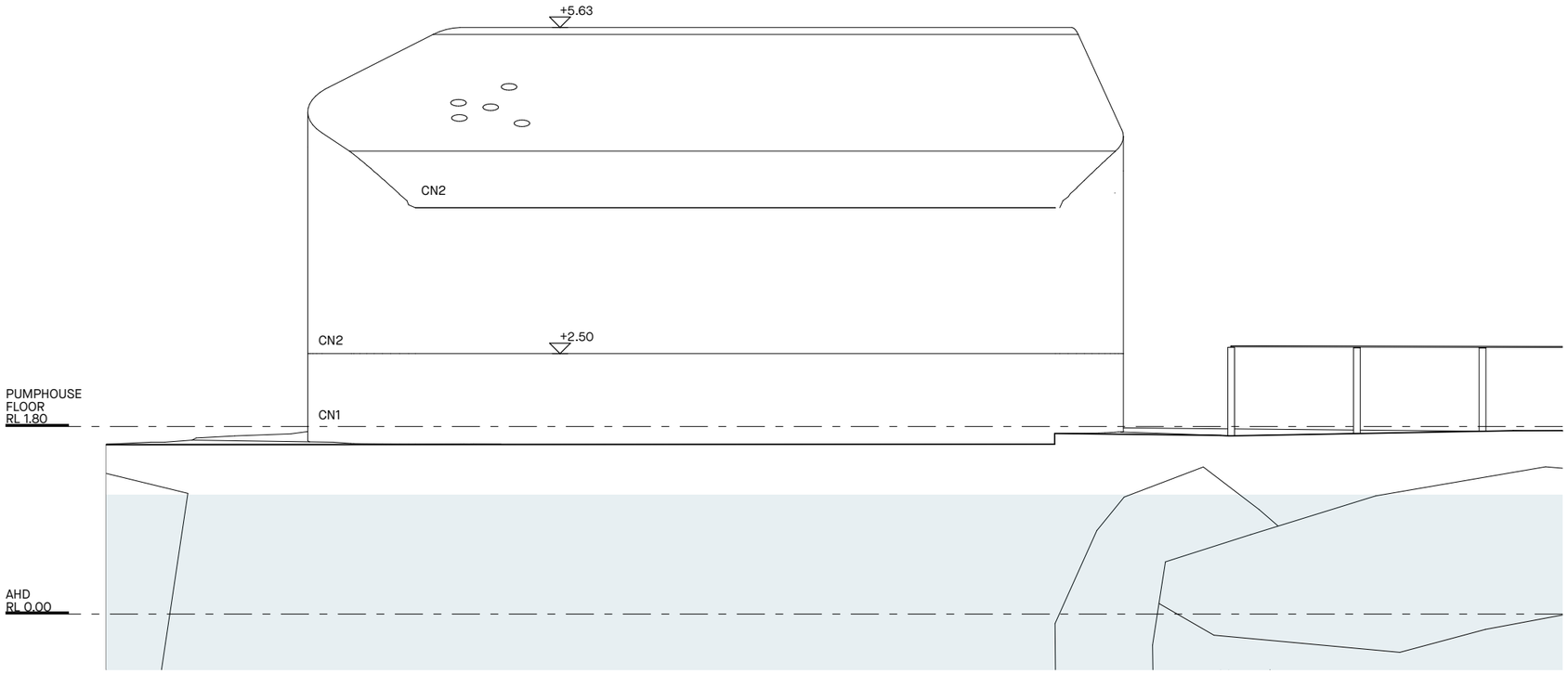

SS - STAINLESS STEEL


CN3 - PAINTED INTERIOR TO CN2


CN2 - SAND OXIDE CONCRETE


CN1 - GREY CONCRETE


CNX - EXISTING CONCRETE PAVEMENT



01 — EAST ELEVATION
1:50 @ A3 / 1:25 @ A1

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0 0.5 1M @ A3

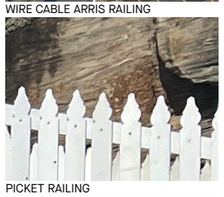
PROJECT NO.:
5658
PROJECT:
SOUTH BRONTE PUMP AND PUMPHOUSE RENEWAL
CLIENT:
WAVERLEY COUNCIL

DRAWING:
PUMPHOUSE ELEVATION

DRAWING NO: CD-1203
ISSUE: P2

MATERIALS SCHEDULE


WIRE CABLE ARRIS RAILING


PICKET RAILING

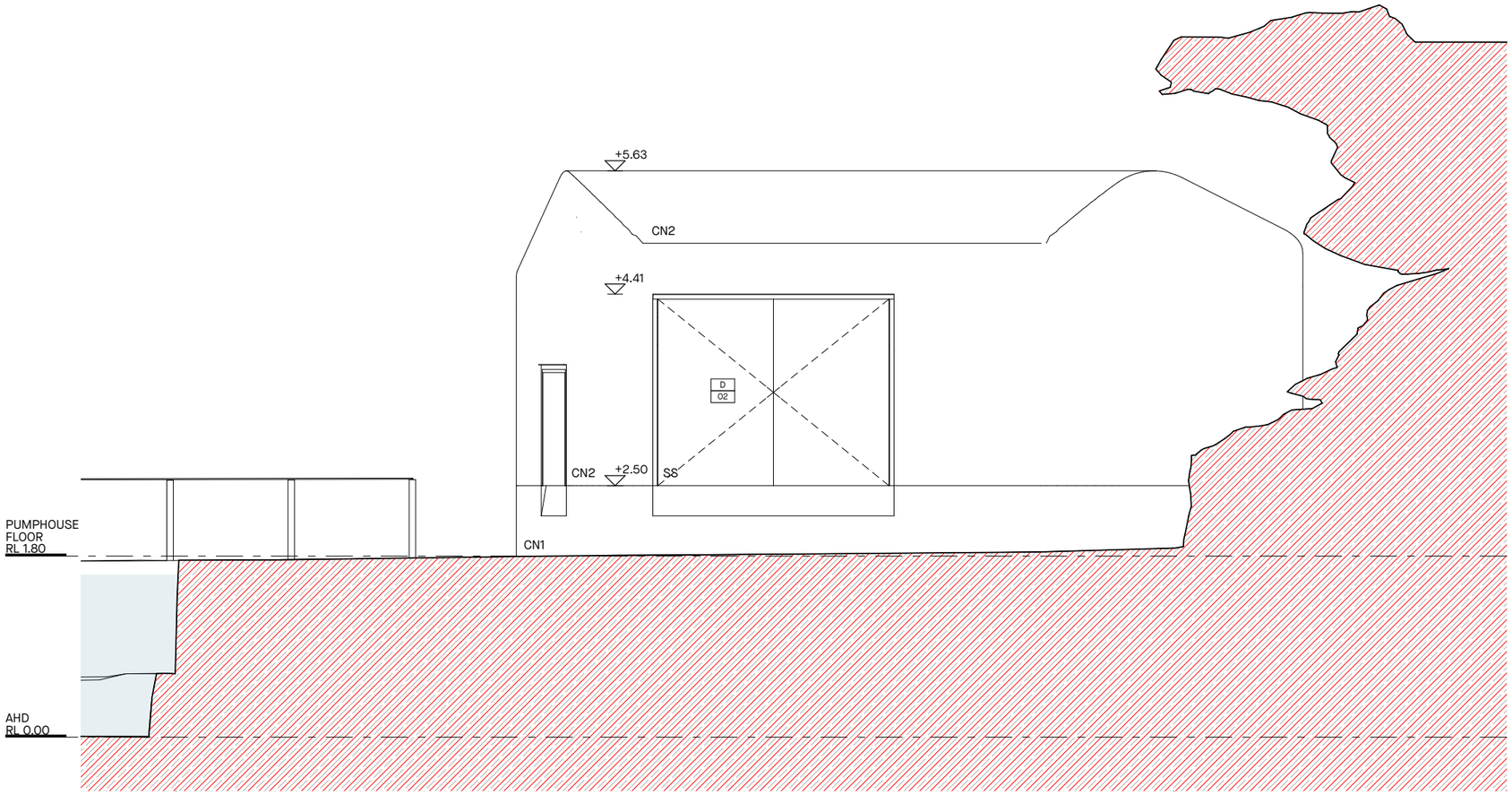

SS - STAINLESS STEEL


CN3 - PAINTED INTERIOR TO CN2


CN2 - SAND OXIDE CONCRETE


CN1 - GREY CONCRETE


CNX - EXISTING CONCRETE PAVEMENT



01
-
WEST ELEVATION
1:50 @ A3 / 1:25 @ A1

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SCOTT

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0 0.5 1M @ A3

PROJECT NO.:
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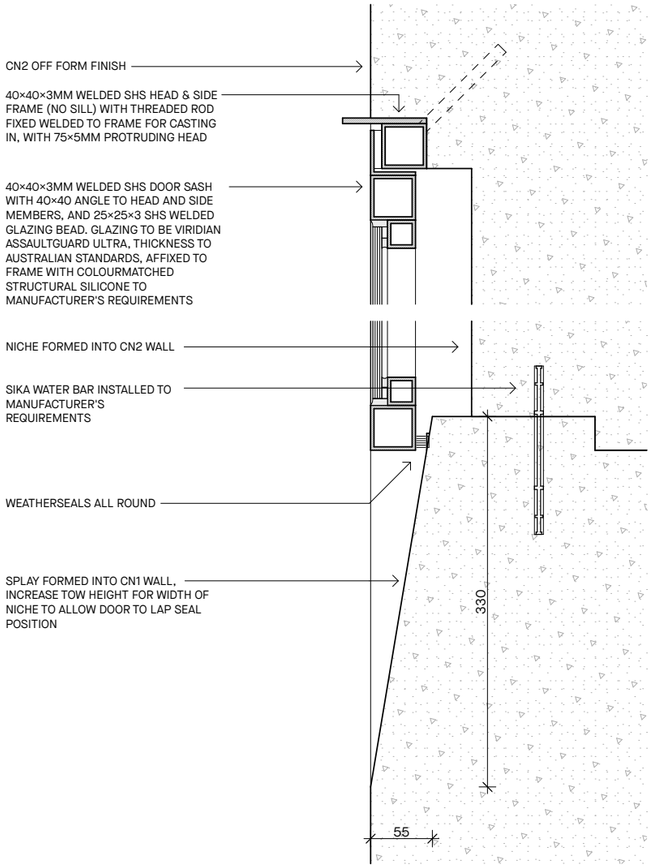
SOUTH BRONTE PUMP AND
PUMPHOUSE RENEWAL
CLIENT:
WAVERLEY COUNCIL

DRAWING:
PUMPHOUSE ELEVATION

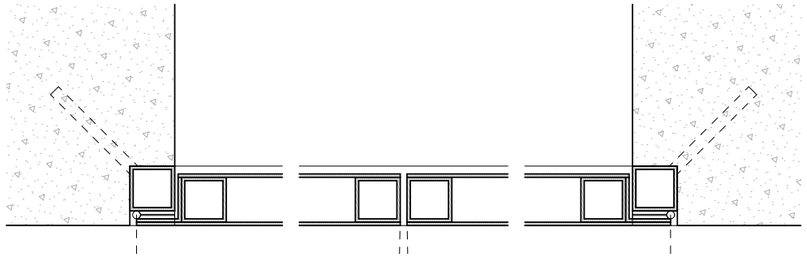
DRAWING NO: CD-1204
ISSUE: P2



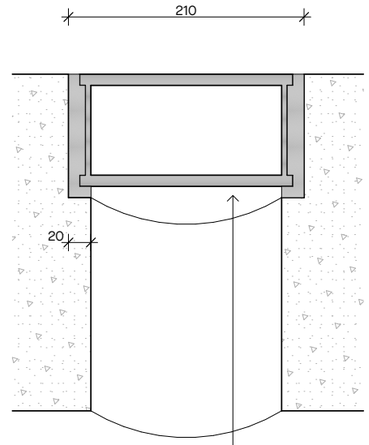
01 - D01 SECTION DETAIL
1:5 @ A3 / 1:2.5 @ A1

03 - D02 SECTION DETAIL
1:5 @ A3 / 1:2.5 @ A1

02 - D01 PLAN DETAIL
1:5 @ A3 / 1:2.5 @ A1



04 - D02 PLAN DETAIL
1:5 @ A3 / 1:2.5 @ A1



05 - ROOFLIGHT SECTION DETAIL
1:5 @ A3 / 1:2.5 @ A1

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0 0.05 0.1M @ A3

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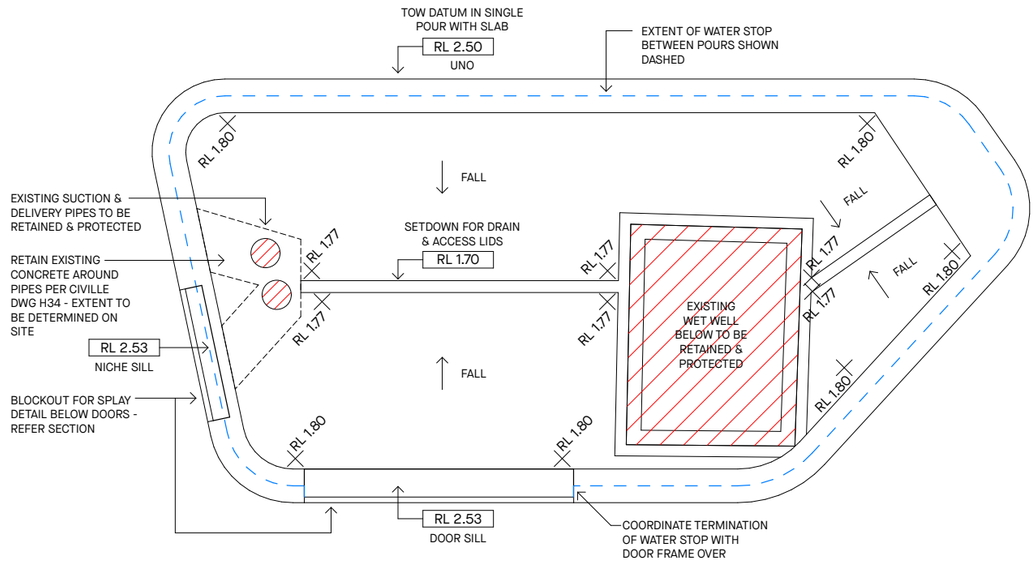
SOUTH BRONTE PUMP AND PUMPHOUSE RENEWAL
CLIENT:
WAVERLEY COUNCIL

DRAWING:
PUMPHOUSE DETAILS

DRAWING NO: CD-1300
ISSUE: P2



01 - CONCRETE SETOUT PLAN - PUMPHOUSE
1:50 @ A3 / 1:25 @ A1

CONCRETE NOTES

NO CHAMFERS OR FILLETS TO ANY CONCRETE. FORM/POUR CONCRETE WITH SQUARE CORNERS. ONCE CURED GRIND 3MM ARISE TO FINISH CORNERS

USE NEW FORMWORK FOR SURFACES TO REMAIN EXPOSED. 45 DEGREE MITRE VERTICAL FORMWORK SO THAT END GRAIN IS NOT VISIBLE IN CONCRETE ON COMPLETION. CONFIRM FORMWORK JOINT LOCATIONS AND MINIMISE USE OF FORMWORK TIES IN VERTICAL SURFACES.

MECHANICALLY VIBRATE ADEQUATELY. DO NOT USE RELEASE AGENT. LEAVE FORMWORK IN PLACE FOR A MINIMUM OF 7 DAYS PRIOR TO STRIPPING CAREFULLY BY HAND. DO NOT PATCH CONCRETE

REFER TO SECTIONS AND DETAILS FOR SETDOWNS, BLOCKOUTS, AND HEIGHTS. REFER TO PLANS & CONFIRM LOCATIONS OF SETDOWNS, UPSTANDS AND SERVICES PENETRATIONS WITH ARCHITECT PRIOR TO POURING

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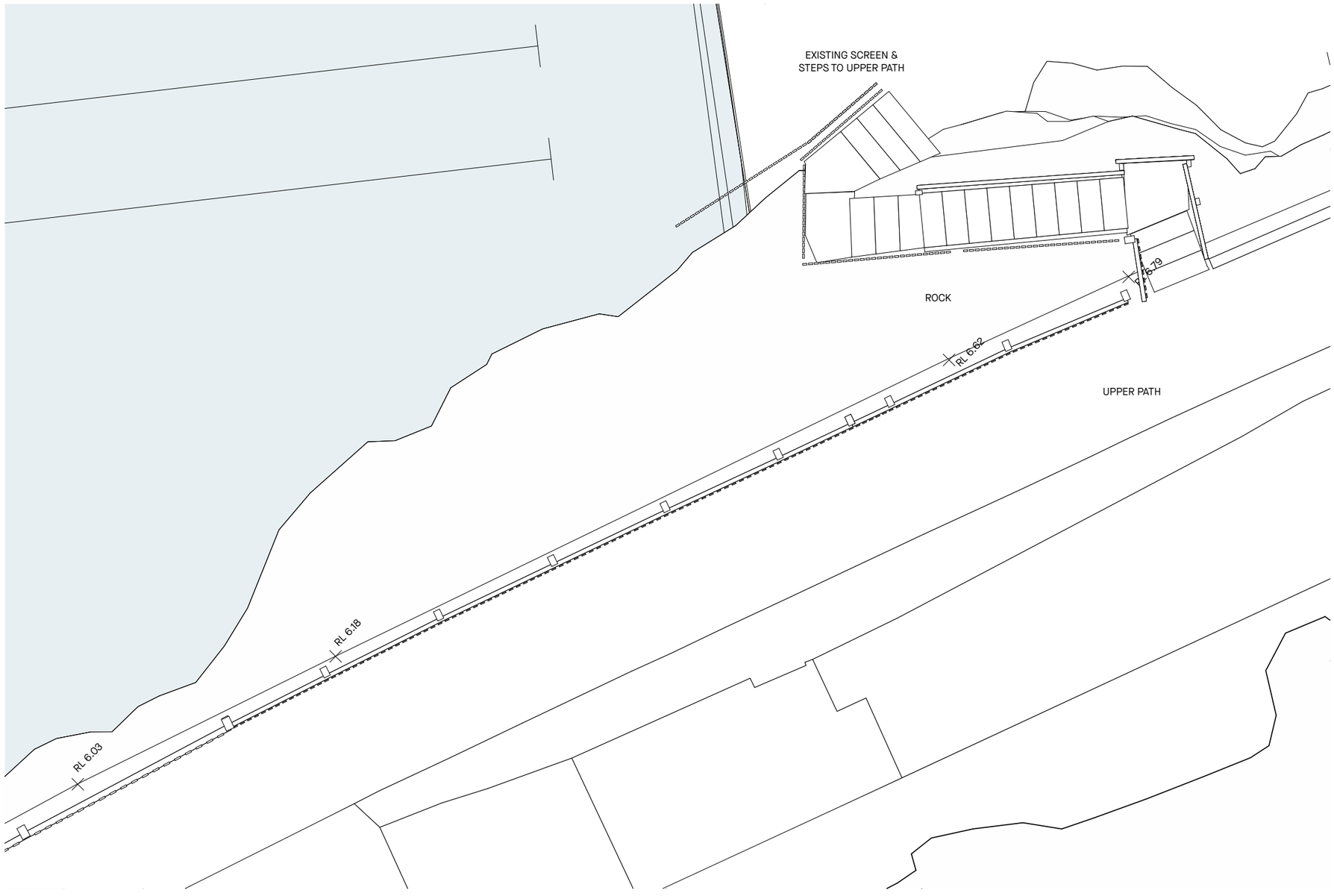
RV	DATE	ISSUE	BY	APP
P1	31.07.24	50% DD REVIEW	TM	AP
P2	07.02.24	DRAFT FOR REF	TM	AP

0 0.5 1M @ A3

PROJECT NO.:
5658
PROJECT:
SOUTH BRONTE PUMP AND PUMPHOUSE RENEWAL
CLIENT:
WAVERLEY COUNCIL

DRAWING:
CONCRETE SETOUT PLAN

DRAWING NO: CD-1600
ISSUE: P2



1
-
STAIR & UPPER PATH EXISTING FLOOR PLAN
1:50 @ A3 / 1:25 @ A1

PANOV—
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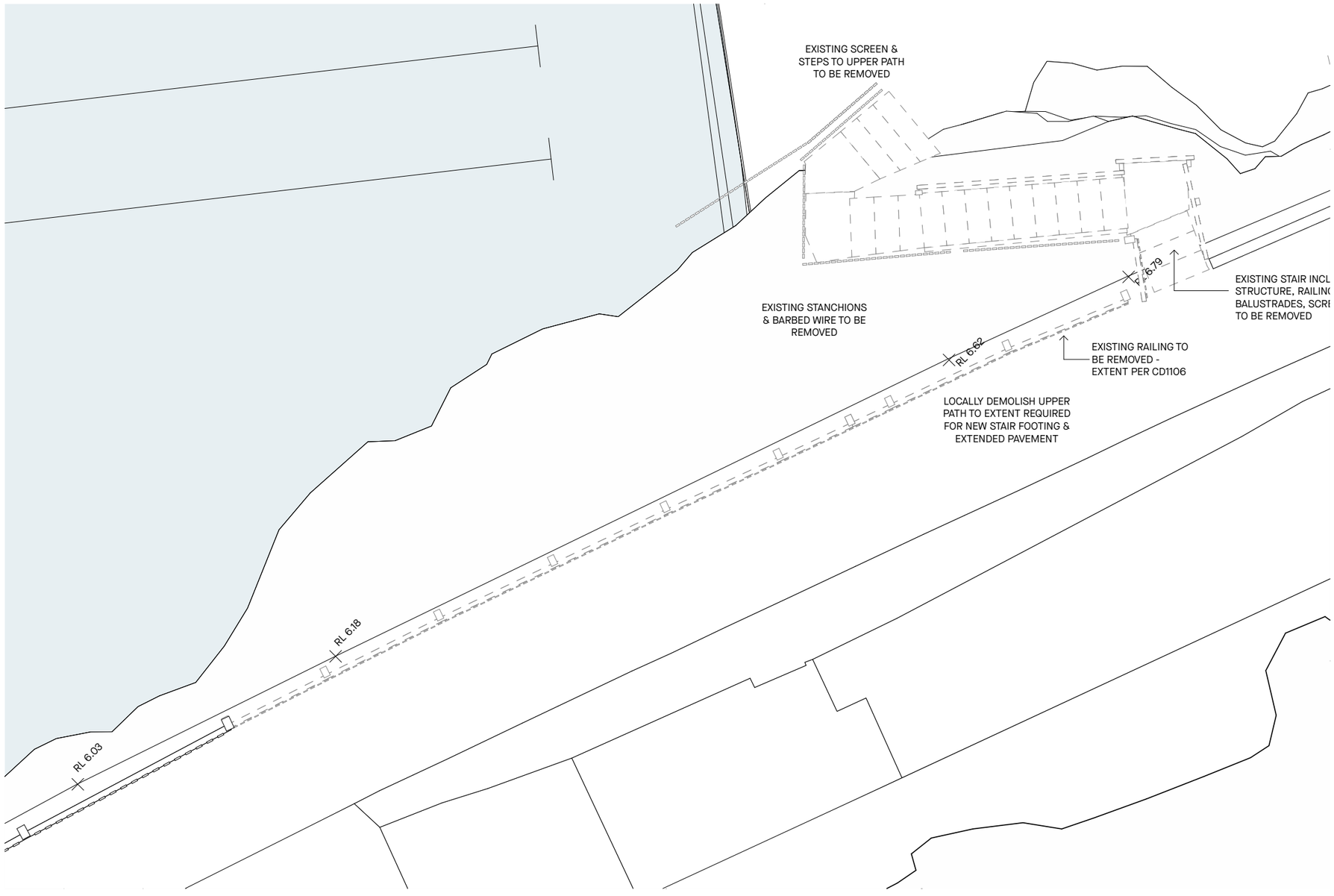
0 0.5 1M @ A3

PROJECT NO.:
5658
PROJECT:
SOUTH BRONTE PUMP AND
PUMPHOUSE RENEWAL
CLIENT:
WAVERLEY COUNCIL

DRAWING:
STAIR & UPPER PATH EXISTING FLOOR
PLAN

DRAWING NO: CD-2100
ISSUE: P2



1 / - STAIR & UPPER PATH DEMOLITION PLAN
1:50 @ A3 / 1:25 @ A1

PANOV—
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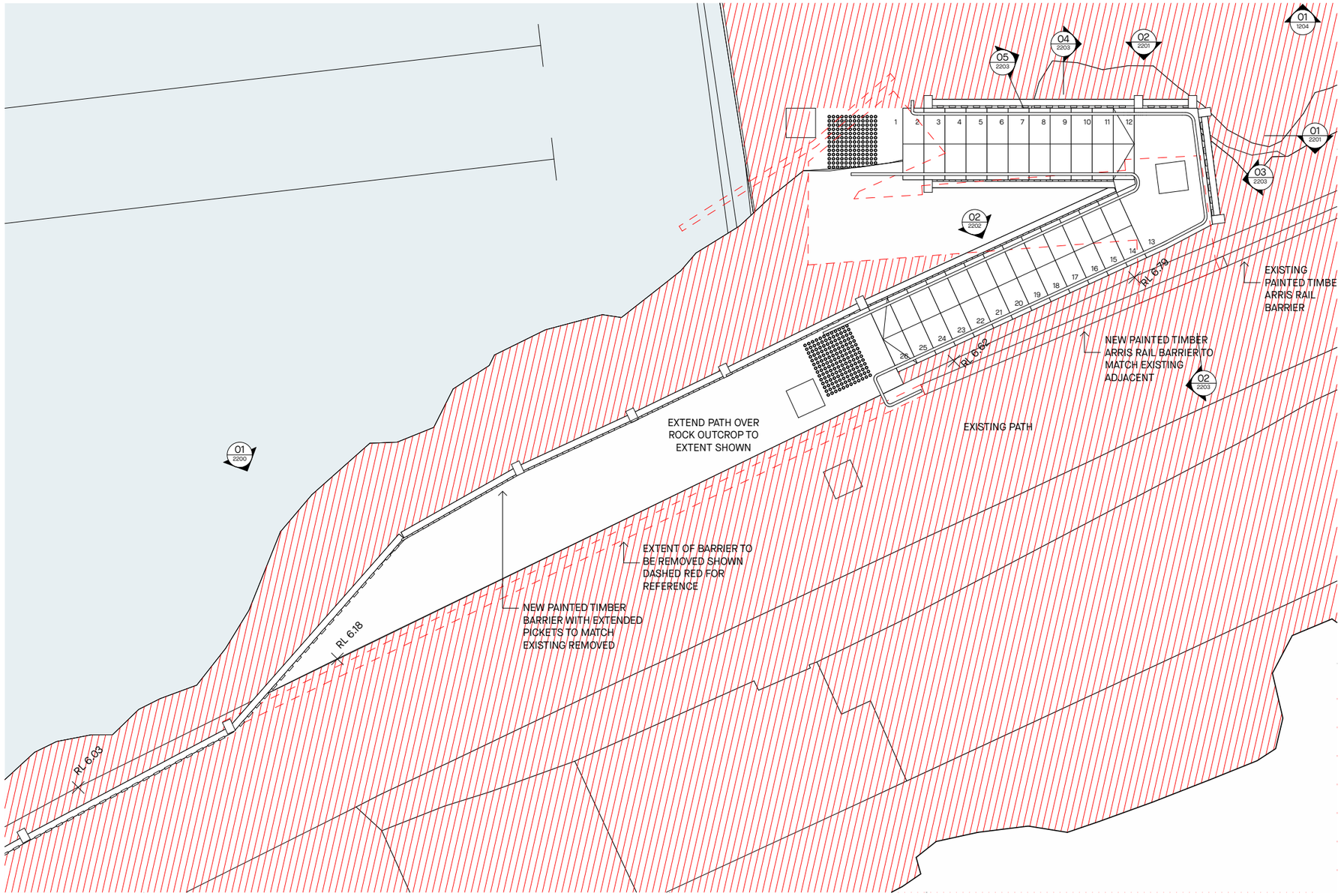
P1	31.07.24	50% DD REVIEW	TM	AP
P2	07.02.24	DRAFT FOR REF	TM	AP

0 0.5 1M @ A3

PROJECT NO.:
5658
PROJECT:
SOUTH BRONTE PUMP AND
PUMPHOUSE RENEWAL
CLIENT:
WAVERLEY COUNCIL

DRAWING:
STAIR & UPPER PATH DEMOLITION
FLOOR PLAN

DRAWING NO: CD-2101
ISSUE: P2



1
-

STAIR & UPPER PATH FLOOR PLAN

1:50 @ A3 / 1:25 @ A1

PANOV—
SCOTT

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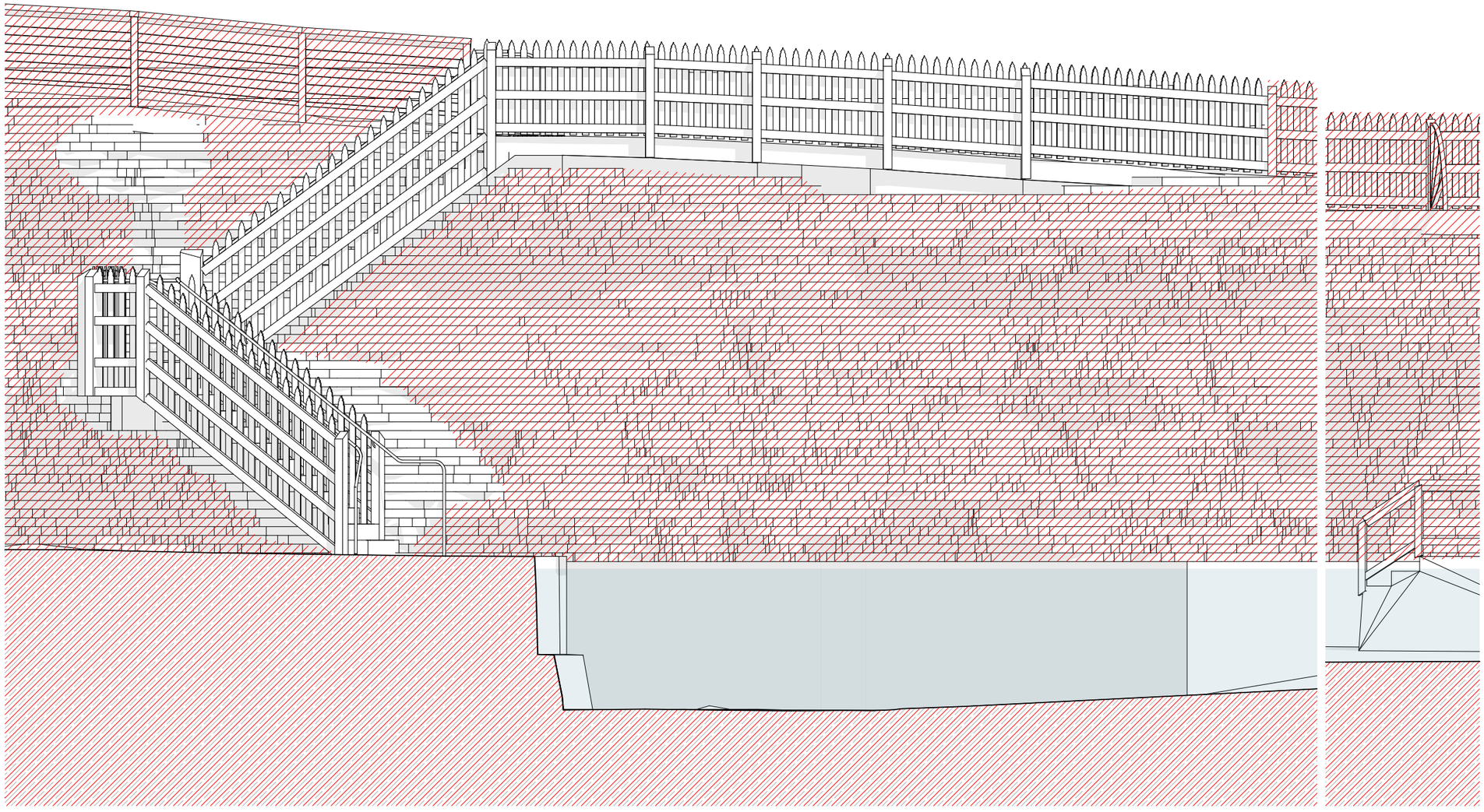
RV	DATE	ISSUE	BY	APP
P1	31.07.24	50% DD REVIEW	TM	AP
P2	07.02.24	DRAFT FOR REF	TM	AP

0 0.5 1M @ A3

PROJECT NO.:
5658
PROJECT:
SOUTH BRONTE PUMP AND
PUMPHOUSE RENEWAL
CLIENT:
WAVERLEY COUNCIL

DRAWING:
STAIR & UPPER PATH FLOOR PLAN

DRAWING NO: CD-2102
ISSUE: P2



01
-
EAST ELEVATION - LONG STAIR & UPPER PATH
1:50 @ A3 / 1:25 @ A1

PANOV—
SCOTT

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P1	31.07.24	50% DD REVIEW	TM	AP
P2	07.02.24	DRAFT FOR REF	TM	AP

0 0.5 1M @ A3

PROJECT NO.:
5658
PROJECT:
SOUTH BRONTE PUMP AND PUMPHOUSE RENEWAL
CLIENT:
WAVERLEY COUNCIL

DRAWING:
STAIR SECTIONS

DRAWING NO: CD-2200
ISSUE: P2

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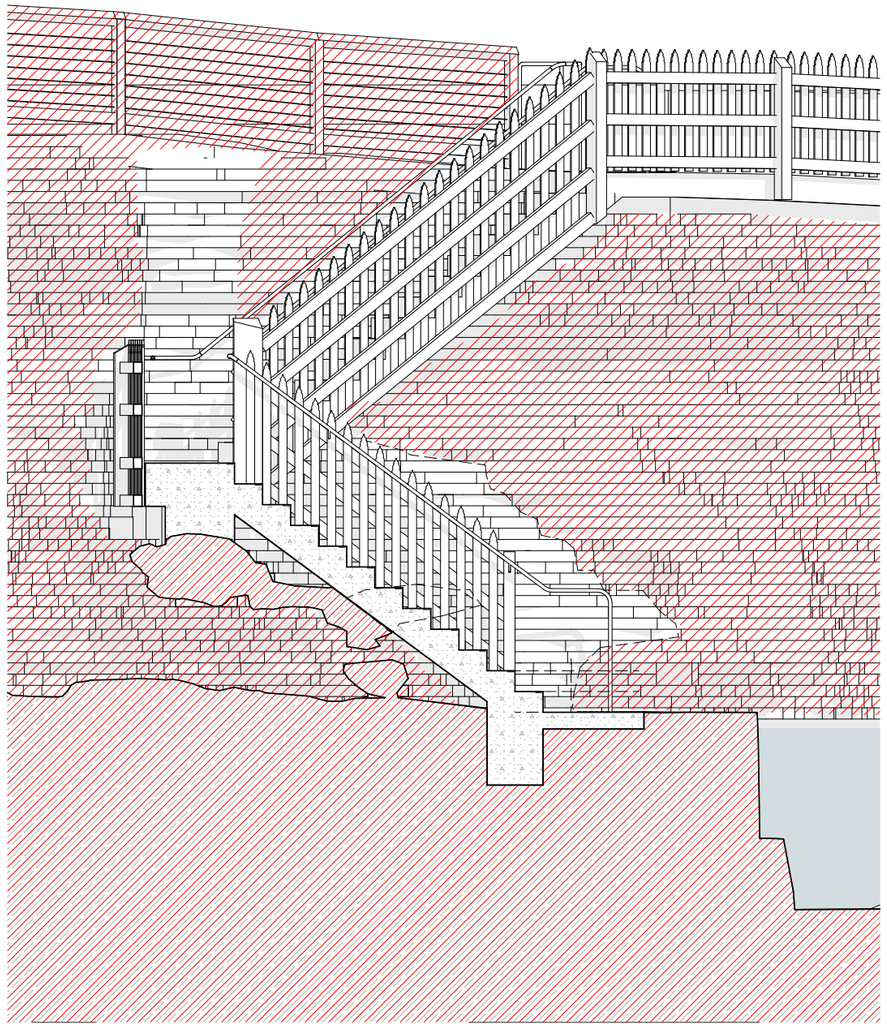
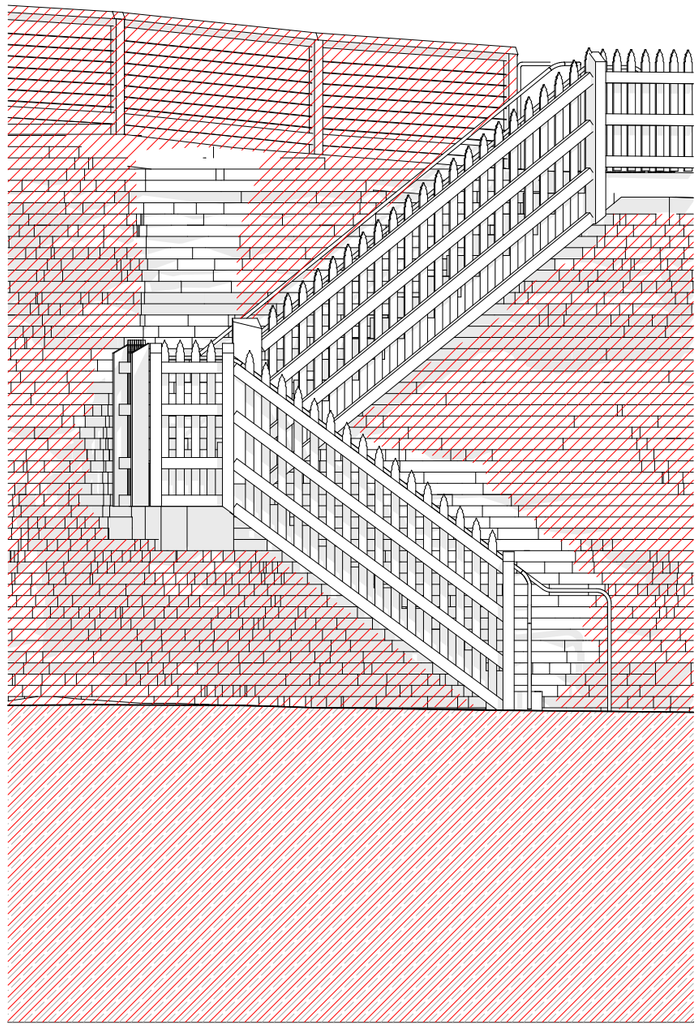


01 - LOWER STAIR FLIGHT LONG SECTION
1:50 @ A3 / 1:25 @ A1



02 - EASTERN ELEVATION - LOWER STAIR & UPPER PATH
1:50 @ A3 / 1:25 @ A1

PRELIMINARY - NOT FOR CONSTRUCTION

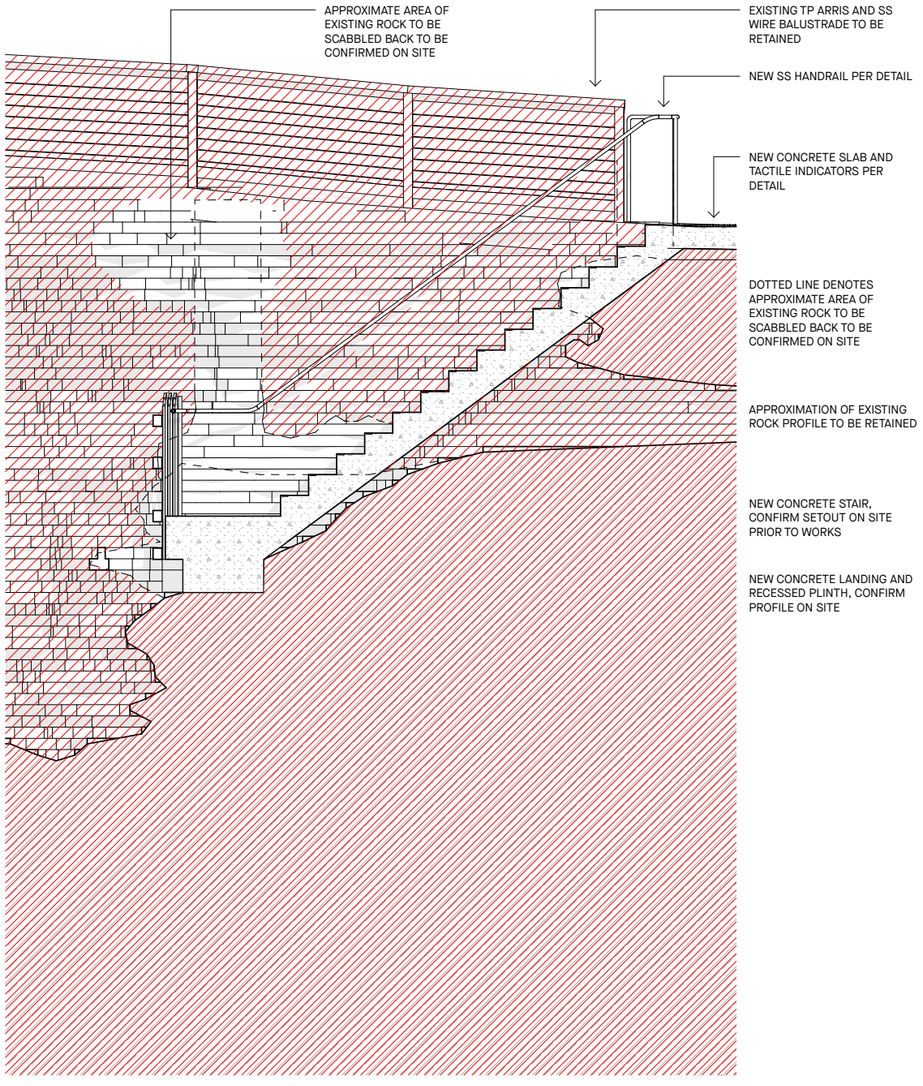
RV	DATE	ISSUE	BY	APP
P1	31.07.24	50% DD REVIEW	TM	AP
P2	07.02.24	DRAFT FOR REF	TM	AP

0 0.5 1M @ A3

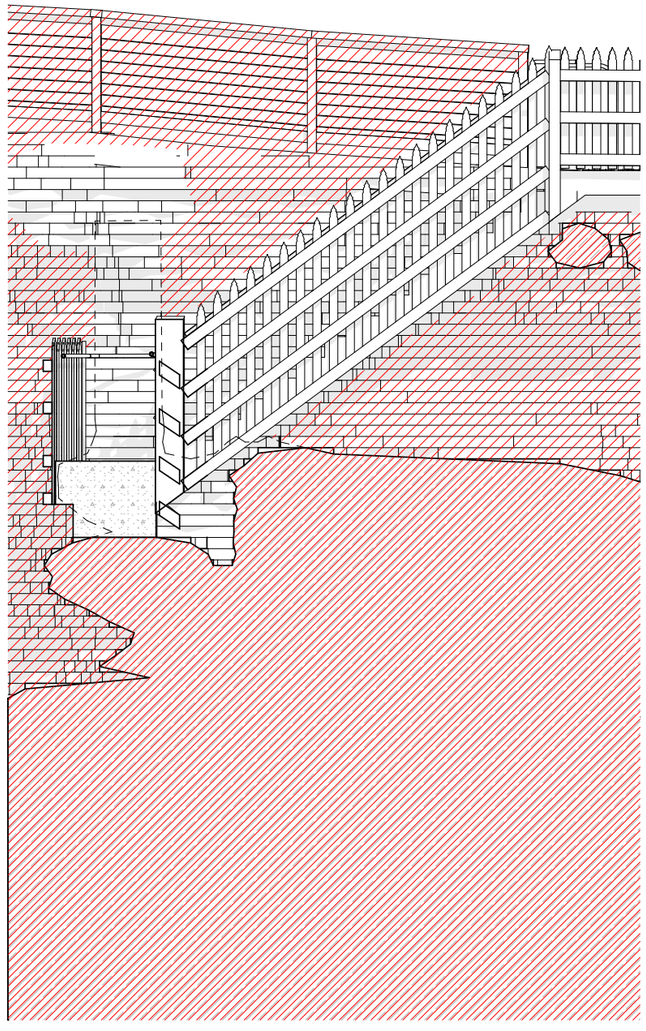
PROJECT NO.:
5658
PROJECT:
SOUTH BRONTE PUMP AND PUMPHOUSE RENEWAL
CLIENT:
WAVERLEY COUNCIL

DRAWING:
STAIR SECTIONS

DRAWING NO: CD-2201
ISSUE: P2



01 - UPPER STAIR FLIGHT LONG SECTION
1:50 @ A3 / 1:25 @ A1



02 - EASTERN ELEVATION - UPPER STAIR & UPPER PATH
1:50 @ A3 / 1:25 @ A1

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RV	DATE	ISSUE	BY	APP
P1	31.07.24	50% DD REVIEW	TM	AP
P2	07.02.24	DRAFT FOR REF	TM	AP

0 0.5 1M @ A3

PROJECT NO.:
5658
PROJECT:
SOUTH BRONTE PUMP AND PUMPHOUSE RENEWAL
CLIENT:
WAVERLEY COUNCIL

DRAWING:
STAIR SECTIONS

DRAWING NO: CD-2202
ISSUE: P2

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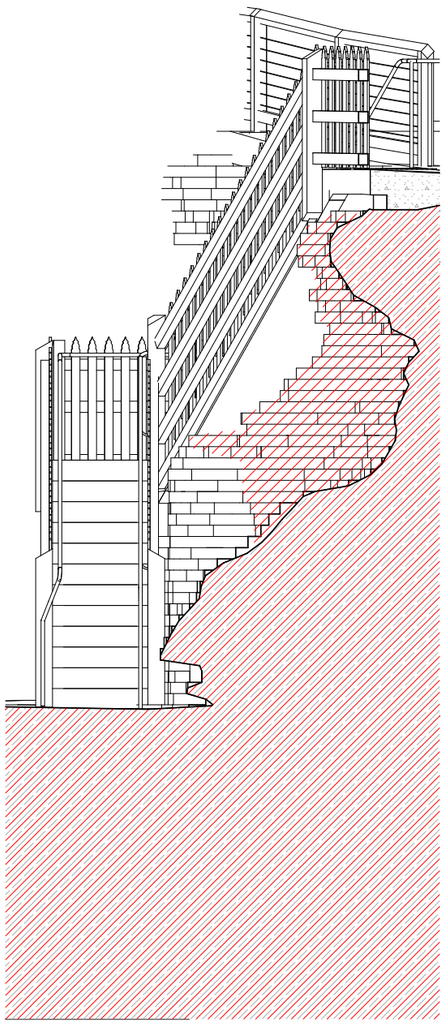
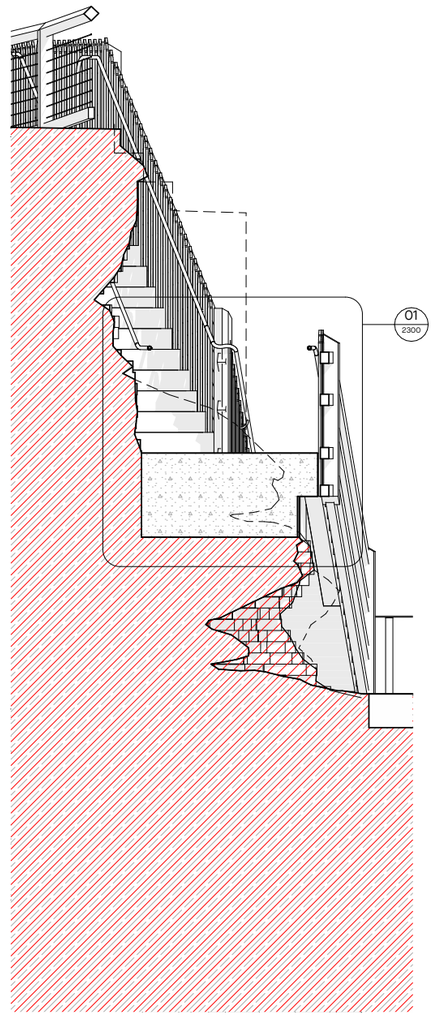
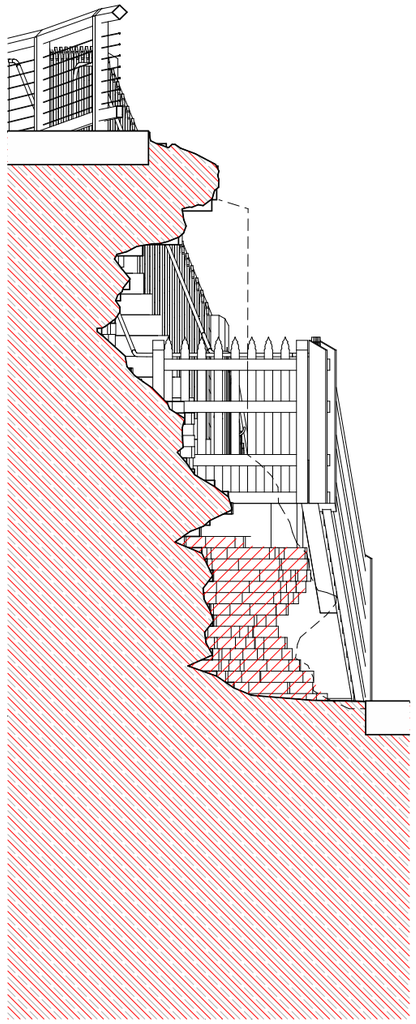


01 - NORTH ELEVATION
1:50 @ A3 / 1:25 @ A1



02 - STAIR CROSS SECTION - LANDING
1:50 @ A3 / 1:25 @ A1



03 - SOUTH ELEVATION - STAIR & UPPER PATH
1:50 @ A3 / 1:25 @ A1

PRELIMINARY - NOT FOR CONSTRUCTION

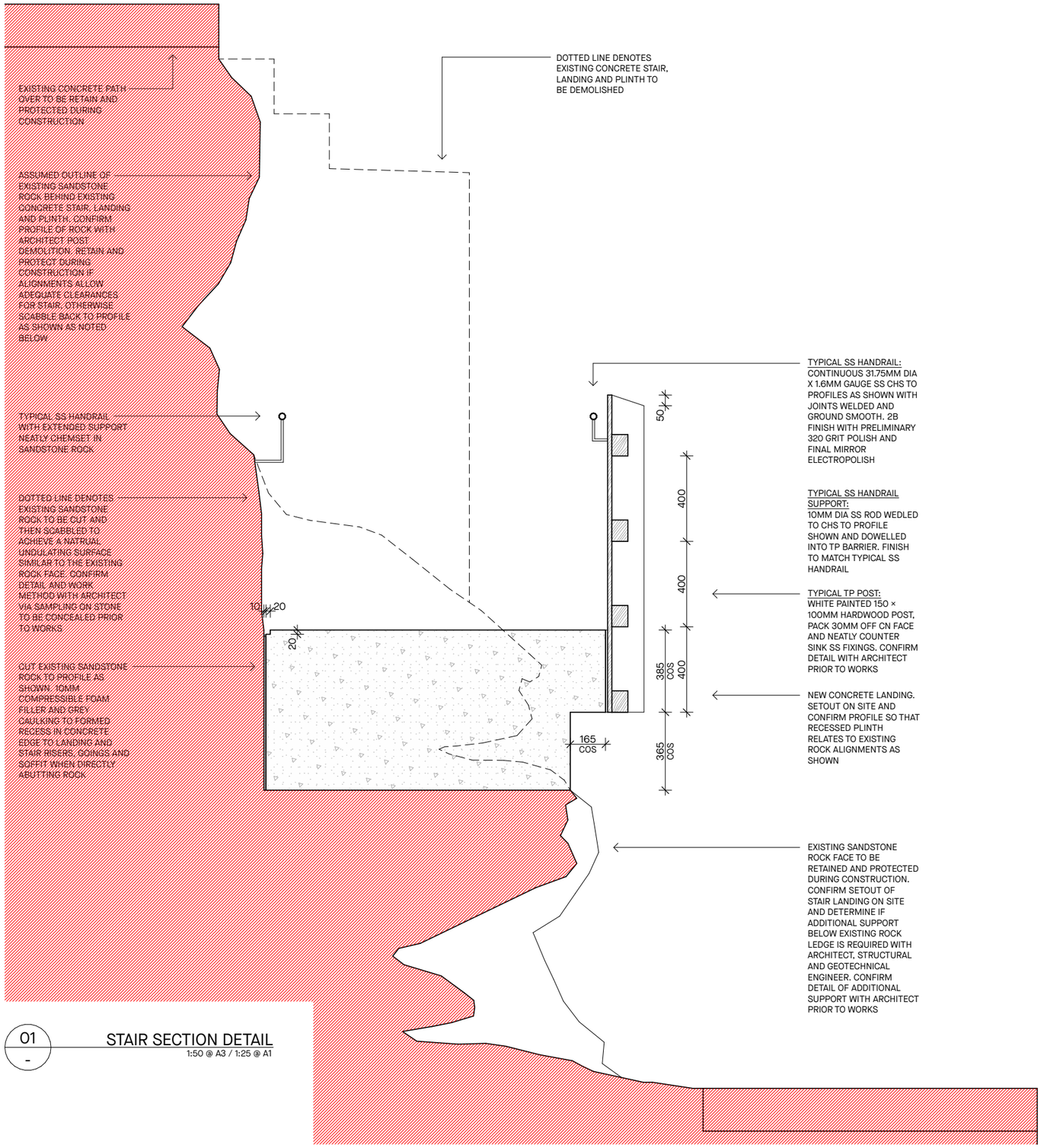
RV	DATE	ISSUE	BY	APP
P1	31.07.24	50% DD REVIEW	TM	AP
P2	07.02.24	DRAFT FOR REF	TM	AP

0 0.5 1M @ A3

PROJECT NO.:
5658
PROJECT:
SOUTH BRONTE PUMP AND PUMPHOUSE RENEWAL
CLIENT:
WAVERLEY COUNCIL

DRAWING:
STAIR ELEVATIONS

DRAWING NO: CD-2203
ISSUE: P2



01
-

STAIR SECTION DETAIL

1:50 @ A3 / 1:25 @ A1

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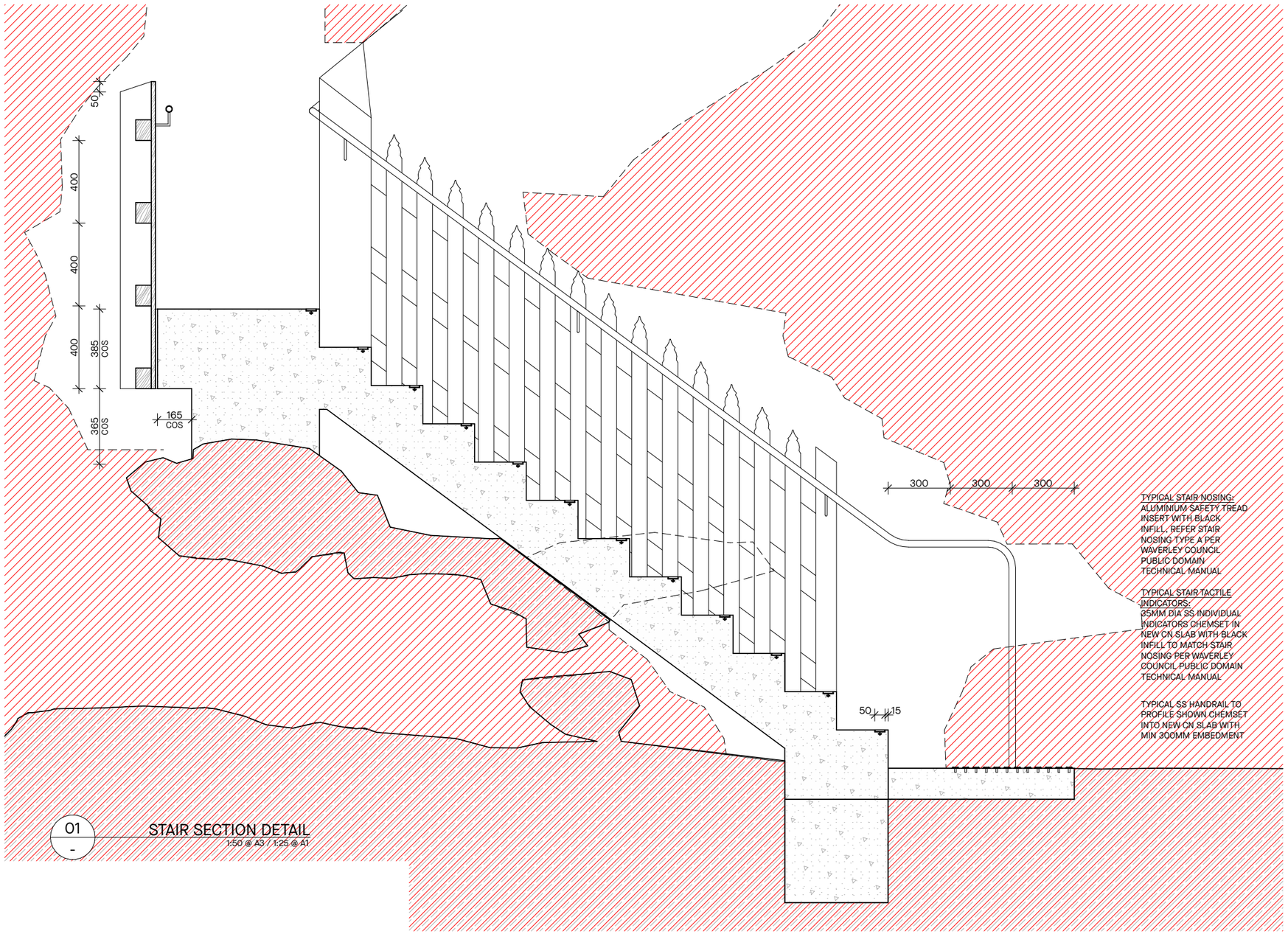
RV	DATE	ISSUE	BY	APP
P1	31.07.24	50% DD REVIEW	TM	AP
P2	07.02.24	DRAFT FOR REF	TM	AP

0 0.2 0.4M @ A3

PROJECT NO.:
5658
PROJECT:
SOUTH BRONTE PUMP AND PUMPHOUSE RENEWAL
CLIENT:
WAVERLEY COUNCIL

DRAWING:
STAIR DETAILS

DRAWING NO: CD-2300
ISSUE: P2



01
-
STAIR SECTION DETAIL
1:50 @ A3 / 1:25 @ A1

PANOV—
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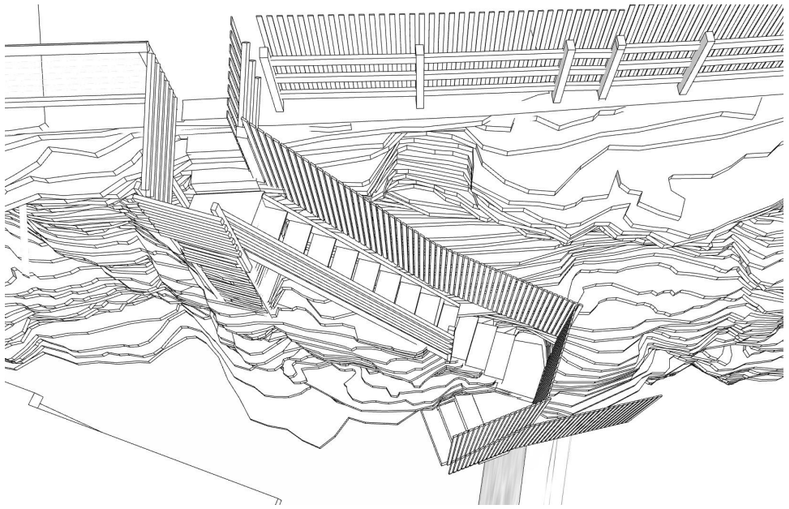
RV	DATE	ISSUE	BY	APP
P1	31.07.24	50% DD REVIEW	TM	AP
P2	07.02.24	DRAFT FOR REF	TM	AP

0 0.2 0.4M @ A3

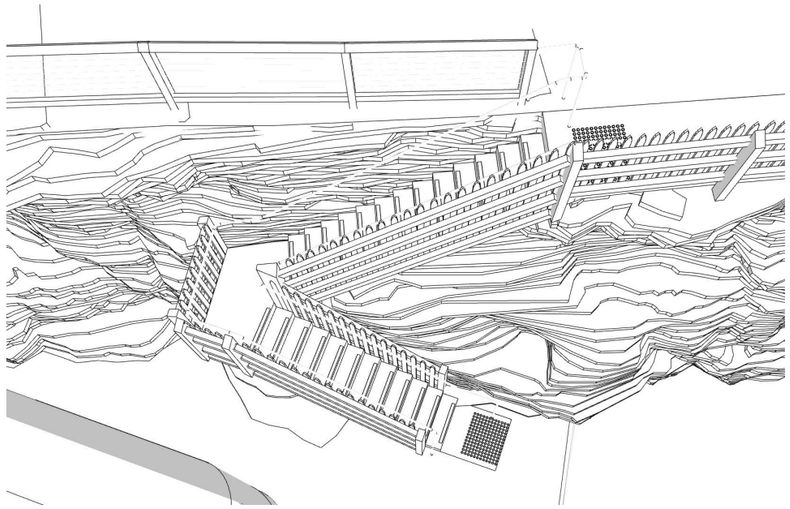
PROJECT NO.:
5658
PROJECT:
SOUTH BRONTE PUMP AND
PUMPHOUSE RENEWAL
CLIENT:
WAVERLEY COUNCIL

DRAWING:
STAIR DETAILS

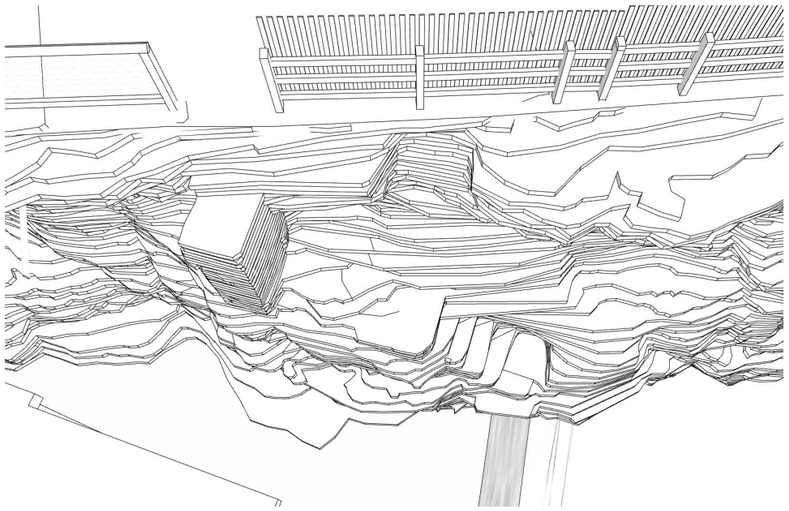
DRAWING NO:
CD-2301
ISSUE:
P2



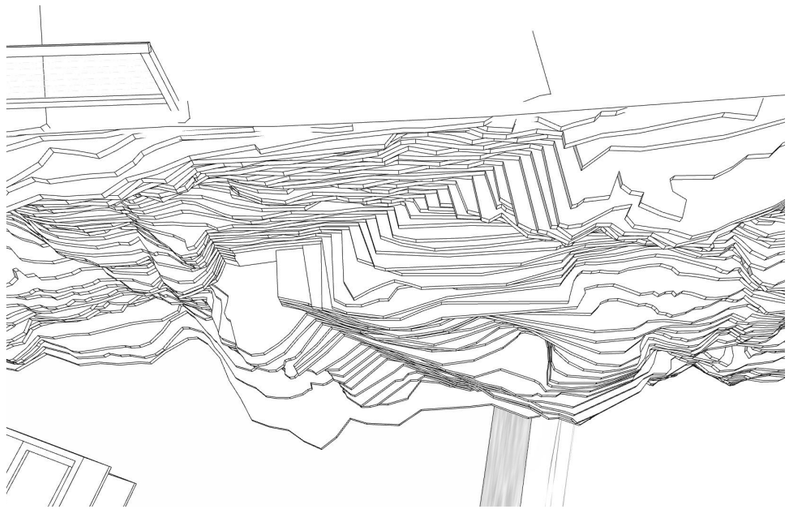
01 - STAIR VIEW EXISTING



02 - STAIR VIEW PROPOSED



03 - STAIR VIEW EXISTING ROCK + CONCRETE



04 - STAIR VIEW PROPOSED ROCK CUT

EXCAVATION NOTES

TBA

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RV	DATE	ISSUE	BY	APP
P1	31.07.24	50% DD REVIEW	TM	AP
P2	07.02.24	DRAFT FOR REF	TM	AP

0 0.5 1M @ A3

PROJECT NO.:
5658

PROJECT:
SOUTH BRONTE PUMP AND PUMPHOUSE RENEWAL

CLIENT:
WAVERLEY COUNCIL

DRAWING:
STAIR EXCAVATION SETOUT

DRAWING NO: CD-2400

ISSUE: P2

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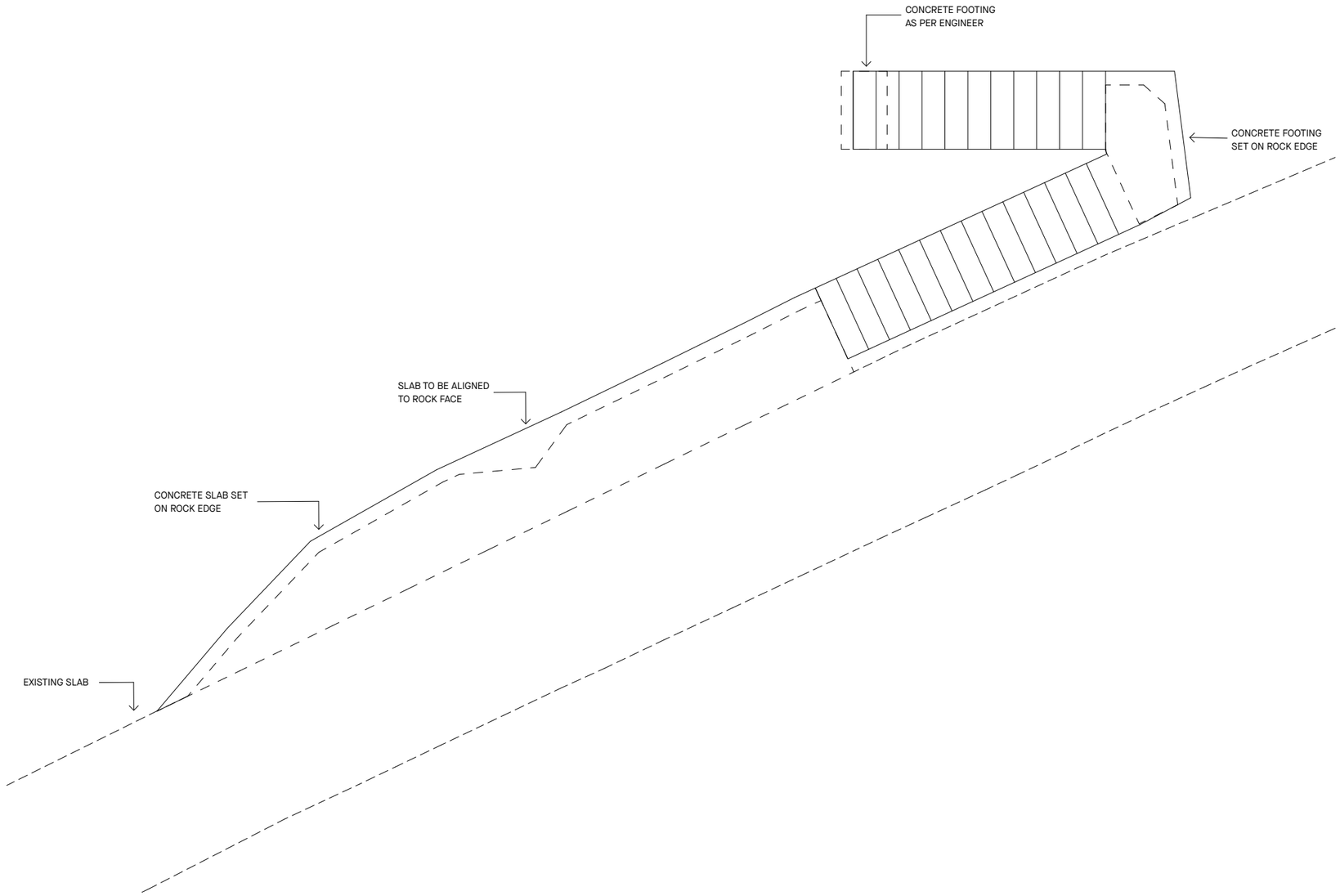

01
-
CONCRETE SETOUT PLAN - UPPER PATH
1:50 @ A3 / 1:25 @ A1

CONCRETE NOTES

NO CHAMFERS OR FILLETS TO ANY CONCRETE. FORM/POUR CONCRETE WITH SQUARE CORNERS. ONCE CURED GRIND 3MM ARISE TO FINISH CORNERS

USE NEW FORMPLY FOR SURFACES TO REMAIN EXPOSED. 45 DEGREE MITRE VERTICAL FORMWORK SO THAT END GRAIN IS NOT VISIBLE IN CONCRETE ON COMPLETION. CONFIRM FORMWORK JOINT LOCATIONS AND MINISE USE OF FORMWORK TIES IN VERTICAL SURFACES.

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REFER TO SECTIONS AND DETAILS FOR SETDOWNS, BLOCKOUTS, AND HEIGHTS. REFER TO PLANS & CONFIRM LOCATIONS OF SETDOWNS, UPSTANDS AND SERVICES PENETRATIONS WITH ARCHITECT PRIOR TO POURING

REFER ARCHITECTURE SPECIFICATION IN RELATION TO PLACING, LEVELING AND FINISHING CONCRETE - BOOT AND MACHINE MARKS IN FINISHED SURFACE WILL NOT BE ACCEPTED

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RV	DATE	ISSUE	BY	APP
P1	31.07.24	50% DD REVIEW	TM	AP
P2	07.02.24	DRAFT FOR REF	TM	AP

0 0.5 1M @ A3

PROJECT NO.:
5658
PROJECT:
SOUTH BRONTE PUMP AND
PUMPHOUSE RENEWAL
CLIENT:
WAVERLEY COUNCIL

DRAWING:
STAIR CONCRETE SETOUT PLAN

DRAWING NO: CD-2600
ISSUE: P2

BRONTE OCEAN POOL PUMPHOUSE RENEWAL
DESIGN DEVELOPMENT



DRAWING LIST

H01	COVER SHEET AND CONTEXT PLAN
H02	SITE VEHICLE ACCESS PLAN
H03	SITE MANAGEMENT PLAN
H04	POOL DRAIN SECTION
H11	PUMPHOUSE DEMOLITION PLAN
H12	PUMPHOUSE EXISTING REFERENCE IMAGES
H21	PUMP SYSTEM PROCESS DIAGRAM
H22	PUMP SYSTEM INDICATIVE LONG SECTION - OCEAN INTAKE
H23	PUMP SYSTEM INDICATIVE LONG SECTION - POOL EMPTYING
H31	OVERVIEW PLAN
H32	PUMPHOUSE SURROUNDS PLAN
H33	PUMPHOUSE PLAN - INTERNAL GENERAL
H34	PUMPHOUSE PLAN - SLAB
H34	PUMPHOUSE PLAN - HYDRAULICS COMPLETE
H35	PUMPHOUSE PLAN - HYDRAULICS STAGE 1
H36	PUMPHOUSE PLAN - HYDRAULICS STAGE 2
H41	SECTIONS SHEET 1 (A)
H42	SECTIONS SHEET 2 (B & C)
H43	SECTIONS SHEET 3 (D & E)
H44	SECTIONS SHEET 4 (F & G)
H45	SECTIONS SHEET 5 - LIFTING
H46	SECTIONS SHEET 6 (J)
H47	SECTIONS SHEET 7 (K)
H48	SECTIONS SHEET 8 (L)

GENERAL NOTES

A. THESE DRAWINGS ARE NOT FOR CONSTRUCTION.
B. DRAWINGS ARE TO BE READ IN CONJUNCTION WITH THE TECHNICAL SPECIFICATIONS.
C. DETAILS REGARDING EXISTING CONDITIONS / ARRANGEMENT ARE BASED ON SITE OBSERVATIONS AND ARE INDICATIVE ONLY.
D. WORKS WILL NEED TO BE CARRIED OUT AROUND TIDAL, WAVE, AND WEATHER CONDITIONS.
E. THE CONTRACTOR MUST PHYSICALLY LOCATE ALL SERVICES BEFORE UNDERTAKING ANY CONSTRUCTION WORK. THE EXTENT OF SERVICES SHOWN ON THIS DRAWING ARE NOT GUARANTEED TO BE COMPLETE OR CORRECT. ANY DAMAGE TO SERVICES IS THE RESPONSIBILITY OF THE CONTRACTOR.
F. THE CONTRACTOR SHALL CONTROL SEDIMENTATION, EROSION AND POLLUTION DURING CONSTRUCTION TO COUNCIL'S REQUIREMENTS.
G. ALL LEVELS ARE TO METERS AHD.

ABBREVIATIONS

RC - REINFORCED CONCRETE
CL - COVER (LID) LEVEL
IL - INVERT LEVEL
TOW - TOP OF WALL
NWL - NORMAL WATER LEVEL
FSL - FINISHED SURFACE LEVEL

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Sutie 5 / 12-16 Chippen St
Chippendale NSW 2008
ABN: 25 635 133 854
www.civille.com.au

Client
WAVERLEY COUNCIL
PANOV — SCOTT

Project Name
BRONTE POOL PUMPHOUSE
Project No.
2217
Address
BRONTE, NSW

Legend

Issue Log

Rev	Revision Description	By / Checked	Date
A	50% DESIGN DEVELOPMENT	AMM	19/08/2024
B	80% DRAFT	AMM	17/12/2024
C	R.E.F.	AMM	28/01/2025
D	R.E.F.	AMM	13/02/2025

Scale
1: 2000 @ A1

North

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Phase
Design Development
Sheet Title
Cover sheet
Sheet No.
H01
Rev
D



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Client
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PANOV — SCOTT

Project Name
BRONTE POOL PUMPHOUSE

Project No.
2217

Address
BRONTE, NSW

Legend

Issue Log

A	50% DESIGN DEVELOPMENT	AMM	19/08/2024
B	80% DRAFT	AMM	17/12/2024
C	R.E.F.	AMM	28/01/2025
D	R.E.F.	AMM	13/02/2025

Rev	Revision Description	By / Checked	Date

Scale
1: 500 @ A1

All dimensions are in metres unless otherwise noted.
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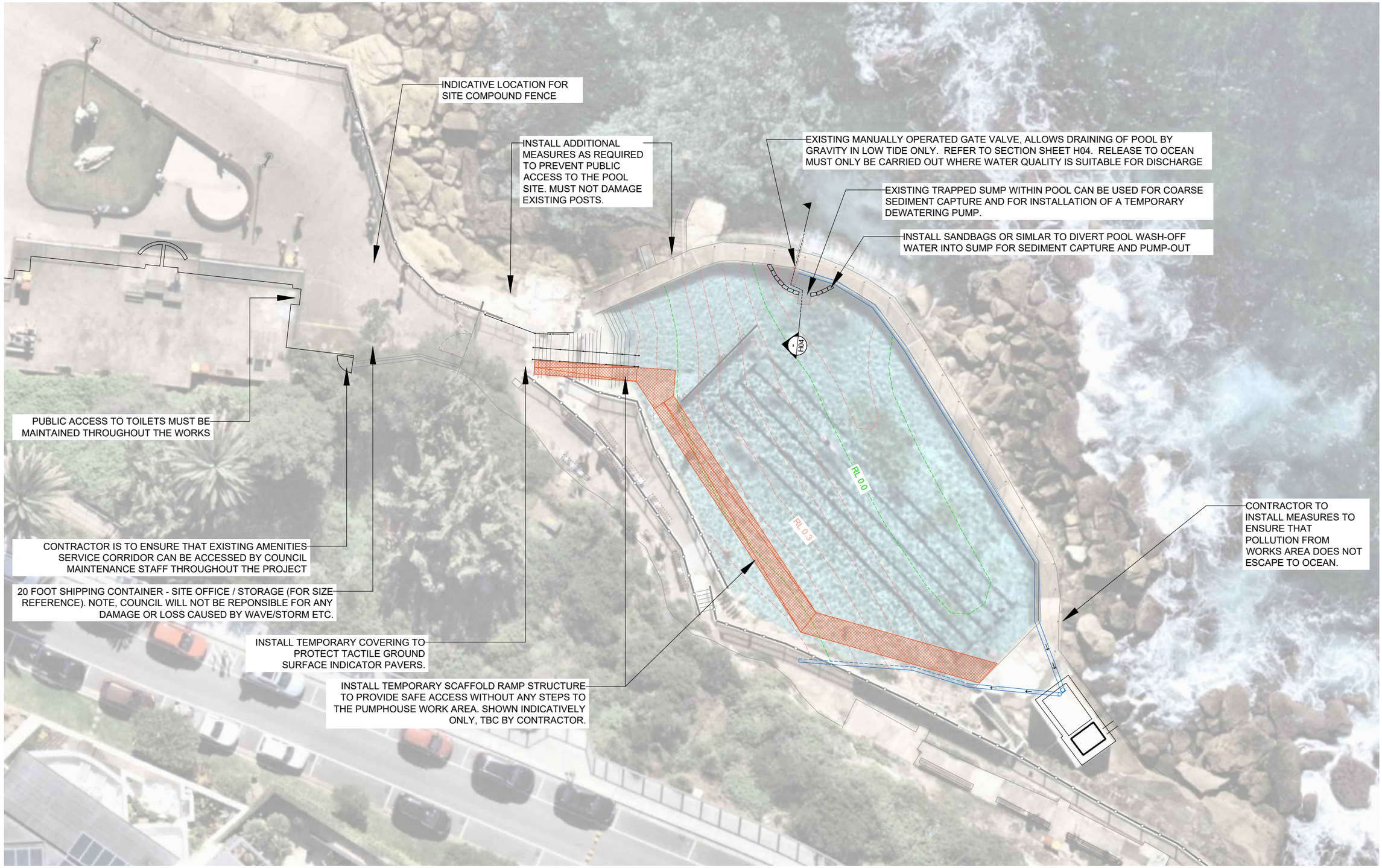
North

Phase
Design Development

Sheet Title
Site vehicle access plan

Sheet No.
H02

Rev
D



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BRONTE POOL PUMPHOUSE

Project No.
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Legend

Issue Log

Rev	Revision Description	By / Checked	Date
A	50% DESIGN DEVELOPMENT	AMM	19/08/2024
B	80% DRAFT	AMM	17/12/2024
C	R.E.F.	AMM	28/01/2025
D	R.E.F.	AMM	13/02/2025

Scale
1: 125 @ A1

All dimensions are in metres unless otherwise noted.
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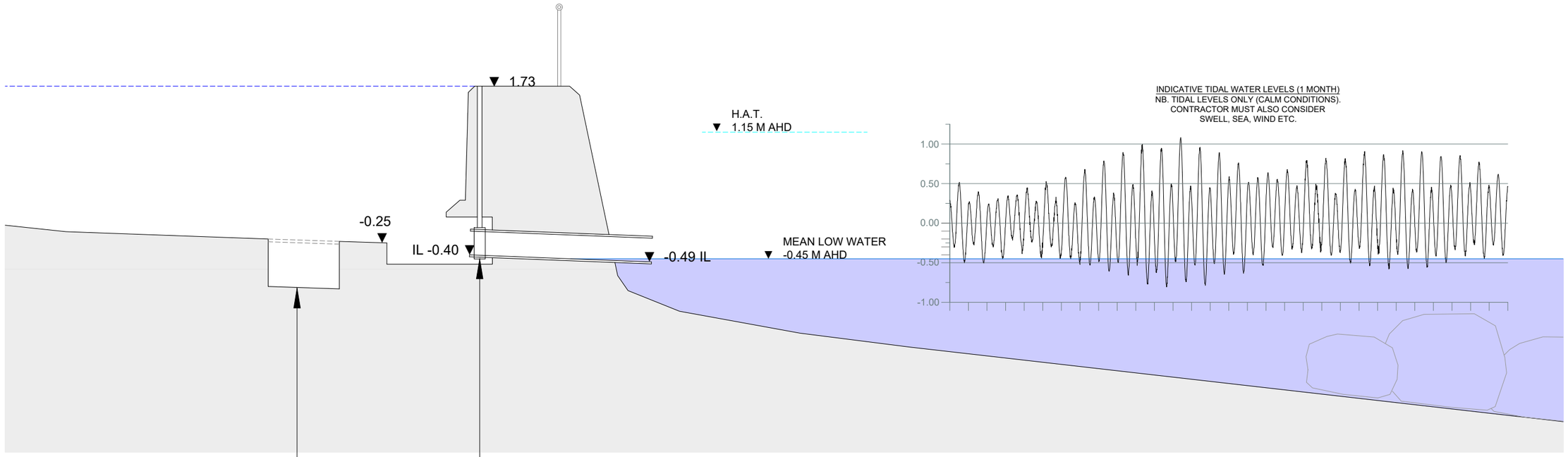
North

Phase
Design Development

Sheet Title
Site management plan

Sheet No. H03

Rev D



SECTION H04-1
EXISTING POOL OUTLET - INDICATIVE
1:25 @ A1

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D	R.E.F.	AMM	13/02/2025

Scale

North

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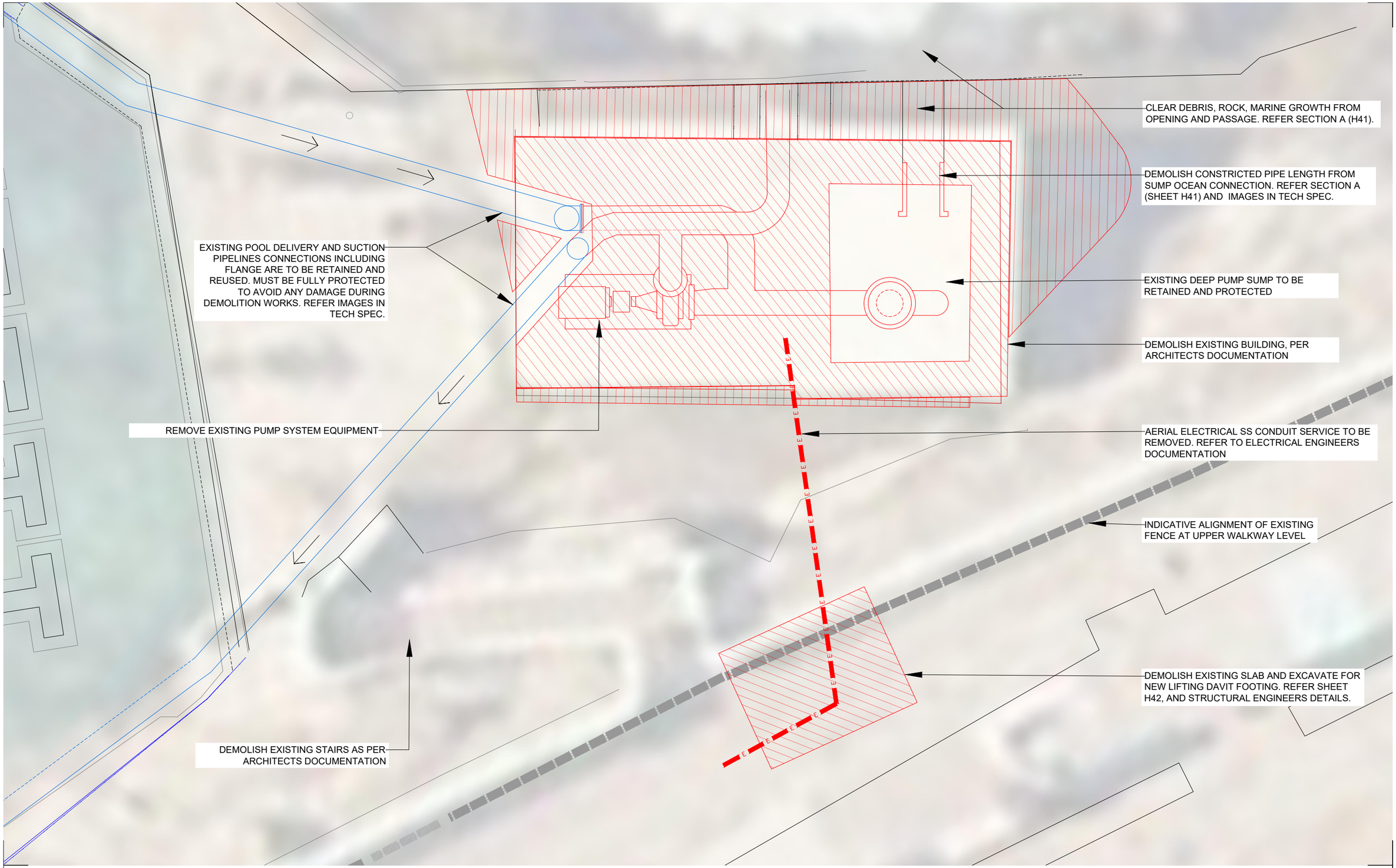
Phase
Design Development

Sheet Title
Pool drain section

Sheet No.
H04

Rev
D



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D	R.E.F.	AMM	13/02/2025

Scale
1:10 @ A1, 1:20 @ A3

North

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Phase
Design Development

Sheet Title
Pumpshouse demolition plan

Sheet No.
H11

Rev
B



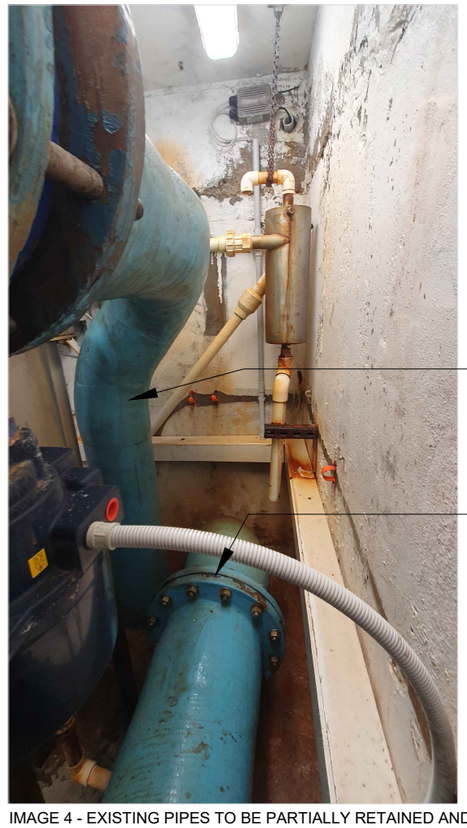
IMAGE 1 - LOOKING DOWN INTO PUMP SUMP



IMAGE 2 - PLATFORM AND BASKET STRAINER ABOVE PUMP SUMP



IMAGE 3 - CURRENT PUMP ARRANGEMENT



POOL DELIVERY LINE TO BE RETAINED, PROTECTED AND REUSED. CUT AND INSTALL CUSTOM UNION FOR NEW CONNECTION.

SUCTION LINE (POOL EMPTYING) FLANGE CONNECTION, AND BELOW GROUND PIPELINE TO BE RETAINED, PROTECTED AND REUSED

IMAGE 4 - EXISTING PIPES TO BE PARTIALLY RETAINED AND CONNECTED TO

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D	R.E.F.	AMM	13/02/2025

Scale
1: 2000 @ A1

North

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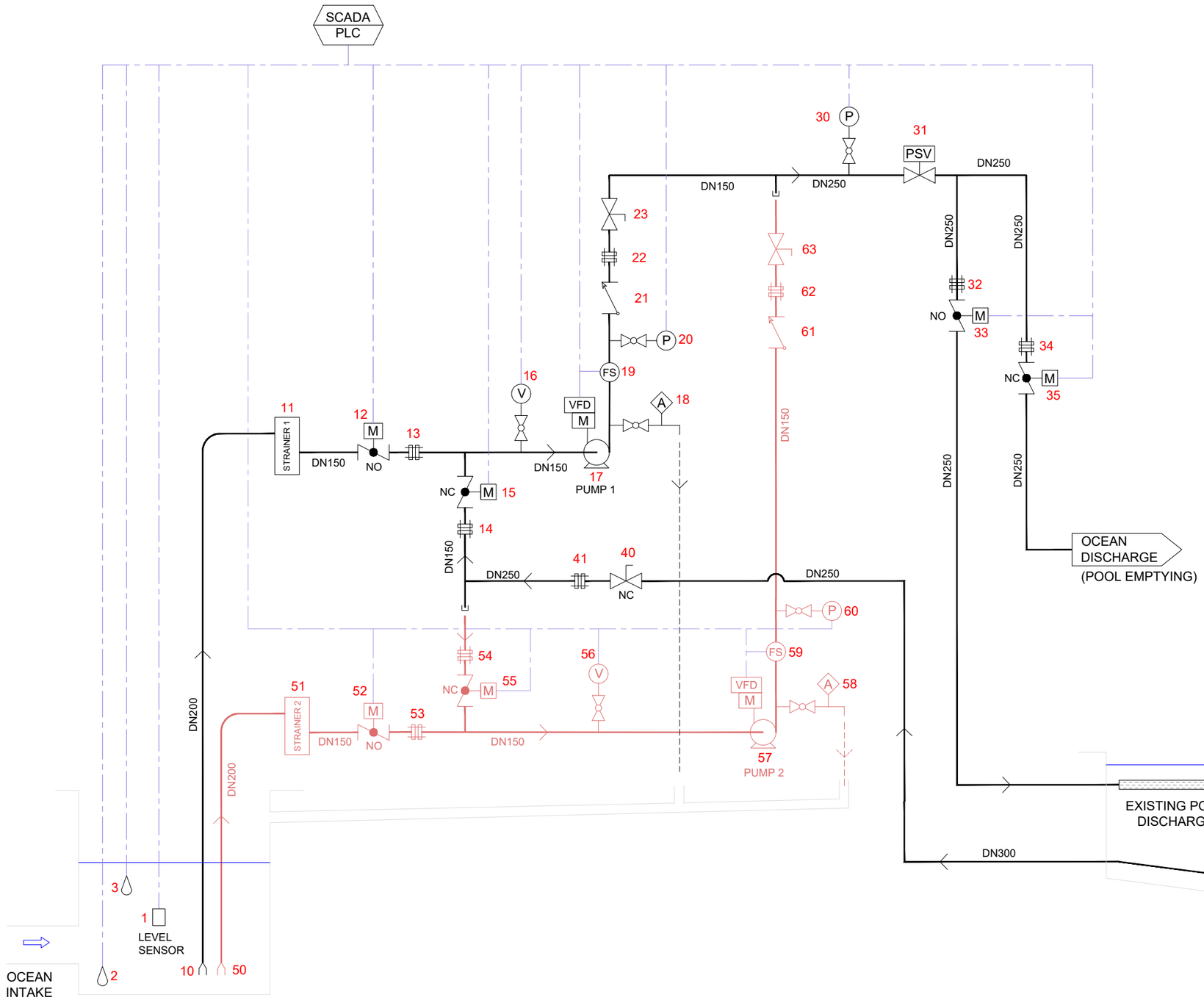
Phase
Design Development

Sheet Title
Existing reference images

Sheet No.
H12

Rev
D



LEGEND

- NON-RETURN VALVE
- ISOLATION VALVE
- BUTTERFLY VALVE MOTORISED
- BALL VALVE
- DISMANTLING JOINT
- AIR RELEASE VALVE
- PRESSURE SUSTAINING VALVE
- PRESSURE/VACUUM GAUGE
- FLOAT TYPE LEVEL SWITCH
- FLOW SWITCH

NO = NORMALLY OPEN
NC = NORMALLY CLOSED

NOTES:
1. REFER TO PUMP SYSTEM OPERATIONAL REQUIREMENTS IN TECHNICAL SPECIFICATION.
2. FOR CLARITY, THIS DIAGRAM DOES NOT SHOW ALL ELECTRICAL, CONTROL, COMMS CONNECTIONS.
3. ALL PIPE TO BE CUSTOM FABRICATED SUPER DUPLEX STAINLESS STEEL.

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D	R.E.F.	AMM	13/02/2025

Scale
NTS

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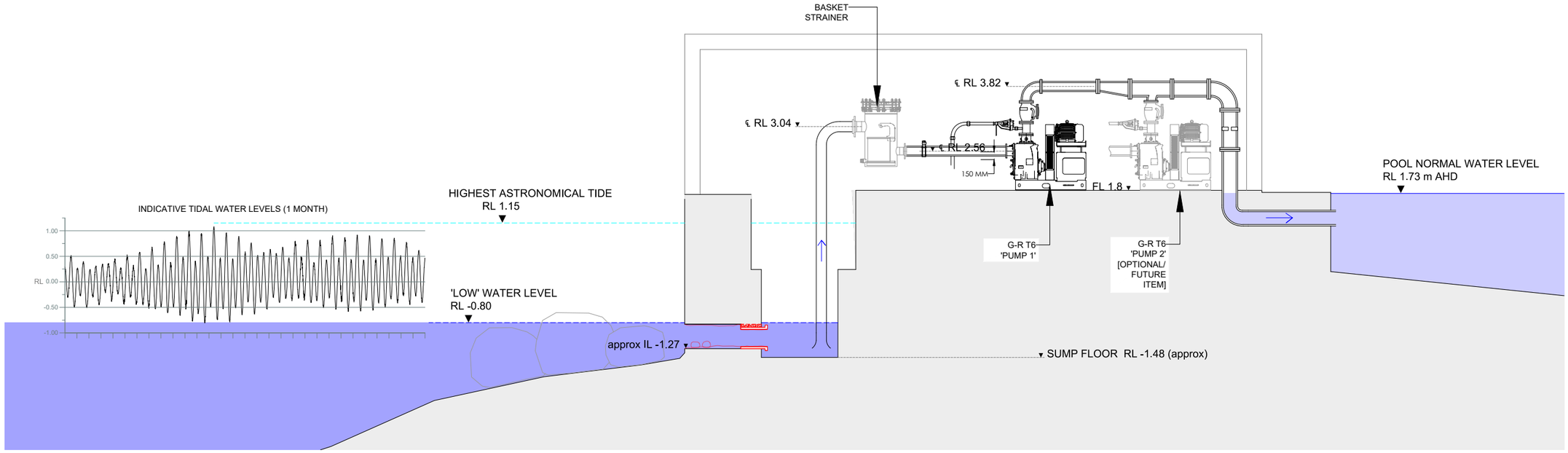
North

Phase
Design Development

Sheet Title
Pump system process diagram

Sheet No.
H21

Rev
D



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D	R.E.F.	AMM	13/02/2025

Scale
1: 40 @ A1

North

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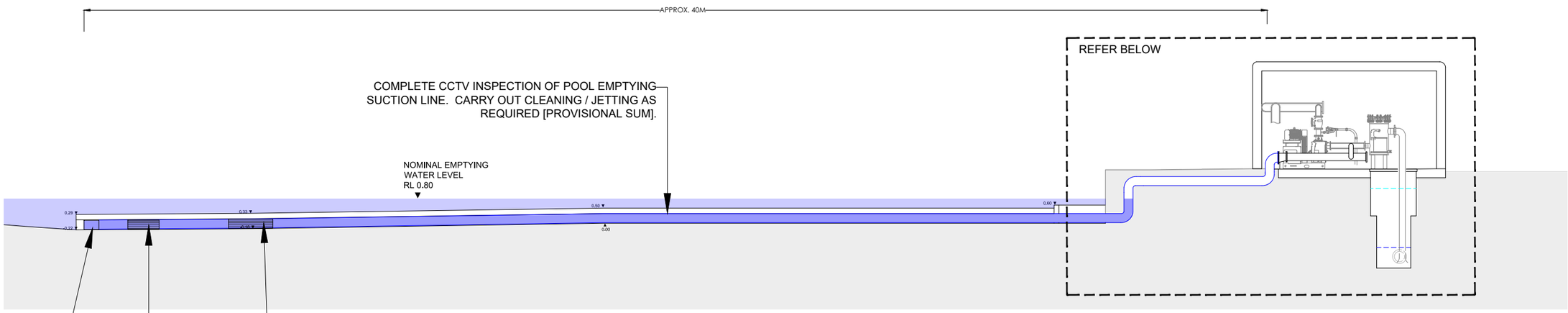
Phase
Design Development

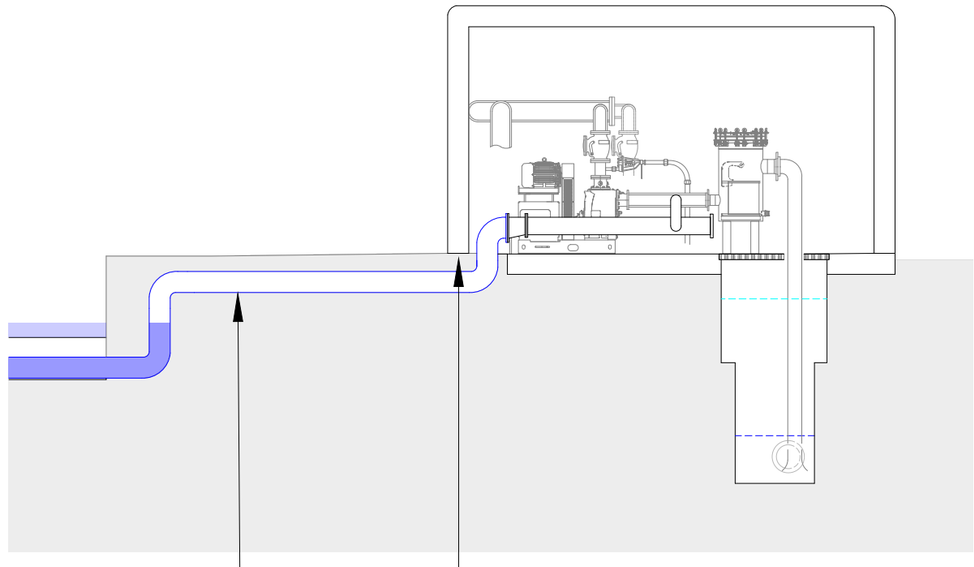
Sheet Title
Indicative long section - ocean intake

Sheet No.
H22

Rev
D







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D	R.E.F.	AMM	13/02/2025

Rev	Revision Description	By / Checked	Date

Scale

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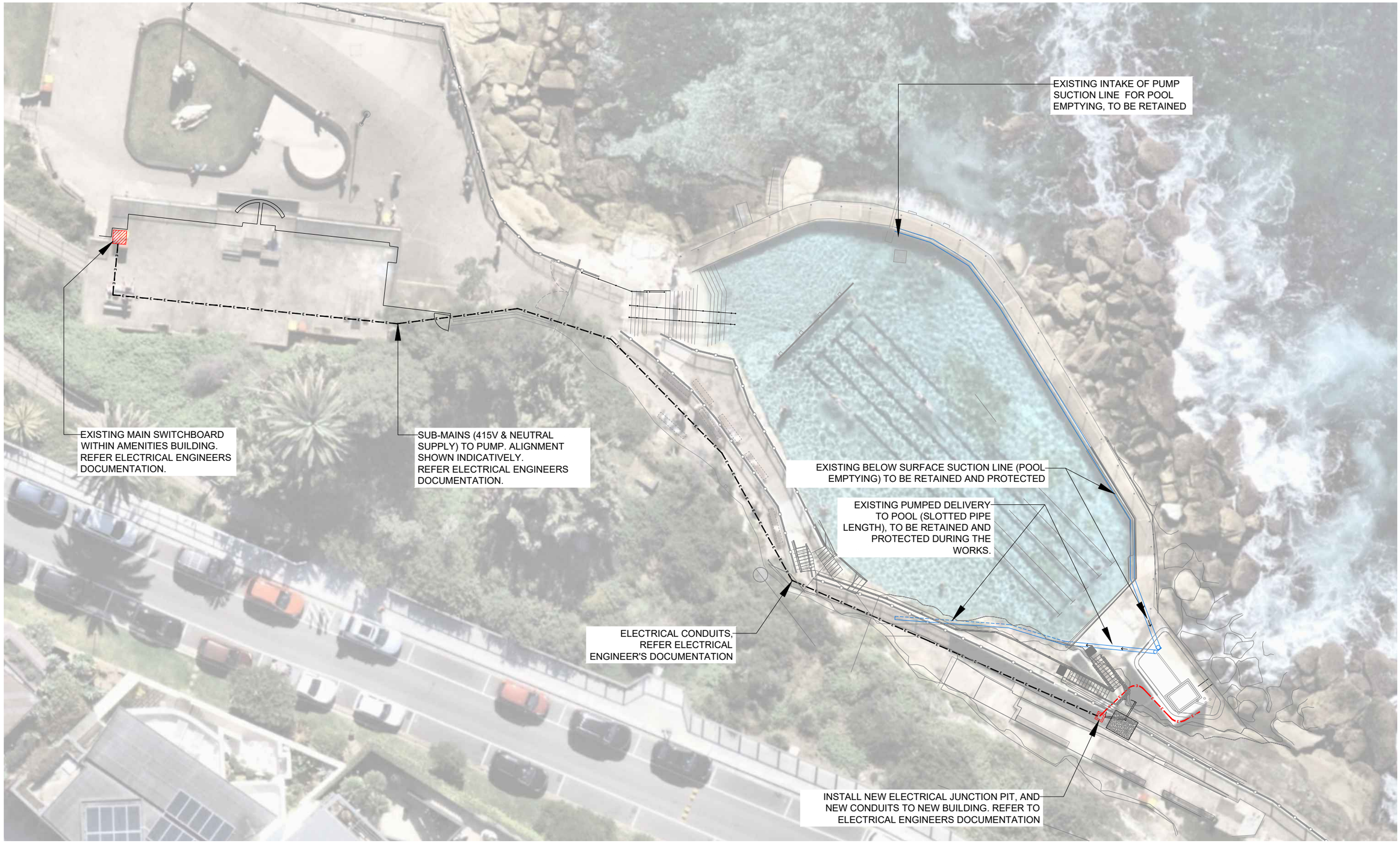
North

Phase
Design Development

Sheet Title
Indicative long section - pool emptying

Sheet No. H23

Rev D



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D	R.E.F.	AMM	13/02/2025

Rev	Revision Description	By / Checked	Date

Scale
1: 125 @ A1

North

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Phase
Design Development

Sheet Title
Overview plan

Sheet No.
H31

Rev
D

EXISTING BELOW SURFACE SUCTION LINE (POOL EMPTYING) TO BE RETAINED AND PROTECTED

EXISTING BELOW SURFACE DELIVERY LINE TO BE RETAINED AND PROTECTED

PORTABLE GANTRY FOR PUMP INSTALLATION. REFER SECTION SHEET H45

REMOVABLE LIFTING DAVIT. REFER IMAGE AT RIGHT, AND TECH SPEC.

SOCKET FITTING WITHIN CONCRETE FOOTING, FOR REMOVABLE LIFTING DAVIT

NEW STAIRS AS PER ARCHITECTS DOCUMENTATION

CONSTRUCT CONCRETE FOOTING FOR LIFTING DAVIT. CONFIRM POSITION ON SITE TO ENSURE SUITABLE POSITION FOR LOWERING. REFER STRUCTURAL ENGINEER'S DOCUMENTATION.



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Legend

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D	R.E.F.	AMM	13/02/2025

Rev	Revision Description	By / Checked	Date

Scale
1:20 @ A1, 1:40 @ A3

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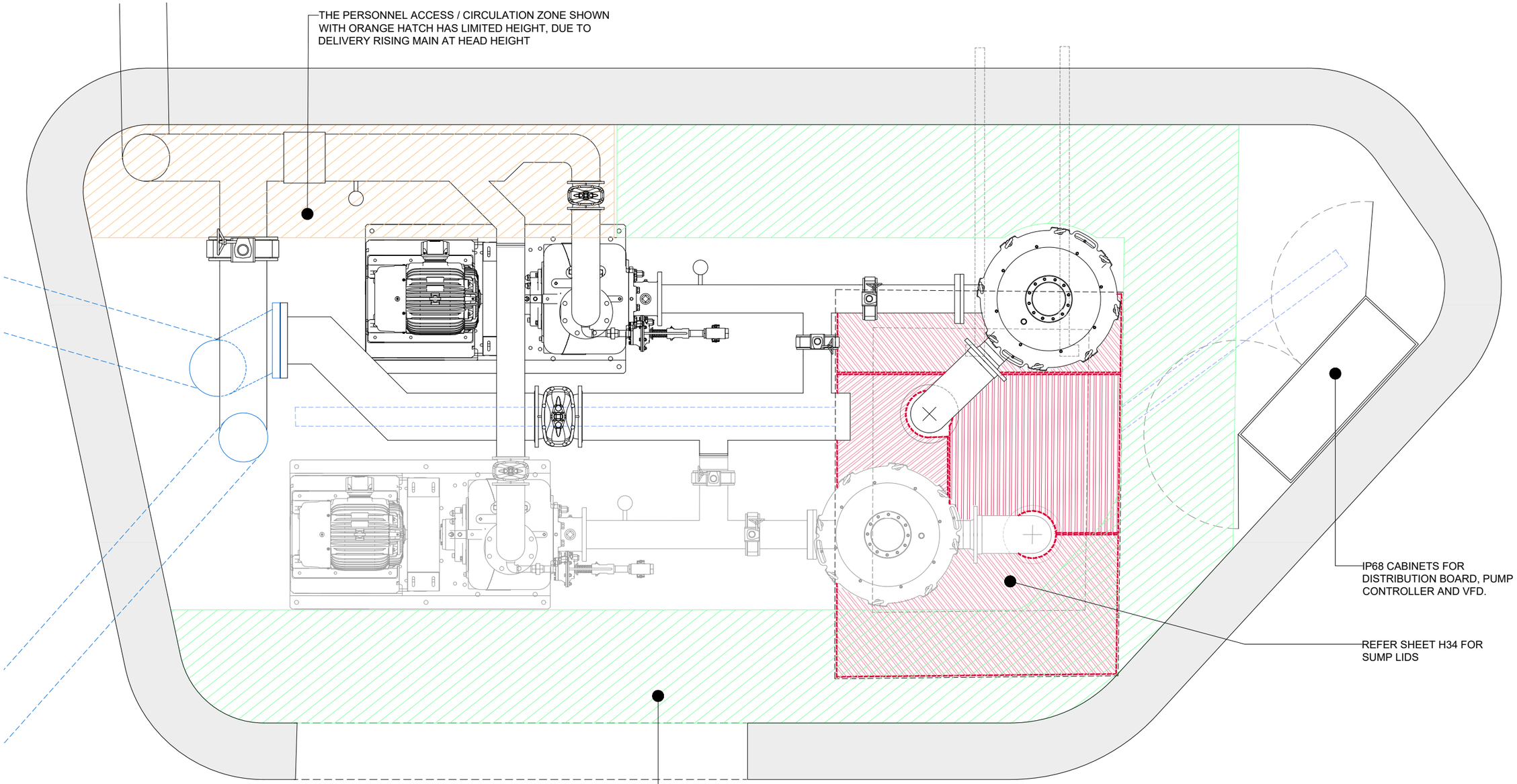
North

Phase
Design Development

Sheet Title
Pumphouse surrounds plan

Sheet No.
H32

Rev
D



NOTE: REFER TO ARCHITECTS AND ELECTRICAL ENGINEERS DOCUMENTATION FOR DETAILS ON POWER, LIGHTING, VENTILATION, SOUNDPROOFING, DOORS ETC.

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D	R.E.F.	AMM	13/02/2025

Scale
1:10 @ A1, 1:20 @ A3

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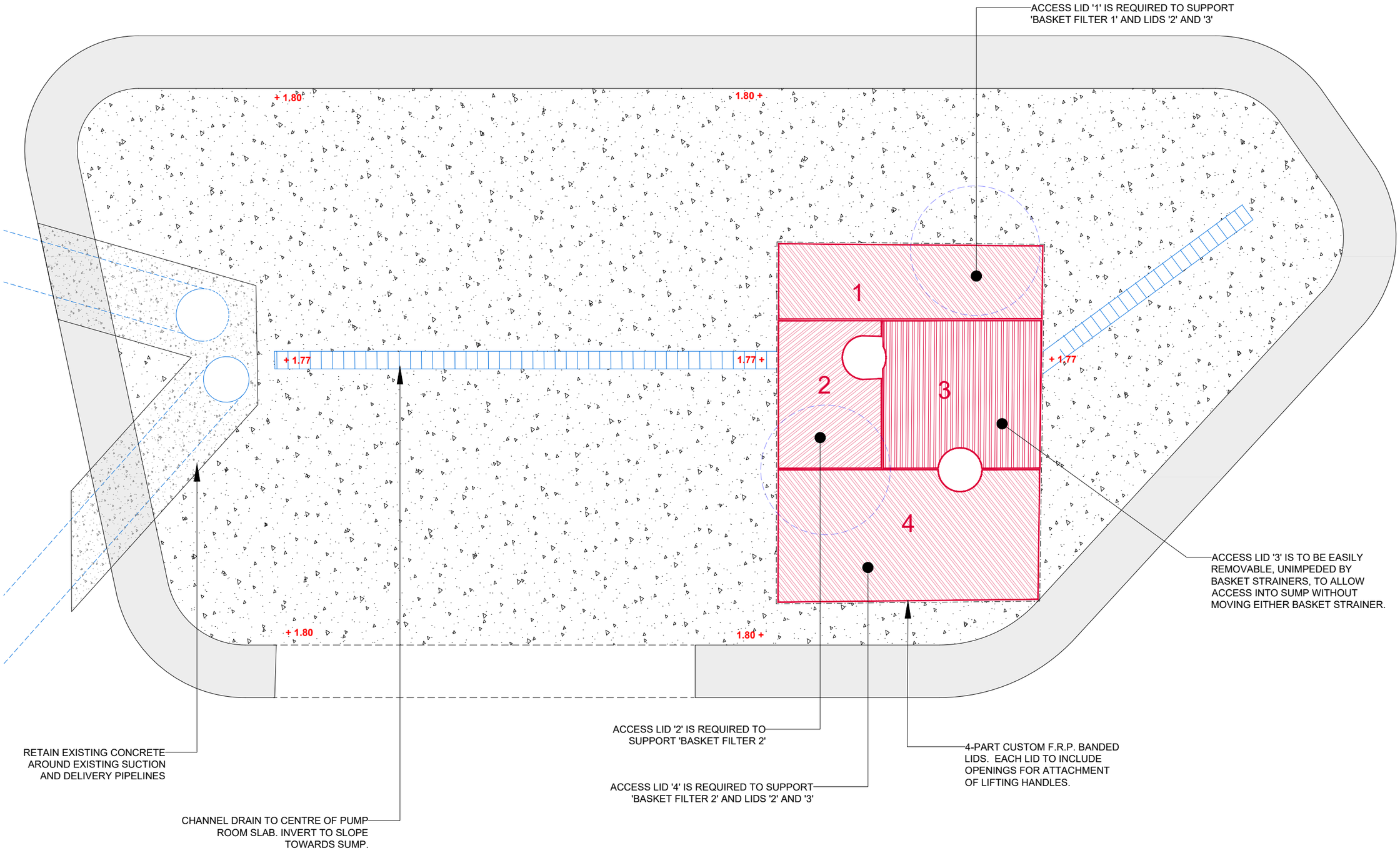
North

Phase
Design Development

Sheet Title
Pumphouse plan - general

Sheet No.
H33

Rev
D



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C	R.E.F.	AMM	28/01/2025
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Rev	Revision Description	By / Checked	Date

Scale
1:10 @ A1, 1:20 @ A3

North

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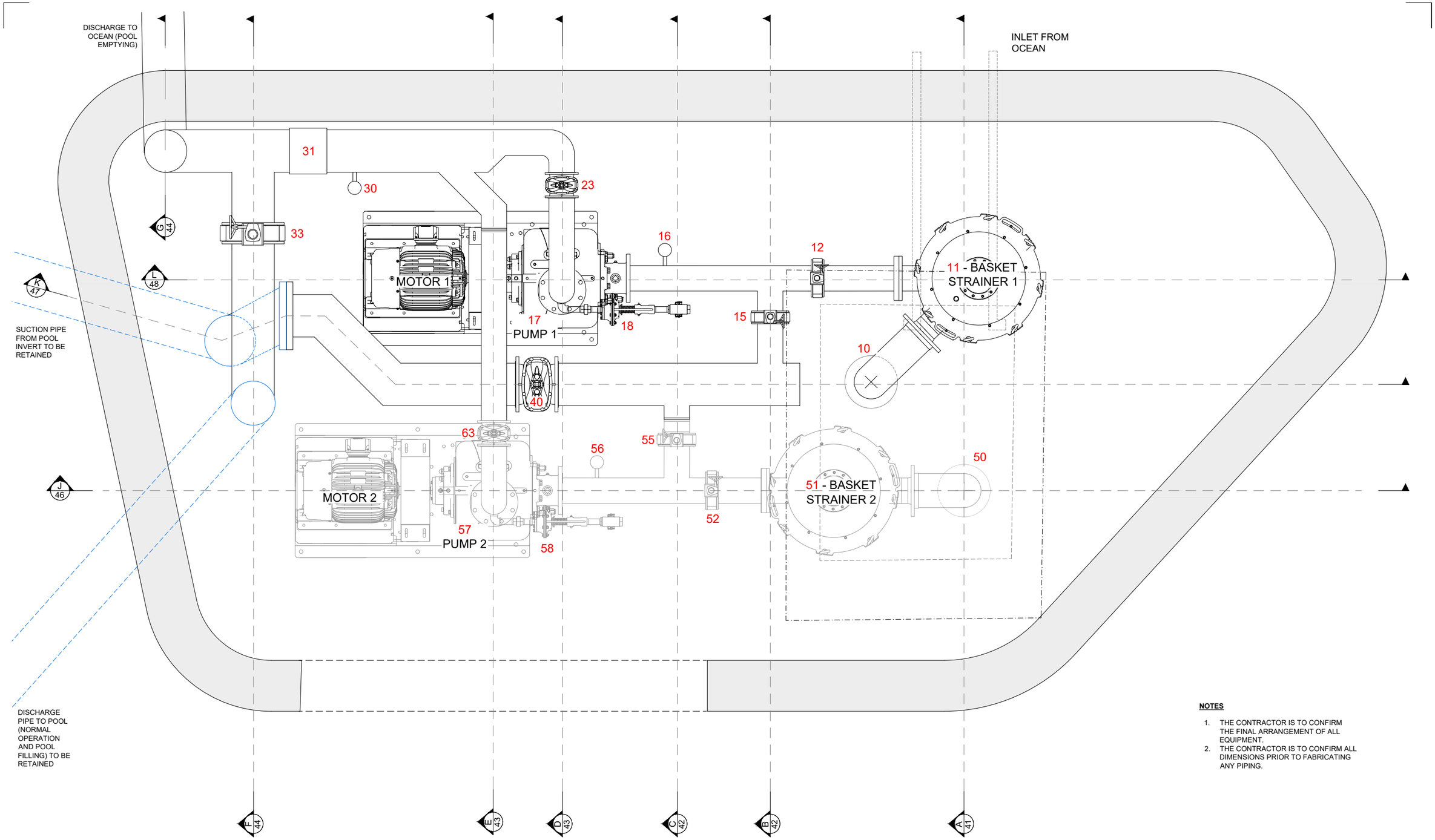
Phase
Design Development

Sheet Title
Pumphouse plan - slab plan

Sheet No.
H34

Rev
D



NOTES

1. THE CONTRACTOR IS TO CONFIRM THE FINAL ARRANGEMENT OF ALL EQUIPMENT.
2. THE CONTRACTOR IS TO CONFIRM ALL DIMENSIONS PRIOR TO FABRICATING ANY PIPING.

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Rev	Revision Description	By / Checked	Date

Scale
1:10 @ A1, 1:20 @ A3

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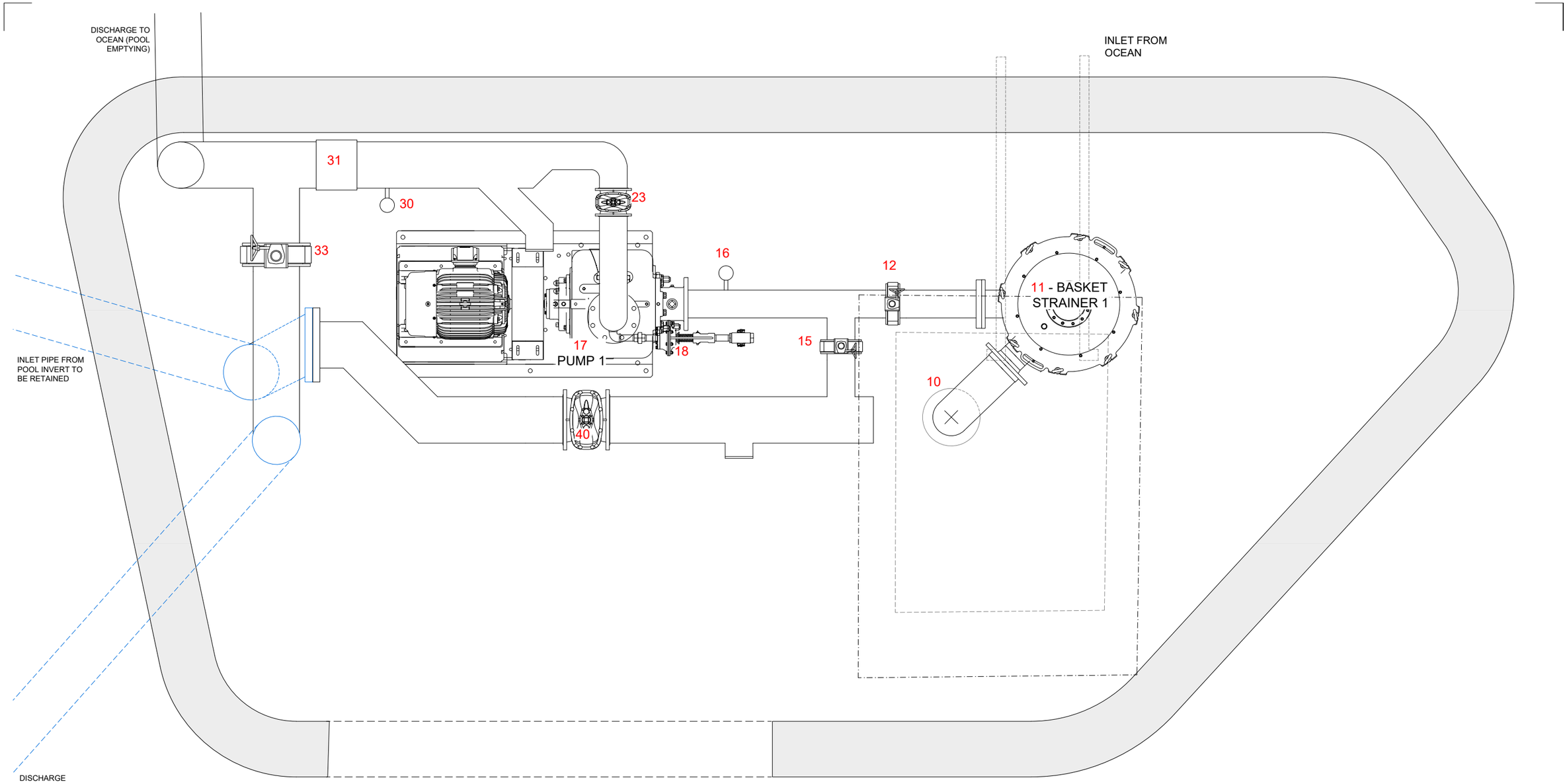
North

Phase
Design Development

Sheet Title
Pumphouse plan - Hydraulics

Sheet No.
H35

Rev
D



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D	R.E.F.	AMM	13/02/2025

Scale
1:10 @ A1, 1:20 @ A3

North

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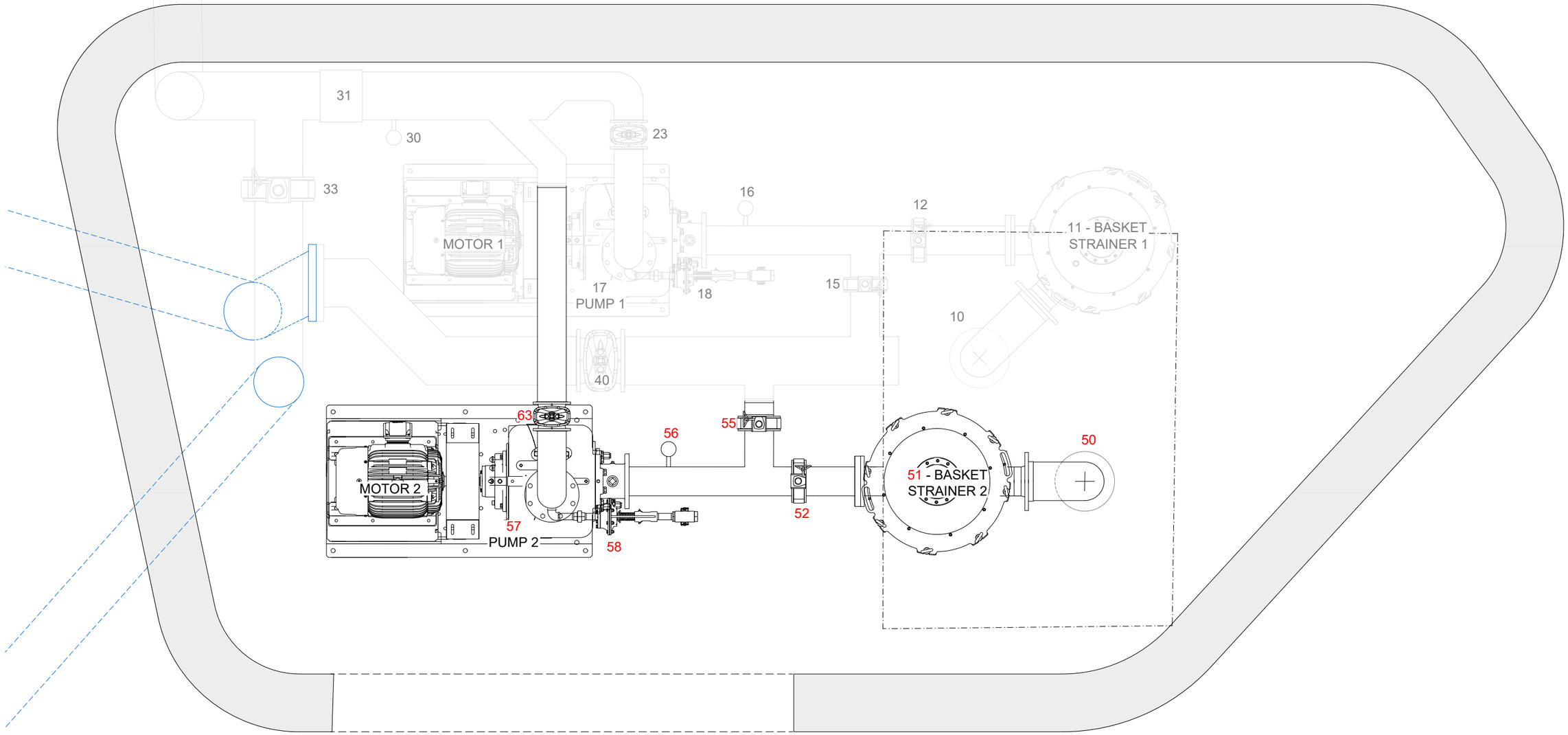
Phase
Design Development

Sheet Title
Pumphouse plan - Hydraulics Stage 1 only

Sheet No. H36

Rev D



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D	R.E.F.	AMM	13/02/2025

Rev	Revision Description	By / Checked	Date

Scale
1:10 @ A1, 1:20 @ A3

North

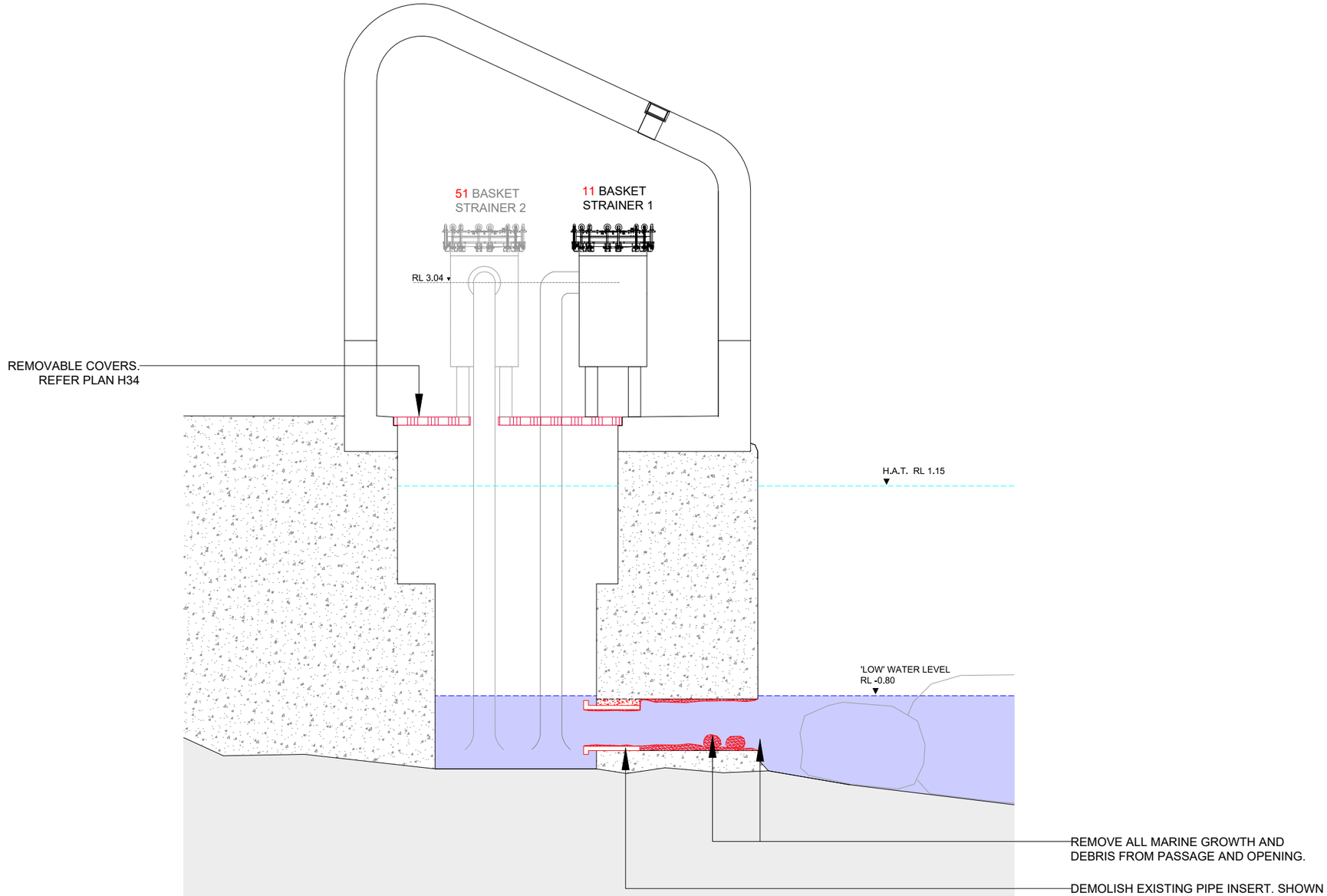
All dimensions are in metres unless otherwise noted.
Do not scale from this drawing.

Phase
Design Development

Sheet Title
Pumphouse plan - Hydraulics Stage 1 only

Sheet No. H37

Rev D



SECTION A / H35
1:20 @ A1

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Rev	Revision Description	By / Checked	Date

Scale

North

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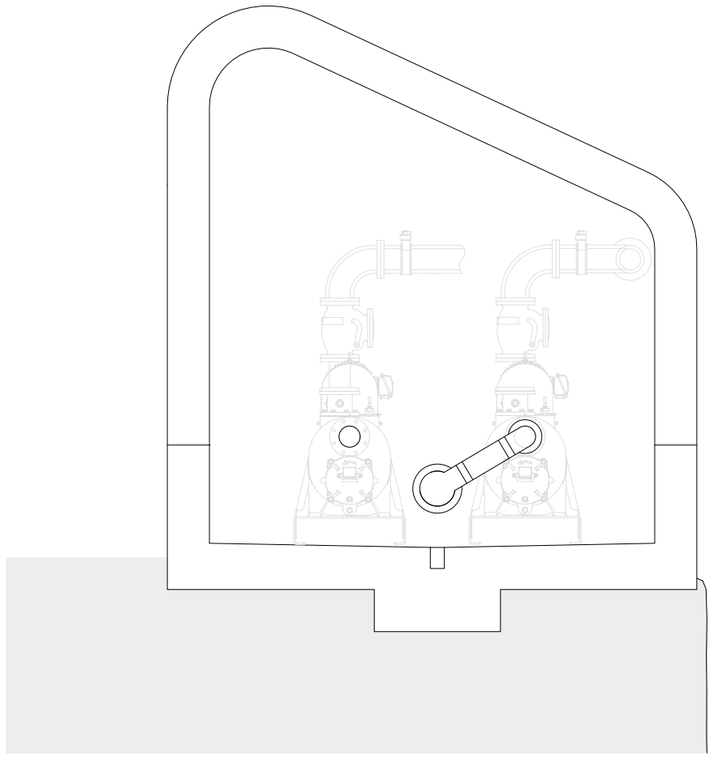
Phase
Design Development

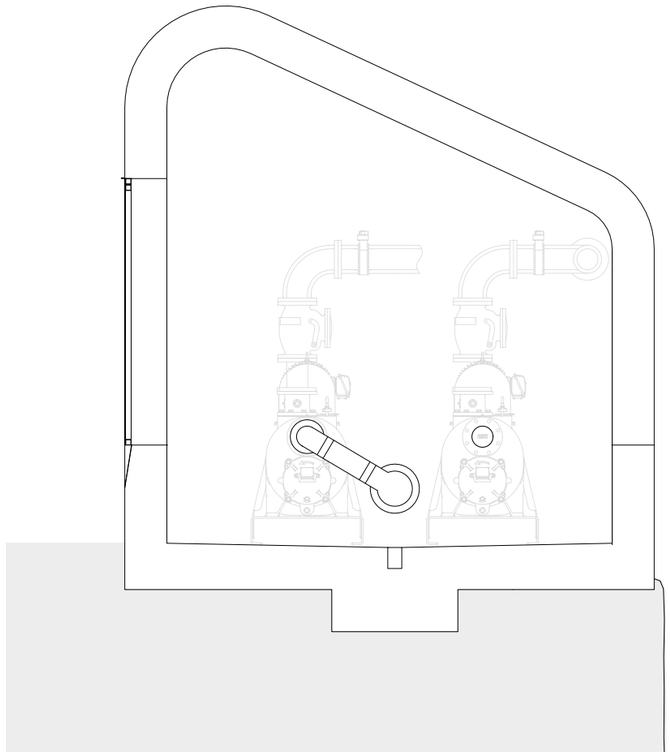
Sheet Title
Sections sheet 1

Sheet No.
H41

Rev
D



SECTION B / H35
1:20 @ A1



SECTION C / H35
1:20 @ A1

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Rev	Revision Description	By / Checked	Date

Scale

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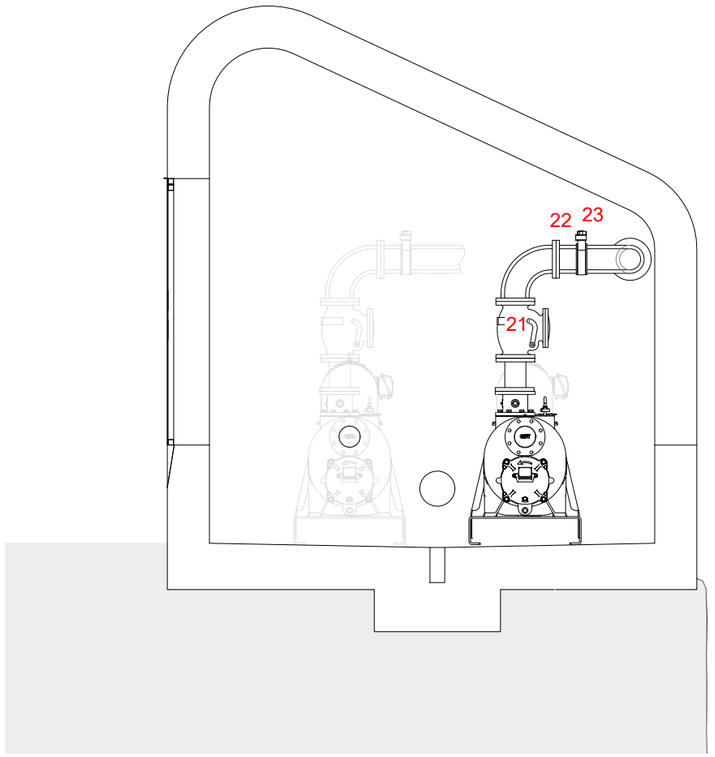
North

Phase
Design Development

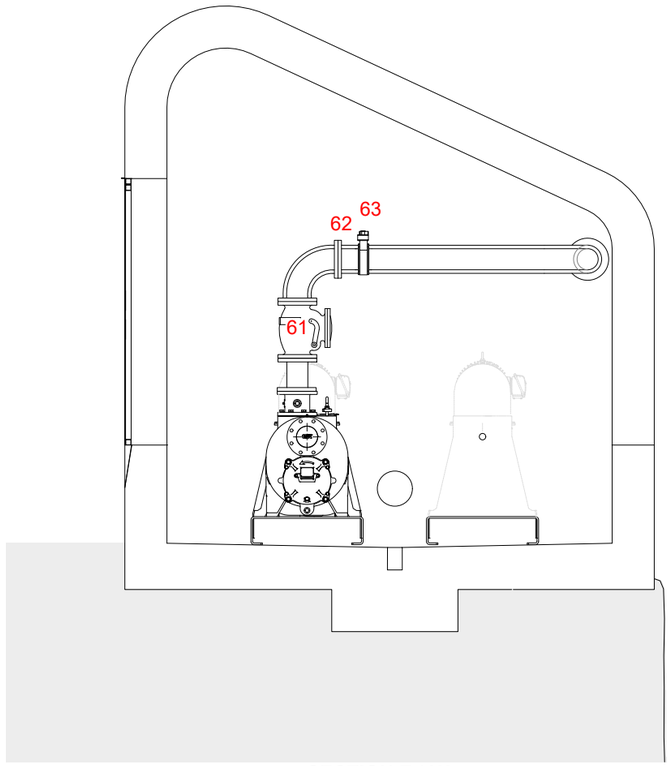
Sheet Title
Sections sheet 2

Sheet No.
H42

Rev
D



SECTION D / H35
1:20 @ A1



SECTION E / H35
1:20 @ A1

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D	R.E.F.	AMM	13/02/2025

Rev	Revision Description	By / Checked	Date

Scale

North

All dimensions are in metres unless otherwise noted.
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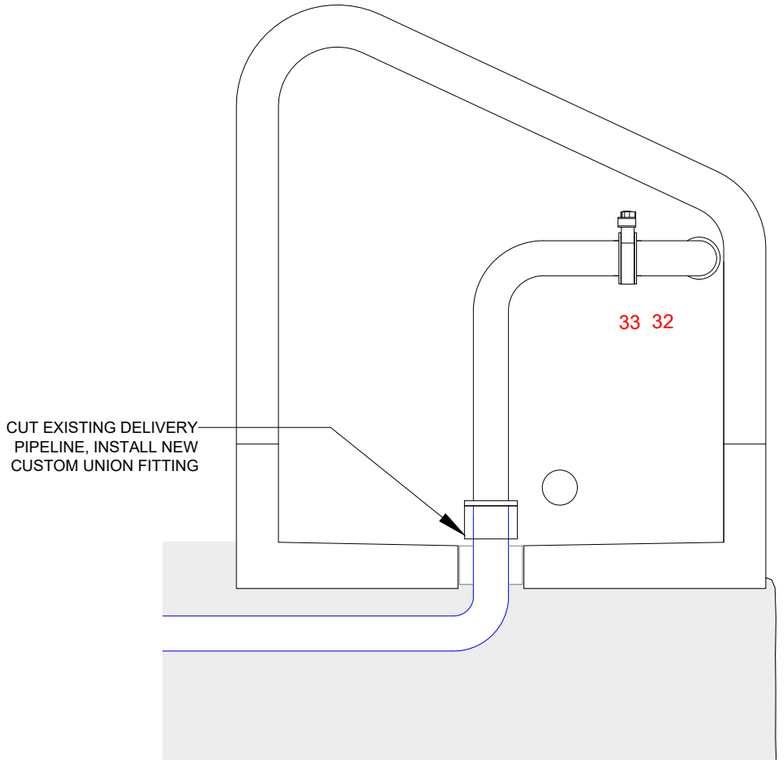
Phase
Design Development

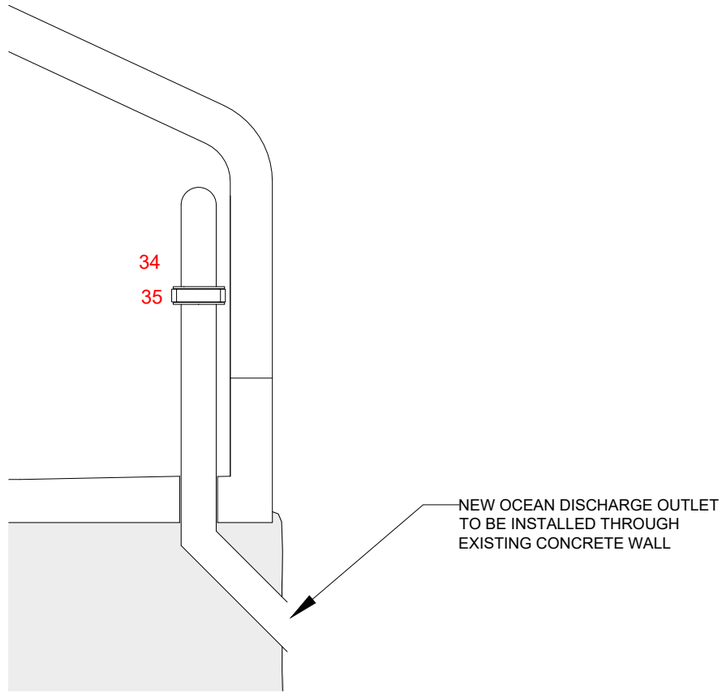
Sheet Title
Sections sheet 3

Sheet No.
H43

Rev
D



SECTION F / H35
1:20 @ A1



SECTION G / H35
1:20 @ A1

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Client
WAVERLEY COUNCIL
PANOV — SCOTT

Project Name
BRONTE POOL PUMPHOUSE

Project No.
2217

Address
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Legend

Issue Log

Rev	Revision Description	By / Checked	Date
A	50% DESIGN DEVELOPMENT	AMM	19/08/2024
B	80% DRAFT	AMM	17/12/2024
C	R.E.F.	AMM	28/01/2025
D	R.E.F.	AMM	13/02/2025

Scale

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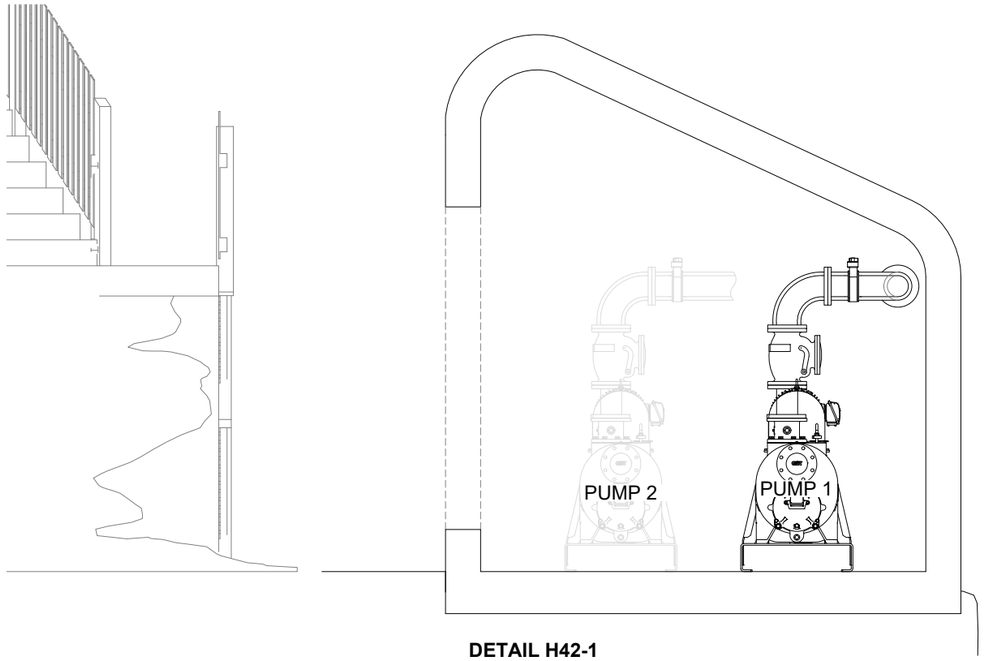
North

Phase
Design Development

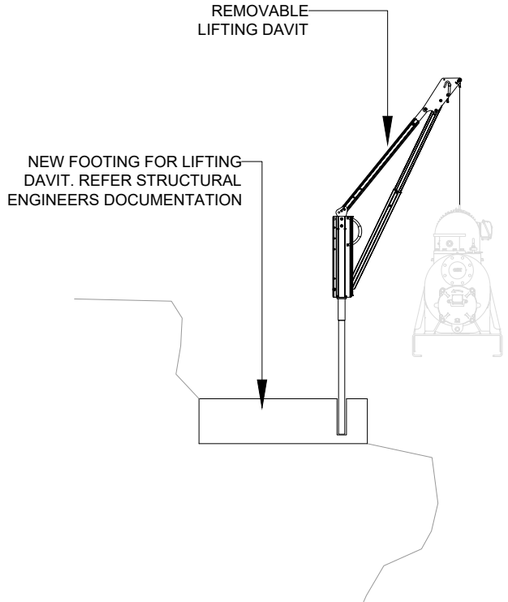
Sheet Title
Sections sheet 4

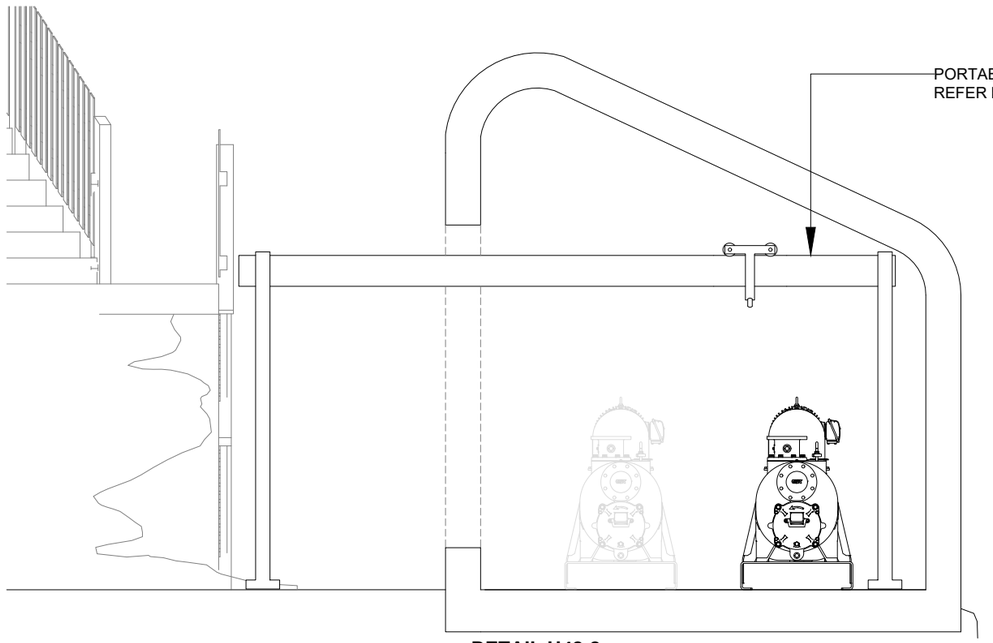
Sheet No.
H44

Rev
D

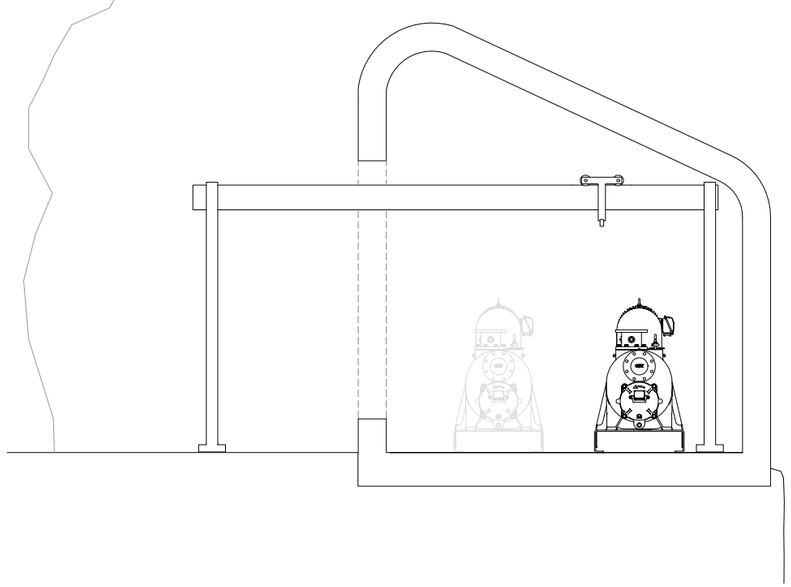


DETAIL H42-1
SECTION - NORMAL ARRANGEMENT
1:20 @ A1





DETAIL H42-2
SECTION - PUMP HOUSE GANTRY
1:20 @ A1



DETAIL H42-3
SECTION - UPPER LIFTING DAVIT
1:25 @ A1

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D	R.E.F.	AMM	13/02/2025

Rev	Revision Description	By / Checked	Date

Scale

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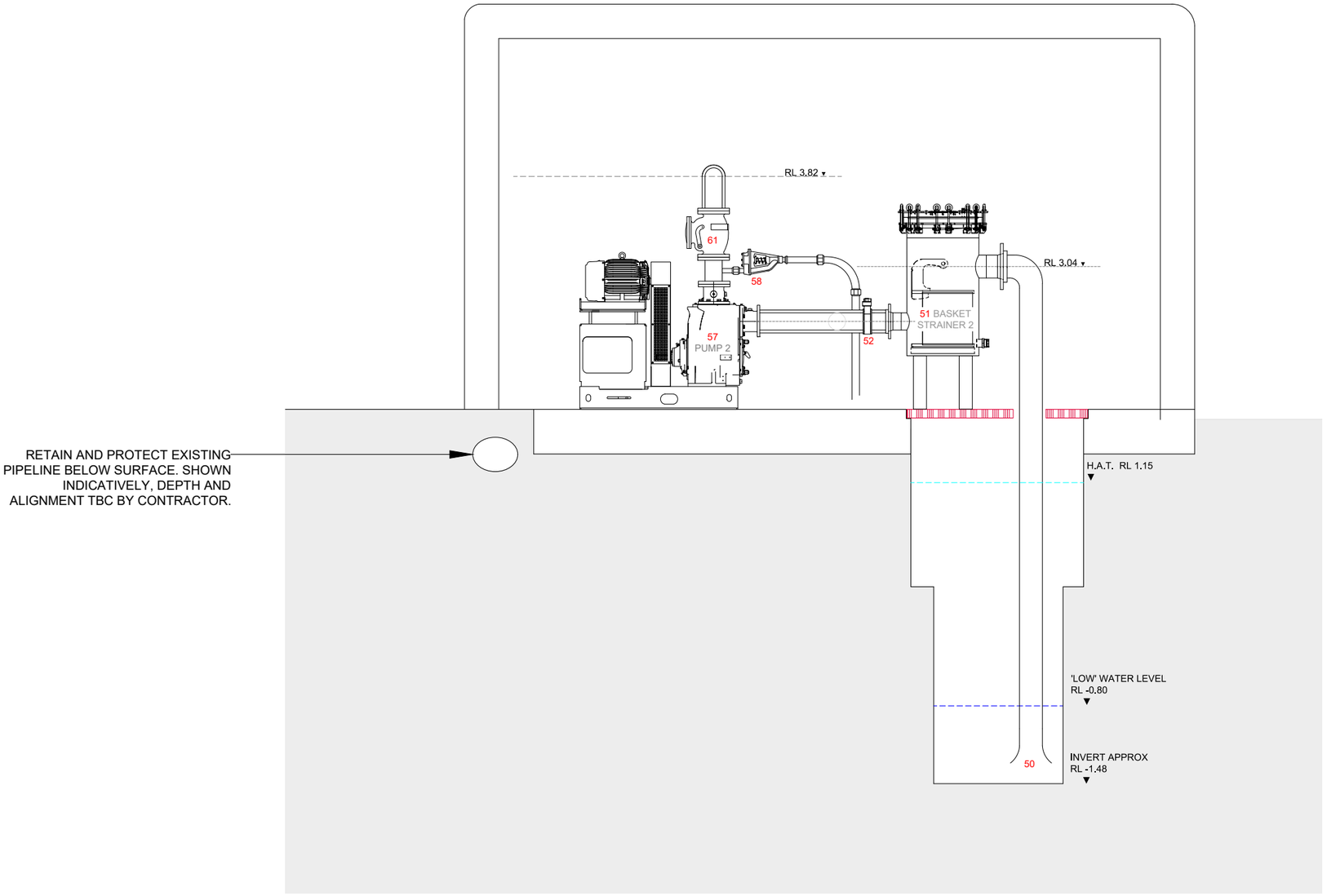
North

Phase
Design Development

Sheet Title
Sections sheet 5

Sheet No.
H45

Rev
D



SECTION J / H35
1:20 @ A1

NOTES

1. THE CONTRACTOR IS TO CONFIRM THE FINAL ARRANGEMENT OF ALL EQUIPMENT.
2. THE CONTRACTOR IS TO CONFIRM ALL DIMENSIONS PRIOR TO FABRICATING ANY PIPING.
3. PIPE SUPPORT NOT SHOWN.

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B	80% DRAFT	AMM	17/12/2024
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D	R.E.F.	AMM	13/02/2025

Scale
AS SHOWN

North

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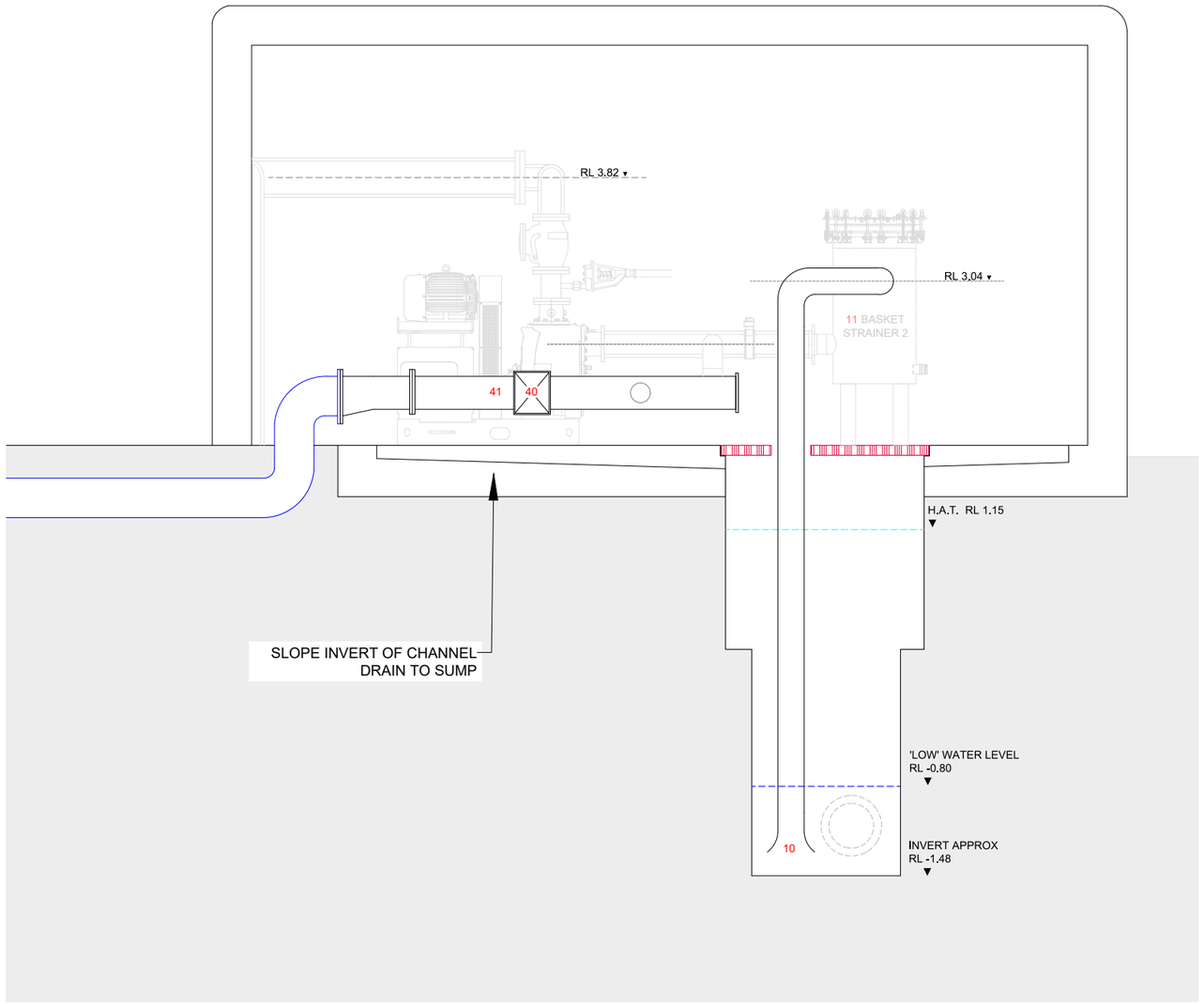
Phase
Design Development

Sheet Title
Sections sheet 6

Sheet No.
H46

Rev
D



SECTION K / H35
1:20 @ A1

NOTES

1. THE CONTRACTOR IS TO CONFIRM THE FINAL ARRANGEMENT OF ALL EQUIPMENT.
2. THE CONTRACTOR IS TO CONFIRM ALL DIMENSIONS PRIOR TO FABRICATING ANY PIPING.
3. PIPE SUPPORT NOT SHOWN.

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Issue Log

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Rev	Revision Description	By / Checked	Date

Scale
AS SHOWN

North

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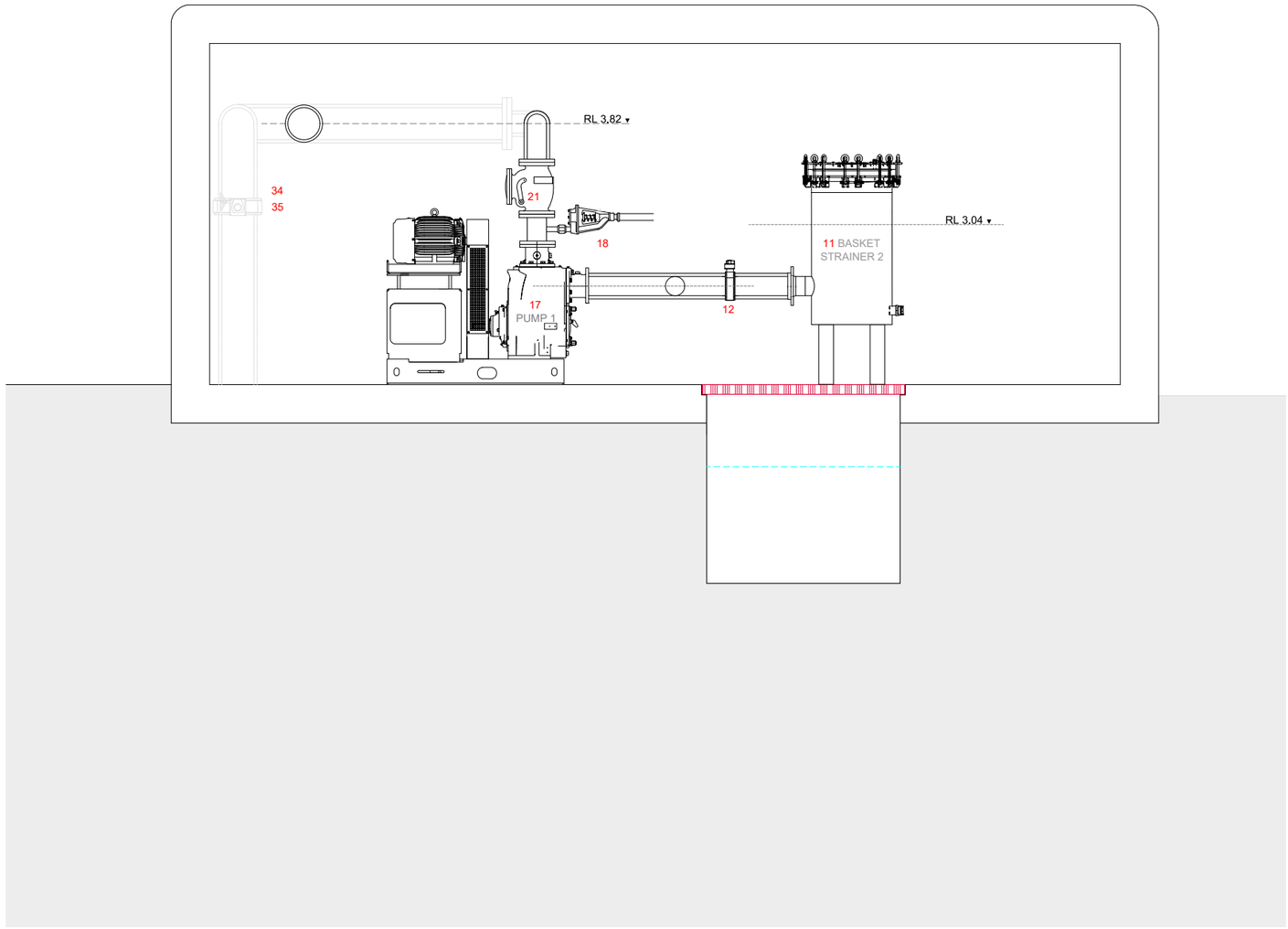
Phase
Design Development

Sheet Title
Sections sheet 7

Sheet No.
H47

Rev
D



SECTION L / H35
1:20 @ A1

NOTES

1. THE CONTRACTOR IS TO CONFIRM THE FINAL ARRANGEMENT OF ALL EQUIPMENT.
2. THE CONTRACTOR IS TO CONFIRM ALL DIMENSIONS PRIOR TO FABRICATING ANY PIPING.
3. PIPE SUPPORT NOT SHOWN.

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D	R.E.F.	AMM	13/02/2025

Rev	Revision Description	By / Checked	Date

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North

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Phase
Design Development

Sheet Title
Sections sheet 8

Sheet No.
H48

Rev
D

SOUTH BRONTE PUMPHOUSE
BRONTE NSW 2024

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ONLY USE FIGURED DIMENSIONS - DO NOT SCALE DRAWINGS. ALL DISCREPANCIES TO BE REFERRED TO ARCHITECT PRIOR TO CONSTRUCTION.

REFER TO DRAWING SERIES S00.-- FOR GENERAL NOTES.

ALL DRAWINGS ARE TO BE READ IN CONJUNCTION WITH THE ARCHITECTS DRAWINGS

CONSTRUCTION CERTIFICATE ISSUE

SAFETY

THE FOLLOWING SAFETY INFORMATION RELATES TO THE STRUCTURE FOR THE BUILDING. REFER TO THE CLIENT, ARCHITECT, CONTRACTOR, CONSULTANTS AND OTHER PARTIES FOR THE SAFETY INFORMATION RELATING TO THEIR WORK.

REFER TO THE RISK MANAGEMENT REGISTER PRODUCED BY CANTILEVER FOR THIS PROJECT. READ THESE NOTES IN CONJUNCTION WITH THAT REPORT.

THE WORKS REQUIRED BY THESE DOCUMENTS COULD LEAD TO POTENTIAL AND/OR REAL SAFETY RISKS TO PERSONNEL, PROPERTY AND EQUIPMENT. ALL PARTIES INVOLVED IN THE PROJECT INCLUDING THE CLIENT, CONTRACTOR, SUBCONTRACTOR AND OTHER INTERESTED PARTIES SHALL CONSIDER, DOCUMENT AND EMPLOY APPROPRIATE WORK SAFE PROCEDURES FOR ALL REQUIRED ACTIVITIES. THESE RISKS COULD BE PRESENT DURING CONSTRUCTION, DURING OPERATION AND END USE OF THE BUILDING, DURING MAINTENANCE AND DURING DEMOLITION.

SAFETY OF THE SITE AND THE BUILDING SHALL BE MAINTAINED AND IMPLEMENTED BY THE CONTRACTOR AND ALL SUB-CONTRACTORS AND THE CLIENT.

TEMPORARY MEASURES ARE REQUIRED TO ENSURE THE STABILITY OF THE BUILDING STRUCTURE DURING CONSTRUCTION. IT IS THE RESPONSIBILITY OF THE BUILDER TO TAKE ALL MEASURES NECESSARY TO MAINTAIN STRUCTURAL INTEGRITY DURING ALL PHASES OF CONSTRUCTION. THE STRUCTURE INDICATED ON THE STRUCTURAL DRAWINGS IS THE FINAL STRUCTURE AND DOES NOT NECESSARILY INCLUDE OR REPRESENT THE CONSTRUCTION METHODOLOGY. THE ENGAGEMENT OF A SPECIALIST DEMOLITION AND TEMPORARY WORKS STRUCTURAL ENGINEER REMAINS THE BUILDERS RESPONSIBILITY. AN ASSESSMENT OF THE EXISTING STRUCTURE AND GROUND TO SUPPORT TEMPORARY LOADS MAY BE REQUIRED. TEMPORARY SUPPORT IS LIKELY TO BE REQUIRED FOR THE FOLLOWING:

- STRUCTURAL STEEL ERECTION INCLUDING STEELWORK PRIOR TO SITE WELDING
- SOIL AND ROCK EXCAVATION
- CONCRETE FORMWORK
- PRECAST CONCRETE
- MASONRY WALLS
- FAÇADE RETENTION AND RETENTION OF EXISTING WALLS AND FLOORS
- WALL REMOVAL
- UNDERPINNING AND SHORING
- RETAINING WALLS

ACTIVITIES REQUIRED TO BE CARRIED OUT DURING THE CONSTRUCTION WHICH ARE NOT CONSIDERED TO BE NORMAL BUILDING PRACTICE AND THEREFORE MAY REQUIRE ENGAGEMENT OF A SPECIALIST CONTRACTOR INCLUDE:

- TENSIONING SYSTEMS
- COMPOSITE STEEL BEAMS
- TRENCHING
- LIFTING AND PLACEMENT OF HEAVY ELEMENTS
- CONSTRUCTION IN CONFINED PLACES
- USE OF HAZARDOUS MATERIALS
- USE OF HEAVY EQUIPMENT
- EXCAVATION IN CONFINED AREA
- DEMOLITION WORKS

A PRESTRESSED TENDON WHEN TENSIONED CONTAINS A CONSIDERABLE AMOUNT OF STORED ENERGY. IN THE RARE EVENT OF A TENDON BREAKING, SERIOUS INJURY TO PERSONAL AND DAMAGE TO EQUIPMENT CAN BE CAUSED BY THE SUDDEN RELEASE OF ENERGY. REASONABLE PRECAUTIONS SHALL BE TAKEN WHEN WORKING WITH OR NEAR TENDONS WHICH HAVE JUST BEEN, OR ARE IN THE PROCESS OF BEING, TENSIONED, OR THAT HAVE BEEN TENSIONED BUT NOT YET GROUTED..

THE FOLLOWING ACTIVITIES MAY BE REQUIRED DURING THE END USE OF THE STRUCTURE AND MAY REQUIRE SPECIALIST ATTENTION INCLUDE:

- WORKING AT HEIGHTS
- OPERATIONAL OR MOVING MACHINERY OR FURNITURE INCLUDING GATES, DOORS, WINDOWS, SKYLIGHTS ETC. WE RECOMMEND THAT THESE ITEMS BE ACCOMPANIED BY AN OPERATIONS MANUAL INCLUDING MAINTENANCE AND DISASSEMBLY INSTRUCTIONS

THE FOLLOWING ACTIVITIES MAY BE REQUIRED DURING THE DEMOLITION AND DISMANTLING OF THE STRUCTURE AND MAY REQUIRE SPECIALIST ATTENTION. FURTHER GUIDANCE ON THE DEMOLITION OF BUILDINGS AND STRUCTURES CAN BE FOUND IN THE CODE OF PRACTICE: DEMOLITION WORK:

- STRUCTURAL STABILITY AND INTEGRITY OF THE STRUCTURE
- LIFTING AND PLACEMENT OF HEAVY ELEMENTS
- CONSTRUCTION IN CONFINED PLACES
- USE OF HEAVY EQUIPMENT
- ASSESSMENT OF THE EXISTING STRUCTURE AND GROUND TO SUPPORT TEMPORARY LOADS
- WORKING AT HEIGHTS

THE BUILDING STRUCTURAL DESIGN HAS BEEN CARRIED OUT IN ACCORDANCE WITH THE DESIGN INTENT OF THE NATIONAL CONSTRUCTION CODE OF AUSTRALIA.

THE CONTRACTOR SHALL ENSURE THAT ALL PERSONNEL ON THE SITE HAVE BEEN ADEQUATELY TRAINED AND ARE AWARE OF ALL HEALTH AND SAFETY REGULATIONS.

GENERAL

G1. THESE DRAWINGS ARE TO BE READ IN CONJUNCTION WITH THE SPECIFICATION, ARCHITECTURAL DRAWINGS, OTHER CONTRACT DOCUMENTATION AND THE REQUIREMENTS OF THE RELEVANT AUTHORITIES.

G2. ANY DISCREPANCIES OR OMISSIONS SHALL BE REFERRED TO THE ENGINEER FOR A DECISION BEFORE PROCEEDING WITH THE WORK.

G3. ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF CURRENT SAA CODES AND THE BY-LAWS, ORDINANCES OR OTHER REQUIREMENTS OF THE RELEVANT BUILDING AUTHORITIES.

G4. DIMENSIONS ARE NOT TO BE OBTAINED BY SCALING THE DRAWINGS.

G5. ALL DIMENSIONS SHOWN ON THE DRAWINGS SHALL BE VERIFIED ON SITE BY THE BUILDER PRIOR TO CONSTRUCTION OR FABRICATION. VERIFY ALL SETTING OUT DIMENSIONS WITH THE ARCHITECT.

G6. DURING CONSTRUCTION THE STRUCTURE SHALL BE MAINTAINED IN A STABLE CONDITION AND NO PART SHALL BE OVERSTRESSED. THE BUILDER IS RESPONSIBLE FOR THE DESIGN AND CONSTRUCTION OF ALL TEMPORARY WORKS REQUIRED FOR THE BUILDING PROJECT.

G7. THESE DRAWINGS INDICATE THE COMPLETED STRUCTURE AND DO NOT DESCRIBE A WORK METHOD. THE DETERMINATION OF A SAFE METHOD REMAINS THE RESPONSIBILITY OF THE BUILDER.

G8. WATERPROOFING, INCLUDING ALL SETDOWNS, REBATES AND RECESSES, ALL CONCRETE PROFILES AND FIRE RATING OF ALL ELEMENTS REMAINS THE RESPONSIBILITY OF THE ARCHITECT AND THE BUILDER.

G9. WHERE NOTES REFER TO THE SPECIFICATION, COMPLY WITH THE REQUIREMENTS OF NATSPEC BUILDING SPECIFICATION AS A MINIMUM UNLESS MODIFIED BY THE CONTRACT DOCUMENT.

G10. THE WORD 'ENGINEER USED IN THESE NOTES REFERS TO AN EMPLOYEE OR NOMINATED REPRESENTATIVE OF CANTILEVER CONSULTING ENGINEERS.

G12. THE BUILDER MUST SUBMIT ONE (1) SET OF WORKSHOP DRAWINGS FOR PREFABRICATED COMPONENTS OF THE WORK TO THE ENGINEER FOR REVIEW AT LEAST THREE (3) WEEKS PRIOR TO FABRICATION. ALLOW FIVE (5) WORKING DAYS FOR THE REVIEW. FABRICATION MUST NOT COMMENCE UNTIL ALL REVIEW AND COMMENTS ON THE WORKSHOP DRAWINGS HAVE BEEN RESOLVED TO THE ENGINEER'S SATISFACTION.

G13. THE "TENDER" ISSUE SET OF THESE DRAWINGS ARE BASED ON PRELIMINARY ARCHITECTURAL DRAWINGS AND PRELIMINARY ENGINEERING. QUANTITIES AND RATES GIVEN ARE FOR INITIAL PRICING AND MAY VARY FROM THE "FOR CONSTRUCTION" ISSUED DOCUMENTS.

G14. THE BUILDER MUST EMPLOY A QUALIFIED GEOTECHNICAL ENGINEER AS REQUIRED FOR ALL GEOTECHNICAL ASPECTS OF THE BUILDING.

OBSERVATIONS

OB1. DURING CONSTRUCTION CANTILEVER CONSULTING ENGINEERS MUST BE CONTACTED TO ATTEND SITE AND OBSERVE ALL STRUCTURAL ELEMENTS SHOWN ON THE DRAWINGS PRODUCED BY CANTILEVER CONSULTING ENGINEERS BEFORE BEING CONCEALED. THIS INCLUDES REINFORCEMENT PRIOR TO PLACING CONCRETE.

OB2. AREAS THAT ARE NOT INSPECTED OR, IF CANTILEVER CONSULTING ENGINEERS ARE NOT ENGAGED TO UNDERTAKE THE INSPECTIONS. VOIDS ALL RESPONSIBILITY BY CANTILEVER CONSULTING ENGINEERS FOR THE WORK.

OB3. THE BUILDER MUST GIVE THE ENGINEER 48 HOURS NOTICE OF OBSERVATIONS REQUIRED FROM THE ENGINEER. THE WORK MUST BE COMPLETE AND THE BUILDER MUST INSPECT AND SIGN OFF ALL STRUCTURAL WORK PRIOR TO REQUESTING OBSERVATIONS FROM THE ENGINEER.

OB4. OBSERVATIONS ARE UNDERTAKEN TO REVIEW THE INTENT OF THE ENGINEERING DESIGN ONLY. OBSERVATIONS ARE NOT SUPERVISION OR QUALITY INSPECTION OF THE CONSTRUCTION. OBSERVATIONS DO NOT GUARANTEE DEFECTIVE WORK WILL BE IDENTIFIED.

OB5. OBSERVATIONS DO NOT RELIEVE THE BUILDER OF THEIR RESPONSIBILITY. OBSERVATIONS DO NOT RELIEVE THE BUILDER OF ENSURING THE WORK COMPLIES WITH THE DOCUMENTATION AND SPECIFICATION.

OB6. PHOTOGRAPHS OR VIRTUAL TOOLS CANNOT BE USED AS A SUBSTITUTE FOR ATTENDING SITE TO UNDERTAKE OBSERVATIONS OF THE WORK.

OB7. THE BUILDER IS RESPONSIBLE FOR ENGAGING A QUALIFIED GEOTECHNICAL ENGINEER TO UNDERTAKE OBSERVATIONS ON ALL GEOTECHNICAL ASPECTS OF THE BUILD.

DESIGN REQUIREMENTS

LOADINGS

PLANT: 5.0 kPa. / 4.5 kN

WIND LOADS

VR (ultimate): 45m/s
REGION: A2
TERRAIN CATEGORY: 1

EARTHQUAKE

EARTHQUAKE DESIGN CATEGORY: EDC II
ANNUAL PROBABILITY OF EXCEEDENCE (kp): 1.3
HAZARD FACTOR (Z): 0.08
SITE SUB-SOIL CLASS: Ae

COASTAL LOADS

REFER TO COASTAL REPORT BY HORTON COASTAL ENGINEERING
WAVE PRESSURE: 22.2 kPa
HYDROSTATIC PRESSURE: 57.3 kPa (ROOF) - 84.5 kPa (BASE)

EXPOSURE CLASSIFICATIONS

INTERNAL: C2
EXTERNAL: C2
ITEM IN CONTACT WITH GROUND: C2

ABBREVIATIONS

(BB)	BOTTOM BOTTOM LAYER (LAID 1ST.)
(B)	BOTTOM LAYER (LAID 2ND.)
(T)	TOP LAYER (LAID 3RD.)
(TT)	TOP TOP LAYER (LAID 4TH.)
ALT	BARS OF LENGTH &/OR SHAPE TO BE LAID ALTERNATELY
CFW	CONTINUOUS FILLET WELD
CPBW	COMPLETE PENETRATION BUTT WELD
CJ	CONSTRUCTION JOINT
EF	EACH FACE
EW	EACH WAY
FSBW	FULL STRENGTH BUTT WELD
FF	FAIR FACE
HORIZ	HORIZONTAL
H/W	HARDWOOD
KDHW	KILN DRIED HARDWOOD
LV	LENGTH VARIES
MC	MASS CONCRETE
MJ	MOVEMENT JOINT
NF	NEAR FACE
UNO	UNLESS NOTED OTHERWISE
TYP	TYPICALLY
NOM	NOMINAL
NSOP	NOT SHOWN ON PLAN
NSOE	NOT SHOWN ON ELEVATION
NTS	NOT TO SCALE
PPBW	PARTIAL PENETRATION BUTT WELD
RC	REINFORCED CONCRETE
VERT	VERTICAL
(u)	UNDER
(o)	OVER
170	INDICATES CONCRETE THICKNESS VARIATION
100	INDICATES PRECAMBER IN CONCRETE AND STEELWORK

CONCRETE

C1. ALL CONCRETE WORKS AND MATERIALS ARE TO BE IN ACCORDANCE WITH AS3600-CONCRETE STRUCTURES CODE (CURRENT EDITION).

C2. CONCRETE COMPRESSIVE STRENGTH (f'c), SHALL BE AS FOLLOWS:

CONCRETE PARAMETERS

ELEMENT	STRENGTH GRADE	SLUMP	MAX AGGREGATE
PIERS	N50	80	20
FOOTINGS	N50	80	20
SLAB ON GROUND	N50	80	20
WALLS	N50	80	20
ROOF	N50	80	20

ADDITION OF WATER ON SITE TO CONCRETE SHALL NOT BE PERMITTED.

C3. CONCRETE SHALL BE SUPPLIED BY AN APPROVED MANUFACTURER IN ACCORDANCE WITH AS1379.

C4. SIZES OF CONCRETE ELEMENTS DO NOT INCLUDE THICKNESS OF APPLIED FINISHES.

C5. LOCATION AND DETAIL OF CONSTRUCTION JOINTS SHALL BE TO THE DETAILS APPROVED BY THE ENGINEER. BUILDER SHALL SUBMIT PROPOSED CONSTRUCTION JOINTS TO THE ENGINEER FOR APPROVAL BEFORE PLACING CONCRETE.

C6. BUILDER SHALL SUBMIT PROPOSED CURING METHOD FOR THE APPROVAL OF THE ENGINEER PRIOR TO PLACING CONCRETE. EXTERNAL CONCRETE TO BE CURED FOR MINIMUM OF 7 DAYS AND OTHER CONCRETE ELEMENTS SHALL BE MOIST CURED FOR A MINIMUM OF 3 DAYS FOLLOWING PLACEMENT OF CONCRETE.

C7. CONDUITS, PIPES AND THE LIKE SHALL NOT BE PLACED WITHIN THE CONCRETE COVER. FOUNDATIONS ADJACENT TO SERVICES ETC. SHALL BE EXTENDED DOWN SUCH THAT THE INFLUENCE LINE OF THE FOUNDATIONS IS BELOW THE SERVICES.

C8. HOLES, CHASES OR PIPES OTHER THAN THOSE SHOWN ON THE STRUCTURAL DRAWINGS SHALL NOT BE PLACED IN CONCRETE MEMBERS WITHOUT PRIOR APPROVAL OF THE ENGINEER.

C9. THE MAXIMUM HEIGHT POUR FOR CONCRETE ELEMENTS SHALL BE 3.0m UNLESS APPROVED BY ENGINEER.

C10. WHEN SHADE TEMPERATURE EXCEEDS 35C, THE EXPOSED SURFACE OF CONCRETE SHALL BE SPRAYED WITH A FINE FILM OF APPROVED ALIPHATIC ALCOHOL DURING CONCRETE PLACEMENT AND FINISHING IN ACCORDANCE WITH THE MANUFACTURERS RECOMMENDATIONS.

C11. ALL CONCRETE SHALL BE MECHANICALLY VIBRATED IN THE FORM TO GIVE MAXIMUM COMPACTION WITHOUT SEGREGATION OF THE CONCRETE.

C12. ARRANGE FOR A NATA REGISTERED TESTING LABORATORY TO TAKE SAMPLE OF AND TEST CONCRETE FOR COMPRESSION, FLEXURAL TENSILE STRENGTH (SLABS ON GROUND ONLY) AND SLUMP, COMPRESSION TEST SAMPLES SHALL CONSISTS OF 3 STANDARD CYLINDERS (4 STANDARD CYLINDERS FOR POST-TENSIONED CONCRETE) TESTED FOR COMPRESSIVE STRENGTH AT 3 DAYS (FOR POST-TENSIONED CONCRETE), 7 DAYS AND 2 AT 28 DAYS. A SLUMP TEST MUST BE TAKEN ON EACH STRENGTH TEST SAMPLE.

DEMOLITION

DE1. ALL DEMOLITION TO BE DONE IN ACCORDANCE WITH WORK COVER CODE OF PRACTICE AND AS2601. THE STRUCTURE IS TO BE CAPABLE OF SUPPORTING ALL VERTICAL AND HORIZONTAL LOADS OUTLINED IN AS2601.

DE2. THE BUILDER IS RESPONSIBLE TO MAINTAIN THE STRUCTURE IN A STABLE CONDITION DURING CONSTRUCTION.

DE3. THE BUILDER MUST NOT ALLOW FOR DEMOLITION MATERIAL TO DROP ON EXISTING STRUCTURES. INSTALL CATCH DECKS AS REQUIRED.

REMOVAL OF EXISTING WALLS

RE1. THE BUILDER IS RESPONSIBLE FOR THE TEMPORARY STABILITY AND SUPPORT OF ALL BRICK WALLS, FLOORS AND ROOF THAT ARE SUPPORTED BY WALLS THAT ARE BEING REMOVED.

RE2. THE BUILDER IS RESPONSIBLE FOR PROPS AND NEEDLES. DO NOT DEMOLISH UNTIL BRICKWORK ABOVE IS ADEQUATELY SUPPORTED.

RE3. THE BUILDER IS TO ALLOW FOR REPAIRS TO ANY WALL THAT IS DAMAGED AS A CONSEQUENCE OF THE WORK.

RE4. DO NOT REMOVE TEMPORARY PROPS WITHOUT AN INSPECTION BY THE ENGINEER AND GROUT OR OTHER HAS REACHED THE REQUIRED STRENGTH.

RE5. THE EXISTING STRUCTURE SHOWN ON THE DRAWINGS IS INDICATIVE ONLY. ADVISE THE ENGINEER IF THE EXISTING STRUCTURE DIFFERS FROM THAT SHOWN ON THE DRAWINGS.

EXISTING STRUCTURES (ALTERATIONS AND ADDITIONS)

E1. THE DRAWINGS ARE BASED ON ASSUMPTIONS RELATING TO THE EXISTING BUILDING.

E2. AFTER EXPOSING THE STRUCTURE OF THE EXISTING BUILDING THE BUILDER MUST ADVISE THE ENGINEER. THE ENGINEER IS TO INSPECT THE EXISTING STRUCTURE AND CONFIRM THE SUITABILITY OF THE DOCUMENTATION PRIOR TO COMMENCING THE WORK RELATING TO THE ALTERATIONS AND ADDITIONS.

BRICKWORK & BLOCKWORK

B1. ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH THE AS3700 - MASONRY STRUCTURES CODE.

B2. MORTAR FOR THE MASONRY SHALL BE PROPORTIONED AS

FOLLOW (BY VOLUME) :

GENERALLY :
SAND: 5 PARTS, LIME: 0 PART, CEMENT: 1 PART
METHYL CELLULOSE WATER THICKENER TO BE USED.

OR WITH NO ADDITIVES:
SAND: 6 PARTS, LIME: 1 PART, CEMENT: 1 PART

BELOW DAMP PROOF COURSE, IN RETAINING WALLS AND IN AREAS SUBJECT TO ATTACK FROM SALT SPRAY OR HEAVILY POLLUTED AREAS :
SAND: 4 PARTS, LIME: 0 PART, CEMENT: 1 PART
METHYL CELLULOSE WATER THICKENER TO BE USED.

OR WITH NO ADDITIVES:
SAND: 4.5 PARTS, LIME: 0.5 PART, CEMENT: 1 PART

B3. ALL LOAD BEARING BRICKWORK TO HAVE A MINIMUM UNCONFINED COMPRESSIVE STRENGTH fuc OF 20 MPa.

B4. REINFORCED BLOCK WALLS SHALL BE CORE FILLED WITH CONCRETE COMPRESSIVE STRENGTH f'c OF 25 MPa. MAX. 10mm. AGGREGATE AND 150 SLUMP (TYPICAL U.N.O.) ALL BLOCKS TO HAVE A MINIMUM GRADE OF f'b OF 15 MPa.

B5. PROVIDE CLEAN OUT BLOCKS TO ALL CORE FILLED BLOCKWORK

B6. GALVANISED COURSE REINFORCEMENT SHALL BE PROVIDED AT VERTICAL SPACINGS EVERY 6th. COURSE EQUAL TO:
110mm - MRBL 50
230mm - MRBL 150
ONE LAYER SHALL BE PROVIDED OVER AND UNDER ALL WINDOW AND DOOR OPENINGS AND EXTEND 300mm. PAST OPENING.

B7. CONTROL JOINTS ARE TO BE PROVIDED IN THE LOCATIONS INDICATED ON THE CONTRACT DOCUMENTS. IF NO CONTROL JOINTS ARE INDICATED THEY SHOULD BE PROVIDED AT SPACINGS RECOMMENDED BY THE BRICK OR BLOCK MANUFACTURER AND THE CEMENT CONCRETE & AGGREGATES AUSTRALIA TECHNICAL NOTE 61 (TN61). CONTROL JOINT SPACINGS NOT EXCEEDING 6m. CONFIRM LOCATION OF ALL CONTROL JOINTS WITH ARCHITECT AND ENGINEER PRIOR TO CONSTRUCTION.

B8. MASONRY SHALL NOT BE CONSTRUCTED ON SUSPENDED SLABS OR BEAMS UNTIL ALL FORMWORK AND PROPS HAVE BEEN REMOVED AND CONCRETE HAS ACHIEVED ADEQUATE STRENGTH.

B9. NON-LOAD BEARING WALLS SHALL BE KEPT 20mm CLEAR OF SLAB AND BEAM SOFFITS. FILL GAP WITH APPROVED COMPRESSIBLE MATERIAL. PROVIDE LATERAL RESTRAINT TO TOPS OF ALL WALLS AS REQUIRED.

B10. CONCRETE SLABS SUPPORTED ON BRICKWORK SHALL BE POURED ON GALV. METAL SLIP JOINTS OR EQUIVALENT FOR EXTERNAL WALLS OR 2 LAYERS OF 0.2mm THICK PVC FOR INTERNAL WALLS. TOP COURSE OF BRICKS SHALL BE LAID FROGS DOWN.

B11. CHASES, RECESSES AND RAKING OF JOINTS ARE NOT PERMITTED IN MASONRY WITHOUT THE APPROVAL OF THE ENGINEER.

B12. WHERE INTERNAL BRICK OR BLOCK WALLS ABUT STEEL OR TIMBER COLUMNS PROVIDE GALV. CRIMPED FRAME TIES AT FOUR (4) COURSE VERTICAL CENTRES FOR BRICKWORK AND 2 COURSE VERTICAL CENTRES FOR BLOCKWORK. USE MASONRY EXPANSION TIE (M.E.T.) 1-6 300 LONG POWER FIXED WITH 3.8mm DIA. DRIVE PINS. ALTERNATIVELY, PROVIDE 10 PL. TABS WITH 2M10 CHEMICAL ANCHORS (80mm EMBEDMENT) FOR EXISTING WALLS.

B13. TEMPORARY BRACING SHALL BE PROVIDED TO WALLS AS NECESSARY TO MAINTAIN STABILITY DURING CONSTRUCTION.

B14. ALL WALLS SHOWN AS 230 (TWO BRICKS WIDE) ARE BE CONSTRUCTED AS FULLY BONDED WITH HEADER COURSE EVERY 4th COURSE U.N.O.

B15. ALL CONNECTORS, CAVITY TIES etc. FOR EXTERNAL WALLS TO BE STAINLESS STEEL (316 or 316L) IN ACCORDANCE WITH AS1649.

B16. SHELF ANGLES AND LINTELS TO BE STAINLESS STEEL (GRADE 316 or 316L) OR HOT DIP GALVANISED (600g/m²) THEN PAINTED WITH 50 MICRONS EPOXY PRIMER, THEN PAINTED WITH 125 MICRONS HIGH BUILD EPOXY IN ACCORDANCE WITH AS3750.14 OR PAINT IN ACCORDANCE WITH STEELWORK NOTE S6 FOR EXTERNAL USE.

TIMBER WALL PLATES CONNECTED TO MASONRY WALLS

WP1. WALL PLATES WITH CHEMICAL ANCHORS CONNECTED TO MASONRY WALLS ARE NOT PERMITTED UNLESS SPECIFICALLY DOCUMENTED WITHIN THE DRAWINGS.

WP2. WHERE TIMBER JOISTS SPAN ONTO MASONRY WALLS, THE JOISTS ARE TO SIT ON TOP OF THE WALL OR THEY ARE TO BE HOUSED INTO THE WALL.

CHEMICAL ANCHORS

CA1. ALL CHEMICAL ANCHORS TO BE INSTALLED AS PER MANUFACTURERS RECOMMENDATIONS. ALL ANCHORS TO BE HILTI HIT-HY 200 + HIT-V CHEMICAL ANCHORS OR EQUIVALENT.

CA2. ALL WORKS AND MATERIALS FOR POST-INSTALLED CHEMICAL ANCHORS INTO CONCRETE TO BE IN ACCORDANCE WITH AS5216.

CA3. DIAMETER OF HOLES ARE TO THE MANUFACTURERS RECOMMENDATIONS. DRILL HOLES USING ROTARY PERCUSSION DRILL. DO NOT CORE DRILL HOLES.

CA4. CLEAN AND DEGREASE BOLT/BARS PRIOR TO INSTALLATION.

CA5. ENSURE CHEMICAL IS ALLOWED TO FULLY CURE IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS PRIOR TO LOADING BOLTS/BARS.

CA6. CHEMICAL ANCHORS REQUIRED TO SUPPORT PERMANENT TENSION LOADS ARE TO BE TESTED AFTER INSTALLATION.

FOUNDATIONS

F1. FOOTINGS HAVE BEEN ENGINEERED FOR AN ALLOWABLE BEARING PRESSURE OF 3500 kPa., SHAFT ADHESION 350 kPa (COMPRESSION). 175 kPa (TENSION).

F2. THE BUILDER MUST ENGAGE A GEOTECHNICAL ENGINEER FOR ALL GROUND WORKS, INCLUDING EXCAVATIONS, FOUNDATIONS, SOIL CLASSIFICATIONS, ETC.

F3. THE GEOTECHNICAL ENGINEER IS TO VERIFY THE ADEQUACY OF FOUNDATION MATERIAL IN ALL FOOTINGS. APPROVAL OF THE FOUNDATION MATERIAL SHALL BE OBTAINED FROM THE ENGINEER PRIOR TO PLACING OF CONCRETE.

F4. STRIP ALL TOPSOIL FROM THE CONSTRUCTION AREA. ALL STRIPPED TOPSOIL IS TO BE REMOVED FROM THE SITE UNLESS DIRECTED OTHERWISE. ANY WEAK OR DEFECTIVE AREAS OF FOUNDATION SOIL SHALL BE REMOVED. REPLACE OR RAISE GROUND AS REQUIRED WITH SELECT FILL COMPACTED IN LAYERS. EACH NOT MORE THAN 100mm. THICK. TO MINIMUM 98% STANDARD MAXIMUM DRY DENSITY IN ACCORDANCE WITH AS1289 5.1.1. SELECT FILL TO BE AS PER TABLE:

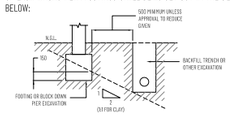
SIEVE APERTURE (mm) TO AS 1152	PERCENTAGE PASSED (BY MASS)
75.0	100
9.5	100 TO 50
2.36	100 TO 30
0.6	50 TO 15
0.075	< 25

PLASTICITY INDEX TO BE > OR = 2% AND < OR = 15%. NON DISPERSIVE (A RATING OF NIL AS DEFINED BY THE 'DISPERSION' TEST AS1289.3.8.1).

F5. ALL INTERNAL SLABS TO BE CAST ON 0.2mm VAPOUR BARRIER ON FREE DRAINING BASE COURSE.

F6. DO NOT BACKFILL RETAINING WALLS (OTHER THAN CANTILEVERED WALLS) UNTIL FLOOR CONSTRUCTION AT TOP AND BOTTOM IS COMPLETE.

F7. EXCAVATION NEAR EXISTING FOOTINGS SHALL NOT EXTEND BELOW FOUNDATION LEVEL OR BELOW THE ZONE OF INFLUENCE WITHOUT THE ENGINEERS APPROVAL, UNLESS OTHERWISE APPROVED BY THE GEOTECHNICAL ENGINEER / ENGINEER / SUPERINTENDENT THE LIMITS OF EXCAVATIONS NEAR FOOTINGS SHALL BE AS SET OUT IN THE DETAIL BELOW:



PRIOR TO ANY EXCAVATION NEAR EXISTING FOOTINGS, THE BUILDER SHALL DETERMINE THE DEPTH OF FOUNDING OF EXISTING FOOTINGS BY LOCAL INVESTIGATE EXCAVATION. EXCAVATION SHALL NOT PROCEED BELOW A LEVEL 150mm ABOVE THE UNDERSIDE OF EXISTING FOOTINGS UNTIL INSTRUCTION IS OBTAINED FROM THE ENGINEER ON PROCEDURES & PRECAUTIONS TO BE TAKEN.

F8. ALL NEW FOOTINGS TO BE FOUNDED ON SIMILAR OR BETTER FOOTINGS THAN THE EXISTING FOUNDATIONS. ALL FOOTINGS TO BE FOUNDED ON THE SAME MATERIAL.

F9. ALL VERTICAL ROCK EXCAVATIONS TO BE INSPECTED BY A GEOTECHNICAL ENGINEER. ALLOWANCE TO BE MADE FOR POSSIBLE RECTIFICATION WORKS TO THE ROCK EXCAVATION.

F10. ANY OVER EXCAVATION SHALL BE BACKFILLED WITH N20 CONCRETE OR OTHER MATERIAL APPROVED BY THE ENGINEER.

F11. THE BUILDER IS RESPONSIBLE FOR MAINTAINING EXCAVATIONS IN A STABLE CONDITION, WITHOUT AFFECTING ADJACENT PROPERTIES OR SERVICES. WHERE REQUIRED, TEMPORARY SHORING MUST BE PROVIDED TO THE SIDES OF THE EXCAVATIONS.

F12. REFER TO GEOTECHNICAL REPORT: No. GG10978.001, DATED 27.03.2023 BY GREEN GEOTECHNICS. GROUND PREPARATION TO BE IN ACCORDANCE WITH REPORT.

FORMWORK

FW1. FORMWORK SHALL BE DESIGNED, CONSTRUCTED AND STRIPPED IN ACCORDANCE WITH AS3610.

FW2. STRIPPING TIME SHALL BE BASED ON THE CONCRETE REACHING A MINIMUM STRENGTH OF 25 MPa.

FW3. BUILDER SHALL SUBMIT PROPOSED SHORING AND BACKPROPPING METHODS FOR THE ENGINEERS APPROVAL BEFORE STRIPPING CONCRETE ELEMENTS.

FW4. FORMWORK CERTIFICATION SHALL BE SUBMITTED TO THE ENGINEER PRIOR TO PLACING CONCRETE. FORMWORK SHALL BE CERTIFIED BY A PRACTICING STRUCTURAL ENGINEER FOR CONFORMANCE WITH THE AUSTRALIAN STANDARDS PRIOR.

FW5. CAMBER. UNLESS NOTED OTHERWISE ON DRAWINGS SLABS AND BEAMS TO BE GIVEN A POSITIVE UPWARD CAMBER AS FOLLOWS. 3mm PER 1000mm AT MIDSPAN FOR CLEAR SPAN BETWEEN SUPPORTS FOR SLABS. 1.5mm PER 1000mm AT MIDSPAN FOR CLEAR SPAN BETWEEN SUPPORTS FOR BEAMS. 1/200 OF THE PROJECTED DISTANCE FROM THE SUPPORT FOR CANTILEVERS. MAINTAIN THE SLAB AND THE BEAM DEPTHS SHOWN. METHOD OF CAMBERING TO FORMWORK IS TO BE AGREED UPON WITH THE ENGINEER.

ISSUE	DESCRIPTION	DATE	CHK
A	ISSUED FOR CONSTRUCTION CERTIFICATE	29.08.24	

ARCHITECT/DESIGNER

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PROJECT

SOUTH BRONTE PUMPHOUSE
BRONTE NSW 2024

CLIENT

WAVERLEY COUNCIL

CANTILEVER

cantileverstudio.com.au

TITLE

CONSTRUCTION NOTES
SHEET 1

STRUCTURAL DRAWING

ENGINEER	DRAWN	DATE	SCALE
DH	MP	AUG '24	N/A

JOB NUMBER	DRAWING NUMBER	REVISION
04078	S00-01	A

CERTIFIED

REINFORCEMENT

R1. ALL REINFORCEMENT AND MATERIALS SHALL BE IN ACCORDANCE WITH AS3600, AS4671 AND OTHER RELEVANT AUSTRALIAN STANDARDS.

R2. REINFORCEMENT TYPE AND GRADE TO BE AS FOLLOWS:
N - HOT ROLLED DEFORMED BAR - D500N
R - HOT ROLLED PLAIN ROUND BAR - R250N
SL - SQUARE MESH - D500L
RL - RECTANGULAR MESH - D500L
L_TM - TRENCH MESS - D500L
RW - COLD ROLLED RIBBED WIRE - D500L
W - COLD DRAWN ROUND WIRE - D500L

R3. REINFORCING BARS ARE DENOTED ON THE DRAWINGS AS FOLLOWS:
NUMBER OF BARS, BAR TYPE, BAR SIZE (mm), SPACING (mm), LAYER.
FOR EXAMPLE: 20 N16-200 (BB)
REINFORCEMENT MESH IS DENOTED ON THE DRAWINGS AS FOLLOWS:
TYPE, AS4671 REFERENCE NUMBER, LOCATION.
FOR EXAMPLE: RL818 TOP

R4. REINFORCEMENT IS REPRESENTED ON THE DRAWINGS INDICATIVELY. THE REINFORCEMENT IS NOT SHOWN ON THE DRAWINGS IN TRUE PROJECTION.

R5. ALL REINFORCEMENT SHALL BE SECURELY SUPPORTED AND MAINTAINED IN CORRECT POSITION DURING THE PLACEMENT OF CONCRETE.

R6. BAR CHAIRS TO EXTERIOR SURFACES WITHIN 1km OF THE COAST SHALL BE PLASTIC OR STAINLESS STEEL.

R7. CLEAR COVER TO REINFORCEMENT (INCLUDING FITMENTS) SHALL BE AS NOTED ON THE DRAWINGS, WHERE NOT SPECIFICALLY DESIGNATED COVER IS TO BE IN ACCORDANCE WITH AS3600

R8. COVER TO REINFORCEMENT ENDS TO BE 45mm, U.N.O.

R9. PROVIDE N12-450 SUPPORT BARS TO TOP REINFORCEMENT AS REQUIRED, LAP 450 U.N.O. WHERE CROSS BARS ARE NOT SHOWN ON PLAN OR SECTION, PROVIDE N12-300 CROSS RODS AS REQUIRED, LAP 450 AS REQUIRED.

R10. NO REINFORCEMENT SPLICES SHALL BE MADE, OTHER THAN THOSE SHOWN ON STRUCTURAL DRAWINGS, WITHOUT THE PRIOR APPROVAL OF THE ENGINEER. MINIMUM LAP FOR FABRIC SHALL BE ONE MESH PLUS 25mm.

R11. DO NOT CUT, HEAT OR WELD REINFORCEMENT WITHOUT WRITTEN PERMISSION FROM THE ENGINEER. WELDING SHALL BE IN ACCORDANCE WITH AS1554.3

R12. STAGGERED BARS ARE TO BE PLACED ALTERNATELY

R13. REINFORCEMENT TO BE CHECKED BY ENGINEER PRIOR TO POURING. GIVE ENGINEER 48 HOURS NOTICE OF CHECK BEING REQUIRED & ALLOW SUFFICIENT TIME FOR ANY REMEDIAL WORK REQUIRED AFTER CHECKING PRIOR TO CONCRETE POUR.

R14. THE MINIMUM CLEAR SPACING BETWEEN CONDUITS, CABLES, PIPES & BARS TO BE AS REQUIRED BY AS3600 BUT NOT LESS THAN THREE DIAMETERS. CONDUITS IN SLABS TO BE PLACED ABOVE BOTTOM REINFORCEMENT & BELOW TOP REINFORCEMENT

R15. ALL RE-ENTRANT CORNERS & SERVICE HOLES ARE TO HAVE TRIMMER BARS PLACED DIAGONALLY AT CORNERS USING TWO BARS (1600 LONG), ONE TIED TO THE UNDERSIDE OF TOP REINFORCEMENT & THE OTHER TIED TO THE TOP OF THE BOTTOM REINFORCEMENT TRIMMER BARS TO BE N12 FOR SLABS NOT THICKER THAN 120, N16 FOR SLABS NOT THICKER THAN 180, N20 OTHERWISE

R16. HOOKS, BENDS, SPLICES & LAPS TO BE IN ACCORDANCE WITH AS3600.

R17. 10N16-250 + 4N16 — INDICATES THE EXTENT OF AREA COVERED BY BARS WITH 10 BARS AT 250 CENTRES PLUS 4 EXTRA PLACED ONE PER SPACE CENTRALLY OVER COLUMN.

R18. — INDICATES A CHANGE IN BAR SHAPE AND/OR LENGTH.

R19. T3 — INDICATES TO REPEAT SIMILAR GROUP OF BARS TAGGED THUS (T3) WITH BARS LAID IN THE DIRECTION OF THE ARROW.

R20. BAND TIES:
2N12-200 INDICATES TIES IN SETS OF TWO AT 200 SPACINGS.

R21. REINFORCEMENT IS TO BE FIXED SO AS TO ACHIEVE THE FOLLOWING CLEAR COVERS (COVERS APPLY TO LOCAL RECESSES, DRIP GROOVES, ETC.):
ALL SURFACES
TIDAL/SPLASH ZONE: C2 - 65mm

R22. REINFORCEMENT THAT HAS BEEN BEND AND SUBSEQUENTLY STRAIGHTENED OR BENT IN THE REVERSE DIRECTION SHALL NOT BE BENT BACK AGAIN WITHIN 20 BAR DIAMETERS OF THE PREVIOUS BEND.

R23. FABRIC SHALL BE LAPPED SUCH THAT THE TWO OUTERMOST WIRES OF ONE SHEET OVERLAP THE TWO OUTERMOST WIRES OF THE OTHER SHEET BY 25mm MINIMUM.

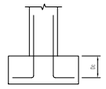


A MAXIMUM OF THREE SHEETS OF FABRIC SHALL BE LAPPED AT ANY ONE POINT.

REINFORCEMENT LAP LENGTHS

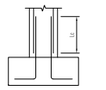
COMPRESSION LAPS

RL1. DEVELOPMENT LENGTH OF DEFORMED BARS IN COMPRESSION



f'c(MPa)	N10	N12	N16	N20	N24	N28	N32	N35	N40
20	250	300	400	500	600	700	800	900	1000
≥25	225	275	350	450	525	625	700	800	900

RL2. LAPPED SPLICES FOR BARS IN COMPRESSION

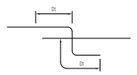


f'c(MPa)	N10	N12	N16	N20	N24	N28	N32	N35	N40
≥20	400	500	650	800	1000	1150	1300	1450	1600

NOTES:
1. FOR BUNDLED BARS, LENGTHS BASED ON LARGEST BAR
2. FOR 3 BAR BUNDLES, INCREASE LENGTHS BY 20%
3. FOR 4 BAR BUNDLES, INCREASE LENGTH BY 33%
4. INDIVIDUAL BAR SPLICES WITHIN A BUNDLE SHALL NOT OVERLAP

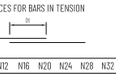
TENSION LAPS

RL3. DEVELOPMENT LENGTH FOR A DEFORMED BAR IN TENSION



f'c(MPa)	N10	N12	N16	N20	N24	N28	N32	N35	N40
20	475	600	800	1000	1250	1500	1800	2100	2450
25	425	500	700	900	1150	1350	1600	1900	2200
32	375	450	650	800	1000	1200	1450	1700	1950
40	325	400	650	800	1000	1150	1300	1450	1600
50	300	350	500	650	800	950	1150	1350	1550
≥65	300	350	500	600	700	850	1000	1200	1350

RL4. LAPPED SPLICES FOR BARS IN TENSION



f'c(MPa)	N10	N12	N16	N20	N24	N28	N32	N35	N40
20	575	700	1000	1250	1550	1900	2250	2650	3050
25	525	650	900	1150	1400	1700	2000	2350	2750
32	450	550	800	1000	1250	1500	1800	2100	2400
40	400	500	700	900	1100	1350	1600	1850	2150
50	375	450	650	800	1000	1200	1450	1650	1950
≥65	325	400	550	700	900	1050	1250	1450	1700

NOTES:
1. INCREASE LENGTHS BY 30% FOR A HORIZONTAL BAR WITH MORE THAN 300mm OF CONCRETE CAST BELOW THE BAR
2. FOR BUNDLED BARS, LENGTHS BASED ON LARGEST BAR
3. FOR 3 BAR BUNDLES, INCREASE LENGTHS BY 20%
4. FOR 4 BAR BUNDLES, INCREASE LENGTH BY 33%

STRUCTURAL STEEL

S1. ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH AS4100 AND AS1554 EXCEPT WHERE VARIED BY THE CONTRACT DOCUMENTS.

S2. PROVIDE TEMPORARY BRACING TO STRUCTURE TO ENSURE STABILITY DURING ERECTION AS PER GENERAL NOTES.

S3. DISTANCES BETWEEN CENTRES OF FASTENER HOLES AND THE MINIMUM EDGE DISTANCES SHALL COMPLY WITH AS4100.

S4. ALL CONNECTION PLATES TO BE 10mm THICK UNLESS NOTED OTHERWISE.

S5. THE BUILDER SHALL PROVIDE ALL CLEATS AND DRILL ALL HOLES NECESSARY FOR FIXING OF STEELWORKS AND ENSURE THAT THE STRUCTURE IS KEPT IN A STABLE CONDITION DURING ERECTION.

WELDS

S6. ALL WELDS SHALL BE 6mm CONTINUOUS FILLET UNLESS NOTED OTHERWISE. ALL WELDS TO USE ELECTRODES WITH A DESIGN STRENGTH OF fuw = 490 MPa UNLESS NOTED OTHERWISE. WHERE INDICATED ON THE DRAWINGS ALL BUTT WELDS SHALL BE COMPLETE PENETRATION BUTT WELDS. WELD CATEGORY TO BE S.P. ALL VISIBLE WELDS TO BE GROUND FLUSH AND WELD SPLATTER REMOVED. ALL WELDS SHALL BE MADE IN THE SHOP, EXCEPT WHERE SITE WELDS ARE SHOWN ON THE DRAWING OR OTHERWISE APPROVED BY THE ENGINEER.. WHERE USED IN AN EXTERNAL APPLICATION HIT AND MISS WELDING TO HAVE A CONTINUOUS SEAM WELD IN BETWEEN.

S7. ▶—— - INDICATES SITE WELDED CONNECTION

BOLTS

S8. ALL BOLTS SHALL BE M20 GRADE 8.8/S U.N.O. NO STEEL TO STEEL CONNECTION IS TO HAVE LESS THAN 2 BOLTS. BOLT DESIGNATION AS FOLLOWS:
4.6/S - COMMERCIAL BOLTS OF GRADE 4.6 TO AS1111 SNUG TIGHT.
8.8/S - HIGH STRENGTH BOLTS OF GRADE 8.8 TO AS1252 SNUG TIGHT.
8.8/TB - HIGH STRENGTH BOLTS OF GRADE 8.8 TO SD1252 FULLY TENSIONED TO AS4100 AS A BEARING JOINT.
8.8/TF - HIGH STRENGTH STRUCTURAL BOLT OF GRADE 8.8 TO AS1252, FULLY TENSIONED TO AS4100 AS A FRICTION JOINT WITH CONTACT SURFACES LEFT UNCOATED.
HIGH STRENGTH BOLTS (8.8) ARE NOT TO BE WELDED.

S9. CORROSION PROTECTION FOR STEELWORK TO BE IN ACCORDANCE WITH AS2312 AS FOLLOWS WITH A DURABILITY RANGE OF 25+ YEARS (EXTRA LONG TERM) AS DEFINED IN ISO 12944-1:
EXTERNAL/EXPOSED STEELWORK:
(C3 - MEDIUM DURABILITY CLASSIFICATION IN ACCORDANCE WITH AS2312)
AS/NZS 2312 - EHB6 (EPOXY MIO) OR PSL2 (POLYSILOXANE) OR PUR5 (POLYURETHANE) OR 1ZS3 (INORGANIC ZINC SILICATE) OR ACC6 (ACRYLIC)
STEELWORK IN CAVITIES:
(C3 - MEDIUM DURABILITY CLASSIFICATION IN ACCORDANCE WITH AS2312)
AS/NZS 2312 - HDG600P6 (HOT DIP GALVANISED)
INTERNAL/COVERED STEELWORK:
(C1 - VERY LOW CLASSIFICATION IN ACCORDANCE WITH AS2312)
AS/NZS 2312 - ACL2 (ACRYLIC) OR 1ZS2 (INORGANIC ZINC SILICATE)

S10. REPAIR STEELWORK WHICH HAS LOCALLY LOST HOT DIPPED GALV. COATING BY APPLYING A ZINC RICH EPOXY PRIMER SUCH AS 'DULUX ZINCANODE 202' IN ACCORDANCE WITH MANUFACTURERS SPECIFICATION OR EQUIVALENT.

S11. BOLTS, SCREWS, HOLD DOWN BOLTS, MASONRY ANCHORS SHALL BE HOT DIP GALVANISED TO AS1214.

S12. MINIMUM YIELD STRESS:
- HOT ROLLED SECTIONS: 300MPa
- SQUARE HOLLOW SECTIONS: 350MPa
- RECTANGULAR HOLLOW SECTIONS: 350MPa
- CIRCULAR HOLLOW SECTIONS: 250MPa
- PLATE: 250MPa

S13. STEELWORK ENCASED IN CONCRETE SHALL BE FREE FROM ALL LOOSE RUST, LOOSE MILL SCALE, DIRT, OIL, GREASE, ETC. AND REINFORCED WITH F41 FABRIC OR EQUIVALENT BLACK IRON WIRE, 3mm DIAMETER. MINIMUM COVER TO STEELWORK TO BE 50mm.

S14. FIX CROSS BRACING TO STRUCTURE AT 3000 MAXIMUM CENTRES WITH M12 RODS OR M16 HOOKS. ALL TURNBUCKLES TO BE PROPRIETARY ITEMS RATED TO SUIT THE SIZE OF THE BRACING.

S15. ALL BASE PLATES AND THE LIKE SHALL BE GROUTED WITH AN APPROVED CEMENTITIOUS, NON-SHRINK GROUT WITH A MINIMUM COMPRESSIVE STRENGTH OF 80MPa AT 7 DAYS. THICKNESS OF GROUT SHALL BE 20mm UNLESS NOTED OTHERWISE. ALLOW TO RECESS ALL BASE PLATES AND GRIND BOLTS FLUSH AND PUDDLE WELD AS REQUIRED.

S16. THE ENDS OF ALL HOLLOW SECTIONS SHALL BE SEALED WITH 6mm PLATES UNLESS NOTED OTHERWISE.

S17. FOR EACH BATCH OF STEEL SUPPLIED AND BOLTS SUPPLIED, THE CONTRACTOR SHALL OBTAIN A CERTIFICATE OF COMPLIANCE FROM THE STEEL SUPPLIER CERTIFYING COMPLIANCE WITH THE RELEVANT AUSTRALIAN STANDARD.

S18. IMPORTED STRUCTURAL STEEL MATERIAL
ALL STRUCTURAL STEEL TO COMPLY WITH AS4100. INCLUDING:
- CERTIFIED MILL TEST REPORTS OR TEST CERTIFICATES TO BE PROVIDED TO THE ENGINEER FOR APPROVAL PRIOR TO COMMENCEMENT OF FABRICATION FOR ALL STEEL AND FASTENERS.
- FOR COLD FORMED STEEL A CERTIFICATE OF CONFORMITY TO AS1163-1991 TO BE PROVIDED TO THE ENGINEER FOR APPROVAL PRIOR TO COMMENCEMENT OF FABRICATION.
ONLY CERTIFICATES FROM ACCREDITED TESTING AUTHORITIES RECOGNISED IN AUSTRALIA WILL BE ACCEPTED. FOR EXAMPLE, NATA OR JAS-ANZ.
ALL UNIDENTIFIED STEEL IS TO CONFORM WITH CLAUSE 2.2.3 OF AS4100.
IF MATERIAL SUPPLIED AND INSTALLED ARE NON-COMPLIANT THE CONTRACTOR IS RESPONSIBLE TO UNDERTAKE NATA OR EQUIVALENT CERTIFICATION OR REPLACEMENT OR RECTIFICATION AT THEIR COST.

S19. STEELWORK SHOP DRAWINGS
THE CONTRACTOR SHALL PREPARE AND SUBMIT STEELWORK SHOP DRAWINGS TO THE SUPERVISING ENGINEER FOR REVIEW. FABRICATION SHALL NOT COMMENCE UNTIL ALL REVIEWS BY THE SUPERVISING ENGINEER HAVE BEEN OBTAINED.

STEEL LINTELS

SL1. PROVIDE STEEL LINTELS OVER ALL OPENINGS IN ACCORDANCE WITH THE FOLLOWING TABLE. PROPRIETARY STEEL LINTELS MAY BE USED PROVIDED THEY ARE SIZED, TREATED AND INSTALLED IN ACCORDANCE WITH THE MANUFACTURERS DETAILS.

STEEL LINTELS SUPPORTING UNIFORM LOADS

MAXIMUM SPAN:	LINTEL MEMBER
950 mm:	50 x 10 FLAT PLATE
1050 mm:	75 x 10 FLATE PLATE
1200 mm:	75 x 75 x 8.0 EA
1500 mm:	90 x 90 x 8.0 EA
1800 mm:	100 x 75 x 8.0 UA
2400 mm:	125 x 75 x 10 UA
3000 mm:	150 x 90 x 12 UA

SL2. PROVIDE ONE (1) LINTEL TO EACH WALL LEAF. DO NOT CUT LINTELS ON SITE. KEEP THE LINTELS 6mm CLEAR OF HEADS AND FRAMES. PACK MORTAR BETWEEN THE ANGLE UPSTAND AND THE SUPPORTED MASONRY UNITS.

SL3. A MINIMUM OF FOUR (4) BRICK COURSES MUST BE PROVIDED OVER EACH LINTEL.

SL4. THE MINIMUM BEARING OF EACH LINTEL TO BE 150mm FOR SPANS LESS THAN 1800mm AND 230mm FOR SPANS UP TO 3000mm.

SL5. TEMPORARILY PROP LINTELS UNTIL THE MASONRY REACHES ITS REQUIRED STRENGTH OR A MINIMUM OF 3 DAYS.

SL6. NOTIFY THE ENGINEER IF LINTELS SUBJECT TO CONCENTRATED LOADS FROM BEAMS OR THE LIKE.

STRUCTURAL TIMBER

T1. MATERIALS AND WORKMANSHIP SHALL COMPLY WITH AS1720 TIMBER ENGINEERING CODE AND AS1684 LIGHT TIMBER FRAMING CODE AND AS4440 INSTALLATION OF NAILPLATED TIMBER ROOF TRUSSES.

T2. ALL TIMBER USED SHALL HAVE BEEN STRESS GRADED BY VISUAL OR MECHANICAL MEANS IN ACCORDANCE WITH THE APPROPRIATE AUSTRALIAN STANDARDS.

T3. HOLES FOR BOLTS, UNLESS NOTED OTHERWISE (U.N.O.), SHALL BE MADE OVERSIZE AS FOLLOWS:
BOLT DIAMETER 15mm..OR LESS - 2mm..OVERSIZE
BOLT DIAMETER 16mm..AND GREATER - 3mm..OVERSIZE

T4. SHANK AND THREAD OF BOLTS SHALL BE THOROUGHLY COATED WITH A HEAVY WATERPROOF GREASE BEFORE INSERTING INTO THE TIMBER.

T5. SPECIALISED METAL FASTENERS SUCH AS GANG-NAIL PLATES, TRIP-L-GRIP ETC. SHALL BE OF PROVEN TYPE & SHALL HAVE HAD WORKING LOADS DETERMINED IN ACCORDANCE WITH THE PROCEDURE SPECIFIED IN AS1649.

T6. AT THE PRACTICAL COMPLETION OF THE CONTRACT, & AGAIN AT THE END OF THE MAINTENANCE PERIOD & IF NECESSARY DURING THAT PERIOD, THE CONTRACTOR SHALL RE-TIGHTEN ALL BOLTS TO APPROVAL. BOLTS THAT WILL BE INACCESSIBLE AFTER COMPLETION OF THE PROJECT, SHALL BE RE-TIGHTENED IMMEDIATELY AFTER TO BEING BUILT.

T7. TRUSSES SHALL BE CONSTRUCTED ONLY BY A FABRICATOR APPROVED BY THE ENGINEER. DESIGN SHALL BE IN ACCORDANCE WITH AS1720 & TO THE LOADINGS, PROFILES & TOGETHER WITH REQUIREMENTS SPECIFIED ON THE DRAWINGS. DESIGN OF TRUSSES SHALL BE BY A QUALIFIED STRUCTURAL ENGINEER EXPERIENCED IN TIMBER DESIGN. SHOP DRAWINGS OF TRUSSES, TOGETHER WITH ALL NECESSARY INFORMATION FOR CHECKING THE STRENGTH OF TRUSS MEMBERS & CONNECTORS SHALL BE SUBMITTED NOT LESS THAN FOURTEEN DAYS PRIOR TO COMMENCEMENT OF FABRICATION. FABRICATION SHALL NOT COMMENCE UNLESS PERMISSION TO DO SO HAS BEEN GIVEN.

T8. EDGE DISTANCES FOR FASTENERS IN TIMBER (FROM ENDS AND SIDES) SHALL BE IN ACCORDANCE WITH AS1720.

T9. CONFIRM ALL SUBSTITUTIONS WITH THE SUPERVISING ENGINEER. MGP10 IS MACHINE GRADED PINE AND MAY BE SUBSTITUTED WITH F7 SEASONED PINE OR F11 SEASONED OREGON. LVL 15 REFERS TO SMARTLVL GRADE 15 BY TILLING TIMBER PTY LTD. OR EQUIVALENT.

T10. ALL EXTERNAL TIMBER TO BE TREATED. LVL NOT TO BE USED EXTERNALLY. WHERE LVL TIMBERS ARE SHOWN EXTERNALLY THE BUILDER IS TO SUBSTITUTE WITH A SUITABLE EXTERNALLY TREATED TIMBER.

T11. BUILDER TO PROVIDE ALL ROOF BATTENS AS REQUIRED FOR ROOF SHEETING. BATTENS TO BE FIXED TO RAFTERS WITH TYPE 17 NUMBER 14 BUGLE SCREWS TO AS1684.

T12. ALL FLOOR JOISTS TO BE BLOCKED WITH FULL HEIGHT BLOCKING AT 1800 MAXIMUM CENTRES.

T13. 19mm (MINIMUM) STRUCTAFLOR OR F11 PLYWOOD OR EQUIVALENT TO BE INSTALLED TO THE MANUFACTURERS RECOMMENDATIONS CONTINUOUSLY AS PLATFORM CONSTRUCTION ON TOP OF ALL FLOOR JOISTS. FLOORING TO BE GLUED AND SCREWED DIRECTLY TO THE FLOOR JOISTS.

STRUCTURAL TIMBER (TIE DOWN)

TD1. THE BUILDER IS RESPONSIBLE FOR ADEQUATE TIE DOWN OF ALL ROOF MEMBERS TO THE FLOOR STRUCTURE AND FLOOR STRUCTURE TO FOUNDATIONS IN ACCORDANCE WITH AS1684.

TD2. TYPICALLY ALL RAFTERS TO BE CONNECTED TO THE WALL TOP PLATE AND ROOF BEAMS WITH PROPRIETARY CONNECTORS SUCH AS TRIP 'L' GRIPS OR APPROVED EQUIVALENT. TOP PLATE TO BE STRAPPED TO WALL FRAMING STUDS OR MASONRY WALLS USING 20 x 0.8 GALVANISED STRAP WITH 4 NAILS AT SPACINGS DETERMINED IN ACCORDANCE WITH AS1684. WALL FRAMING STUDS TO BE CONNECTED TO BOTTOM PLATE USING 20 x 0.8 GALVANISED STRAP WITH 4 NAILS AT SPACINGS DETERMINED IN ACCORDANCE WITH AS1684. BOTTOM PLATE TO BE CONNECTED TO THE FLOOR FRAMING OR CONCRETE SLAB IN ACCORDANCE WITH AS1684.

TD3. ALL ROOF BEAMS TO BE STRAPPED TO THE TOP PLATE AND WALL FRAMING IN ACCORDANCE WITH AS1684.

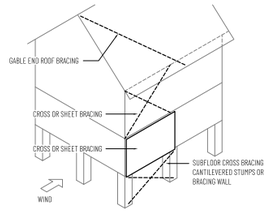
TD4. ALL BRACING WALLS TO BE CONNECTED TO THE FLOOR STRUCTURE IN ACCORDANCE WITH AS1684.

STRUCTURAL TIMBER (BRACING)

TB1. MATERIALS AND WORKMANSHIP SHALL COMPLY WITH AS1720 TIMBER ENGINEERING CODE AND AS1684 LIGHT TIMBER FRAMING CODE AND AS4440 INSTALLATION OF NAILPLATED TIMBER ROOF TRUSSES.

TB2. PERMANENT BRACING SHALL BE PROVIDED TO ENABLE THE ROOF, WALL AND FLOOR FRAMING TO RESIST HORIZONTAL FORCES APPLIED TO THE BUILDING IN ACCORDANCE WITH SECTION 8 OF AS1684.

TB3. CONNECTIONS SHALL BE PROVIDED TO TRANSFER THESE FORCES THROUGH THE FRAMEWORK AND SUBFLOOR STRUCTURE TO THE BUILDING'S FOUNDATIONS.



TB4. TEMPORARY BRACING SHALL BE PROVIDED DURING CONSTRUCTION TO RESIST THE WIND LOAD AND CONSTRUCTION LOADS ON THE BUILDING.

TB5. THE BUILDER IS RESPONSIBLE FOR PROVIDING THE BRACING TO THE BUILDING IN ACCORDANCE WITH AS1684. STEEL PORTAL FRAMES, PROPRIETARY BRACING FRAMES (SUCH AS PT BRACES), WALL BRACING, STRAP BRACED WALLS AND PLY BRACED WALLS (PBW) HAVE BEEN HAVE BEEN ENGINEERED AND SHOWN ON THE DRAWINGS TO ASSIST WITH THE BRACING. ADDITIONAL BRACING ELEMENTS MAY BE REQUIRED.

SUBFLOOR BRACING

SB1. SUBFLOOR BRACING IS NOT REQUIRED FOR SLABS ON GROUND

SB2. SUBFLOOR BRACING SHALL BE PROVIDED BY USING BRACING, CANTILEVERED STUMPS OR COLUMNS, CROSSBRACING OR MASONRY SHEAR WALLS IN ACCORDANCE WITH CLAUSE 8.3.5 OF AS1684.

WALL BRACING

WB1. WALLS GREATER THAN 450 LONG WITH SHEET LININGS CAN BE USED TO SUPPORT UP TO 50% OF THE TOTAL BRACING REQUIREMENTS. BRACING CAPACITY ARE AS FOLLOWS:

METHOD	BRACING CAPACITY
SHEETED ONE SIDE ONLY	0.45 kN/m
SHEETED ON TWO SIDES	0.75 kN/m

WB2. SHEET-BRACED WALLS SHALL BE SHEETED CONTINUOUSLY FROM THE TOP PLATE OR RING BEAM TO THE BOTTOM PLATE. NOGGINGS ARE TO BE PROVIDED OVER ALL HORIZONTAL SHEET JOINS WITH FIXINGS AS REQUIRED FOR THE TOP AND BOTTOM PLATE. SHEET BRACING TO BE A MINIMUM OF 900 WIDE EXCEPT FOR BRACING TYPE (n) METHOD A WHICH IS TO BE A MINIMUM OF 600 WIDE. ALL STUDS USED FOR SHEET BRACED WALLS ARE TO BE SEASONED TIMBERS WITH MINIMUM JOINT STRENGTH GROUP JD4 (LVL15 AND MGP10 IS ACCEPTABLE PROVIDED HEART-IN MATERIAL IS EXCLUDED) AND SPACED AT MAXIMUM 450 CENTRES.

WB3. DETAILS FOR STRAP BRACED WALLS AND PLY BRACED WALLS WHERE INDICATED ON THE DRAWINGS ARE TO BE IN ACCORDANCE WITH THE TYPICAL DETAILS. CAPACITIES OF THESE WALLS ARE GIVEN IN TABLE 8.18 OF AS1684. WHERE THE WALL HEIGHT EXCEEDS 2700 THE CAPACITIES ARE TO BE REDUCED IN ACCORDANCE WITH THE FOLLOWING TABLE:

WALL HEIGHT	MULTIPLIER
3000 mm	0.9
3300 mm	0.8
3600 mm	0.75
3900 mm	0.7
4200 mm	0.64

WB4. BRACING SHALL BE APPROXIMATELY EVENLY DISTRIBUTED THROUGHOUT THE BUILDING AND SHALL BE PROVIDED IN BOTH DIRECTIONS. THE MAXIMUM DISTANCE BETWEEN BRACING WALLS IN A SINGLE DIRECTION SHALL NOT EXCEED 9000mm.

WB5. ALL BRACING WALLS TO BE FIXED AT THE TOP OF THE WALLS IN ACCORDANCE WITH CLAUSE 8.3.6.8 OF AS1684.

WB6. ALL BRACING WALLS TO BE FIXED AT THE BOTTOM OF THE WALLS IN ACCORDANCE WITH CLAUSE 8.3.6.10 OF AS1684.

ROOF BRACING

RB1. MATERIALS AND WORKMANSHIP SHALL COMPLY WITH AS4440 INSTALLATION OF NAILPLATED TIMBER ROOF TRUSSES.

RB2. STEELBRACE SHALL HAVE A MINIMUM TENSION CAPACITY OF 8.4kN, MINIMUM CORROSION PROTECTION EQUIVALENT TO Z275 GALVANISED STEEL, END FIXING THAT PROVIDED A MINIMUM TENSION CAPACITY OF 8.4kN, BRACE TO INTERMEDIATE RAFTER, PURLIN AND TRUSS FIXINGS OF MINIMUM TENSION CAPACITY OF 0.70kN AND MINIMUM TENSION CAPACITY AT SPLICE OF 7.2kN. ROOF BRACING TO BE PRYDA SPEEDBRACE SDB 37 x 1.0 mm 8.7kN DESIGN TENSION CAPACITY OR EQUIVALENT.

RB3. ARRANGEMENT OF ROOF BRACING ON DRAWINGS IS INDICATIVE ONLY. NOT ALL REQUIRED ROOF BRACING IS SHOWN ON THE DRAWINGS. ALL ROOFS TO BE BRACED IN ACCORDANCE WITH AS4440 INSTALLATION OF NAILPLATED TIMBER ROOF TRUSSES. WHERE ROOF BRACING IS REQUIRED BUT IS NOT ABLE TO COMPLY WITH AS4440, PROVIDE CONTINUOUS PLY BRACED CEILINGS.

TOP HUNG OPERABLE WALLS AND DOORS

OW1. OPERABLE DOORS AND WALLS TO BE SUPPORTED OFF STEEL BEAMS OR CONCRETE SLABS AS SHOWN ON THE DRAWINGS. IF STEEL BEAMS OR CONCRETE SLABS ARE NOT SHOWN ON THE DRAWINGS AN ALLOWANCE FOR AN APPROPRIATELY SIZED STEEL BEAM SUPPORTED ON STEEL COLUMNS IS TO BE MADE.

OW2. STEEL BEAMS AND CONCRETE SLABS SUPPORTING OPERABLE DOORS/WALLS HAVE BEEN ENGINEERED TO DEFLECT NO MORE THAN 5mm UNDER THE WEIGHT OF THE DOORS/WALLS. IF TOLERANCES GREATER THAN THIS ARE REQUIRED BY THE MANUFACTURER THEN NOTIFY THE ENGINEER AND ALLOW FOR AN APPROPRIATELY SIZED LARGER BEAM AT NO ADDITIONAL COST.

OW3. A WEIGHT OF 35kg/m2 HAS BEEN ASSUMED FOR THE DOORS/WALLS. IF THE DOORS/WALLS ARE GREATER THAN THIS AMOUNT NOTIFY THE ENGINEER AND A LARGER BEAM IS TO BE ALLOWED FOR AT NO ADDITIONAL COST.

OW4. WHEN SETTING THE TRACK FOR THE OPERABLE DOOR/WALL THE STEEL BEAM AND CONCRETE SLAB SHOULD BE PRELOADED WITH THE WEIGHT OF THE DOOR/WALL.

PILES (CONCRETE AND STEEL)

P1. WORKMANSHIP AND MATERIALS FOR PILES SHALL BE IN ACCORDANCE WITH AS2159, AS3600, AS3700 and AS4100.

P2. PILES TO HAVE +/-75mm SURFACE POSITION PERPENDICULAR AND PARALLEL TO THE PILE LINE, 1% VERTICAL TOLERANCE & 25mm CUT OFF LEVEL.

P3. THE PILING CONTRACTOR SHALL DESIGN PILES & PILE CAPS WHICH WHEN INSTALLED PROPERLY WILL CARRY THE LOADS SHOWN ON THE DRAWINGS AND MEET THE PERFORMANCE REQUIREMENTS CALCULATIONS TO SUBSTANTIATE THE DESIGN AND GEOTECHNICAL ENGINEERING REQUIREMENTS. PILES SHALL BE DESIGNED FOR 10mm MAXIMUM DISPLACEMENT.

P4. THE NUMBER OF PILES AND THE PILE CAPACITIES MAY BE VARIED FROM THOSE ON THE DRAWINGS. REVISED ARRANGEMENTS OF PILES, ETC. MUST BE SUBMITTED TO THE SUPERVISING ENGINEER FOR APPROVAL PRIOR TO COMMENCEMENT OF PILING.

P5. REINFORCEMENT IS TO BE FIXED SO AS TO ACHIEVE 50mm CLEAR COVER.

P6. PROVIDE FULL LAP LENGTH TO VERTICAL BARS OF PILES ABOVE FINISHED CONCRETE.

P7. DO NOT CUT, HEAT OR WELD REINFORCEMENT WITHOUT WRITTEN PERMISSION FROM THE SUPERVISING ENGINEER.

P8. PILES TO BE DESIGNED FOR A 100 YEAR DESIGN LIFE FOR THE LOADS INDICATES IN THE DRAWINGS.

P9. CONTRACTOR TO ENGAGE A GEOTECHNICAL ENGINEER TO CONFIRM ALL FOUNDATIONS AND FOOTINGS.

P10. ALLOW TO USE THE TREMIE CONCRETE PLACEMENT METHOD IF WATER IS AT THE BASE OF THE PILE EXCAVATIONS. ALLOW TO USE LINERS IF REQUIRED.

P11. THE DESIGN AND DOCUMENTATION OF THE PROPOSED STRUCTURAL SYSTEM SHALL BE CERTIFIED BY A PRACTICING STRUCTURAL ENGINEER WITH SUITABLE PROFESSIONAL INDEMNITY COVER. ON COMPLETION OF THE CONSTRUCTION OF THE PILES, A FURTHER CERTIFICATION SHALL BE SUBMITTED CONFIRMING THE WORK HAS BEEN CARRIED OUT IN ACCORDANCE WITH THE DESIGN DOCUMENTATION.

P12. SUBMIT ENGINEERING CALCULATIONS OF VERTICAL COMPRESSIVE AND TENSILE CAPACITY, AND DURABILITY, PILING SHALL NOT COMMENCE UNTIL REVIEW BY SUPERVISING ENGINEER.

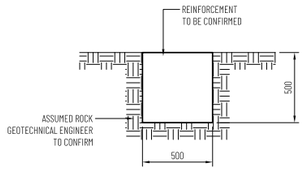
P13. FOR STEEL SCREW PILES: STEEL TO BE MINIMUM GRADE 350; SPLICES TO BE WELDED OR BOLTED FLANGES; ENDS PLATES TO BE PROVIDED TO BASE OF PILES; STATIC LOAD TESTS TO BE PROVIDED FOR ALL PILES WITH A SWL GREATER THAN 300kN; PILES TO BE CONCRETE FILLED FOR AGGRESSIVE SOILS.

TENSION ANCHORS

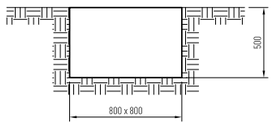
TA1. WORKMANSHIP AND MATERIALS FOR TENSION ANCHORS SHALL BE IN ACCORDANCE WITH AS3600 and AS4100.

TA2. TENSION ANCHORS TO HAVE +/-75mm SURFACE POSITION PERPENDICULAR AND PARALLEL TO THE TENSION ANCHOR LINE & 1% VERTICAL TOLERANCE.

TA3. THE TENSION ANCHOR CONTRACTOR SHALL DESIGN TENSION ANCHORS WHICH WHEN



SF1 - STRIP FOOTING DETAIL
SCALE 1:20



PF1 - PAD FOOTING DETAIL
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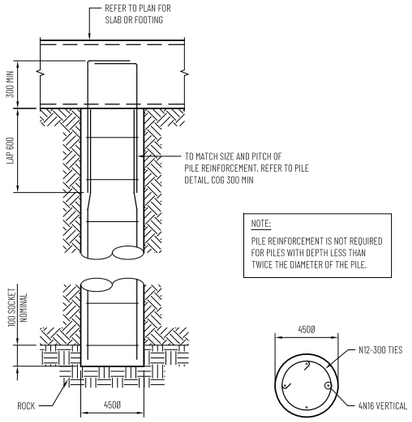
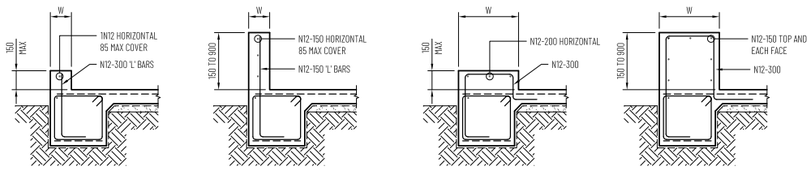


NOTE:
PILE REINFORCEMENT IS NOT REQUIRED FOR PILES WITH DEPTH LESS THAN TWICE THE DIAMETER OF THE PILE.

P1 - PILE SECTION
SCALE 1:20 69a05b450

P1 - PILE DETAIL
SCALE 1:20

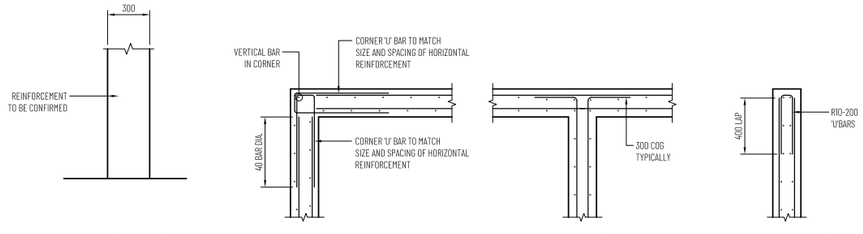


HOB WIDTH 90 < 'W' < 190

HOB WIDTH 'W' > 190

TYPICAL CONCRETE HOB / UPSTAND DETAILS
SCALE 1:20

NOTE:
REFER TO ARCHITECTURAL DETAILS FOR HOB DIMENSIONS. TYPICAL

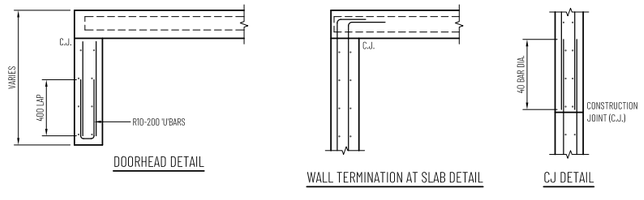


BUILT OFF SLAB DETAIL

CORNER DETAIL

JUNCTION DETAIL

TOP/END OF WALL DETAIL

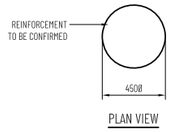


DOORHEAD DETAIL

WALL TERMINATION AT SLAB DETAIL

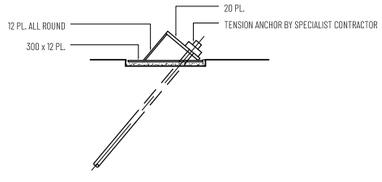
CJ DETAIL

CW1 - TYPICAL REINFORCED CONCRETE WALL DETAILS
SCALE 1:20

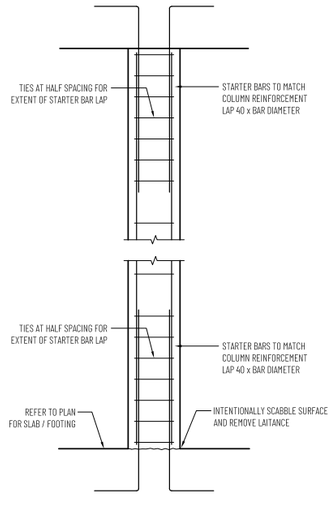


PLAN VIEW

CC1 - CONCRETE COLUMN DETAIL
SCALE 1:20



TYPICAL TENSION ANCHOR DETAIL
NTS



TYPICAL CONCRETE COLUMN DETAIL
SCALE 1:20

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CONSTRUCTION CERTIFICATE ISSUE

ISSUE	DESCRIPTION	DATE	CHK
A	ISSUED FOR CONSTRUCTION CERTIFICATE	29.08.24	

ARCHITECT/DESIGNER

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PROJECT

SOUTH BRONTE PUMPHOUSE
BRONTE NSW 2024

CLIENT

WAVERLEY COUNCIL

CANTILEVER
cantileverstudio.com.au

TITLE

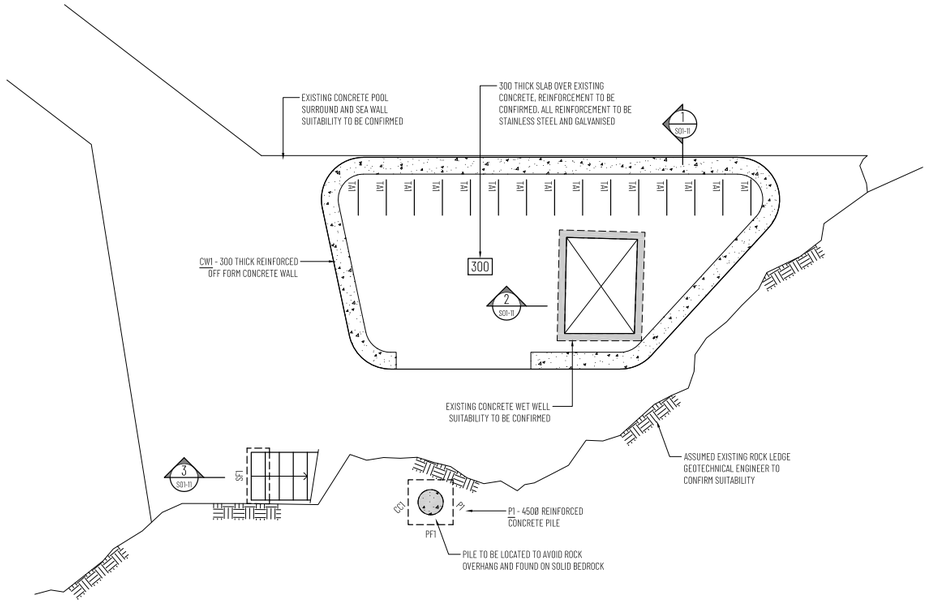
TYPICAL DETAILS
SHEET 1

STRUCTURAL DRAWING

ENGINEER	DRAWN	DATE	SCALE
DH	MP	AUG '24	1:20 UNO

JOB NUMBER	DRAWING NUMBER	REVISION
04078	S00-11	A

CERTIFIED



PUMP ROOM FLOOR PLAN

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NOTE:
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NOTE:
ALL CONCRETE PROFILES ie: STEPS, HOBS, RECESSES, ETC. TO ARCHITECTS DETAILS

ALL FOOTINGS TO BE FOUNDED ON ROCK, TYPICAL

ANCHOR SCHEDULE	
MARK	SWL (kN)
TA1	100 kN

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SOUTH BRONTE PUMPHOUSE
BRONTE NSW 2024

CLIENT

WAVERLEY COUNCIL

CANTILEVER
cantileverstudio.com.au

TITLE

PUMP ROOM FLOOR PLAN

STRUCTURAL DRAWING

ENGINEER	DRAWN	DATE	SCALE
DH	MP	AUG '24	1:50 UNO

JOB NUMBER	DRAWING NUMBER	REVISION
04078	S01-00	A

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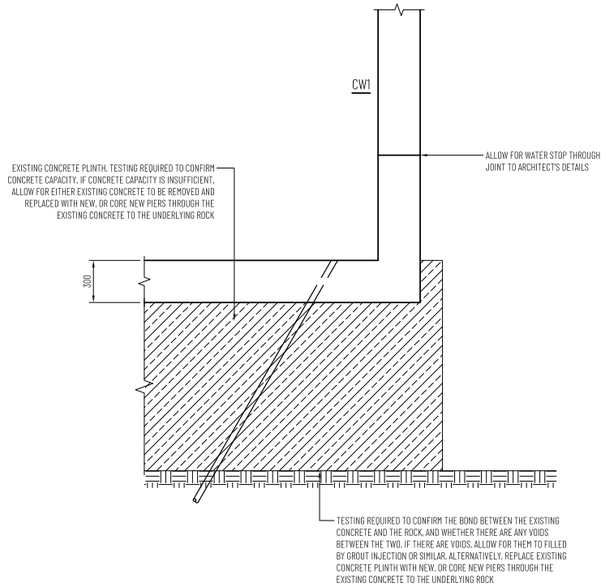
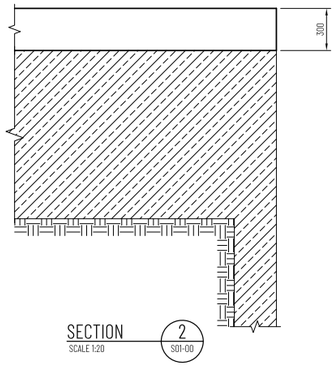


SECTION 1
SCALE 1:20 S01-00



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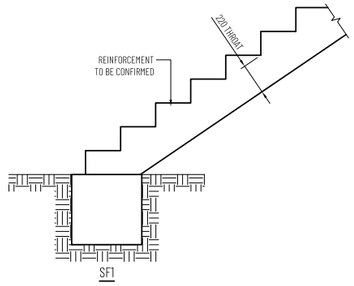

SECTION 3
SCALE 1:20 S01-00

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SOUTH BRONTE PUMPHOUSE
BRONTE NSW 2024

CLIENT

WAVERLEY COUNCIL

CANTILEVER

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TITLE

PUMP ROOM FLOOR SECTIONS AND DETAILS SHEET

STRUCTURAL DRAWING

ENGINEER	DRAWN	DATE	SCALE
DH	MP	AUG '24	1:20 UNO

JOB NUMBER	DRAWING NUMBER	REVISION
04078	S01-11	A

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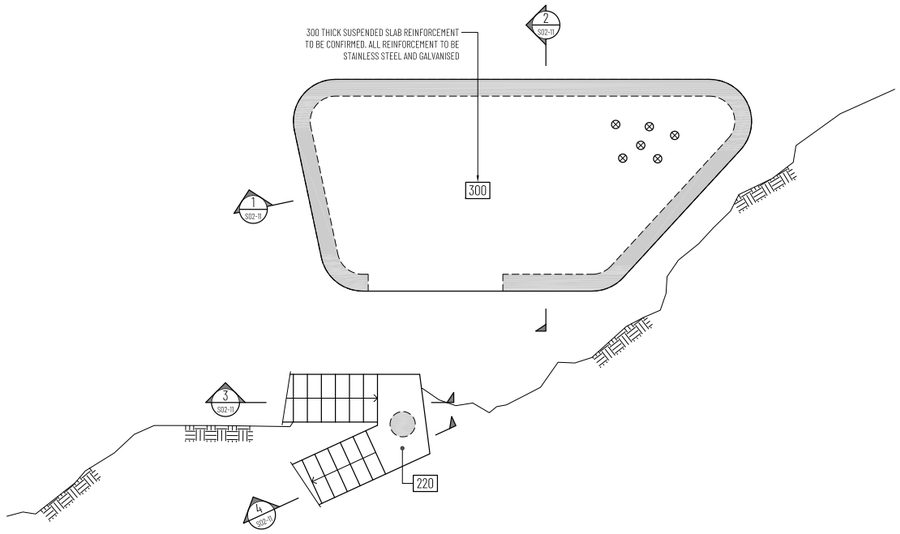

PUMP ROOM ROOF PLAN

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NOTE:
ALL CONCRETE PROFILES ie: STEPS, HOBS, RECESSES, ETC. TO ARCHITECTS DETAILS

ALL FOOTINGS TO BE FOUNDED ON ROCK, TYPICAL

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BRONTE NSW 2024

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WAVERLEY COUNCIL

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TITLE

PUMP ROOM ROOF PLAN

STRUCTURAL DRAWING

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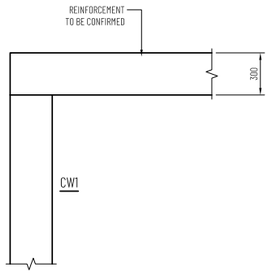

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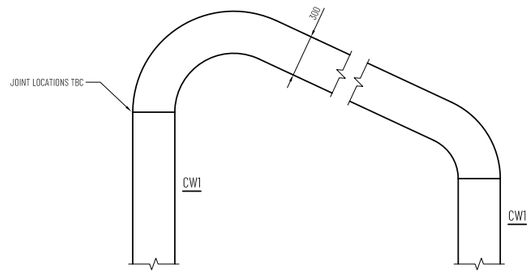

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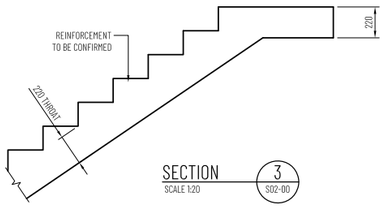

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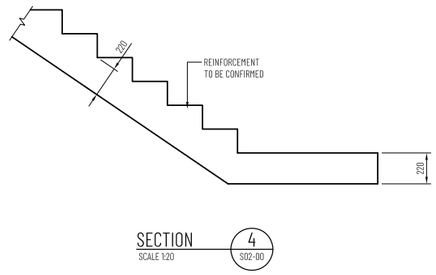

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PROJECT

SOUTH BRONTE PUMPHOUSE
BRONTE NSW 2024

CLIENT

WAVERLEY COUNCIL

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TITLE

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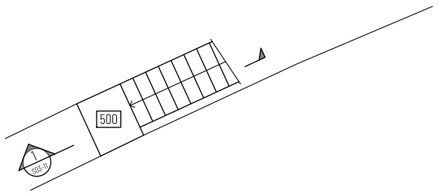

UPPER PATH PLAN

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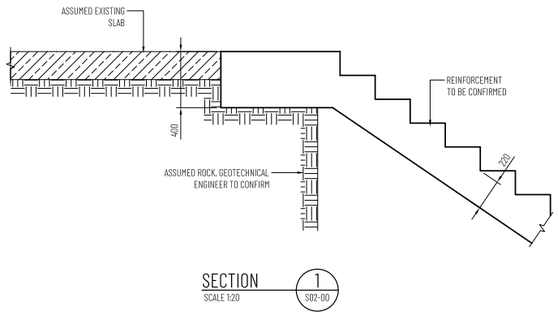

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STATEMENT OF HERITAGE IMPACT - BRONTE OCEAN POOL PUMPHOUSE / PUMP MACHINERY / CLIFF STAIR



Prepared for
Panov-Scott Architects

by
Insite Land Solutions

May 2025

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1.0 Introduction and Aim

Waverley Council are proposing to undertake the replacement of the pool pump and pumphouse which service Bronte Ocean Pool - this due to general deterioration of the facility. Council have commissioned Panov-Scott Architects to design and document the replacement of the pool pump and pumphouse and to consider the renewal of the adjoining cliff stair for reasons of improved access and public safety. This follows an options study, also undertaken by Panov-Scott, in 2021. That options study considered repair of the existing structure and pump, encasing the existing building and reconstruction. After considering the alternatives proposed in that options study, Council has resolved to replace the pump and pumphouse in the same location.

As the pumphouse and cliff stair lie within the Waverley LEP 2012 heritage listing boundary for Bronte Ocean Pool, within landscape conservation area C59 and abutting landscape conservation area C29 (both also on the LEP), Panov-Scott engaged Insite Land Solutions (Insite) to prepare this Statement of Heritage Impact (SoHI). Insite also prepared a Preliminary Statement of Heritage Impact (SoHI) in 2021, which considered the aforementioned design options. Both this SoHI and the Preliminary SoHI were prepared to ensure that the proposed upgrade or replacement of the pump house facility does not have an adverse impact on heritage items and values – both to existing heritage-significant fabric, land on which the pumphouse and cliff stair are located, landscape conservation areas on the LEP and nearby public recreation areas and natural assets.

1.1 The Study Area

The site of the Bronte Ocean Pool pumphouse is identified on the aerial image below. It sits on a concrete apron over a rock shelf to the immediate south-east of the pool. Bronte Ocean Pool, as contained on Schedule 5 of the LEP 2012, is ‘Bronte Swimming Pool PO 70/58’. The cliff stair directly abuts the eastern end of the pool and provides access from the pumphouse surrounds to the public pedestrian pathway along the cliff-face, above the pool.



Figure S1 – Aerial photo showing the location of Bronte pool pump house and cliff stair. Source: SIX Maps, 2023.

1.2 Methodology

For the preliminary SoHI, Insite visited the site and photographed the pumphouse, cliff stair and their environs in September 2021. The consultant again visited the site, for this document, in April 2023. For both studies, key documentation regarding the item and site were then reviewed, chiefly the Heritage Study of Bronte Park by Mayne-Wilson & Associates from 2003 (on which this author consulted) and the most recent Bronte Park and Beach Plan of Management, adopted in 2023. This author also prepared a SoHI for the proposed change facilities building adjoining the Bronte Ocean Pool in 2020, from which historical information and analysis has been borrowed for this study.

Whilst Waverley local studies library and archive was not able to be accessed during the course of preparation of the 2021 preliminary SoHI - due to COVID19 - research was able to be carried out in that repository for this study. That material was reviewed and added to the historical overview within the preliminary SoHI, for formulation of this document.

As a result of the additional research and the resolution of design based on the options study, the significance assessment and assessment of impacts contained in the 2021 preliminary assessment has been updated.

1.3 Limitations

The purpose of this SOHI is to consider possible heritage impacts to the pool pump asset, to the heritage significance of Bronte Ocean Pool and abutting heritage items and surrounding landscape conservation areas, from the demolition and reconstruction of the pool pumphouse, pump machinery and certain allied pool-compound fabric. This document is neither a Heritage Study or Conservation Management Plan of the ocean pool.

Whilst research for this SOHI has resolved the approximate construction year for the pump and pumphouse, original plans and specifications documenting the structure have not been found in Council archives. Also, research for this SoHI has not conclusively resolved if the original pumphouse building is that which remains today, and the extent to which the original structure may have been rebuilt or encased in the 1960s and / or 1990s. Whilst additional research may yield further information on the above matters, this is not likely to result in the conclusions of this SoHI needing to be amended.

This study does not include heritage impact determinations specific to Aboriginal heritage matters, outcomes of archaeological investigations of the site or a natural heritage assessment of the landscape abutting the subject area of development.

Other than the above, there are no particular limitations applicable to the findings of this report.

1.4 Authorship

This report was prepared by Ari Anderson, Principal of Insite Land Solutions.

1.5 Acknowledgements

The author wishes to thank Mayne-Wilson & Associates for the extensive historical analysis work previously undertaken on this site (drawn-on for this report) and Jean Rice, Architect and Heritage Consultant, for making available relevant historical images from her archives. Also to Candis Diaz, Waverley Local Studies Librarian, for her assistance with research and analysis. Ingrid Grace, Waverley Council's Local History Research and Engagement Officer at the time of the 2021 preliminary SoHI, supplied background historical information for that initial assessment.

2.0 Site analysis

The flat-roofed reasonably-non-descript Bronte Ocean Pool pumphouse sits astride a large bulk- concrete apron to the south-east of the ocean pool, which lies at the southern side of Bronte Beach. It is accessed principally by a set of steps which extends down to the pumphouse and eastern pool surrounds from the cliff-face public walkway above the pool complex. The pumphouse is prominent in views to the pool complex from the north, northwest and west and in recent years has been furnished on its north-western façade with historical images of personalities influential in the early C20th history of the baths and local swimming club. (Of note is that those images of Fanny Durack, Mina Wylie - now removed or stolen - and Evelyn Whillier do not appear to have been taken at Bronte).

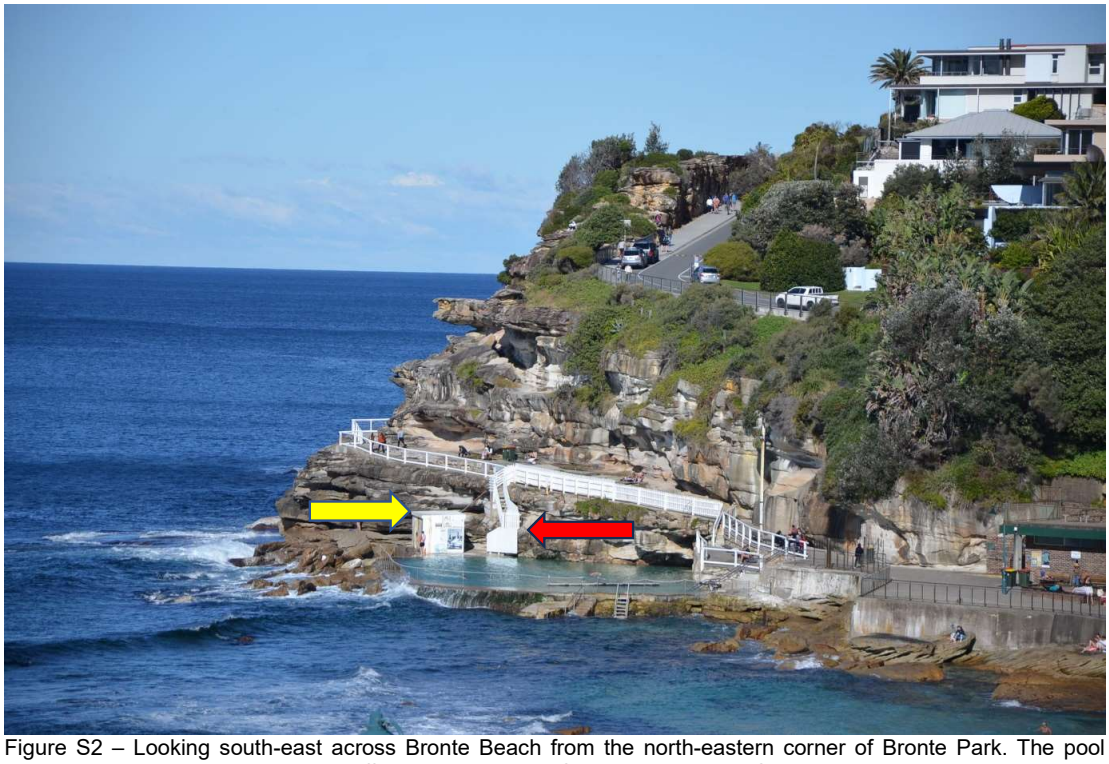


Figure S2 – Looking south-east across Bronte Beach from the north-eastern corner of Bronte Park. The pool pumphouse is arrowed yellow, the cliff stair arrowed red. Source: Insite Land Solutions, 2021.

The building is slightly offset from the abutting cliff-face. Whilst the main entry to the ocean pool is at the pool's north-western end (from the beach promenade), the concrete threshold surrounding the pumphouse is used by swimmers and sunbakers as a defacto extension to the pool's pedestrian skirt, for general access and sunbaking. This bulk-concrete footing to the pumphouse was essentially built into a 'void' between the eastern end of the ocean pool's seawall and the adjoining cliff-face. A sump intake pipe and a pump outlet to the ocean are located below the north-eastern edge of the concrete footing that supports the pumphouse. The pumphouse itself is broadly separated into two parts, the sump and the pump room. A diffuser outlet below the rockface to the immediate west of the pumphouse expels pumped water into the pool.

The pump is principally accessed from doors on the south-western side of the pumphouse structure. A memorial plaque to Edith (Alderton) Quirk is affixed to the rockface immediately behind the building.

The Waverley Council Storage Facility Property Condition Assessments & Ten Year Program of Expenditure Report of 2019 describes that the pumphouse was 'purpose built to house the pump equipment, electrical equipment and controls for the Bronte Baths' and that 'the size and location of the pumphouse is suitable for its intended use'. It discusses that the plant and equipment of the facility are in good condition but the built structure compromised.

Civille's assessment of the pumphouse from 2021 catalogues various integrity and operational issues with the structure of the pumphouse and the functioning of the pump hardware. For a range of longevity and operational reasons, that document recommended the relocation of the pumphouse to a well in the pool concourse and an upgrade to the pump system.

The timber and concrete cliff stair abutting the pumphouse has been in situ for some decades, the latest incarnation of a cliff accessway provided to the eastern end of the pool surrounds – the first dating from the early 1900s. The stair is essentially three flights of steps, the main flight running broadly parallel to the cliff-face. A large concrete 'pillar' supports the eastern (upper) end of the stair. The element is mostly framed by high timber pickets, except on its northern side (facing the pumphouse) which has timber rails.

The photographic tabulation shows the pumphouse and stair in their immediate context. All photographs were taken by Ari Anderson of Insite in August 2021 and in March 2023.



Figure S3 – Looking southeast (telescopically) to the ocean pool from the Bronte Beach promenade.



Figure S4 – View of Bronte ocean pool from the rocks surrounding the beach bogey hole. The pumphouse and stair are visible at back right.



Figure S5 – The ocean pool from the southern extent of the beach promenade, looking southeast.



Figure S6 – The pumphouse and timber picket fencing to the cliff stair are the most prominent built features at the eastern end of the pool complex.

SoHI Bronte ocean pool pumphouse / pump machinery / cliff stair



Figure S7– Looking over the ocean pool from the walkway above its southern skirt.



Figure S8 – The pool pumphouse and cliff stair seen from the southern walkway above the pool ‘compound’.



Figure S9 – The western façade of the pumphouse building facing the ocean pool. Note the various public safety accretions of occupance on the cliff face, including barbed wire, to discourage public access and jumping into the pool.

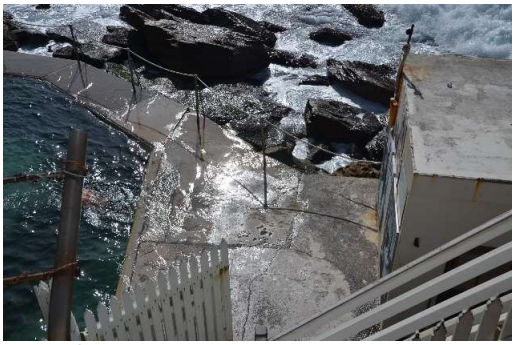


Figure S10 – The concrete apron between the ocean pool and the pumphouse.



Figure S11 – The roof of the pumphouse structure seen from the east.



Figure S12 – The pumphouse, ocean pool and now relict concrete footings (at left) which supported dressing sheds during the early to mid C20th.



Figure S13 – Looking west over the ocean pool precinct, with pump house at lower right.

SoHI Bronte ocean pool pumphouse / pump machinery / cliff stair



Figure S14 – The Bronte pool pumphouse roof.



Figure S15 – The north-western and south-western façades of the pumphouse, as seen from the abutting public staircase.



Figure S16 – The memorial plaque to Edith Quirk on the cliff-face behind the pumphouse building.



Figure S17 – The pumphouse and its north-eastern façade (at left) from the surrounds of the ocean pool.



Figure S18 – The south-eastern façade of the pump house from the eastern extent of the concrete footing that supports the building.



Figure S19 – The north-western façade of the pump house building, with abutting cliff access stair – during pool cleaning operations.



Figure S20 – Detail of the signage on the north-western façade of the pumphouse building.



Figure S21 – Association of the pumphouse, concrete threshold and access stair down the cliff-face.



Figure S22 – Association of the pumphouse and cliff-face. Note the large concrete 'pillar' on the cliff-face supporting the cliff stair.



Figure S23 – Lower steps of the access stair abutting the pumphouse.



Figure S24 – View down to the eastern end of the pool from above the eastern access stair.



Figure S25 – Concrete and sandstone steps along the southern side of the ocean pool.



Figure S26 – Pump machinery viewed through the access doors on the south-western elevation of the pumphouse.



Figure S27 – Looking west from above the pumphouse, showing various relict post holes and fencing supports (arrowed) on the cliff-face above the pool.

3.0 Historical overview

The following historical information has been included for the specific purpose of providing background to the development of the Bronte Ocean Pool pumphouse, abutting the ocean pool. It is also included to enable consideration of the contributory heritage value of the subject building, in the context of the significance of the ocean pool and the surrounding Bronte Beach and Park landscape.

A detailed history of Bronte Park was prepared as part of the Heritage Study of the site by Mayne-Wilson & Associates in 2003. That document is held by Waverley Council and should be referred to in relation to examination of historical fabric and values of the remainder of this cultural landscape. Some information in this section has been extracted from the above document and is supplemented by additional research, analysis and findings.

The establishment of a park for public recreation at Bronte Beach (formerly Nelson Bay) had its origin in a deputation from the Municipal Council of Waverley in November 1863. The deputation was concerned with a proposed road through the estate (then owned by the Holdsworths). The Surveyor-General at the time confirmed that a reservation for a 100 foot wide road to the beach was provided in the original grant. Another 100 foot wide Crown reservation existed along the back of the beach. It is said that Holdsworth attempted to purchase the latter reservation, but the Municipal Council protested to the Minister for Lands against such an action. The Council asked the Government to place this reserve under the control of the Council for the purpose of public recreation and sea-bathing. The reference to sea-bathing may be the first mention of a reserve for that purpose by the local Council or possibly by any Municipal Council.[1]



Figure H1 - Copy of a watercolour painted by Mrs. Georgiana Lowe between 1846-1849, showing Nelson Bay and *Bronte House* perched commandingly in the background. The painting was composed from the rock shelf on which Bronte ocean pool and the eventual series of change room facilities were sited. Source: Mitchell Library.

[1] Dowd, B.T. 1959 - *The History of the Waverley Municipal District*

However, it was not until the mid-1880s when the movement for the purchase of lands in Nelson Bay was again raised in Council. [There was, by now, a strong movement throughout NSW in favour of the creation of public parks and reserves, many of which were established in this period.] An area of three or four acres was originally sought, at an estimated cost of £6000. However, after pressure for a final decision on this purchase was exerted on the Minister for Mines in the Legislative Assembly (whose authorisation was required), the government resumed 14 acres at Bronte (see Figure H2). This was notified in the NSW Government Gazette on 22nd October 1886. Waverley Council was appointed Trustees of Bronte Park and the area was progressively fenced off during the next ten years and entry gates erected.

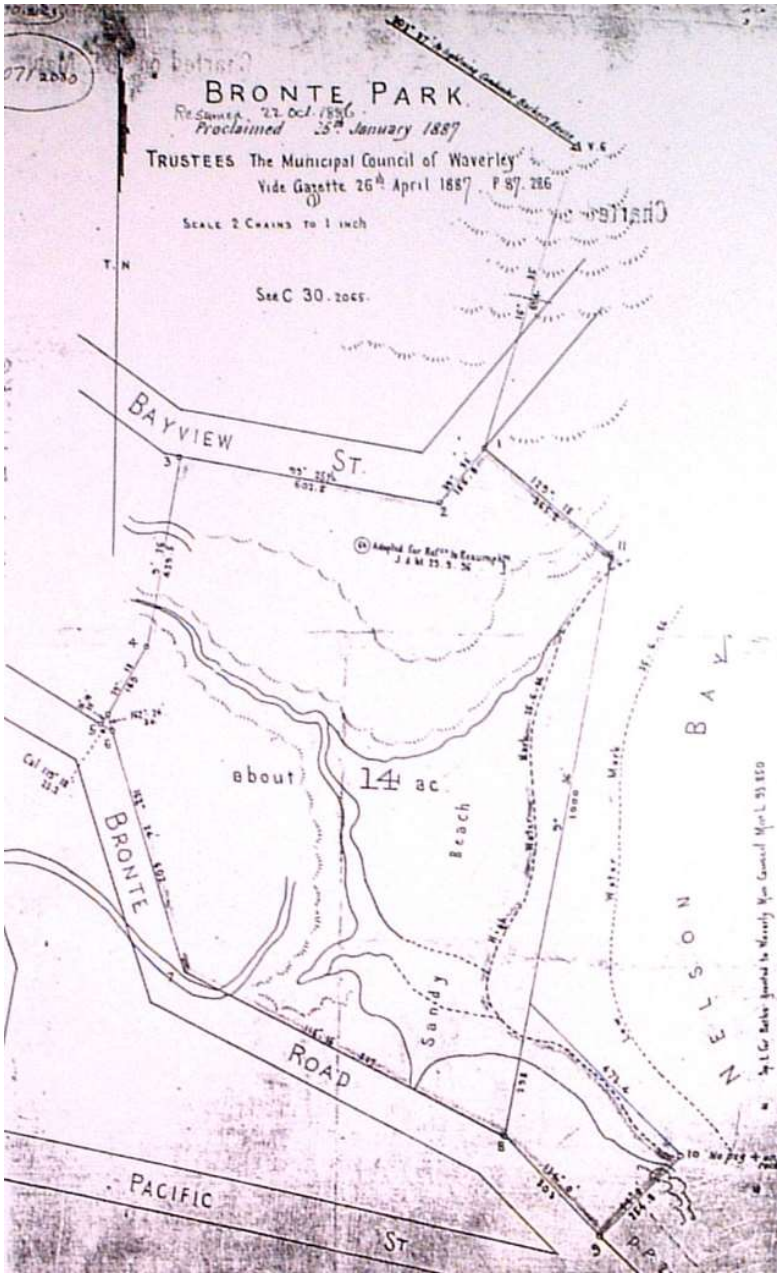


Figure H2 – Plan showing the original 14 acres resumed by Council at Bronte for a public reserve, in October 1886. Source: Thesis by Cahill, R.C. & Pender, A.N., 1976.

The first Council constructions within the park were the ocean baths and adjoining women's dressing sheds, which were completed in mid-1887. Prior to the construction of the dressing sheds, wheeled bathers' houses were used on the beach, permitted by Council from 1886. The baths were first managed by private lessees and built on top of a 'bogey hole' in the rock bench. In allied beach 'provision' works, the first refreshment booth was opened in Bronte Park during the 1890s.

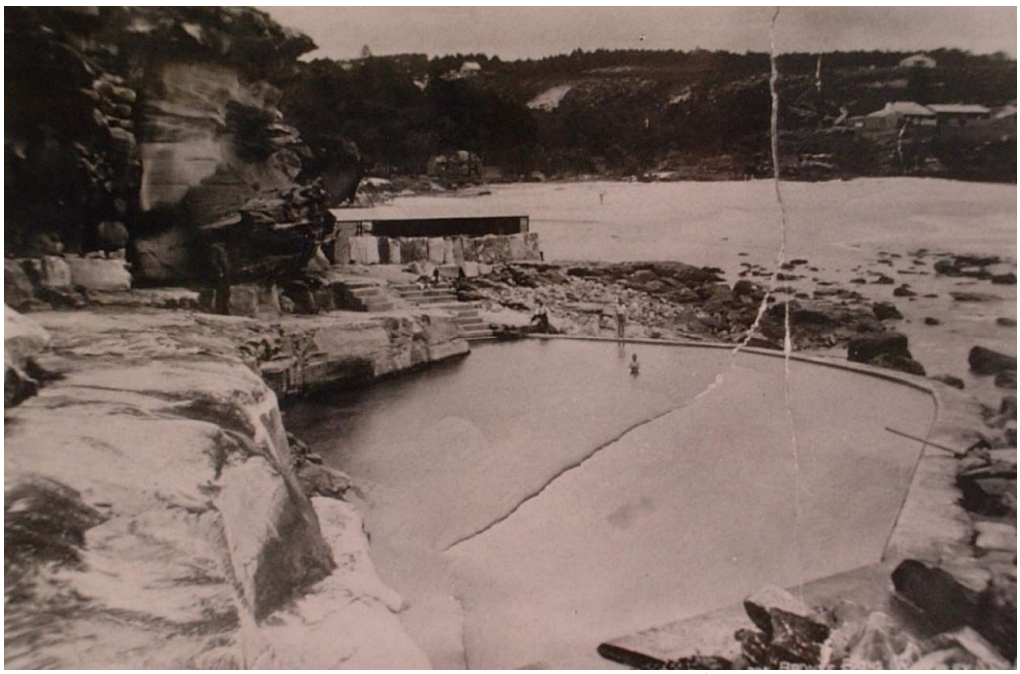


Figure H3 – Photograph west across Bronte Baths c.1888, showing the first women's dressing sheds in the centre of the image. Pump facilities for the ocean pool did not exist at this time. Image courtesy of Mr. Stan Vesper.



Figure H4 – Bronte Baths in 1888, the eastern (seaward) end in its original form seen here, prior to the development of the pumphouse facility in the C20th. Source: Waverley local studies library, picture ref. 5204.

The self-cleansing nature of the original ocean pool construction was discussed from the earliest articles concerning the baths construction, for example from The Daily Telegraph on the 6th February 1888. That article refers to the cleft left in the breakwater, the 'basin' able to be filled with seawater, without the need for any pumping process.



Figure H5 - Photograph south-east across Bronte Beach from 1889. Arrowed white is the ocean pool with lessee's house (Lloyd) and the first women's dressing sheds structures, situated just 'inland' from the pool. The park had not been levelled (including beach reclamation) by this time. Image courtesy of Mr. Stan Vesper.

The impact of ocean forces on structures around the baths were reported in the years following the bath's establishment. The Australian Star from the 22nd June 1893 described the Waverley Council Engineer reporting on significant damage to all buildings at the baths and recommended that all these facilities be moved further from the sea. A similar storm damage report at the baths was contained in the Evening News from the 14th August 1901.



Figure H6 - Bronte Baths in 1898, again prior to the development of the pumphouse or cliff buildings. Note the arris rail type fencing along the 'cliff walk', installed during the 1890s. Source: The Sydney Mail and NSW Advertiser, 2nd April 1898.

An article from The Sydney Mail and NSW Advertiser, 2nd April 1898 talks about the location and size of the baths and the 'purity' of its water, courtesy of a 'shoot' in the bath walls which caught all of the tides with an overflow out of the seawall at the opposite end of the baths.

The desire by the early lessees of the baths for the general improvement of the recreational facility shortly after the turn of the C20th was exemplified by a communication received by Waverley Council from the proprietor of the baths in 1903, requesting that gas be laid to the baths so that night races could be efficiently run. This matter was referred to the Baths and Parks Committee at the time. In 1904, a petition was received by Waverley Council regarding the general improvement of the baths facility, including the idea of formalising the bogey hole next to the baths, so that the element could be a feature of the beach when the tides were unable to flush and fill the main pool.

Around 1904, the first swimming club building (see below) was built on the cliff above the Bronte Ocean Pool - around the same time as the (then) men's bogey hole was cleared.



Figure H7 – View east across Bronte Baths on 26th November 1904. Note the barbed wire fencing in the foreground, installed to stop children from entering the baths without paying. The timber structure at left was used to shape the bogey holes by breaking up rocks and moving boulders. At this time the swimming club building (background) was called the 'Eastern Suburbs Headquarters Swimming Club'. The first of what appears to be arris rail fencing is evident on the cliff top and along the path to the former clubhouse. A stair had not yet been built down the cliff-face, to service the pool's eastern surrounds, at the time of this image.
Source: Allen Family Album, Mitchell Library, Image courtesy of Mr. Stan Vesper.

Around 1910, it would appear that the first men's dressing sheds were built above Bronte Ocean Pool, concurrently with the first women's dressing sheds next to the baths being removed and replaced. It was between 1904 and 1910 that the first stair down to the eastern end of the pool seems to have been built - likely to service those new cliff dressing sheds. That staircase appears to have originally been a single flight timber frame (essentially a wide ladder) that extended down from the cliff walkway at a very steep grade.



Figure H8 – c.1910 photograph of Bronte Baths, showing the recently-built men's dressing sheds on the ledge of the cliff-face above the pool. The pumphouse had still not been developed by this date. The recently built ladder / stair from the dressing sheds is arrowed. Source: Waverley local studies library, picture ref. 7209.

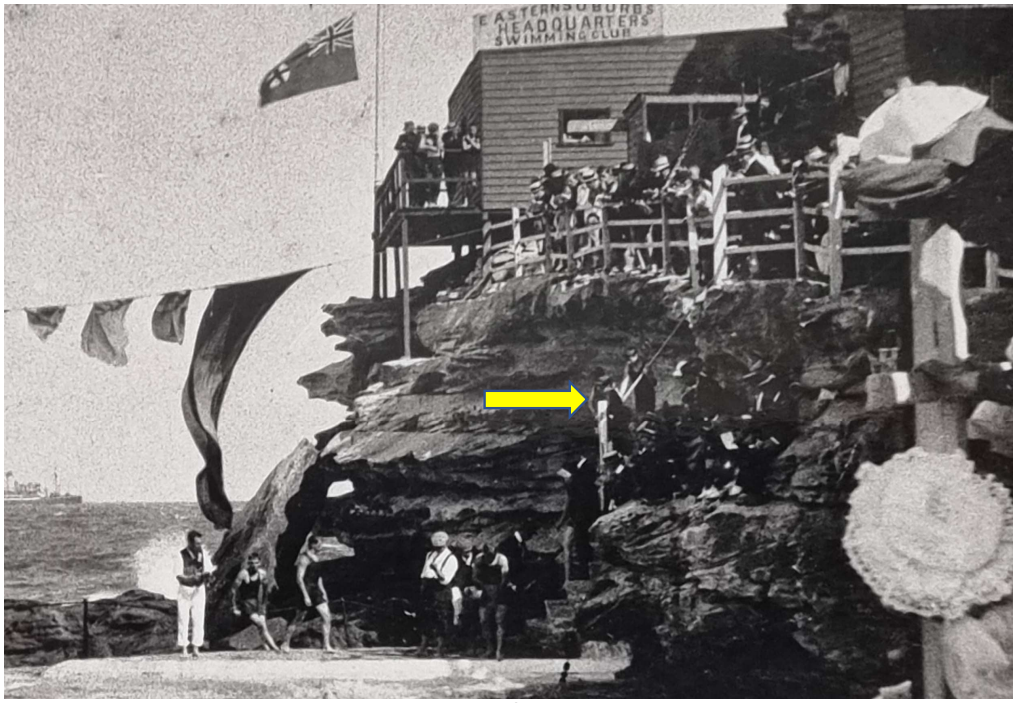


Figure H9 – c.1910 image prior to the construction of the pool pumphouse. Note people on the original cliff stair ladder / staircase at centre right of the image (arrowed). Source; Waverley local studies library, picture ref. 4427.

The end of the first decade of the C20th and the 1920s were expansive times in the history of Bronte Beach and Park, generated to a large extent by the legalisation of daylight bathing in the early 1900s and the extension of the tramline to Bronte, a service which opened in 1911.

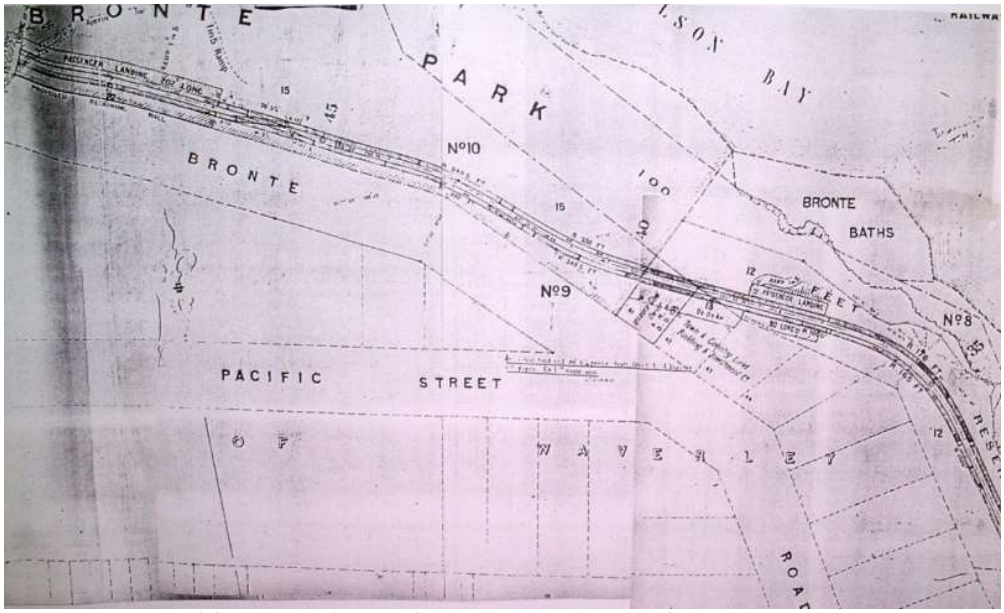


Figure H10 – Part of Crown Plan (no 3920) showing the alignment of the Bronte tram line, with two passenger landings adjoining the park and beach – the one at right specifically sited for ease of access to the ocean pool and change facilities. By 1911/12, a path from the main passenger shelter to the ocean pool had been built. Image courtesy of Mr. Robert Mills. Source: LTO 'Waverley Terminus to Bronte Beach tramway extension Working Plan April 1910'.

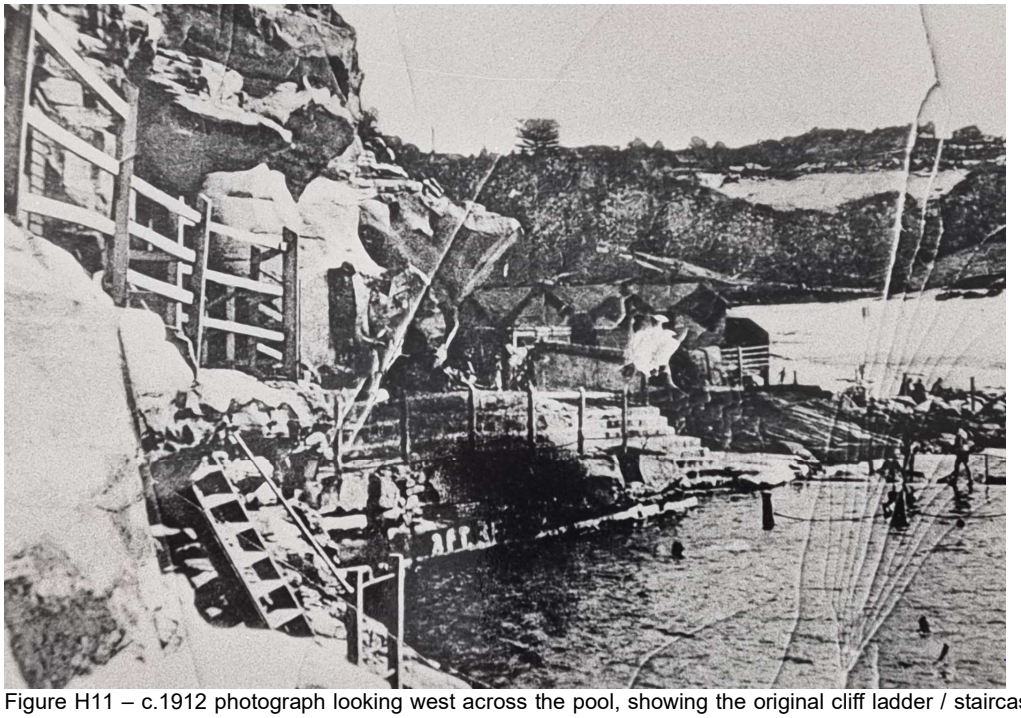


Figure H11 – c.1912 photograph looking west across the pool, showing the original cliff ladder / staircase to the baths at left. Source: Waverley local studies library, picture ref. 4432.

Also around 1910, the first Surf Life Saving Club was built and a substantial men's dressing sheds structure was constructed on the northern cliffs of the beach. Between 1914 and 1916, the beach seawall was built, the promenade created and the area behind it filled, levelled and turfed. The swimming club building above the ocean pool was expanded with a second storey around 1924, seemingly just prior to the first Bronte Splashers Club building being constructed.



Figure H12 – 1921 photo of the southern end of Bronte Beach, showing the pool at left, in the immediate years prior to the construction of the pumphouse. Note the various types of fencing within the pool precinct at that time. Source: Waverley local studies library.

Council minutes from 15th March 1922 indicate that an extensive suite of works was being considered at and around Bronte Ocean Pool at that time – including larger baths and a designated ladies' baths.

Whilst the swim club and change room facilities/activities buildings above the baths seem to have remained much as seen and described above until the 1960s, the change room buildings to the west of the ocean pool underwent a fairly wholesale change by the mid-1920s, with a significant expansion inclusive of what appear to have been four pitched-roof linear dressing sheds (likely solely for women), situated between the baths entry building and the pool itself.

A report from Waverley Council's Baths and Parks Committee from the 8th April 1924 documents costs for the proposed supply and fitting of pumps at both Bronte Ocean Pool and Bondi Ocean Pool. That report also describes approaches being made to the lessees of both pools regarding what increased rent they were prepared to pay if pumps were installed.

Another report to Council's Baths and Parks Committee from the 12th August 1924 recommends for both Bronte and Bondi ocean pools that Thomson & Sons (consulting engineers) be engaged to prepare a specification and plan for the pool pumps. The Sun newspaper from the 22nd November 1924 contained a tender advertisement for the supply and erection of centrifugal pumps for the ocean baths at Bronte and Bondi. Plans and specifications for the units had been prepared by J. R. Thomson & Sons.

A letter to Council from the lessee of the Bronte Ocean Pool, John Bond, dated 8th May 1925 – regarding renewal of his lease – describes that Council had decided to proceed with additions to the bath premises and to install a pool pump.

A report to the Baths and Parks Committee from 8th September 1925 refers to a 'sun basking' area being established once the concrete pumphouse is completed – suggesting that the building may have been under construction at that time. The bulk concrete footing to the structure and the diffuser inlets at the eastern end of the pool would have been established at this time.

A report to the Baths and Parks Committee, dated 11th May 1926, refers to reports by the Council engineer from earlier that year regarding poor ventilation in the pumphouse and the need to provide ventilators.

Various amenity and safety structures and elements were proposed and established at Bronte Beach and adjoining beaches in the 1920s. This included a request from the Bronte-Waverley Progress Association in February 1925 for the erection of safety fencing on the cliffs above Bronte ocean pool and the proposal for an extension to the stormwater drain below Bronte Park and beach.



Figure H13 – Photograph of the southern end of Bronte Beach from 1927 showing a Bronte tram on the line above the baths and the assorted change room and swim club buildings dotted along Bronte headland. Note that the pool pumphouse (arrowed) was in existence by the date of this image.
Image courtesy of Mr. Robert Mills. Source: Waverley local studies library, picture ref. 5212.

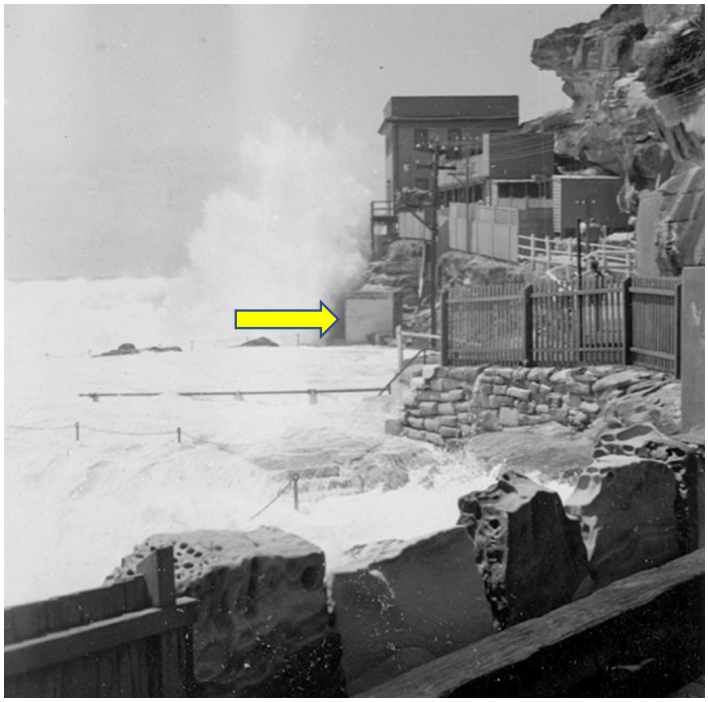


Figure H14 – Looking east over the Bronte Ocean Pool c. late 1920s showing the recently built pumphouse structure taking the brunt of heavy seas. Source: Waverley Library.

A report to the Baths and Parks Committee from the 15th October 1928 describes a quote received from Coupland and Waddell for maintenance of the pump equipment at Bronte Ocean Pool. This was to include the removal of all rust, the drying out of electrical equipment and the supply of a new motor belt.



Figure H15 – c.1930 image looking west over Bronte Ocean Pool, with the roof of the recently-built pumphouse in the immediate foreground. Note the cliff ladder from the pool deck at far left. Source: State Library NSW, FL1337639.

An advertisement from Les Bond, the lessee of the Bronte Ocean Pool, in February 1931, confirms that the baths were flood-lit by that time.

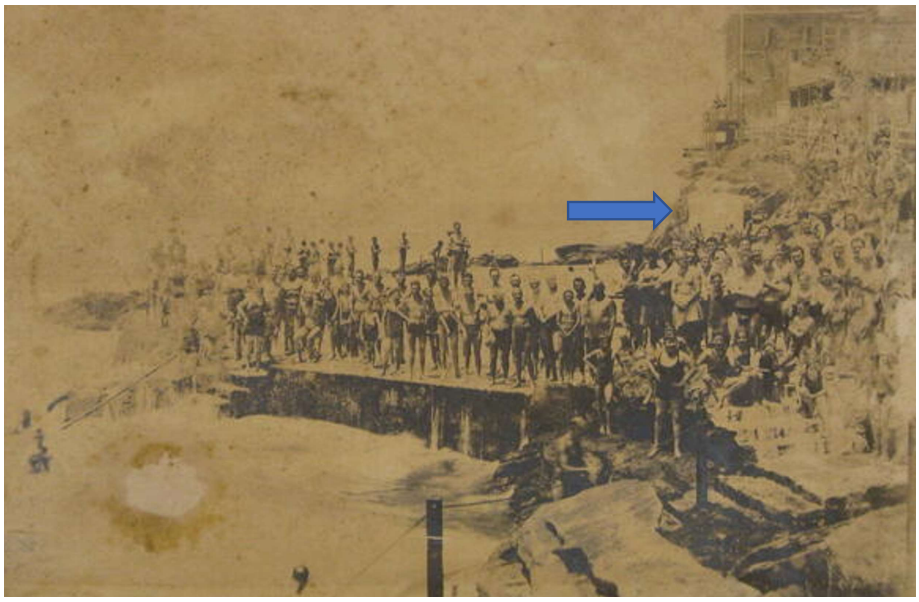


Figure H16 – 1930s photograph looking east across Bronte Ocean Pool, showing the recently established pumphouse (arrowed). Source: Waverley Library.

Waverley Council minutes from July 1957 record that the Council Engineer reported on the existing pool pump at that time. He concluded that the pump gave constant trouble owing to sea water damaging the pump's windings and suggested that the open ventilated type of pump be replaced by an enclosed type. The engineer recommended buying an enclosed type for 110 pounds. Approval was given by Council for that purchase, the new motor held in storage.

It is not clear if / when the enclosed pump was installed at the ocean pool. Council records contain a letter from electrical engineers, from June 1960, describing their upcoming works in checking and overhauling the pump motor. That work was to include dismantling and re-insulation of windings. The pump motor starter had been replaced in March 1960 by the same engineers, S. & E. Downie P/L.

A letter to Council from the lessee of the baths, Mr Cleland, dated 31st October 1961 – described the need for the pump to be run regularly and suggests that the pump equipment was new at that time. A letter to the Town Clerk about the baths, dated 4th November 1961, also from the lessee, states that the 'new pump was installed about two years ago'. A burnt-out 12.5 H.P. motor frame formerly of the Bronte ocean pool was reported in a letter to the Town Clerk, Municipality of Waverley from Harbour Electric P/L, dated 15th November 1961.

The composition of the second main phase of public facilities buildings at the southern end of Bronte Beach remained in situ until sometime shortly after 1961, when the second women's dressing sheds adjoining the baths were removed, a new Community Centre and Splashers Club change rooms built and a large grassed area formed in front of the community centre building – the area which supported the former multi-pitched roof change facilities structures.



Figure H17 - 1943 aerial, showing that at that time, the swim club and change facilities components of Bronte Ocean Pool stretched across the bulk of the 'platform' at the southern end of Bronte promenade. Included in these utilitarian elements was the pool pumphouse (arrowed). Source: SIX Maps.



Figure H18 – Section of 1940s photograph looking east across Bronte Ocean Pool. The pumphouse can be seen at lower left, an early incarnation of the cliff stairs abutting that building also evident at the centre of this image. Source: Waverley local studies library, picture ref. 4429.

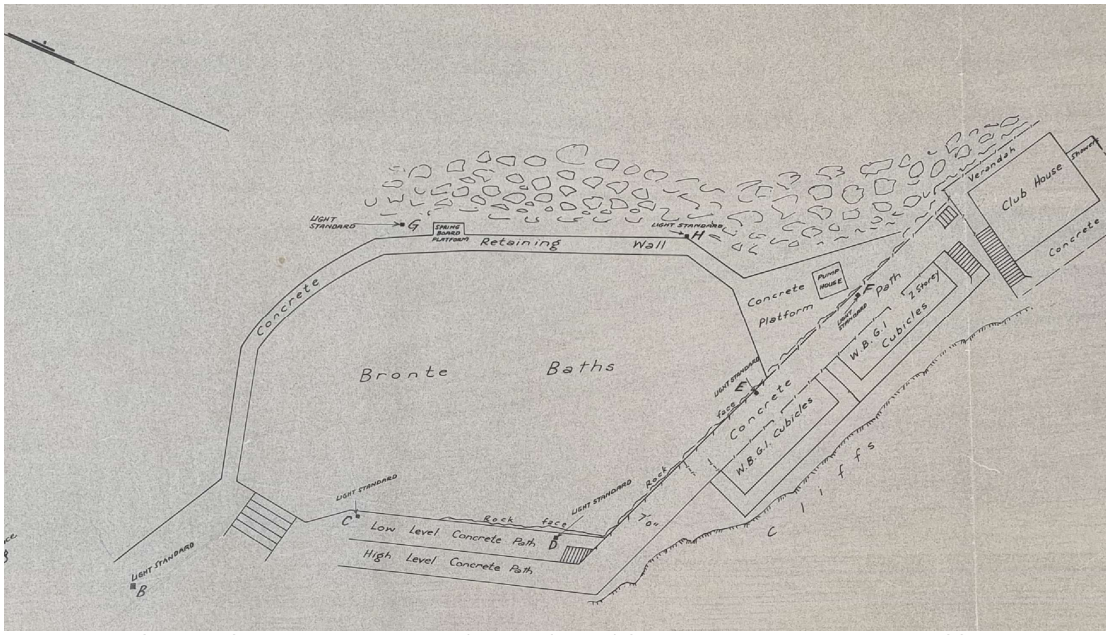


Figure H19 – Section of proposed lighting plan (c.1930s/1940s) for the walkway above the pool. Of note on this drawing is that the cliff stair abutting the pumphouse was not shown, although one would have been present. Source: Waverley local studies library, ref: plan 300.

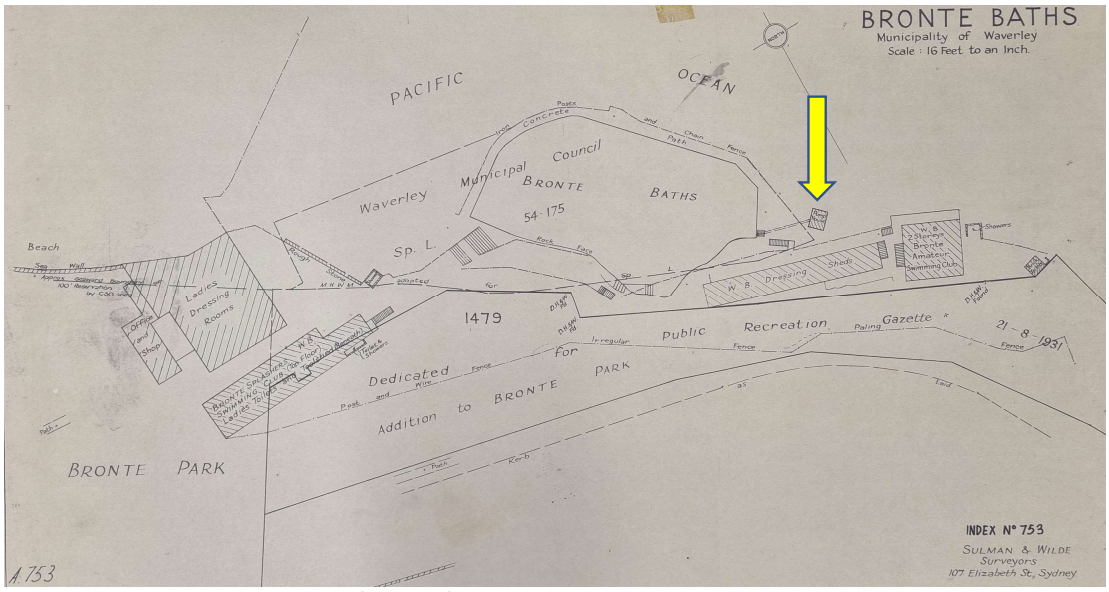


Figure H20 – Undated survey plan of Bronte Ocean Pool and environs, likely early to mid-1960s. The existing weatherboard buildings above the baths are in situ, as is the pumphouse and cliff stairs (arrowed) abutting it. Source: Waverley local studies library, ref: plan 301

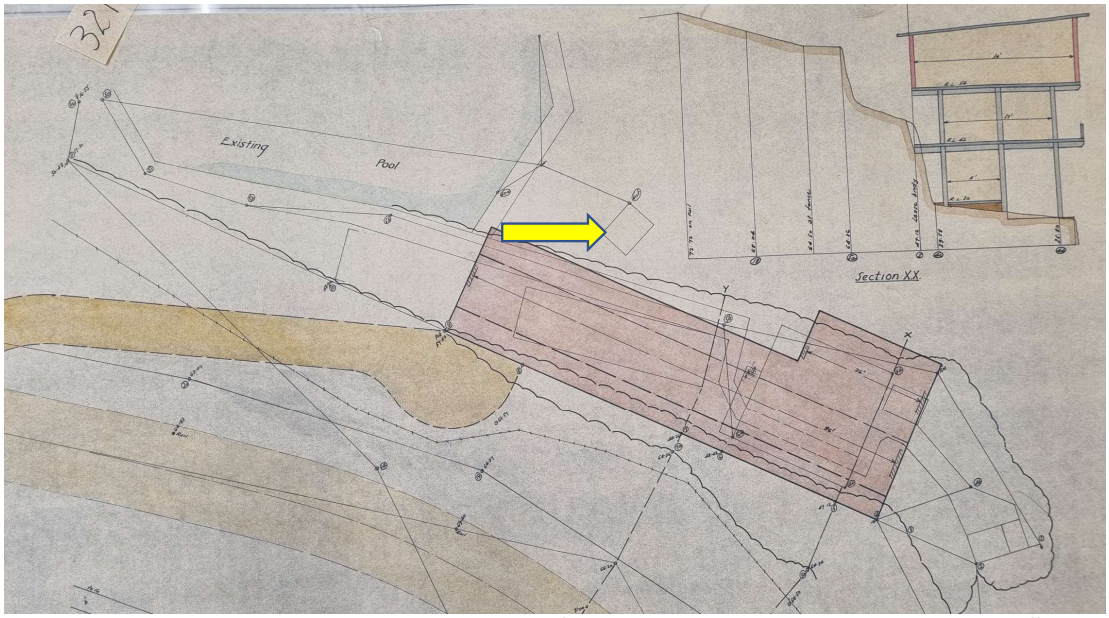


Figure H21 – 1961 plan, not realised, showing a proposal for new club rooms and dressing sheds on the cliff above the Bronte Ocean Pool – to replace existing amenity structures. Note the existing pool pumphouse (arrowed) and the proposal that the new cliff building be serviced by a path / road from the former tramway. Council correspondence from 1963 records that the Bronte Ocean Pool measured 40 yards by 20 yards at that time. Source: Waverley local studies library, ref: A661.

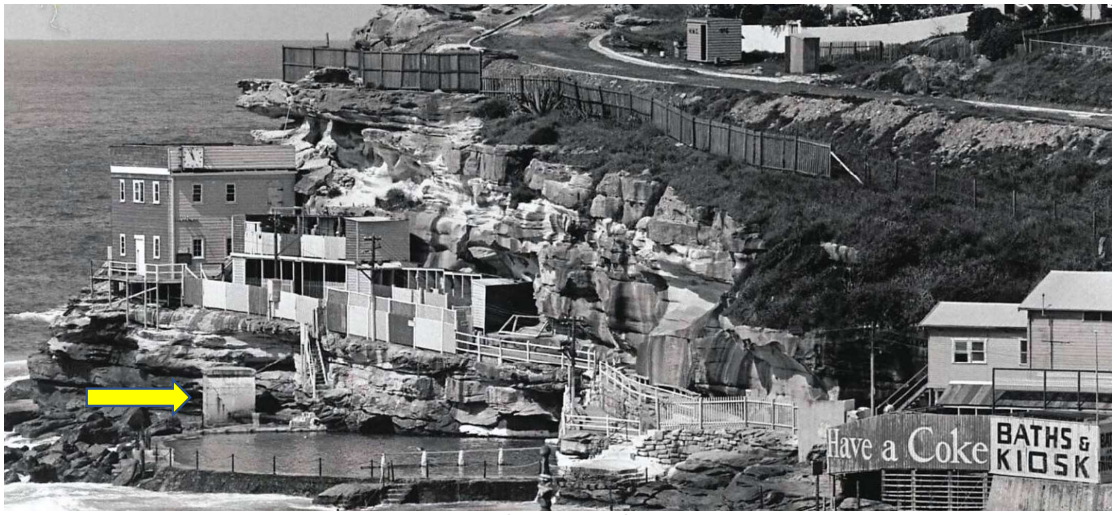


Figure H22 – 1966 photograph east toward Bronte Ocean Pool from Bronte Park. The pool pumphouse can be seen arrowed at the base of the cliff – which at that time still supported numerous change room and ancillary baths facilities. Source: Waverley Library.

Council Baths and Parks Committee records from February 1967 document multiple ideas for the development of the Bronte Ocean Pool by key stakeholder groups. This included the development of a 50 metre pool (abutting the existing baths), new expanded clubrooms and new amenities.

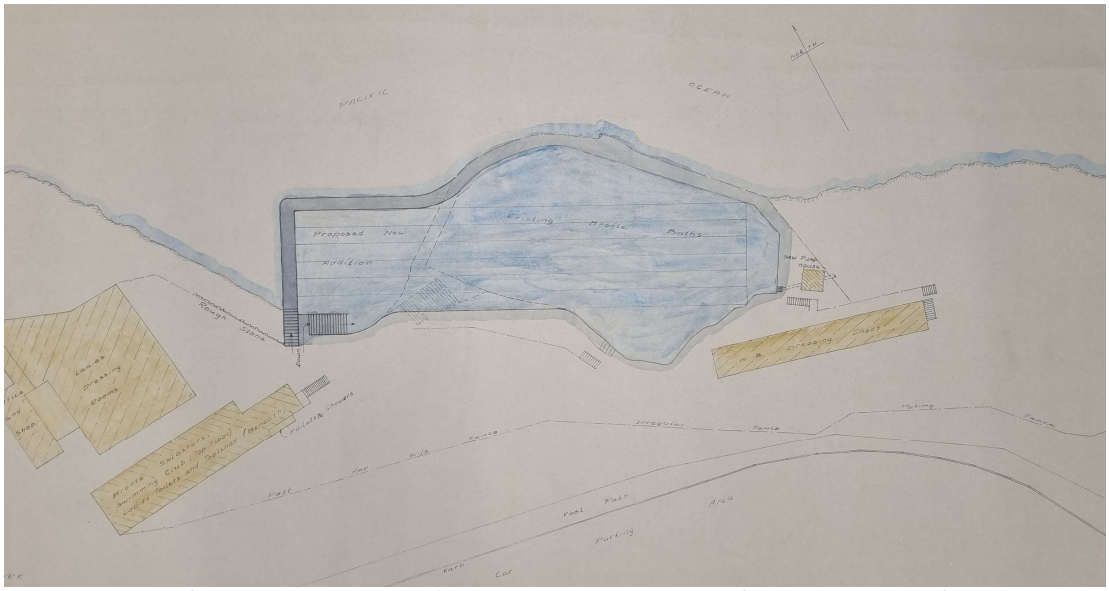


Figure H23 – Plan from 1967 showing one of several proposals at that time for the lengthening of the Bronte Ocean Pool. This plan was never realised. The pumphouse is recorded here as 'new pump house' but it is unclear if that notation indicated the intent for a new structure rather than it having already been built. Source: Waverley local studies library, ref: plan 319.

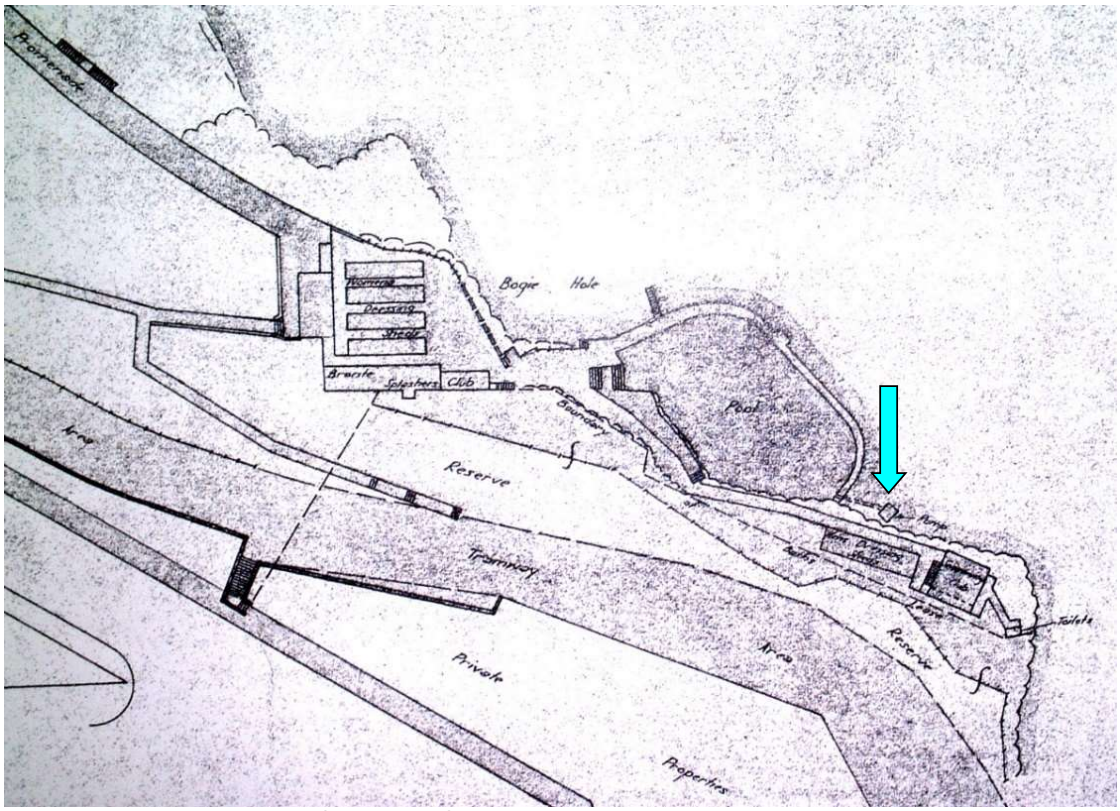


Figure H24 – Existing site plan of the Bronte Ocean Pool complex prior to renovation works undertaken c.1970. The pumphouse structure is arrowed, interestingly shown without the concrete platform on which it would appear to have always stood. Source: Waverley Local Studies Library.

A report on the proceedings of a committee appointed to examine issues related to Bronte Ocean Pool, dated 12th June 1969, discussed several matters. These included proposals of the future reconstruction of the baths, that the pool should be available free-of-charge and that the barbed wire separating the bogey bole and baths should be removed. The committee also examined the possible removal of structures in the environs of the pool. The committee asked Council's Engineer to prepare alternate design plans. An allied report dated the 30th June 1969 provided to the above-mentioned committee discussed indicative costs for changes to the environs of the pool, including the demolition of the existing weatherboard change facilities and club on the cliffs above the pool and their replacement with a new building in that area. The Bronte Ocean Pool and dressing sheds Council committee recorded in their meeting of 15th July 1969 the Mayor's rationale for determinations for design changes at the pool and in its environs.

Some of this proposed expansion / renewal work had been considered almost a decade earlier and was also examined – and again largely scrapped - in the late 1970s. Only selected parts of the design ideas of the 1960s went ahead, principally the removal of old amenities facilities around the pool.

In the 1970s, a major beach improvement scheme at Bronte saw the promenade widened, dwarf walls constructed behind it and paths and other facilities improved. The current S.L.S.C. building and amenities building on the north of the beach were built in 1973-4, following the destruction of the 1931 S.L.S.C. building by fire in 1972.

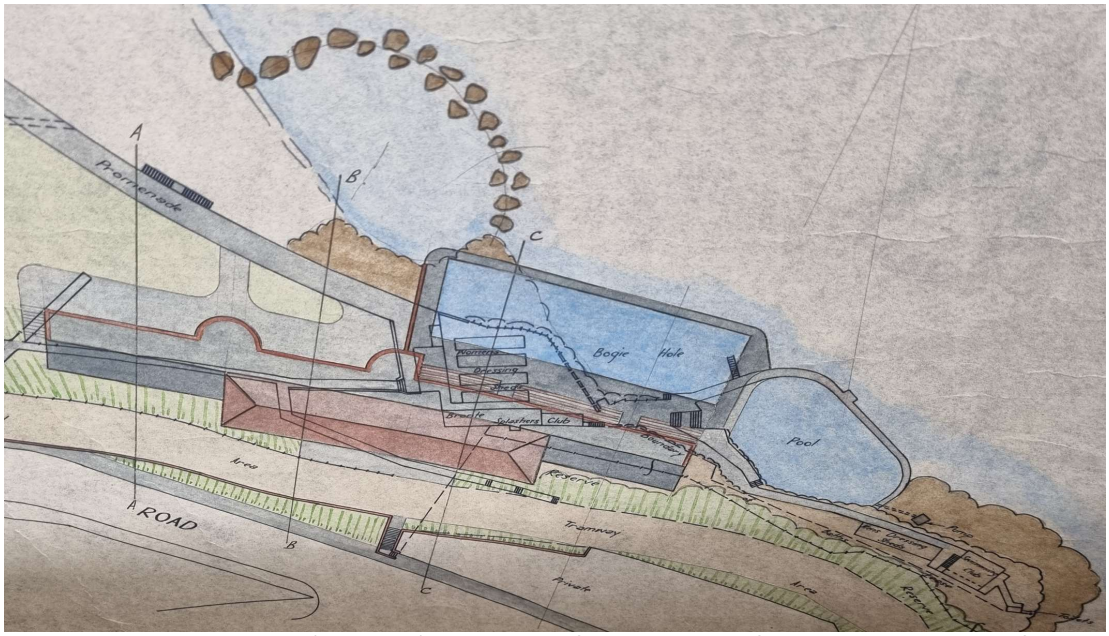


Figure H25 – Another proposal (unrealised), c. late 1960s, for the extension of the ocean pool swimming facility at Bronte. Source: Waverley local studies library.

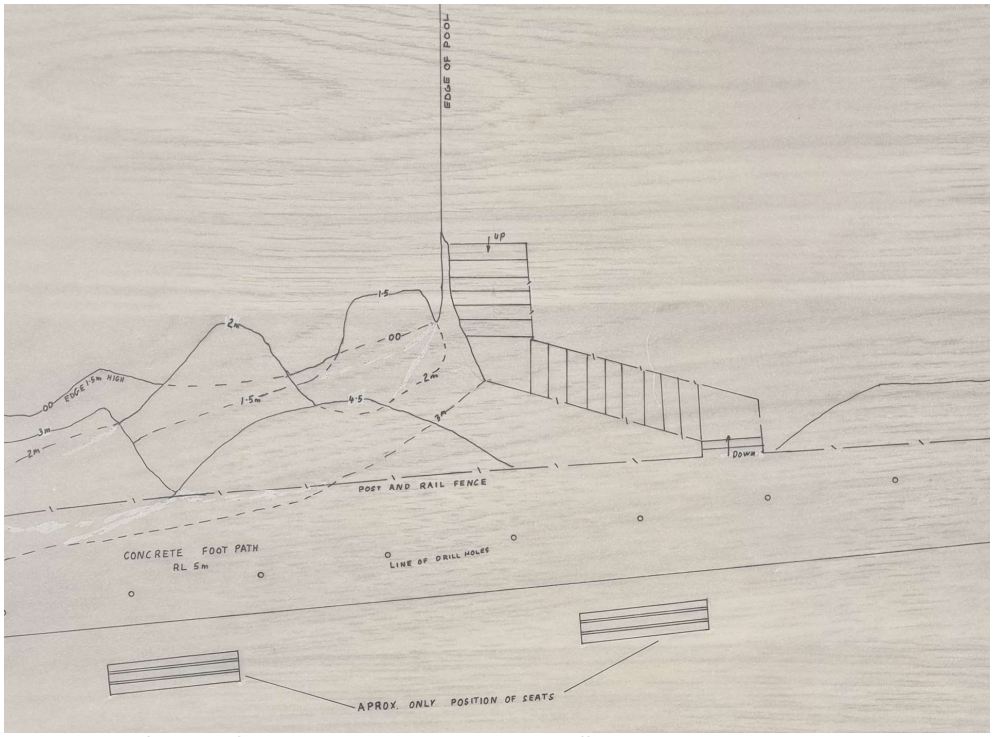


Figure H26 – Section of 1976 survey plan, showing the cliff stairs abutting the pumphouse, as they were at that time. Source: Waverley local studies library, ref: plan 312.

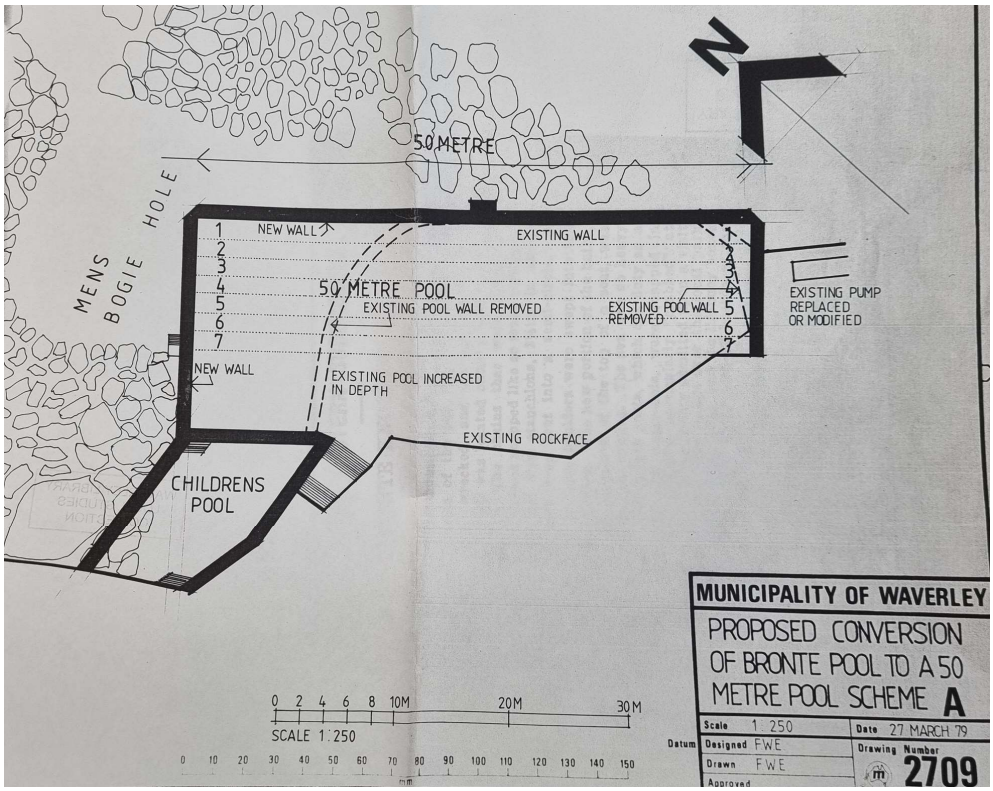


Figure H27 – Part of a 1979 package of drawings related to the proposed expansion of the Bronte Ocean Pool into a 50 metre facility. This plan noted that the pump's renewal was under consideration.
Source: Waverley local studies library.

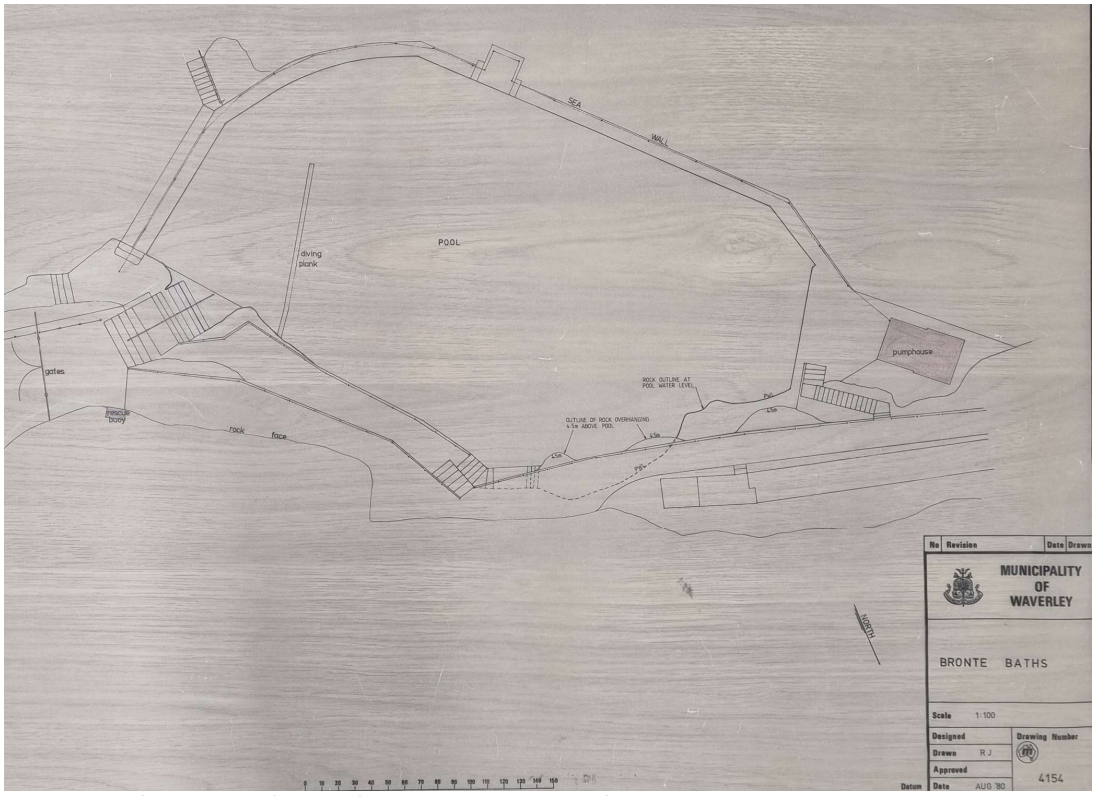


Figure H28 – Survey plan of Bronte Ocean Pool and environs from 1980. The pumphouse building is coloured and the cliff stair abutting it (as it was at that time) is marked. Source: Waverley local studies library, ref: plan 320.


Figure H29 – A 1991 photograph across the baths, showing the pumphouse, prior to late 1990s remedial works to the structure. Source: Waverley Council.

A Wentworth Courier article from the 4th March 1998 describes health and safety concerns at Bronte Ocean Pool as a result of the pump being continually broken down. A subsequent article in the same publication from the 22nd April 1998 confirms that $245,000 had been set aside for upgrade works at Bronte Ocean Pool. This included the replacement of the pool pump, using an overseas model. An article in the Spectator, from the 5th August 1998, suggests that the works to be carried out included not only the replacement of the pump but also the construction of a new pumphouse. This SoHI has not confirmed if indeed an entirely new pump building was built at that time. Engineering advice reviewed for this SoHI suggests that the original building was not demolished, rather an additional concrete skin being added to it.

In July 2003, the Bronte Express contained an article regarding the condition of Bronte Ocean Pool. It refers to experts having analysed the pool, finding that the pump system should ideally be upgraded with improved valves and priming system. In 2006, Bronte Ocean Pool was due to close, so that major remedial works could be carried out on its external walls. A pumphouse structural review from 2016 found a severe degree of reinforcement corrosion and noted a critical state of deterioration.

Trisley Hydraulic Services undertook substantial pump operation and electrical and control works in 2018. SAS also undertook extensive pump remediation works at the site in 2019.



Figure H30 – Undated aerial image (c.2000s) over the ocean pool, with subject pumphouse at left.
Source: Waverley local studies library.

The ACOR structural condition assessment of the pumphouse from 2020 contains reference to the existing outer structure of the facility being approximately forty years old. ACOR reviewed design and structural drawings (prepared by NSW Department of Public Works), dated July 1998, which included the design for the encapsulation of the original pumphouse walls with new concrete walls and capped with a new flat concrete roof. They also included an upgrade of the main centrifugal pump (from the pump supplier), upgrade of the priming chambers and the electrical circuit, upgrade of the pool intake and structural strengthening works to the building. Civille's 2021 report on the pool suggests that these works were carried out.

Research and analysis for this report confirms that a substantial amount of design, redesign, demolition and remedial works have occurred to and around Bronte Ocean Pool since the time of its construction in the late C19th. This includes changes in the location and form of the exterior principal pool wall itself and the insertion (and often removal some decades later) of various buildings and utilitarian elements into the immediate setting of the pool – including dressing sheds, recreational buildings, shower facilities, fencing and lighting. Some elements, like staircases or retaining walls (which may have undergone remedial works or even realignment over many decades) remain in situ. The extant cliff staircase abutting the pumphouse, for example, resides in much the same location as the original 'ladder' access which serviced the cliff-mounted dressing sheds from the 1910s. The stair as it exists today is also a variation of the form of stair that can be seen in images from the 1940s and that was surveyed on the same location in 1980.

4.0 Comparative analysis

During the early C20th, local Municipal Councils commonly investigated remedial works that could be undertaken to improve public recreation assets built in the latter decades of the C19th, including public bathing conveniences.

The Evening News from the 23rd September 1908 carried an article concerning the advisability of a pumping scheme being developed for the Bondi Baths, as during the bathing season tides were often not sufficient to sweep through the baths and flush stagnant waters. The Sydney Morning Herald on the 20th October 1908 included an article about Waverley Council's request of the Railway Commissioner to extend Bondi's tramway electric power to the nearby baths, for pumping purposes at the baths. That work did not happen at that time. The Sun, from the 20th October 1913, carried at article concerning consideration by Waverley Council of the provision of a pool pump at Bondi Baths to the estimated cost of 250 pounds. It would appear that the works were not carried out at that time, either.

In 1924, tenders were requested by Waverley Council for the supply and erection of a centrifugal pool pump at Bondi Baths, as per that proposed at Bronte. A totally new swimming facility was designed at south Bondi in the late 1920s. That scheme sought the enlargement of the baths, new accommodation and the establishment of water channels which would provide a continuous flow of clean water to new tanks (Government Gazette of the State of NSW, 22nd June 1928). The concept also sought the inclusion of special pumps and heating chambers to warm the pools in the complex, during winter.

The Truth, from the 10th January 1937, discussed the failures of the 1925-installed pump at Bondi Baths – stating that its capacity of 140 gallons per hour was normally not met due to malfunctioning of equipment. Waverley Council proposed to spend 2000 pounds during the winter of 1937 to install a completely new pumping 'outfit' at the baths.

At Wellington, in the NSW central west, a pumping plant was proposed in 1926 to support its renowned swimming baths on the banks of the Bell River (The Muswellbrook Chronicle, 19th February 1926). That unit was proposed to pump fresh spring water every day.

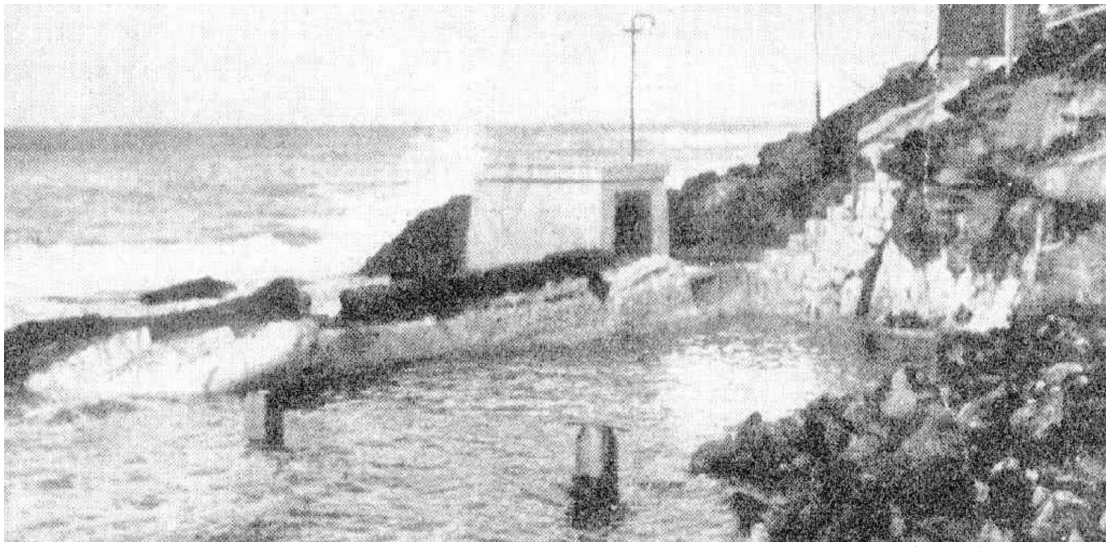


Figure H31 – Bondi Baths in 1931, showing what would appear to be the original pumphouse (centre) on that site.
Source: The Daily Telegraph, 11th June 1931.

During the same period, Merewether baths in Newcastle was the subject of various 'waterfront improvements' including extensive alterations to Merewether Ocean Baths. This was to include the provision of a pump and various stop-valves to empty the baths quickly (Newcastle Morning Herald and Miners' Advocate, 24th March 1937). A channel six to eight feet wide was proposed at the north-east corner of the Merewether pool in 1939. A large concrete pump house was to be built at that corner to accommodate two 12 inch pumps (The Newcastle Sun, 12th June 1939). Newcastle ocean baths appear to have been serviced by such a pump house by this time. Greater Newcastle Council ended up accepting a tender for the supply of two 14 inch pumps in 1939 at Merewether Ocean Baths. It appears that the pumping facility and other pool works were not carried out at that time, or only partially completed, as in 1942 discussions were still underway within Council for the renovation of the baths and its utilities.



Figure H32 – Merewether Ocean Baths, undated, c.1930s – prior to the construction of the pumphouse.
Source: Museums Victoria.

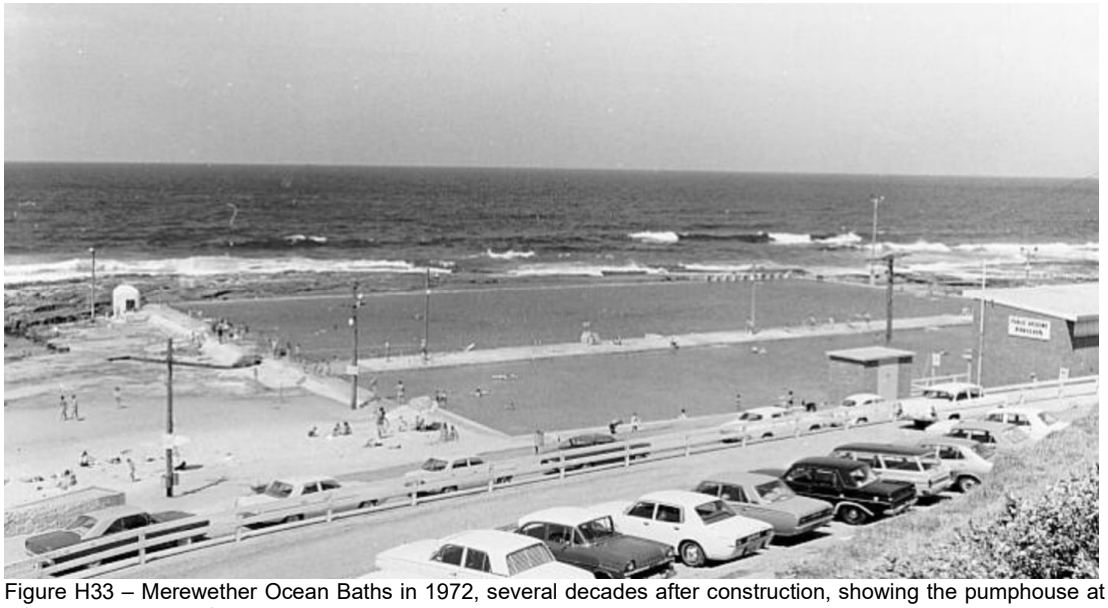


Figure H33 – Merewether Ocean Baths in 1972, several decades after construction, showing the pumphouse at left middle distance. Source: Newcastle Libraries.



Figure H34 – Newcastle Ocean Baths pumphouse. The first pump at these baths appears to have been constructed prior to 1921 (Newcastle Sun, 16th August 1921). Source: locationscout.net

Ocean pools in NSW are serviced by a wide array of stair and ramp typologies. At Bronte Ocean Pool, there are an assortment of stair materials and forms servicing the pool from the cliff and promenade and the ocean from the pool. This includes a recent flight of broad concrete steps at the western end of the pool, concrete and sandstone block stair flights along the southern side of the pool, concrete and metal steps and metal ladder to the adjoining bogey hole and the part timber stair abutting the pumphouse. These forms and material use are representative of historic access infrastructure built to service many ocean pools in NSW.



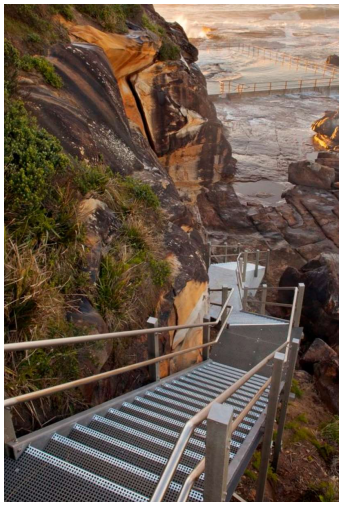
Main concrete stair at the western end of Bronte Ocean Pool. Source: Strabe.com.au



Concrete stair along southern side of Bronte Ocean Pool. Source: oceanrockpools.com.au



A local example of coastal pool access stairs hewn from the abutting cliff-face at Ivo Rowe Rockpool, South Coogee. Source: Flickr



The recently constructed staircase accessing North Curl Curl Rockpool, this replacing a sandstone and concrete stair, which likely replaced an earlier series of timber steps or ladders. Source: Pinterest



Prominent cliff staircase accessing the Newcastle Bogey Hole. Source: wanderaustralia.com.au

5.0 Significance

The purpose of this section is to assess the significance of the pool pumphouse building / pump machinery / abutting cliff stair – primarily to consider the contributory value of the subject structures and utilities in the context of Waverley LEP 2012 heritage listings which, locationally, include or adjoin the built asset. These include the listing areas for Bronte Ocean Pool and the landscape conservation areas of 'Bronte Beach and Park' and 'South Bronte Headland' – the latter of which includes 'Bronte Cutting'. The pumphouse, attachments to it, the pump machinery and timber/concrete cliff stair are not specifically mentioned within the heritage listing under Schedule 5 or on the State Heritage Register in their own right.

Additional to findings made by this author, existing statements of significance for the above listed items or heritage conservation areas have been considered in undertaking this assessment. These include determinations made by the NSW Office of Environment and Heritage (OEH), by Mayne-Wilson & Associates (MWA) in their Bronte Park Heritage Study and by GML Heritage in their recent commission updating Waverley Council's State Heritage Inventory forms – the latter two of which this author provided advice for.

It is important to note that the boundary of, for example, Bronte Park as described by OEH and MWA is not the same. The report by the latter considered the significance of Bronte Ocean Pool, for example, within the assessment of the heritage values of the Park. With reference to the LEP 2012, the subject swim club and facilities building appears to in fact straddle the notional boundary of the two listed landscape conservation areas at Bronte – 'Bronte Beach and Park' and 'South Bronte Headland' (the latter of which overlays the individual listing for Bronte Ocean Pool). These matters are of no real consequence in considerations of significance for the pumphouse or, more broadly, for impact assessment analysis.

A detailed Aboriginal Heritage Assessment of Bronte House was prepared by Dominic Steele in 2015. The assessment describes that the nearest known Aboriginal heritage site to Bronte is a rock shelter located on the northern side of Tamarama Beach beneath the Surf Life Saving Club stairs - reported in 1990 to contain occupation remains of shell-food refuse, animal bones and stone artefacts. Steele states that 'prehistoric archaeology may survive buried in places on the former Bronte estate lands (gully, beach and 'ridge top' areas) and these archaeological deposits and objects may document an equally long history of Aboriginal occupation of what has been at times a highly transformative landscape'.

Existing statements of significance

OEH's inventory form for Bronte Park contains a statement of significance which describes the place as having historic, cultural, natural, scenic values, as a "rare example of a beachside park retaining much of its 1920-1940 period character and layout……. unusual for a Sydney beach park not to have its beach and park elements separated by a road".

MWA's statement of significance for Bronte Park describes the place as having "...evolved into a complex recreational reserve with a range of facilities serving diverse community needs". They also found, re contributory value, that Bronte Ocean Pool has a high degree of heritage significance.

The updated State Heritage Inventory form for the South Bronte Headland Landscape Conservation Area describes that South Bronte Headland 'has heritage significance as a result of its natural heritage values and for its history and attributes as a cultural landscape. The location has significant historic value, supporting the heritage-listed Bronte Ocean Pool (and its former array of dressing sheds) and the c.1911 Bronte tram cutting. It also has historic associational value with Bronte Park'. Waverley Council are currently considering the extension of the South Bronte Headland LCA to include Calga Reserve.

It should be noted that none of the above documents refer specifically to the subject pool pumphouse, pump machinery or abutting cliff stair, regarding significance or contributory heritage value within the broader landscape conservation area listings.

The below assessment is intended to be read in conjunction with the conclusions reached in the above documents and inventory forms and takes into account the *fabric* and *form* of the pumphouse element and its machinery and *the continuity of use on the site* on which they are located. The contributory value of the pumphouse within broader heritage listings is discussed in relation to the heritage assessment criteria adopted by the NSW Heritage Office and set out in its guidelines documents *Assessing Heritage Significance* 2001 and the Department of Planning and Environment's *Assessing Heritage Significance* 2023. Determined contributory value is stated in terms of the above documents' 'gradings of significance', which describes items as exceptional, high, moderate, little and intrusive.

Criterion (a): *importance in the course, or pattern, of NSW's or the local area's cultural or natural history*
The *fabric* and *form* of the existing Bronte Ocean Pool pumphouse and the pump machinery have a moderate degree of contributory cultural historical significance to Bronte Ocean Pool and no contributory significance to the Bronte Park and Beach and South Bronte Headland Landscape Conservation Areas. The original building and pump machinery, built and installed almost a hundred years ago, in 1925, appear to have incurred wholesale remedial modifications possibly twice during the C20th (due to structural compromise and hardware failure). The building looks to have been slightly enlarged with the full encasing of the original structure in the 1990s. The building and pump hardware have also undergone regular upkeep and replacement of parts. Fabric associated with the functioning of the pump machinery, like the form of the pump outlet to the ocean and the slotted pipe inlet to the pool may also have a moderate degree of contributory cultural historical significance to Bronte Ocean Pool - if resolved to have been established at the time of the original pump's construction. The *fabric* and *form* of the existing cliff stair (an element changed several times over the last century) - including its structural supports – has only a little degree of contributory cultural historical significance to Bronte Ocean Pool and no contributory significance to the Bronte Park and Beach and South Bronte Headland landscape conservation areas.

Current signage, historical information and photographic displays attached to the building are not of contributory historical significance to the heritage value of Bronte Ocean Pool.

The *continuity of use on the site* of the existing pumphouse and a pumping facility for pool functioning and upkeep purposes has a high degree of contributory cultural historical significance to Bronte Ocean Pool - in the housing of a service which has been in operation for over a century, enabling continual use and improved management of this prominent recreational facility. The *continuity of use on the site* of the cliff stair abutting the pumphouse has a high degree of contributory cultural historical significance – in the continual provision of pedestrian access to the eastern end of the pool from the cliff path and former cliff buildings.

Criterion (b)*: strong or special association with the life or works of a person, or group of persons, of importance in the cultural or natural history of NSW or the local area*
The existing pumphouse building, pump machinery and cliff stair would seem to have no particular strong or special association with the life or works of a person or people. There may be some minor associative value with the J. R. Thomson & Son firm who prepared the specification for the original pumps and likely advised on or designed that machinery's connectivity to the existing pool. Likewise with current or former staff at the NSW Department of Public Works, who developed a series of design drawings for pump building remedial work and system upgrade in 1998.

Criterion (c): *importance in demonstrating aesthetic characteristics and/or a high degree of creative or technical achievement in NSW or the local area*

The *fabric* and *form* of the pool pumphouse and the bulk-concrete foundation on which it stands and the abutting cliff-face stair have no distinctive aesthetic qualities or aesthetic merit and do not meet criteria for creative achievement. The existing building does not have a notable or distinctive construction response to its setting, nor are designs or techniques used in its construction of exceptional interest or demonstrate rare technical achievement. The pumphouse and cliff stair are prominent in views across Bronte Beach from the beach's northern headland but they do not have any visual amenity value. Current signage, historical information and photographic displays attached to the pumphouse are not of contributory aesthetic value to the heritage significance of Bronte Ocean Pool or South Bronte Headland Landscape Conservation Area.

The suite of pump-associated works retrofitted to the ocean pool in 1925 – and refinement and upkeep of the system in subsequent years - could be considered to have a moderate degree of technical achievement, principally due to the relative infancy at that time of installing such hardware in difficult to access coastal environments. Changes and works to the pump machinery and the system's workings throughout the C20th might also be of a little technical design merit, principally in the assessment and specification of machinery and pump methodology better suited for the purpose and the site. The original insertion of pump machinery to the ocean pool, and subsequent improvements and adaptations to it, could be considered a notable innovative example of the application of technology for the improvement of public assets in the local area.

Criterion (d): *strong or special association with a particular community or cultural group in NSW or the local area for social, cultural or spiritual reasons*

The *fabric* and *continuity of use on the site* of the existing pool pumphouse and pump machinery likely has no associative value for a large portion of the local community and day tripper / tourist population. This owing to the strictly utilitarian purpose of the elements, the spartan nature of the building and the extent to which most onlookers would likely be unaware of the building's purpose or history. The building and the utility it services may have a little degree of associative value to some members of local Bronte swim clubs (and allied community organisations) who are aware of the history of the ocean pool and its various allied public amenity and service facilities from the early 1900s.

The existence of the concrete platform on which the pumphouse stands and the availability of a cliff stair abutting it may have a little degree of associative significance for the community-at-large, purely in relation to access to the pool deck and general pedestrianability of the pool surrounds.

The environs of the pool pumphouse, generally, may have some associative significance to the family of Edith (Alderton) Quirk, to whom a memorial plaque is mounted on the cliff-face behind the building. Likewise to the families of Fanny Durack, Mina Wylie and Evelyn Whillier, past Olympians whose details are recorded on signage attached to the pumphouse.

As the new pumphouse structure and stair are proposed within generally the same location as the existing, any social values relevant to the historic use of this location for bathing-related service facilities would not be impacted.

Criterion (e): *potential to yield information that will contribute to an understanding of NSW's or the local area's cultural or natural history*

The *fabric* and *form* of the existing pool pumphouse structure has minimal potential to yield technical or research information germane to an appreciation of local or State cultural history. The pump machinery itself, however, would likely have a little degree of contributory heritage value to the heritage significance of the pool - in relation to an understanding of the typologies

of pump equipment supplied to the site over almost a century. Likewise, the construction methodology and hydraulic design formulated in the 1920s to link the pump between ocean and pool. The *fabric* and *form* of the abutting cliff stair has no potential to yield technical or research information germane to an appreciation of local or State cultural history.

The *continuity of use on the site* of a pumphouse over almost a century may enable a more detailed historical examination to be made regarding the sequence of pump-related works on the site since 1925. This may include the exact footprint of the original building and historic pool design features associated with the original pump development. Some minor archaeological potential may exist. The *continuity of use on the site* of a cliff stair at the eastern end of the pool, whose precursors serviced the pool from the early 1900s, enables an appreciation of the historical development of pool-related structures on the cliff face during the C20th.

Criterion (f): *possession of uncommon, rare or endangered aspects of the cultural or natural history of NSW or the local area*

The *fabric* and *form* of the existing pumphouse building does not appear to possess uncommon or rare architectural aspects of local or State cultural history. However, this pumphouse building would appear to have only been / continues to be one of only a small number of such buildings abutting ocean pools in NSW.

Brief analysis for this SoHI suggests that the few sites with pumphouse buildings of the sort and scale at Bronte are the older and historically more prominent ocean pools in NSW, for example at Bondi, Merewether and Newcastle beaches. It was in these locations that community agitation for the incorporation of pumps occurred by the 1920s or 1930s – the time when many other ocean pools were only just being built. Submersible or semi-submersible pumps and smaller pump technology may have been developed by the time many of the 1920s or 1930s-built pools were eventually retrofitted with pumps – resulting in a large building to house pump hardware not being required – as it has always been at Bronte. This hypothesis requires further research.

The *continuity of use on the site* of a pool pump facility and abutting areas directly above the Bronte Ocean Pool for cliff stairs, and for now non-extant community change rooms and swim club buildings demonstrates roughly a century of the provision of public utilities and amenity structures at Bronte Beach – in quite ambitious locations.

Criterion (g): *importance in demonstrating the principal characteristics of a class of NSW's or the local area's cultural or natural places or environments*

The *fabric* and *siting* of the existing pumphouse and abutting cliff stairs is representative of similar historic utilities buildings and structures (some now non-extant) which have historically serviced ocean pools in NSW. This includes at Bondi, Merewether and Newcastle beaches.

Summary Statement of Cultural Significance

The Bronte Ocean Pool pumphouse, pump machinery and abutting cliff stair are determined here to have only a little contributory value to the heritage significance of Bronte Ocean Pool. They have no contributory value to the heritage significance of Bronte Beach and Park Landscape Conservation Area or South Bronte Headland Landscape Conservation Area.

This finding takes into account that the pumphouse and pump system were purpose-built into the ocean pool almost a century ago, that along with Bondi Icebergs, this ocean pool pump fixture may be amongst the first of its type in NSW and that the facility has been integral to the use and maintenance of the popular recreational facility since 1925. Also, that the pumphouse structure and pump typology would appear to be relatively rare amongst ocean pools in NSW.

The pumphouse and original machinery have, however (as purely utilitarian elements in an exposed setting) often been repaired and replaced, impacting the integrity of the original form. This includes the encasing of the original walls of the building, the construction of a new roof (for reasons of structural compromise) and the provision of updated pump hardware throughout the C20th.

The pumphouse building, the pump machinery and C20th works to retrofit the pump facility to the ocean pool do not fulfill criteria for local or State heritage listing in their own right.

The cliff stair abutting the pumphouse is determined here to have only a little contributory value to the heritage significance of Bronte Ocean Pool. It has no contributory value to the heritage significance of Bronte Beach and Park Landscape Conservation Area or South Bronte Headland Landscape Conservation Area. This finding is principally based on the stair element being the most recent of several stair accessways (roughly in the same location) that have enabled swimmers to access the eastern end of the ocean pool from the walkway and former swimming-related buildings along the cliff-face, from the early C20th. Stairs in this location have always been an integral component of access within the pool environs. However, the element does not fulfill criteria for local or State heritage listing in its own right.

5.1 Historic themes

The NSW OEH discusses historical themes as ways of 'describing a major force or process which has contributed to our history…providing a context within which the heritage significance of an item can be understood, assessed and compared. Themes help to explain why an item exists, how it was changed and how it relates to other items linked by the theme'.

Themes which relate to the existence of the pool pumphouse (in association with the Bronte ocean pool and Bronte Park) include:

National	*State*	*Local (egs)*
3 Developing local, regional & national economies	Environment / cultural landscape Development of cultural landscapes, shaping the physical surroundings	Surf beach / ocean baths / accessways
3 Developing local, regional & national economies	Technology	Underwater concrete footings
4 Building settlements, towns and cities	Towns, suburbs and villages Creating, planning & managing urban functions, landscapes and lifestyles	Recreation facilities
4 Building settlements, towns and cities	Towns, suburbs and villages Provision of utilities	Pumping facilities / accessways
8 Developing Australia's cultural life	Leisure	Swimming hole / pool
8 Developing Australia's cultural life	Sport	Swimming pool

6.0 Heritage listings

The following heritage listings for elements or areas – considered of relevance to this assessment – around or covering the site of the pool pumphouse have been identified. The pumphouse and cliff stair lie within the listing boundary for Bronte Ocean Pool.

- Bronte Beach and Park Landscape Conservation Area – including Bronte tram shelter and Bronte picnic shelters (C29 Waverley LEP 2012)
- South Bronte Headland Landscape Conservation Area – including Bronte Cutting (C59 Waverley LEP 2012)
  Consideration is being given by Council to include Calga Reserve in this LCA
- Bronte Ocean Pool (Item I280 – Waverley LEP 2012)
- Bronte House & Grounds (Item I278 and Item I508 – Waverley LEP 2012 / SHR 00055)
- Bronte Sewage Pumping Station (SHR 0056)



Figure L1 – Section of Heritage layer map from the Waverley 2012 LEP.
Bronte Ocean Pool is indicated at far right (I280).

7.0 The Proposal

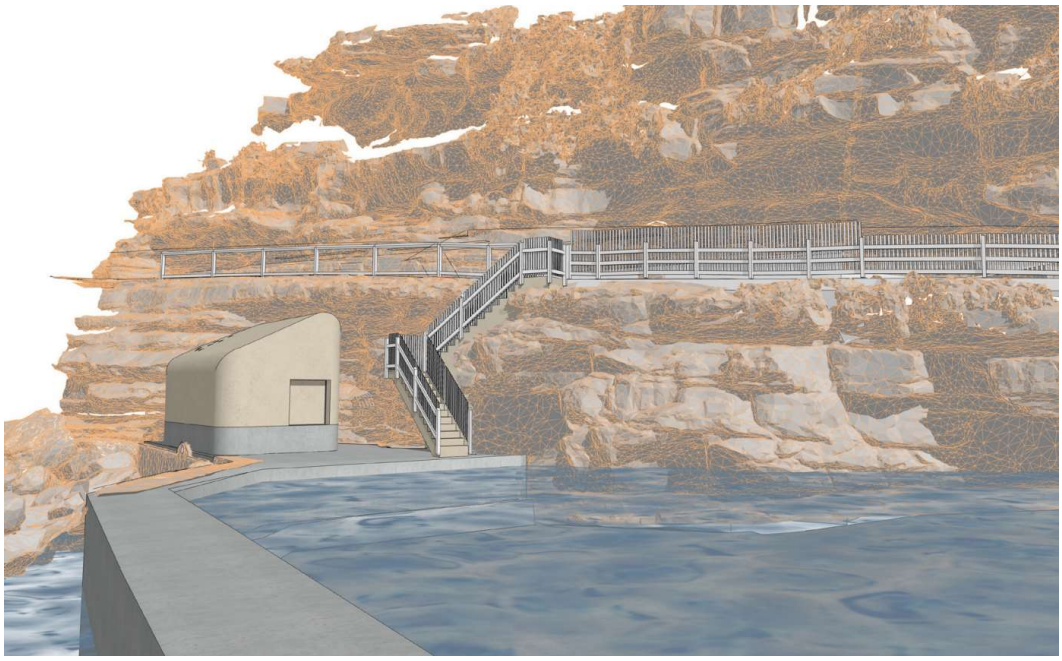


Figure P1 – Panov-Scott design for the new pumphouse and adjoining cliff stair.

Pumphouse / pump equipment

The Panov-Scott / Civille design for a new pumphouse and pump equipment would result in the total demolition of the existing pumphouse building and the removal of all existing pump machinery. Existing pool delivery and suction pipeline connections would be retained, as would the existing deep pump sump below the building. Likewise, the mass concrete footing of the pumphouse is proposed to be retained (pending further structural testing and modification to suit the slab of the new building).

The new pumphouse would have a slightly larger footprint than the existing building and would be marginally taller than the existing structure. It would be sited generally on the same location as the existing pumphouse and its concrete shell changed from a strict rectangle to a more irregular form with curved corners and sloping roof. The scale of the new pumphouse has been determined by the spatial constraints of the existing bulk concrete zone abutting the eastern end of the pool, the alignment of the cliff-face, the location of retained pipelines, particulars of the new pump machinery, internal access requirements around that machinery and the proportions of the proposed portable gantry.

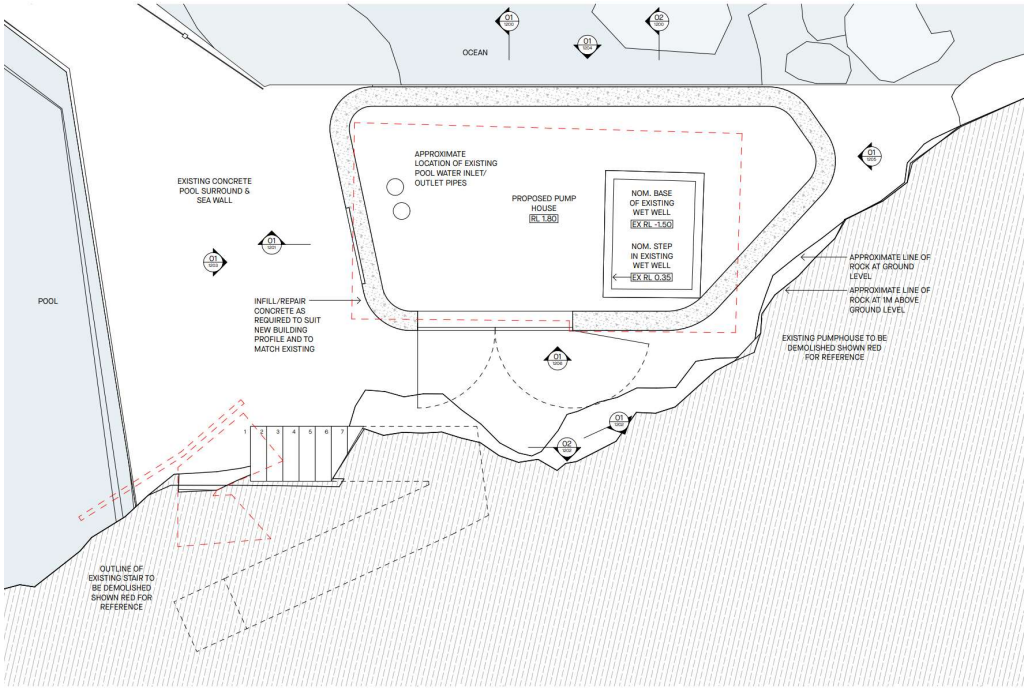


Figure P2 – Floor plan of the pumphouse, shown against the location of the existing building (dashed red). Source: Panov-Scott.

Due to the extent of pipework in the new pumphouse, the pump equipment would be located centrally in the new building, with a 600mm circulation zone around the perimeter. The pump and allied machinery would increase by two-fold, the overall increase in footprint of the building changing from around 19 to 25 square metres.



Figure P3 – The Gorman-Rupp self-priming centrifugal pump proposed for use in the new pumphouse. Source: Panov-Scott.

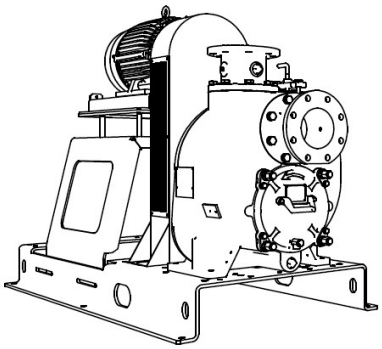


Figure P4 – Hydro Innovations vertical motor mount drawing showing the proposed pump in the foreground. Source: Panov-Scott.

Cliff stair / cliff path

So as to improve access to the pumphouse and pedestrian safety to and from the eastern end of the ocean pool, Panov-Scott have designed a new cliff stair to replace the existing structure. The new stair would be situated on the same section of cliff-face as the existing utility, its overall composition reimagined as a double flight switchback staircase, rather than the somewhat contorted existing double dog-legged form. The upper landing of the new stair would be located several metres west of the existing stair opening, its upper flight extending essentially parallel with the abutting coastal path. The landing at the top of the stair would be serviced by a widened section of path over the rock outcrop, to reduce the extent to which the stair landing is a pedestrian pinch-point with the coastal pathway. An allied consideration in the proposal to broaden this section of cliff path relates to the public safety risk of pool users scaling the existing cliff picket fence, so as to stand on the rockface above the pool and then jump in. The path broadening would 'overtop' a section of cliff edge, which would seem to have historically been the most popular location for people to jump into the ocean pool. It is envisaged that the path broadening proposal at this point (with reinstated abutting arris rail and picket fencing typologies) would result in reduction of likelihood of such jumping occurring and existing deterrence elements including barbed wire able to be removed.

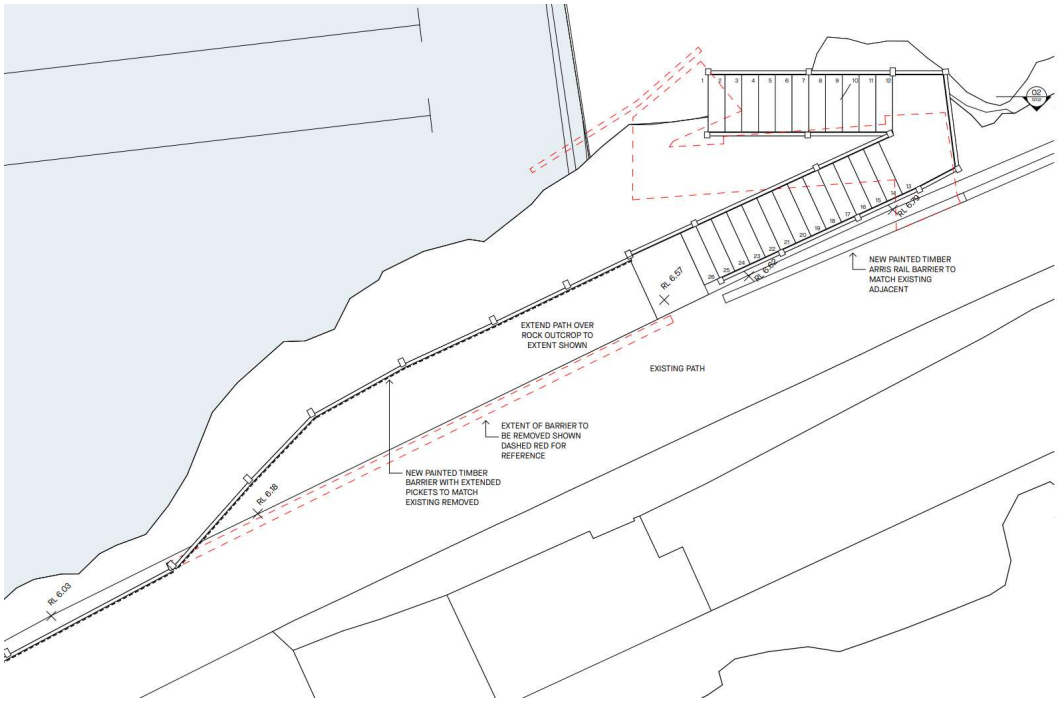


Figure P5 – Plan of the proposed cliff stair and splayed extension to a section of the cliff path, to service the stairs. The existing stair is shown with red dashed line. Also shown red dashed is a section of the existing arris rail and picket fencing that would need to be realigned to service the widened pathway. Source: Panov-Scott.

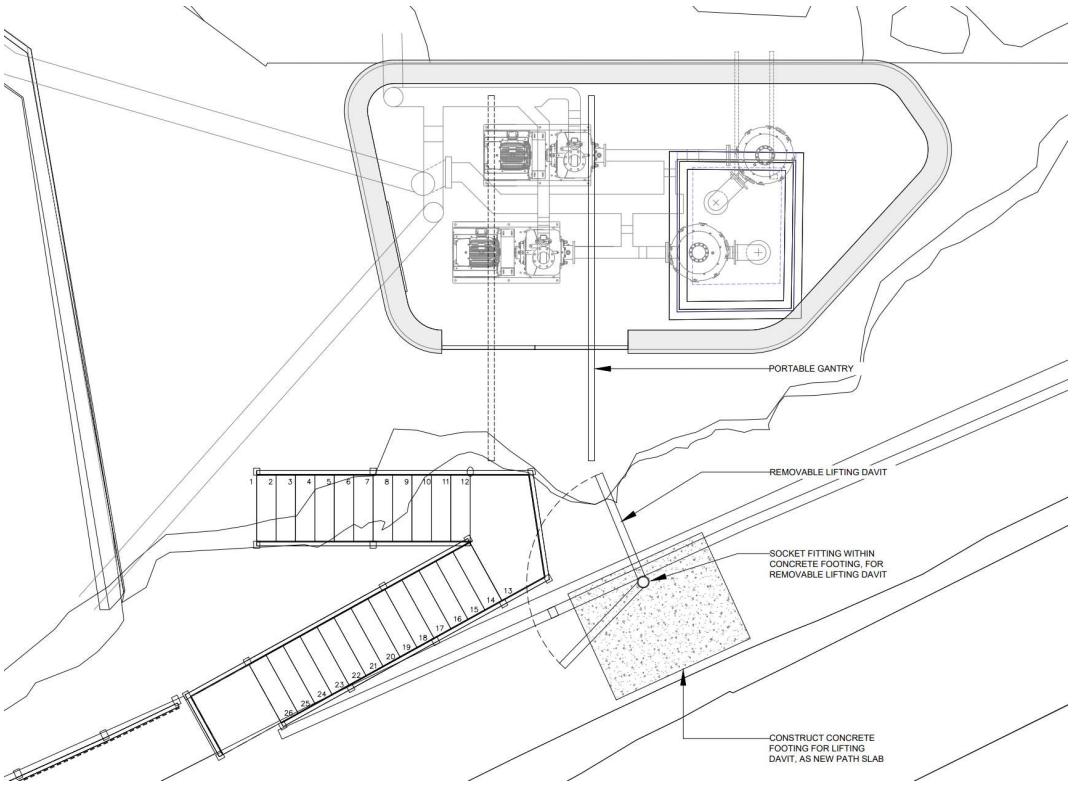


Figure P6 – Civille plan showing the proposed pumphouse, pump machinery and section of cliff concrete path (stippled) that would need to be demolished and rebuilt as a footing to support a removable lifting davit. This mechanism, in association with the portable gantry, would enable faulty pump machinery to be lifted from the pumphouse to the cliff path and taken away for service or replacement. Source: Panov-Scott.

Panov-Scott have located and designed the new staircase taking into account findings of initial profile mapping of the abutting cliff-face. The new stair is proposed to be formed as two concrete flights with a central landing, which would have a half landing support founded onto the cliff-face. New footings would be located at the top and base of the stair. The stair would be framed on both sides by an arris rail fence with pickets attached, as per existing fencing in the vicinity. Concrete sections of the existing stair, concrete footings to it and the main concrete pillar support of the current structure (on the cliff-face) would be removed as part of the demolition works.

The suite of works within the Panov-Scott commission does not include changes to any other ocean pool or cliff-face fabric other than the development extent described above.

8.0 Assessment of Impacts

This assessment is based on analysis of the design scheme by Panov-Scott (31 July 2024) and heritage significance findings of this SoHI. It chiefly concerns the contributory value of the pumphouse and cliff stairs to the heritage-listed Bronte ocean pool and the proximity of the pumphouse to the South Bronte Headland landscape conservation area.

This assessment has also been prepared with consideration of the multiple changes and remedial works to the Bronte ocean pool and its immediate setting over more than a century. This includes the extent and form of the outer wall of the pool and various changes to the pump building and pump hardware, stair case accesses, swimmer amenity elements and safety fencing. Various phases of swimming club and change room facilities buildings have also come and gone from the immediate setting of the pool since the early 1900s.

As noted in the historical overview above, the ocean pool site has also been the subject of several substantial unrealised development proposals (especially in the 1960s and 1970s) - many of which may have resulted in considerable impact to the heritage significance of the ocean pool.

This assessment has been undertaken with reference to the NSW Environment and Heritage's *'*Guidelines for preparing a statement of heritage impact', 2023.

It is concluded that:

- whilst the scheme would result in the demolition of built fabric within a locally-listed heritage item, the subject fabric (pumphouse, pump equipment, aerial electrical services conduit and cliff-stair) is not germane to the heritage significance of Bronte ocean pool or South Bronte Headland landscape conservation area.

- the demolition of the existing pumphouse, pump equipment, aerial electrical services conduit and cliff stair would not have an adverse impact on the heritage significance or interpretability of any of the locally or State listed heritage items or conservation areas in the vicinity of the study area.

- the proposed renewal of the pumphouse, pump equipment and cliff stair marks what could be considered the latest 'phase' of use-equivalent 'accretions of occupance' in this location – commencing in the early 1900s with the provision of the first public access, public amenity and pool management infrastructure around and above the ocean pool. Numerous pumphouse remedial works, pump equipment replacements and upgrades and cliff stair modifications have been undertaken during the C20th – the most recent being strengthening works to the pumphouse designed in 1998 and pump hardware replacements in 2018 and 2019. Some of these have been essential structural stabilization works, others have been as a result of failure due to the coastal environment. As such, the 'like-for-like' intent and scope of the design scheme would retain the historic, technical and social associative values of the elements and be sympathetic to the site.

- whilst remnants of early to mid C20th infrastructure provision exist around the ocean pool, archaeological potential on the subject site is relatively low. However, archival recording of fabric found in excavations for new paths and stairs should be undertaken.

- whilst the scheme may involve minor localized excavation of the cliff-face abutting the pumphouse for the construction of a new cliff-stair, the nature and extent of that excavation would not have an adverse impact on the heritage significance or interpretability of either the heritage-listed Bronte ocean pool or South Bronte Headland landscape conservation area. Natural heritage values of the place would not be impacted by the small scale of the possible cliff-face works involved in the establishment of the new cliff stair. A precautionary principle to the place's geological formations and geodiversity has been applied by Panov-Scott in the design of the new pumphouse and cliff-stair. A Marine Ecology Assessment by Ocean Environmental has determined that there will be no significant impacts on marine flora or fauna in the vicinity of the study area. A geotechnical assessment by Green Geotechnics describes that further detailed mapping of the cliff-face should be undertaken as part of detailed design to confirm initial design assumptions, for example, about new stair location, angle of flights and location of footings. (The South Bronte Headland landscape conservation area has been the subject of human modification / excavation since the development of the tram cutting in the early C20th. The development of the expansive swimming club and network of changeroom buildings on the cliff-face in the same era

and the development of various pool access stairs from the late C19th also resulted in incursions into the cliff-faces and sandstone platforms for elements like footings, service lines and fence post holes).

- the pumphouse, pump equipment and cliff-stair replacement project is not part of a larger scope of works for the Bronte ocean pool or South Bronte headland conservation area. There will be no cumulative impact of these works, in relation to a broader suite of concurrent projects on and in the subject heritage listed item and conservation area.

- the proposed renewal of the pumphouse, pump equipment and cliff stair would not result in substantial changes to the overall configuration and spatial arrangement of the eastern end of the ocean pool platform. There would no impact to the integrity of the setting. Existing ground levels at the eastern end of the pool and along the cliff walkway are to be retained.

- the proposed renewal of the pumphouse, pump equipment and cliff stair would not have any adverse impact on the setting or character of the heritage-listed Bronte ocean pool or the heritage-listed South Bronte Headland landscape conservation area. The replacement structures are broadly of the same form, location and scale as existing fabric to be demolished and would have no impact on existing views across the beach, through Bronte Park, from the cliff-walk (above the pool) or from the South Bronte headland, generally. This is confirmed by photomontages from Panov-Scott, which articulate that views to, from and within the Bronte ocean pool heritage item would not be negatively impacted by the proposed works and would, in fact, be improved by the demolition of existing deteriorated fabric and its replacement by new carefully-designed and place-specific elements.

- the proposed renewal of the pumphouse, pump equipment and cliff stair would not have an adverse impact on the aesthetic significance of Bronte ocean pool, the South Bronte Headland landscape conservation area or the Bronte Beach and Park landscape conservation area. The location, scale and form of the proposed pumphouse and cliff stair would not impact a user's / viewer's ability to interpret the original scale of the Bronte ocean pool or the various swimming-related buildings which dominated the site through the C20th.

- the proposed materials used for the new pumphouse and cliff stair would not have an adverse impact on the heritage significance, aesthetic values and interpretability of either the Bronte ocean pool or South Bronte Headland landscape conservation area. Glass fibre reinforced concrete walls and roof to the new pumphouse and concrete and timber components to the new cliff stair are commensurate with the existing palette of ocean pool and public amenity materials.

- the widening of a section of cliff pathway above the pool, for the purpose of improved public access to the new cliff stair and so as to reduce risks associated with pool users jumping from the cliff-face would not have an adverse impact on the heritage significance or interpretability of either the Bronte ocean pool or South Bronte Headland landscape conservation area. Whilst a small zone of cliff edge would be 'overtopped' by a new concrete path, this expansion would not require substantial excavation or obstruct views of the cliff-face from the pool.

- the change in alignment of / additional supply to arris rail / picket-dressed fencing to service the widened cliff walk above the pool and new cliff stair would not have an adverse impact on the heritage significance or interpretability of either the Bronte ocean pool or South Bronte Headland landscape conservation area. Panov-Scott have specified that all new fencing should matching existing.

- the provision of a removal davit and portable gantry (and the construction of a footing for the davit in the cliff walkway) would not have an adverse impact on the heritage significance, aesthetic values or interpretability of either the Bronte ocean pool or South Bronte Headland landscape conservation area. The subject elements could be stored off-site.

- there is scope within the proposal for the reuse of pickets and sections of arris rail fencing timbers for new or realigned balustrades - although these timbers are not of heritage significance. Removed pump hardware does not need to be salvaged and reused.

- if further testing of the mass concrete footing to the existing pumphouse confirms that it has to be replaced as part of the development works, considerable care must be taken in its removal and replacement to minimize impacts to geological formations and marine flora and fauna.

- existing signage and imagery on the pool pumphouse are not of contributory heritage value and the existing elements do not need to be replaced on a new pumphouse.

9.0 Alternate solutions and ameliorative measures

A preliminary SoHI prepared by Insite in 2021 considered four alternate solutions (proposed by Panov-Scott) for the renewal of the pumphouse. They were:

- Repair of the existing structure;
- Encasing the existing structure, with the building enlarging by 220mm on all sides;
- Reconstruction - replace like with like; and
- Reconstruction - replacement with a new, contextually appropriate pumphouse

The preliminary SoHI included initial heritage considerations based on the above possible design outcomes. In that study, Insite was not asked to consider heritage impacts of a proposal from the March 2021 Civille Pump House Assessment for pumphouse and pump relocation.

Following consideration of these alternatives and based on structural integrity and potential-for-failure assessments by Civille (both of building and pump system), Waverley Council resolved to pursue the last reconstruction solution. It commissioned Panov-Scott to develop design options for a new pumphouse (on the location of the existing structure) and concepts for improvement to pedestrian access at and above the eastern end of the ocean pool. The Panov-Scott / Civille scheme of 31 July 2024 is the outcome of the concept design process. The scheme has sought to minimise impacts to heritage significance by providing new contextually-specific structures which are circumspect substitutes for the existing compromised or unsuitable fabric.

It is in the context of the above reconstruction approach being pursued by Council that the below commentary on alternate solutions and ameliorative measures has been prepared.

Alternate solutions – new pumphouse and new pump machinery

Position of new building
Panov-Scott's positioning of a new pumphouse on the site of the existing pumphouse is constrained by several factors. These include the extent of the current mass concrete footing below the building (proposed to be reused) and the proposal to retain and reuse the deep pump sump of the existing pumphouse and the delivery and suction pipelines from and to the pool. Another constraint is the cliff-face to the south and the desire to keep the new building as far away as feasible from that alignment. It is understood that the possibility of siting the new pumphouse off the 'pool deck' (combined with a different typology of pump machinery) - possibly enabling the removal of the mass concrete footing on which the current structure stands - was not considered feasible by Council.

Scale of new building
The proportions of the proposed pumphouse have been determined by the size of new pump hardware and pump / pipe arrangement required to best service the pool, access around that machinery and available space for the portable gantry to operate. There would appear little scope to change these parameters.

Pump infrastructure
The existing pump system has major constraints. This includes the inability to pump at lower tides, the requirement for a secondary priming pump, the requirement for daily maintenance of the filtration system and difficulties with obtaining replacement parts. Whilst the existing pump hardware could continue to be retained and managed, there are significant running cost and energy consumption savings associated with the complete renewal of existing pump machinery and the redesign of the overall pump hardware composition. There are no heritage impact reasons to consider as inappropriate this change in pump infrastructure. The pump machinery is unlikely to have any scientific research potential.

Form of new building
After a concept design phase that considered multiple options for the style of the new pumphouse, Panov-Scott's final form for the building is a carefully-considered one that 'softens' the rigid geometry of the existing more rudimentary pumphouse form, courtesy of its deliberate P & O profile and styling. There are no heritage impact reasons to consider as inappropriate the form of the proposed building.

Detailing of new building
At the time of the preparation of this SoHI, the final detailing of the pumphouse had not been fully documented. Panov-Scott propose that the structure would have grey concrete base anchors and sand coloured concrete walls, referencing the adjoining sandstone cliff-face. The building would have a recessed niche on its western façade (facing the pool) for swimming pool notices or heritage interpretation. As the new pumphouse will not be a significant contributory component of the heritage significance of the ocean pool or the South Bronte Headland landscape conservation area, its detailing does not need to conform to a particular template. However, the general point is made here that pump buildings are not historically decorative elements and any treatment or fixtures applied to the outside of the building should not cause a diminution in the aesthetic values of the pool, its environs or the cliff-scape of South Bronte Headland.

Alternate solutions – new cliff stair and widened section of cliff pathway

Remove cliff stair from site and do not replace
As safety and longevity concerns apply to the existing cliff stair abutting the pumphouse and as the stair is only of little significance to the heritage value of Bronte Ocean Pool, the element could be removed. This would not fundamentally impact the cultural significance of the site. However, a cliff stair (broadly in the location of the existing element) has been available to the public and Council maintenance staff since the early C20th and serves a useful purpose in providing access to the eastern end of the pool and to the pumphouse. When the cliff-scape was furnished with various swimming club and change room buildings (through the majority of the C20th), a stair access in the subject location was of considerably greater importance in terms of access than it is in contemporary use of the site, without any of those service buildings remaining extant.

Do nothing - retain the existing stair, pathway and fencing as is
The new pumphouse may be able to be built and operational (inclusive of the new lifting davit on the cliff walk) without the construction of a new cliff stair abutting. This could mean the retention of the width of the cliff walkway as existing and the retention of all existing fencing alignments as existing. However, in considering the upgrade to a new pumphouse and the general composition of the eastern skirt to the ocean pool, Council and Panov-Scott have determined that best practice would see that allied infrastructure germane to pumphouse (and pool) management and access is also upgraded – principally the cliff stair. This would remove existing safety and non-compliance concerns regarding the current stair. Additional to the above, the proposal for widening of a short section of the cliff walkway, abutting the upper landing of the proposed stair, is considered by Council a fundamental part of works in this vicinity – to further reduce risk of available rockface for cliff jumping above the pool.

Remediate / retrofit existing stair
The existing cliff stair abutting the pumphouse could, notionally, be retained and remediated, with upgrades to its width and stair flight profiles to ensure its compliance with current Australian Standards. Retention may also mean that the cliff-face would not need to incur any excavation, which may be required in the proposal by Panov-Scott for a completely new stair structure. However, documentation of the existing stair would likely confirm impracticalities in attempting to retrofit the existing element, based on the material composition of the structure, the pitch of its flights of steps and its overall configuration.

Move the subject cliff stair to a different location
Following further mapping of the cliff-face abutting the pool and pumphouse, Panov-Scott may be able to ‘finesse’ the location of the proposed stair and its landings to avoid or further minimise currently-envisaged excavational impact to the cliff-face. However, locational choice for the positioning of a new stair at the eastern end of the pool is restricted by the available extent of the concrete skirt between the pumphouse and the pool.

Develop stair proposal that does not require any excavation of the cliff-face
Following further mapping of the cliff-face abutting the pool and pumphouse and further design consideration of possible alternate typologies of stairs that could be applied to this site, a new cliff stair servicing the eastern end of the pool may be able to be designed to be completely free-standing of the cliff-face. This could mean the removal of all existing concrete footings servicing the existing structure, without need for their replacement with new footings (attached to the rock) to service a new stair. Additionally, it could result in there being no need for cliff-face alignment modification to suit a new stair. However, as in relation to moving the stair

location, choice for design configurations of a new stair at the eastern end of the pool are restricted by the cliff-face profile, the pumphouse location and the available extent of concrete skirt between the pumphouse and the pool.

Ameliorative measures

The below ameliorative measures have been proposed in response to the findings made in Section 8 Assessment of Impacts. To avoid adverse impacts to the significance and interpretability of the Bronte Ocean Pool and South Bronte Headland Landscape Conservation Area, the following recommendations are made:

Pumphouse
As this SoHI has concluded that the replacement of the existing pumphouse with a new carefully-designed structure to house new pump machinery will not have a detrimental impact on the heritage values of the listed Bronte Ocean Pool and South Bronte Headland Landscape Conservation Area, there are no ameliorative measures deemed necessary in heritage terms.

Cliff stair
Panov-Scott have undertaken initial mapping of the cliff-face in the location of the existing and proposed stair to determine the most favourable siting and alignment of a new access structure – to minimise impacts to the abutting cliff-face. It is understood that further cliff-face mapping and analysis would be undertaken during the detailed design phase to ensure that any new stair has as few contact points with the cliff-face as structurally feasible. There are no other ameliorative measures deemed necessary in heritage terms.

Cliff walkway
If the proposal for a broadened section of cliff walkway servicing a new cliff stair is pursued, that broadened walkway should not project past the alignment of the cliff edge abutting it - causing any identifiable overhang of that pathway proud of the cliff-face. Allied to this, supports for the broadened cliff walkway should not be made down the cliff-face – so as to avoid concealment of the geological form and particulars of this section of the South Bronte Headland Landscape Conservation Area.

Signage and heritage interpretation material
Visual impact from a patchwork of signage and heritage interpretation material on a new pumphouse structure (as on the existing building) should be minimised. The placement of pool-related notices, plaques, etc on and around the new building should be carefully considered, so as not to visually dominate the setting. In this regard, heritage interpretive content and imagery (like the existing and former mounted prints containing historical Olympic information and large images of Evelyn Whillier, Fanny Durack and Mina Wylie) would be better located away from the pool surrounds, possibly incorporated into a new south Bronte public amenities building. The existing cliff-mounted plaque to Edith (Alderton) Quirk (behind the pump house) may be able to be grouped with other heritage interpretive content and features, away from the pool surrounds.

Natural heritage values
As per the Australian Natural Heritage Charter, evidence of the existing biodiversity, geodiversity and any other significant features of the place should be recorded before any disturbance of the place occurs.

10.0 Conclusion

The Panov-Scott scheme for the suite of works at the eastern end of Bronte Ocean Pool has resulted from assessments of the structural deterioration of the pump building, functionality and maintenance issues with the pump infrastructure and safety and non-compliance issues with the cliff stair. Long-term retention of these elements has become unviable or undesirable.

The proposed works, which can broadly be considered as replacing 'like-for-like', have been determined in this SoHI to have no foreseeable adverse heritage impacts on the heritage listed Bronte Ocean Pool or South Bronte Headland Landscape Conservation Area. The existing subject fabric to be demolished and replaced is of no contributory significance to the heritage value of the ocean pool or Landscape Conservation Area.

The pool itself, the cliff-scape above and around it and the rock platforms to its west have incurred a substantial palette of built incursions throughout the C20th – including pool expansions, stair development into the pool, the provision of swimming club buildings and dressing sheds on the cliff, provision of lighting and the development and modification of pool pumping facilities. The natural setting of the original Bronte Ocean Pool was modified over many decades, to be somewhat 'reclaimed' in more recent years with the removal of many built accretions above the pool. Whilst the original pumphouse dates to the 1920s, it is the service that the facility has provided for a hundred years rather than the 1920s and 1990s structures themselves that is of some heritage value to the overall significance of the pool. Owing to this, scope does exist – in heritage terms – for the 'reimagining' of the pumphouse regarding its location and form and for the supply of new pump technology.

Panov-Scott's siting and design for the new pumphouse and cliff stair is 'neutral' in heritage terms and would essentially align with a core tenet of the Burra Charter…..'doing as much as necessary and as little as possible'. Article 23 of the Burra Charter describes that new work to and in a heritage item is permissible in relation to continuing of significant use or activity – this guideline applicable to the supply of a new pumphouse, pump hardware and access structure. The proposed pumphouse and cliff stair are a thematically and stylistically appropriate 'reimagining' of existing elements. Via the retention of components of the existing pumphouse's configuration and pool supply, the development and evolution of the pump facility will remain identifiable.

The subject works are considered here to be but the latest of a multitude of infrastructure and public convenience works (and upkeep thereof) on the South Bronte headland, since the early 1900s - chiefly around the ocean pool. Structural stabilisation of the pool and various elements around it are recorded in Council minutes throughout the C20th, as are the historical impacts of storms and normal wave action on the site's built fabric. As such, the current proposals are emblematic of the land use and social history of these environs.

As well as the proposed works not affecting the heritage significance of the Bronte Ocean Pool or South Bronte Headland Landscape Conservation Area, the character of the ocean pool surrounds and views to, from and within the heritage items will not be impacted by the replacement of the existing pumphouse and cliff stair. If anything, these will be improved as a result of more thoughtful and place-specific design of the subject utilitarian elements. The proposed works will also not hinder a continued understanding of the heritage significance and values of the listed items and conservation areas on and in the vicinity of the study area.

The SoHI has found that there are prospective minor adverse heritage impacts on the natural heritage value of the cliff-face above the pool as a result of the location and extent of the proposed cliff stair. Such impact, however, is considered here to not pose a risk to the values and interpretability of the place's heritage listed items. If localised cliff-face 're-profiling' is required to enable the proposed stair to be built, this work would be one of the more minor encroachments into the South Bronte Headland landform since the late C19th.

Bronte Ocean Pool Pump and Pumphouse Renewal



Marine Ecology Assessment

15 May 2025_Final Report

Prepared on behalf of Panov-Scott Architects

Ocean Environmental
2025

Executive Summary

The proposed Bronte Ocean Pool Pump and Pumphouse Renewal (the proposal) seeks to address critical structural stability and safety risks associated with the existing 1920s-era infrastructure, ensuring the long-term viability of this iconic community asset. Located within the Waverley Local Government Area on Crown land, the site forms part of the heritage-listed Bronte Ocean Pool (Item I280) and adjoins the Bronte-Coogee Aquatic Reserve. The proposal involves demolishing the deteriorated pumphouse and stair access, reconstructing a modern facility, and upgrading the pump system to enhance operational efficiency, safety, and public access while preserving the site's historical context.

Ocean Environmental was engaged to undertake a marine ecology assessment for the proposed works to inform a Review of Environmental Factors (REF) for the proposal. The scope of works included a review of existing information, a field survey to describe the coastal and marine habitats present within and immediately adjacent to the proposed works area, an assessment of potential impacts and identification of mitigation and/or management measures for the proposed works.

In summary the following were found:

- The study site adjacent to the most northern portion of a NSW marine protected area, the Bronte-Coogee Aquatic Reserve.
- Intertidal and subtidal rocky reef areas lie adjacent to the Bronte Ocean Pool. These are dominated by temperate macroalgae communities, with the seaweed *Caulerpa filiformis* being particularly abundant over the low profile subtidal reef. No mangroves, saltmarsh or seagrass occur.
- No direct harm to marine vegetation will occur as the proposed works will not be undertaken within, or from, the marine environment. The potential for indirect impacts is very low as any potential indirect impacts from the proposed land based works are able to be effectively mitigated.
- No mapped Coastal Wetlands or Littoral Rainforests occur near to the study site and will not be impacted by the proposal.
- Matters of National Environmental Significance (MNES) listed under the Environment Protection and Biodiversity Conservation Act (EPBC Act) 1999 occurring within 1 km of the study area were identified, with the following results:
    - No Wetlands of International Importance (Ramsar wetlands) occur.
    - The Great Barrier Reef Marine Park does not occur.
    - The Commonwealth Marine Area does not occur.



  - Five listed threatened ecological communities occur. All of these are terrestrial plant communities, none occur within the study area, and they will not be impacted by the proposal.
  - 79 threatened species and 60 migratory species (marine and terrestrial) have the potential to occur within the area.
- Other Matters protected by the EPBC Act occurring within 1 km of the study area were determined, with the following results:
  - 79 listed marine species occur.
  - 13 whales and other cetaceans occur.
  - No critical habitats occur.
  - No Australian Marine Parks occur.
  - No habitat critical to the survival of marine turtles occurs.
  - Biologically important areas (BIAs) for three marine species are likely to or known to occur in the area:
    - Indo-Pacific Bottlenose Dolphin (*Tursiops aduncus*) - Breeding Likely to occur.
    - Grey Nurse Shark (*Carcharias taurus*) - Foraging Known to occur.
    - Humpback Whale (*Megaptera novaeangliae*) - Foraging Known to occur.
- No declared Critical Habitat (listed under the NSW Fisheries Management Act 1994 (FM Act) or EPBC Act) or Areas of Outstanding Biodiversity Value (listed under the NSW Biodiversity Conservation Act (BC Act)) occur within the study area and will not be impacted by the proposal.
- A number of threatened and protected marine and coastal fauna listed under the FM Act and BC Act are known to occur in the study area, however, it is not expected that any significant impacts on any of these fauna will occur from the proposed works.

Potential direct and indirect impacts on coastal and marine habitats associated with the proposed works are described. All potential impacts are expected to be minor, temporary, localised and able to be managed or mitigated effectively. Overall, with the adoption of appropriate mitigation and management during the proposed activity, the woks are expected to be able to be undertaken without causing any significant harm to the local coastal or marine environment.

Considering the overall significance of potential impacts;

- There will be no significant impacts on marine flora or fauna listed under the FM Act, so further assessment via a Species Impact Statement (SIS) will not be required.
- There will be no significant impacts on any threatened fauna or Endangered Ecological Communities (EECs) listed under the BC Act, therefore, a Species Impact Statement (SIS) will not be necessary and

entry into the Biodiversity Offsets Scheme (BOS) under the BC Act will not be required.

- No significant impacts on any threatened fauna or EECs listed under the EPBC Act will occur, therefore, no additional assessment in the form of an Environmental Impact Statement (EIS) or referral to the Commonwealth Environment Minister for consideration and approval is required.

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Appendix A – EBPC Act Protected Matters Search

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1. Introduction

Background

Proposal Overview
The proposed Bronte Ocean Pool Pump and Pumphouse Renewal (the proposal) seeks to address critical structural stability and safety risks associated with the existing 1920s-era infrastructure, ensuring the long-term viability of this iconic community asset. Located within the Waverley Local Government Area on Crown land, the site forms part of the heritage-listed Bronte Ocean Pool (Item I280) and adjoins the Bronte-Coogee Aquatic Reserve. The proposal involves demolishing the deteriorated pumphouse and stair access, reconstructing a modern facility, and upgrading the pump system to enhance operational efficiency, safety, and public access while preserving the site's historical context.

Need for the Proposal
Structural assessments identified significant risks posed by the aging pumphouse, including potential failure of electrical systems and physical collapse, posing a critical safety risk for both users and the nearby sensitive environments. The Bronte Park and Beach Plan of Management (2023) further highlighted the need to address safety hazards and concerns for staff and to improve infrastructure resilience in response to coastal weather extremes. The proposal aligns with Council's obligations under the *Environmental Planning and Assessment Act 1979* (EP&A Act) to maintain public safety and environmental protection.

Key Components of the Proposal
Options have been presented in the Review of Environmental factors (REF) for the proposal. The preferred option – Option 3 (Reconstruction) – includes:

1. **New Pumphouse**: A 300 mm thick reinforced concrete structure with stainless steel reinforcement, designed to harmonise with the coastal landscape through sandstone-coloured finishes and minimal visual bulk.
2. **Dual Pump System**: Installation of two self-priming pumps to ensure reliable seawater circulation, reducing maintenance needs.
3. **Improved Access**: A reconfigured compliant stairway with timber railings, relocated to deter unsafe cliff jumping and enhance safety.
4. **Heritage Integration**: Retention of the pool's historical function and spatial relationship, with design elements reflecting the site's utilitarian heritage.

Study Location

The proposed works are located adjacent to the South Bronte Ocean Pool, above the high tide level at Bronte Beach, New South Wales (NSW)(Figure 1).



Figure 1 Location of the proposed works (Source: Nearmap 2025)

Study Objectives and Functional Requirements

The objective of the proposal is to provide a resolution to the conflating issues surrounding the deteriorated structural condition of the existing pumphouse, ongoing operational issues with the pool pump system and Council's obligation to provide a safe working environment for staff and contractors in and around the pumphouse.

Proposed Works

The proposal comprises the following core elements (refer to site plan in Figure 2 and the proposal drawings in Appendix A of the project REF):

Pump:

- Provision of 2 x self-priming end suction pumps with basket strainers.
- Reuse of existing pool delivery and suction pipe connections.
- Reuse of existing wet well/pump sump, with obstructions removed from existing ocean intake opening to improve flow rates.
- Controls to be located within IP68 cabinet.
- Removable lifting davit and portable gantry for installation and deinstallation of pumps.

Pumphouse:

- Removal of existing pumphouse structure.
- Construction of new in-situ 300 mm thick concrete pumphouse with stainless steel reinforcement. The size and arrangement of the pumphouse responds directly to the accommodation of equipment within, within physical constraint of retention of existing elements identified above, on balance with a consideration of minimising loss of publicly accessible/usable space around the pool and of maintaining adequate visual and service curtilage between the pumphouse and rockface.
- Rock anchors to existing rock/concrete substrate below – testing to be undertaken of existing concrete to determine condition/strength.
- Concrete to be poured as slab/low upturn wall for maximum watertightness at floor/wall junction, with waterstop installed prior to second pour of upper walls and roof. This construction methodology allows for a differentiation in colour, with the grey concrete of the pool surround continuing up to a low datum, and sandstone coloured concrete above to respond to the surrounding rock.
- Stainless steel access doors for maintenance.
- Integration of services – aerial electrical conduit to be removed and replaced with cast in conduit with stair.

Stairs/path:

- Removal of existing timber and concrete stairs and railings/screen
- Construction of new concrete stairs with timber railings – in keeping with existing character of white painted railings extant around the pool. The footprint of the stair increases in footprint to achieve compliant riser and tread dimensions and improved width for service access. To best accommodate the larger stairs, a revised configuration has been adopted whereby the departure point is further back along the upper path than existing, at a lower point to reduce the total height of the stair, which has the added benefit of locating the mid landing away from the pool and adjacent rockface, to mitigate dangers associated with jumping into the pool.
- Further to above, it has been determined that relocating the barrier closer to the edge of the upper path will further deter jumping into the

pool from height. The upper path is therefore intended to be widened at this location, so that there is less of a foothold at the top of the rockface which makes climbing the barrier easier and perhaps more tempting. This will enable removal of the existing barbed wire barrier.

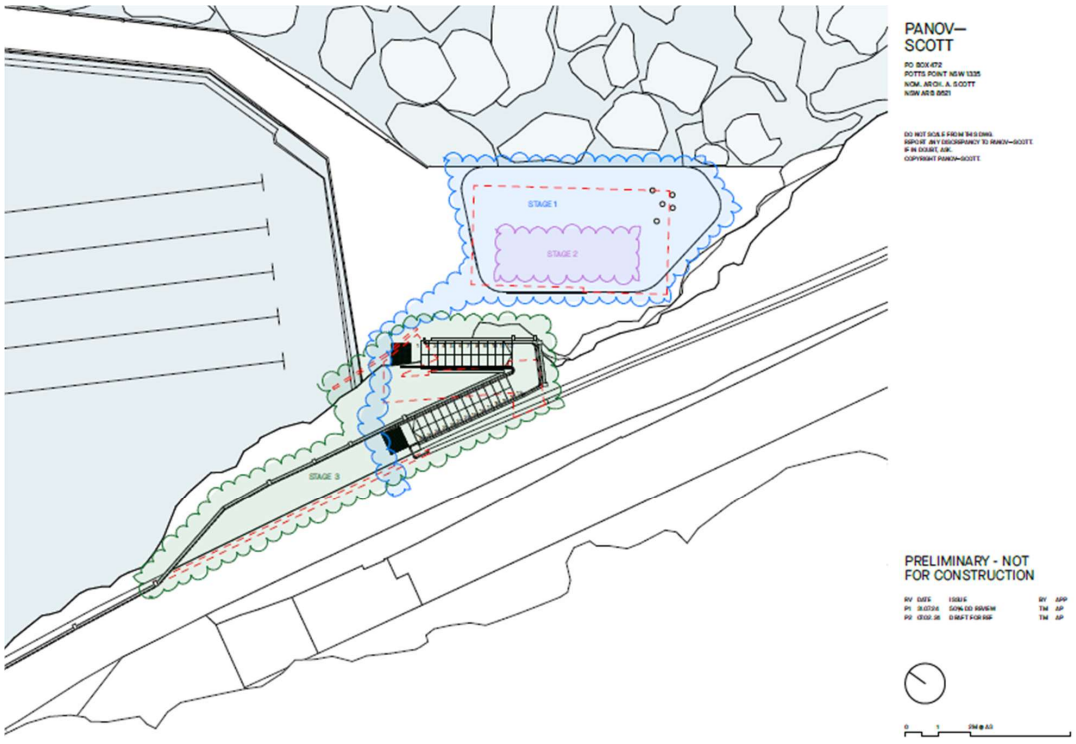

Figure 2 Site and staging plan for the proposed upgrades (Source: Panov-Scott, 2025)

Construction Activities

Work Methodology

The proposal is divided into three stages to minimise environmental and operational disruptions:

Stage 1:

- Demolition of the existing pumphouse (including slab, walls, roof, fixtures and equipment).
- Construction of a new pumphouse with a single pump installed.
- Installation of temporary electrical conduits between top and bottom pits for underground connections.

- Protection of retained elements: existing wet well, pool water inlet/outlet pipes, and rock formations.

Stage 2:
- Installation and commissioning of the second pump.
- Modifications to control systems and ancillary equipment.

Stage 3:
- Demolition of the existing stairs, temporary electrical conduits, and screens.
- Construction of new stairs, extended upper path, and final electrical connections (conduits cast into stair structure).
- Installation of railing modifications and mid-landing electrical pit.

The above stages involve the following key activities:

Demolition:
- Removal of the existing pumphouse, stairs, screens, and redundant concrete elements.
- Retention/protection of:
  - Existing wet well and suction/delivery pipes.
  - Concrete pool surround, sea wall, and sandstone rock outcrops (no rock cutting without prior approval).
- Waste management to be implemented via segregation of recyclable materials (e.g. metal railings, concrete).

Pumphouse construction:
- Construction of the new pumphouse to feature the following concrete works:
  - 300 mm thick reinforced concrete walls/roof with stainless steel (SS) reinforcement, Xypex additive, and glass fibre reinforcement for durability.
  - Water stops at all joints and cold joints.
  - Formwork requirements include square edges, 45 degree mitred vertical formwork to avoid visible end grain.
- Waterproofing of new pumphouse, including external waterproof membrane and below-ground concrete faces.
- Heritage integration of façade elements, include recessed niche in walls for heritage interpretation/notices.

Stairs and upper path works:
- Installation of new concrete stairs and landings with tactile indicators.
- Extension of the upper path over rock outcrops.
- Installation of SS handrails and painted timber barriers to match existing aesthetics.

- Protection of existing sandstone rock during excavation and scabbing to achieve natural undulating surfaces.

Electrical services:

- Temporary electrical conduits during Stage 1 are to be replaced with permanent cast-in conduits in Stage 3.
- Light emitting diode (LED) lighting and general-purpose outlets (GPOs) to be installed in the new pumphouse.

It is expected that construction works would be undertaken by a suitability qualified Contractor in accordance with a site-specific Construction Environmental Management Plan (CEMP), covering all aspects of environmental management and performance, including noise and traffic management.

Various machinery, handheld tools and equipment would likely be utilised. These include, for example, generators, jackhammers, concrete saws, grinders, rollers and pumps. Waste storage bins are also expected to be placed in the vicinity of any demolition activities.

Construction Duration and Hours

The work is scheduled for Winter 2025 (June – August, inclusive), during which time the pool will be closed for up to three months.

Standard working hours are proposed for the construction phase:

- Monday to Friday: 7am – 6pm.
- Saturday: 8am – 1pm.
- Sunday and Public Holidays: No works.

Traffic Management and Access

Traffic and pedestrian management would be required at the site with public access restricted to the pool during construction works. Contractors are to access the site via the promenade through Bronte Park, off Bronte Road. Temporary fencing and establishment of ancillary/storage/compound facilities would be set up within a suitable location within or near the site (to be determined by Council) to ensure the safety of construction personnel and the public and to minimise impacts to surrounding areas of Bronte Park. An indicative site vehicle access plan with potential compound area is shown in Figure 3 and a site management plan is provided in Figure 4.

BRONTE OCEAN POOL PUMP AND PUMPHOUSE RENEWAL

MARINE ECOLOGY ASSESSMENT 2025



Figure 3 Site vehicle access plan (Source: Civille, 2025)

BRONTE OCEAN POOL PUMP AND PUMPHOUSE RENEWAL

MARINE ECOLOGY ASSESSMENT 2025

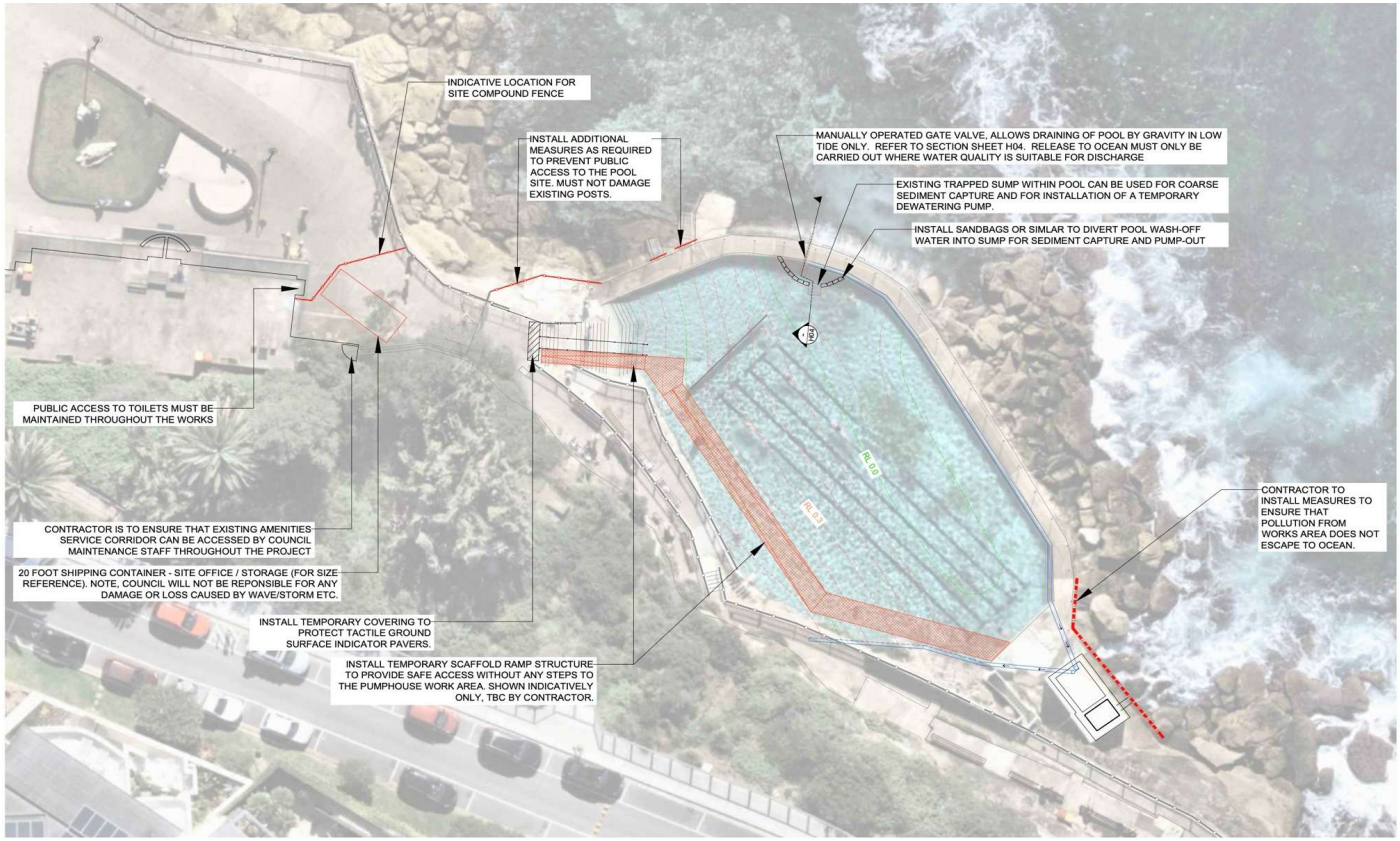

Figure 4 Site management Plan (Source: Civille, 2025)

Operation

There would be no major or substantial changes to existing pool operations following completion of the proposal. Regular maintenance would continue to be carried out by a Contractor engaged by the Council.

Scope of Works

Ocean Environmental was engaged to undertake a Marine Ecology Assessment for the proposed works. This report includes a review of existing marine ecological data for the study area, as well as the results of a field survey undertaken on 27 April 2023. It outlines the potential impacts of the proposed works on the marine environment and mitigation measures to minimise or avoid impacts to habitats and fauna during construction.

2. Background Data Review

Coastal and Aquatic Habitats

Marine Vegetation (NSW DPI)

All marine vegetation in NSW is protected under the NSW *Fisheries Management Act* (FM Act) *1994*. Marine vegetation, including saltmarsh, mangroves, seagrasses and macroalgae (seaweeds), provides shelter and nursery areas for aquatic fauna and is an essential component of the food chain in estuarine and coastal environments. It also stabilises sediments and shorelines and protects water quality in estuaries for recreational users. The NSW Department of Primary Industries and Reginal Development (DPIRD) (Fisheries) administers legislation which protects marine vegetation on public water land and foreshores. Harming or removal of marine vegetation is generally only permissible by permit.

Marine vegetation within all estuaries of NSW has been mapped by DPIRD Fisheries, however mapping does not include coastal marine areas. Fieldwork undertaken in April 2023 identified abundant marine macroalgae in the intertidal and subtidal zones of the marine habitat adjacent to the proposed works area. This is visible in aerial imagery of the site (see Figure 5). However, no macroalgae occurs in the works area which is above the high tide mark. No seagrass, mangroves or saltmarsh were present at the site. Field survey results are provided in Section 5.



Figure 5 Aerial imagery of the site showing expanses of intertidal and subtidal reef which all suport macroalgae communitites (Source: Nearmap 2023)

Key Fish Habitat

One of the objectives of the FM Act is to 'conserve key fish habitats'. To achieve the objectives of the FM Act, NSW DPI Fisheries has identified 'Key Fish Habitats' (KFH) as those aquatic habitats that are important to the sustainability of the recreational and commercial fishing industries, the maintenance of fish populations generally, and the survival and recovery of threatened aquatic species.

KFH is defined to include all marine and estuarine habitats up to highest astronomical tide (HAT) level (that reached by 'king' tides) and most permanent and semipermanent freshwater habitats including rivers, creeks, lakes, lagoons, billabongs, weir pools and impoundments to the top of bank.

The proposal lies adjacent to an area of marine KFH.

Waterway and Fish Habitat Classification (NSW DPI)

Under the Fisheries NSW *Policy and Guidelines for Fish Habitat Conservation and Management* (NSW DPI 2013) (Table 2), the marine area adjacent to the proposed works would be considered as a *CLASS 1 – Major Key Fish Habitat*, i.e. "a marine or estuarine waterway or permanently flowing or flooded freshwater waterway (e.g. river or major creek), habitat of a threatened or protected species or 'critical habitat'".

Considering the specific attributes of the marine habitats in the study area (refer to this section and field survey results), and in accordance with Table 1 of the Policy, the marine habitat adjacent to the proposed works would be considered *TYPE 1 – Highly sensitive key fish habitat* (as it is an aquatic reserve).

Coastal Wetlands and Littoral Rainforests

The Coastal Management Act (CM Act) 2016 replaces the Coastal Protection Act 1979 and establishes a new strategic framework and objectives for managing coastal issues in NSW. The Act defines the coastal zone as comprising four coastal management areas:

1. Coastal wetlands and littoral rainforests – areas which display the characteristics of coastal wetlands or littoral rainforests that were previously protected by SEPP 14 and SEPP 26.
2. Coastal vulnerability area – areas subject to coastal hazards such as coastal erosion and tidal inundation.
3. Coastal environment area – areas that are characterised by natural coastal features such as beaches, rock platforms, coastal lakes and

lagoons and undeveloped headlands. Marine and estuarine waters are also included.
4. Coastal use area – land adjacent to coastal waters, estuaries and coastal lakes and lagoons.

The State Environmental Planning Policy (SEPP) (Resilience and Hazards) 2021 updates and consolidates into one integrated policy SEPP (Coastal Management) 2018, SEPP 33 (Hazardous and Offensive Development) and SEPP 55 (Remediation of Lands). These policies are now repealed (DP&E 2022).

The occurrence of Coastal Wetlands and Littoral Rainforests in the general study area was mapped using the NSW DPI Spatial Data Portal (NSW DPI 2023) (Figure 6). No Coastal Wetlands or Littoral rainforests occur in the vicinity of the proposal and will not be impacted directly or indirectly by the proposed works.

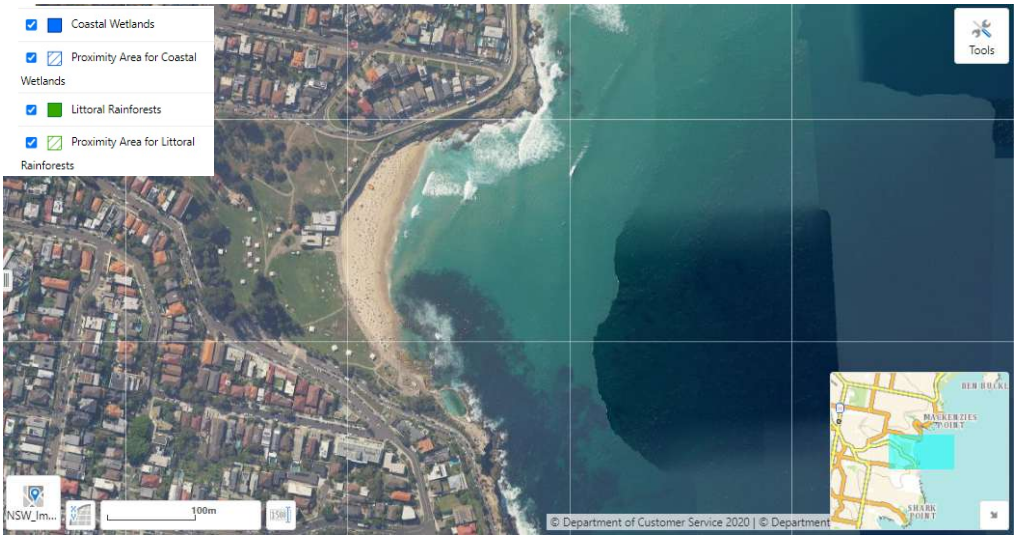

Figure 6 Coastal Wetlands and Littoral Rainforest mapped in the study area (Source: DPIE 2023)

Marine Protected Areas

Marine Parks in NSW are identified, managed, and protected under the Marine Estate Management Act (MEM Act) 2014. Marine Parks aim to conserve marine biodiversity and support marine science, recreation, and education.

The NSW system of marine protected areas includes:

- 6 Marine Parks – multiple use marine parks cover around one third (~345,000 ha) of the NSW marine estate.
- 12 Aquatic Reserves – cover ~2,000 ha of the NSW marine estate.
- National Parks and Nature Reserves – include ~20,000 ha of estuarine and oceanic habitats.

The study site is located adjacent to the northern most extent of the Bronte-Coogee Aquatic Reserve (Figure 7).

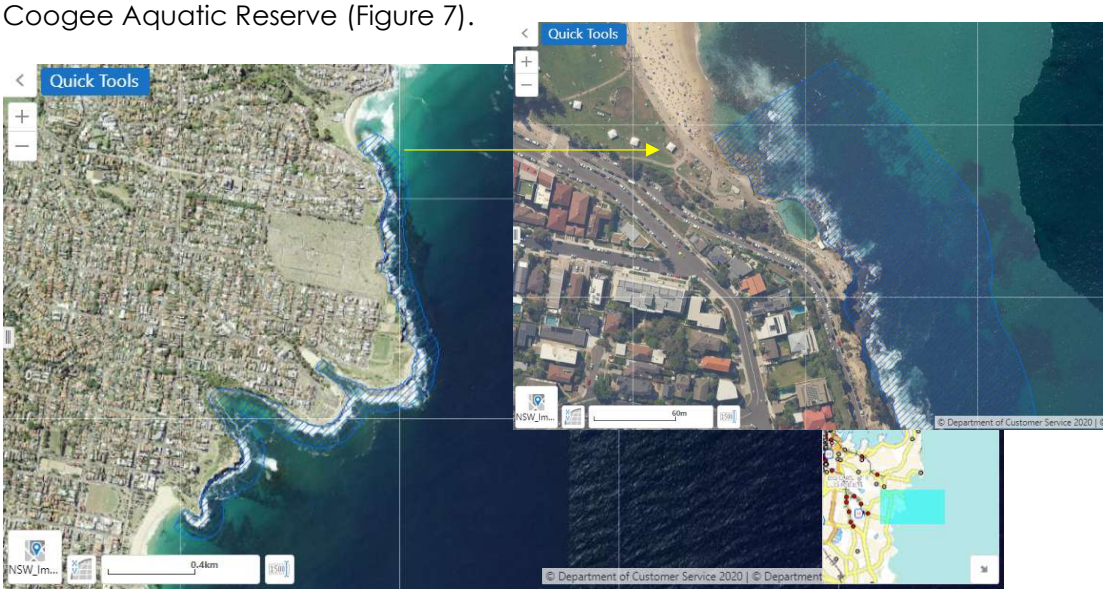

Figure 7 Extent of the Bronte-Coogee Aquatic Reserve (Source: NSW DPI 2023)

Bronte-Coogee Aquatic Reserve extends from the southern end of Bronte Beach to the rock baths at Coogee Beach and out to 100 m offshore. It covers an area of approximately 40 hectares and includes 4,000 m of coastline. This site was an Intertidal Protected Area from 1993 to 2002.

Objectives of the reserve are to:

- Conserve the biodiversity of fish and marine vegetation
- Protect fish habitat
- Facilitate educational activities
- Facilitate scientific research.

Bronte-Coogee Aquatic Reserve is centred on the extensive rocky shores and nearshore reefs of Sydney's Eastern Suburbs. Two small bays, Gordons Bay and Clovelly Bay, are important features of the reserve. Gordons Bay has a rocky wall drop off which is home to a diversity of marine life. A rocky breakwater exists at the mouth of Clovelly Bay creating very calm conditions.

The blue groper (*Achoerodus viridis*) (Figure 8) has an iconic status within the eastern suburbs community, and in this reserve recreational divers and snorkelers enjoy swimming with the local groper population. The blue groper has been afforded extra protection through a fishing closure in part of the reserve. The reserve is also home to a variety of invertebrate species, including unusual assemblages living under boulders such as chitons, starfish and flatworms.



Blue groper (*Achoerodus viridis*). Photo: Renata Pronk.



Blue groper (*Achoerodus viridis*). Photo: Renata Pronk.

Figure 8 Blue groper (*Achoerodus viridis*) in the Bronte-Coogee Aquatic Reserve (Source: NSW DPI 2023)

Critical Habitats / Areas of Outstanding Biodiversity Value

This section identifies land declared as Critical Habitat (under the FM Act and EPBC Act) and Areas of Outstanding Biodiversity Value (AOBVs) (under the BC Act) located within the study area.

Fisheries Management Act 1994 (FM Act)

Critical Habitat is defined under the FM Act as 'the whole or any part of the habitat of an endangered species, population or ecological community that is critical to the survival of the species, population or ecological community'. The Register of Critical Habitat under the FM Act includes:

1. Grey Nurse Shark Critical Habitat – Various locations in NSW are listed, the closest to the proposal site being Magic Point, Maroubra. This area will not be impacted in any way by the proposal. A map showing the location of this Critical Habitat is provided at the following: https://www.dpi.nsw.gov.au/fishing/threatened-species/threatened-species-distributions-in-nsw/greynurse-sites-maps

Register of Critical Habitat under the NSW FM Act 1994 (NSW DPI 2021): http://www.dpi.nsw.gov.au/fishing/species-protection/conservation/what/register

Biodiversity Conservation Act 2016 (BC Act)

The BC Act gives the Minister for the Environment the power to declare Areas of Outstanding Biodiversity Value (AOBV). AOBVs are special areas that contain irreplaceable biodiversity values that are important to the whole of NSW, Australia or globally. AOBVs in NSW include:

1. Cabbage Tree Island, Port Stephens, NSW – Critical Habitat for Gould's petrel (*Pterodroma leucoptera*).
2. Manly, Sydney Harbour, NSW – Critical Habitat for little penguin (*Eudyptula minor*).
3. Stotts Island Nature Reserve, NSW – Mitchell's Rainforest Snail (*Thersites mitchellae*).
4. Wollemi National Park, NSW - Wollemi Pine (*Wollemia nobilis*).

No AOBVs listed under the BC Act are located within the study area and will not be impacted by the proposal.

Register of AOBVs - https://www.environment.nsw.gov.au/topics/animals-and-plants/biodiversity/areas-of-outstanding-biodiversity-value/area-of-outstanding-biodiversity-value-register

Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)

The Register of Critical Habitat for species listed under the EPBC Act indicates that no areas of listed Critical Habitat under this Act occur within the study area (DCCEEW 2023) (https://www.environment.gov.au/cgi-bin/sprat/public/publicregisterofcriticalhabitat.pl).

Areas of Critical Habitat identified under the EPBC Act include:

1. *Diomedea exulans* (Wandering Albatross) - Macquarie Island, TAS.
2. *Lepidium ginninderrense* (Ginninderra Peppercress) - Northwest corner Belconnen Naval Transmission Station, ACT.
3. *Manorina melanotis* (Black-eared Miner) - Gluepot Reserve, Taylorville Station and Calperum Station, excluding the area of Calperum Station south and east of Main Wentworth Road.
4. *Thalassarche cauta* (Shy Albatross) - Albatross Island, The Mewstone, *Pedra Branca*, TAS.

5. *Thalassarche chrysostoma* (Grey-headed Albatross) - Macquarie Island, TAS.

Matters of National Environmental Significance

A Protected Matters Search under the EPBC Act 1999 was undertaken on 26 March 2023 to determine whether any Matters of National Environmental Significance (MNES) associated with coastal and marine habitats occur within a 1 km radius of the study area and have the potential to be impacted by the proposal (see report in **Appendix A**).

The following MNES are applicable to the proposal:

- No Wetlands of International Importance occur and will not be impacted by the proposal.
- The Great Barrier Reef Marine Park does not occur and will not be impacted by the proposal.
- The Commonwealth Marine Area is not located within a 1 km radius and will not be impacted by the proposal.
- Five listed threatened ecological communities occur within 1 km of the study site – these are all terrestrial communities, do not occur at the site and will not be impacted by the proposal.
- 79 Listed Threatened Species (including marine and terrestrial species) have the potential to occur.
- 60 Listed Migratory Species (including marine and terrestrial species) have the potential to occur.

Other Matters listed under the EPBC Act relevant to the proposal include:

- 72 Listed Marine Species have the potential to occur.
- 13 Whales and Other Cetaceans have the potential to occur.
- No Critical Habitats occur.
- No Commonwealth Reserves occur (Terrestrial).
- No Australian Marine Parks occur.
- No Habitat Critical to the Survival of Marine Turtles occurs.
- No Nationally Important Wetlands occur.
- No Key Ecological Features (Marine) occur.
- Three Biologically Important Areas occur as follows:
    - Indo-Pacific/Spotted Bottlenose Dolphin (*Tursiops aduncus*) - Breeding Likely to occur in feature area.
    - Grey Nurse Shark (*Carcharias taurus*) - Foraging Known to occur in feature area.
    - Humpback Whale (*Megaptera novaeangliae*) - Foraging Known to occur in feature area.

Threatened and Protected Fauna

Fisheries Management Act 1994 (FM Act)

Threatened and protected species listed under Schedules 4 to 5 of the FM Act (see **Appendix B**) were reviewed to satisfy requirements of the Fisheries NSW Policy and Guidelines for Fish Habitat Conservation and Management (NSW DPI 2013). Marine species, populations and ecological communities listed as endangered, critically endangered and/or vulnerable (i.e. Schedule 4, 4A and 5) under the NSW FM Act with the potential to occur in the coastal marine area adjacent to the study area are listed below. The proposed works will not occur within the habitat for any of these species,

Schedule 4: Endangered Species, Populations and Ecological Communities

- Scalloped hammerhead shark (*Sphyrna lewini*) - endangered species
- Southern bluefin tuna (*Thunnus maccoyii*) - endangered species
- Marine worm (*Hadrachaeta aspeta*) - species presumed extinct
- Bennett's seaweed (*Vanvoorstia bennettiana*) - species presumed extinct

Schedule 4A: Critically Endangered Species and Ecological Communities

- Grey nurse shark (*Carcharius taurus*) - critically endangered species
- Marine slug (*Smeagol hilaris*) - critically endangered species
- Marine brown algae (*Nereia lophocladia*) - critically endangered species

Schedule 5: Vulnerable Species and Ecological Communities

- Great white shark (*Carcharodon carcharias*) - vulnerable species
- Black cod (*Epinephelus daemelii*) - vulnerable species
- Great hammerhead shark (*Sphyrna mokarran*) - vulnerable species

Protected Species

- All species of the families 'Syngnathidae', 'Solenostomidae' and 'Pegasidae' (i.e. seahorses, sea dragons, pipefishes, pipehorses).
- Ballina angelfish, *Chaetodontoplus ballinae*
- Bluefish, *Girella cyanea*
- Eastern blue devil fish, *Paraplesiops bleekeri*
- Elegant wrasse, *Anampses elegans*
- Estuary cod, *Epinephelus coioides*
- Giant Queensland groper, *Epinephelus lanceolatus*
- Herbsts nurse shark, *Odontaspis ferox*

Considering the location and scope of the proposed activity, which is not within the marine environment, and is located above the high tide mark, none of the species listed are expected to be impacted by the proposal.

Biodiversity Conservation Act 2016 (BC Act)

An online database search for threatened and protected species listed under the NSW BC Act recorded within a 10 km radium of the study site (using the BioNet Atlas of NSW Wildlife) was undertaken on 26 March 2023. The full Atlas of NSW Wildlife search results are provided in **Appendix C**. Marine species listed are shown in Table 1.

Table 1 Marine species listed under the BC Act with the potential to occur in the marine area adjacent to the proposal site.

Species	**Common Name**	**Status***
Caretta caretta	Loggerhead Turtle	E1,P
Chelonia mydas	Green Turtle	V,P
Cheloniidae sp.	unidentified sea turtle	P
Eretmochelys imbricata	Hawksbill Turtle	P
Natator depressus	Flatback Turtle	P
Dermochelys coriacea	Leatherback Turtle	E1,P
Aipysurus laevis	Olive Seasnake	P
Hydrophis platurus	Yellow-bellied Seasnake	P
Eudyptula minor	Little Penguin	P
Dugong dugon	Dugong	E1,P
Arctocephalus forsteri	New Zealand Fur-seal	V,P
Arctocephalus pusillus doriferus	Australian Fur-seal	V,P
Arctocephalus sp.	Unidentified Fur-seal	P
Arctocephalus tropicalis	Subantarctic Fur-seal	P
Neophoca cinerea	Australian Sea-lion	P
Seal sp.	Unidentified Seal	P
Hydrurga leptonyx	Leopard Seal	P
Eubalaena australis	Southern Right Whale	E1,P
Balaenoptera acutorostrata	Dwarf Minke Whale	P
Balaenoptera musculus	Blue Whale	E1,P
Megaptera novaeangliae	Humpback Whale	P

Whale sp.	Unidentified Whale	P
Kogia breviceps	Pygmy Sperm Whale	P
Mesoplodon layardii	Strap-toothed Beaked Whale	P
Delphinus delphis	Common Dolphin	P
Dolphin sp.	Unidentified Dolphin	P
Grampus griseus	Risso's Dolphin	P
Stenella attenuata	Pantropical Spotted Dolphin	P
Tursiops aduncus	Indo-Pacific Bottlenose Dolphin	P
Tursiops truncatus	Bottlenose Dolphin	P

P = protected, E1 = endangered, CE = critically endangered, V = vulnerable

Considering the location and scope of the proposed activity, its potential impacts on marine fauna and available mitigation / management measures, the proposed works are not expected to cause any long term or significant impact on any of these species, nor will they impact on the viability of local populations or place any of them at the risk of extinction.

Marine and migratory bird species listed under the BC Act are not expected to be impacted by the proposal apart from the potential for minor disruptions associated with noise if they happen to be feeding or roosting nearby the site at the time. No destruction of nesting habitat for any of these species is proposed and considering the current use of the site it is highly unlikely any of these birds would occur at the site.

Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)

An online database search for species listed under the EPBC Act with the potential to occur within a 1 km radius of the site was made on 26 March 2023 using the EPBC Act Protected Matters Search Tool. Full search results are provided in **Appendix A.**

The EPBC Act Protected Matters Search listed 79 threatened species (marine and terrestrial), 60 listed migratory species (marine and terrestrial), 79 listed marine species and 13 whales and other cetaceans, with the potential to occur within a 1 km radius of the study site. The threatened and protected species under the EPBC Act 1999 are listed in **Appendix A**. The likelihood of occurrence of these species (as determined by the database) in the study area is provided.

Marine species include birds, whales, seals, sharks and rays, dolphins, fish, reptiles (turtles and seasnakes). Marine species listed under the EPBC Act utilising marine habitats in coastal waters adjacent to the proposal are not expected to be impacted by the proposed works as long as safeguards to prevent the mobilisation of sediments or pollutants into the waterway are adopted.

Marine and migratory bird species listed under the EPBC Act which utilise the area are not expected to be impacted by the proposal apart from potential minor disruptions associated with noise and construction activities. No destruction of habitat for any of these species is proposed as above.

3. Field Survey Results

A field survey was undertaken on the 27 April 2023 via snorkel and site walkover. The survey was undertaken around mid-tide between the hours of 11 am and 1 pm. Conditions were fine and sunny with light winds. Moderate with some large swells affecting the site at times and restricting access to the area immediately adjacent to the pumphouse outlet. The survey was undertaken within the area shown in Figure 9 and aimed to:

- Describe the intertidal and subtidal habitats within the proposed works area and immediately adjacent areas.
- Describe the marine flora and fauna within the proposed works area.

Images of the existing pumphouse are shown in Figure 10.



Figure 9 Approximate extent of the habitat field survey (blue) (Source: Nearmap 2025)



Figure 10 Images of the existing pumphouse and location (Source: Ocean Environmental 2023)

Intertidal Zone

The intertidal zone refers to the region between the high and low tide level. Intertidal habitat within the study area was comprised of the vertical surfaces of the existing Bronte Seapool seawall as well as various surfaces of the natural intertidal rocky reef / rock platform which occurred along the base of the seawall and to the south and west (including horizontal, vertical, under hangs, cracks and crevices). The extent of natural intertidal rocky reef and intertidal rock platform was variable along the length of the site.

The marine flora and fauna inhabiting the intertidal zone of the site was typical of intertidal rocky reefs in temperate NSW. The seawall itself provided an artificial hard substrate for the attachment of sessile marine invertebrates including Sydney rock oysters (S. glomerata), limpets, barnacles, tube worms (*Galeolaris gemineoa*), ascidians and small varieties of marine macroalgae (e.g. small green algae *Ulva lactuca* and foliose and turfing red algae varieties). The natural intertidal rocky habitats at the site were inhabited by a similar suite of organisms in the upper tidal levels, as well as a more diverse array of macroalgae and solitary ascidians (*Pyura praeputialis*) in the lower intertidal zones.

Typical zonation of intertidal organisms occurred at the site. Small littorinids (e.g. periwinkles) occurred in the upper splash fringe level (above the high tide level where waves and splash influence habitat). The high tide level was dominated by barnacles, with some semi-mobile molluscs also present here (e.g. limpets, chitons, periwinkles). In the mid tide level aggregations of polychaete tube worms (*G. gemineoa*) occurred as well as some smaller algae varieties (of red and green species). Below this, at the low tide level, marine macroalgae were more common, more diverse and more variable in size. Species included foliose, turfing and encrusting varieties. In addition, aggregations of the solitary ascidian *P. praeputialis* occurred at the low tide level. Mobile invertebrates including anemones, sea stars, sea urchins, chitons, tritons, whelks, limpets, barnacles, crabs and ascidians were also present, on occasion, in this area. The low-fringe level, which is typically wetted, but exposed at times during waves and large tide events, was inhabited by a diverse array of macroalgae. No seagrass, mangroves or saltmarsh were present within the intertidal zone of the study area.

Images of the intertidal zone adjacent to the pool and pumphouse are shown in Figure 11.

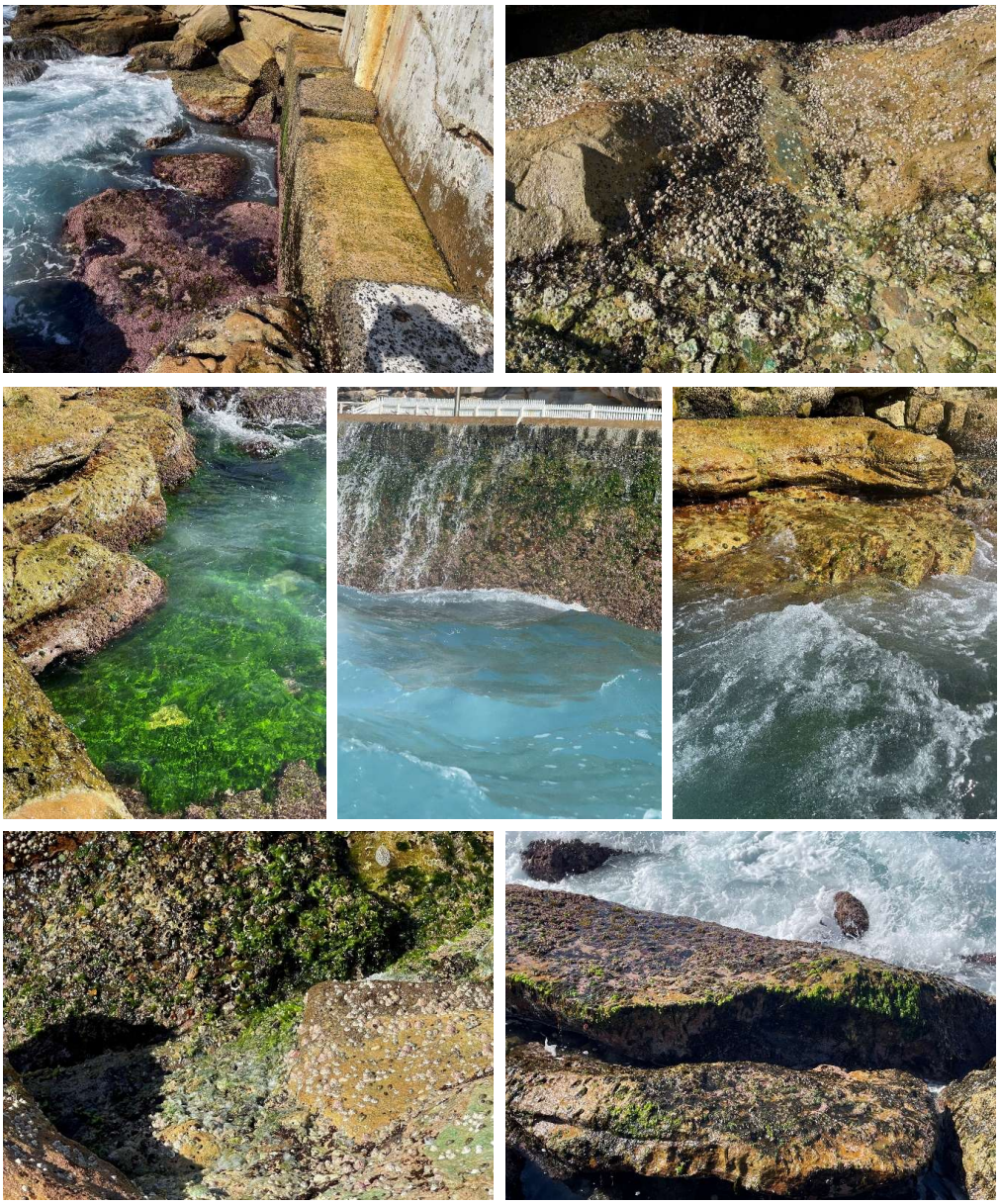

Figure 11 Intertidal habitats in the marine environment adjacent to the site (Source: Ocean Environmental 2023)

Subtidal Zone

Subtidal habitat at the site consisted of natural subtidal rocky reef which extended eastwards and to the north and south of the site, along with patches of unvegetated sandy soft sediment seafloor. The rocky reef

included near horizontal surfaces, small drop offs, boulders, overhangs and crevices which all provide different microhabitats for marine flora and fauna.

The rocky subtidal habitat at the site was colonised by a diverse assemblage of small to large marine macroalgae species including encrusting corallines, foliose, turfing and habitat forming species of red (Rhodophyta), green (Chlorophyta) and brown (Heterokontophyta) algae. The seaweed species *Caleurpa filiformis* was the dominant algae species identified in the subtidal zone adjacent to the site. Other species included (but were not limited to *Phyllospora comosa* (crayweed), Sargassum sp., *Ulva lactuca* (sea lettuce), Dictyota sp., Laurencia sp., Padina sp., *Augophyllum delicatum*, Cryptonemia sp., and crustose coralline algae. Very little bare rock was seen. Images of the subtidal zone adjacent to the site are shown in Figure 12.

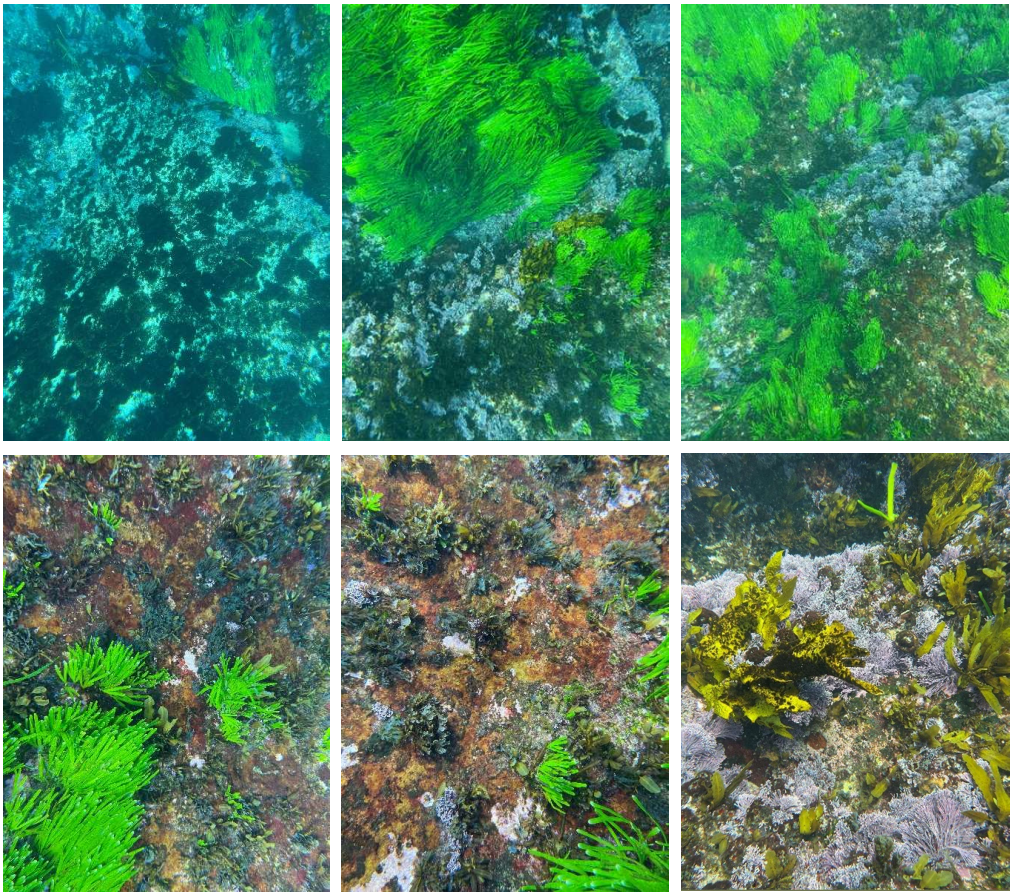

Figure 12 Subtidal habitats in the marine environment adjacent to the site (Source: Ocean Environmental 2023)

4. Potential Impacts and Mitigations

The proposed demolition and construction works have been outlined in Section 1. It is expected that construction works would be undertaken by a suitability qualified Contractor in accordance with a site-specific Construction Environmental Management Plan (CEMP), covering all aspects of environmental management and performance. Various small machinery, handheld tools and equipment would likely be utilised, for example, generators, jackhammers, concrete saws, grinders, rollers and pumps. Waste storage bins are also expected to be placed in the vicinity of any demolition activities.

The potential impacts of the proposed works on the local marine environment were determined and measures to manage and/or mitigate these impacts are provided. No coastal or marine vegetation will be impacted directly by the proposed works. Nor will any species of marine or coastal fauna (or their habitat) by directly impacted by the proposed works. Any potential impacts will be indirect in nature and can be broadly grouped into noise, waste and water pollution, impacts on marine habitats, impacts on marine fauna.

It is anticipated that all potential impacts of construction are able to be mitigated or managed effectively, with no or minimal and insignificant impacts to marine habitats and fauna in the adjacent marine environment. The potential impacts of the proposed works on the coastal and marine environment and measures to mitigate these, are outlined below.

Noise

Potential Impacts

- There are likely to be short term noise impacts during the proposed demolition and construction works. These will include vehicle and construction equipment engine noise, hammering and drilling tool noise and general noise associated with the pumphouse demolition and repair work. No underwater noise will occur. Construction noise has the potential to affect the behaviour of coastal and marine fauna including birds, sharks, fish and mammals. If present in the study area during construction, marine fauna may avoid or leave the area temporarily and impacts are not considered to be significant.

Mitigation Measures

- Noise should be managed in accordance with the Office of Environment and Heritage (OEH) Interim Construction Noise Guideline 2009.
- Silencers on engines and machinery should be used where feasible to minimise noise impacts on marine and coastal fauna.

Generation of Waste & Water Pollution

The proposed works have the potential to create water pollution, demolition waste and general waste and these can have impacts on the adjacent marine waters, habitats and fauna they support. Potential pollution/waste related impacts of the proposed works are outlined below:

- The proposed demolition and construction activities have the potential to generate general rubbish, demolition and construction waste and there is the potential for chemical, fuel or oil leaks from construction vehicles and equipment. These can all create water pollution and cause harm to marine and coastal vertebrates (e.g. birds, fish, mammals and reptiles) via toxic effects of chemicals and the high potential for oil/fuels to attach to feathers/fur of birds and mammals. Depending on the magnitude, such pollution events can be extremely harmful to marine and coastal fauna (causing illness, loss of ability to feed, swim or fly, loss of ability to source or consume food and drowning).
- Accidental release of general waste or demolition/construction waste into the marine environment can pollute these habitats and also cause harm to the fauna utilising them, particularly through ingestion and/or entanglement. Ingestion and/or entanglement of marine fauna in marine debris is listed as a Key Threatening Process under the BC Act 2016 and the EPBC Act 1999. There are a large number of threatened / protected and other marine and coastal fauna known to occur, or have the potential to occur, in the local area.
- Pollution via spillage of liquids and solids (including concrete, chemicals, fuels, oils) from equipment and vehicles - Hazardous substances which are accidently released/spilled and enter terrestrial environments or waterways have the potential to pollute these habitats and have harmful consequences on fauna they support via ingestion and/or creating water quality impacts.

Mitigation Measures

The following measures should be adopted to prevent or minimise potential pollution and water quality impacts:

- Timing of construction works should avoid periods of high rainfall, large swells or poor weather conditions to reduce the potential for water quality impacts and/or significant runoff of construction materials such as concrete dust and increases in turbidity. Works should be postponed in the event of heavy or prolonged rainfall.
- Works should be undertaken at or around mid to low tide where possible to reduce the potential for impacts on local water quality.
- To reduce the potential impact of runoff from the construction area on the adjacent marine environment, erosion and turbidity control measures (i.e. erosion control fencing) should be installed around the immediate works areas. These should be in accordance with Managing Urban Stormwater: Soils and construction - Volume 1, 4th edition (The 'Blue Book')(Landcom 2004).
- Appropriate storage and bunding of chemicals, fuels and oils during construction works should be maintained at all times. These areas should be well defined and signed and away from the adjacent marine area.
- All chemicals and fuels required during construction are to be used in accordance with relevant Material Safety Data Sheets (MSDS).
- Spill response kits should be located at the site during construction - all contractors should be trained in the use of these. A spill response strategy should be included as part of any site induction. The spill response strategy/procedures should include the contact details of the authorities that are to be notified in the event of a spill.
- Any demolition products generated should be contained during works and then removed from the site and disposed of appropriately.
- Waste management must be implemented via segregation of recyclable materials (e.g. metal railings, concrete).
- All general solid waste/litter (e.g. food scraps and packaging) generated should be contained and should be disposed of appropriately with recycling as required.
- All construction equipment and vehicles should be well maintained and regularly serviced to reduce the likelihood of oil/fuel leaks and spills. Prior to use on site all machinery should be appropriately cleaned, degreased and serviced. Visual inspection of vehicles, plant and equipment shall be carried out by the Contractor.
- No refuelling of equipment should occur within 50 m of waterways.
- Pollution incidents are to be reported as per the Duty to Notify Provisions of the POEO Act 1997.

Impacts to Coastal Habitats & Vegetation

Potential Impacts

- No direct impacts on the adjacent marine environment are anticipated due to the location of proposed work above the high tide mark. No works will be undertaken from the water and no demolition works are associated with the concrete pool surrounds or the seawall. However, given the proximity of marine habitat, indirect impacts are possible.
- Demolition and construction activities have the potential to result in the generation of concrete waste and concrete dust. If not contained and disposed of appropriately, this can result in localised water quality impacts and increased turbidity in the adjacent waterway.
- Construction vehicles and other equipment may cause indirect impacts of water pollution (e.g. accidental spills of fuels and oils, or incorrect disposal of waste).

Mitigation Measures

- Erosion control devices should be erected around all work areas to decrease the potential for runoff and sedimentation related impacts on adjacent marine habitats. These should be kept in place until works are competed and all demolition and construction waste at the site has been cleaned up.
- Works should be postponed in the event of heavy rainfall to reduce the potential impacts of pollution and increased turbidity on the marine environment.
- Works should be planned for mid-low tide or around low tide if practicable, to reduce the potential impacts on the adjacent waterway.
- By reducing pollution and water quality impacts as per the recommendations listed in the previous sections, damage to adjacent marine habitat will also be minimised.

Impacts on Fauna

A summary of potential impacts on coastal and marine fauna are provided below:

- Impacts associated with noise, impacts to coastal and marine habitats and water quality have been outlined previously and apply to fauna as described previously.
- Temporary avoidance of the local area during periods of noisy construction works due to noise impacts may occur.
- Short term disturbance to areas used for foraging or roosting.

- Ingestion of, or entanglement of, fauna in demolition or construction related debris if waste is not managed and disposed of correctly.
- Impacts of water pollution, including oil and fuel spills or leaks, on coastal and marine fauna are possible if not managed correctly.

Considering the scope of the proposal and mitigation measures available, any impacts on coastal and marine fauna would be highly localised, minor and short term and would not threaten the livelihood of individuals or populations. The proposed works will not have any significant impact on any species of threatened or protected marine fauna that have the potential to occur at the study site.

Mitigation Measures

The following general measures should be adopted to avoid impacts on coastal and marine fauna:

- All mitigation and management measures outlined for minimising impacts of noise, pollution and reductions in water quality on coastal and marine habitats which have been outlined in previous sections should be adopted to aid in preventing impacts on fauna which reside within them.
- Contractors shall take all necessary actions to avoid adverse interactions of vehicles and construction equipment with coastal fauna e.g. birds.
- Erosion control devices should be monitored to avoid entanglement of fauna.
- To limit the potential of a fish kill incident, the Contractor should undertake a visual inspection of the adjacent waterway for dead or distressed fish (indicated by fish gasping at the water surface, fish crowding at the shoreline) during the works. DPI Fisheries (1800 043 536) shall be immediately notified of any observations or reports of dead or distressed fish adjacent to the construction area. In such cases, all works other than emergency response procedures are to cease until the issue is rectified.
- A soft start procedure should be adopted for any noisy construction equipment during demolition or repair works to reduce potential noise impacts on fauna.
- Any injured wildlife should be immediately reported to NPWS on 1300 361 967.
- Any injured marine mammals should be immediately reported to the ORRCA 24 hour hotline on 02 9415 3333 or NPWS on 1300 361 967.

5. References

DAFF (2023). EPBC Act Protected Matters Search Tool. http://www.environment.gov.au/webgis-framework/apps/pmst/pmst.jsf

DAFF (2023). Register of Critical Habitat. http://www.environment.gov.au/cgi-bin/sprat/public/publicregisterofcriticalhabitat.pl

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DPIE (2023). NSW Fisheries Spatial Data Portal. https://www.dpi.nsw.gov.au/about-us/research-development/spatial-data-portal

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NSW Government (2023). Atlas of NSW Wildlife Search. https://www.environment.nsw.gov.au/atlaspublicapp/ui_modules/atlas_/atlassearch.aspx

Appendix A – EPBC Act Protected Matters Search

Australian Government

Department of Climate Change, Energy, the Environment and Water

EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

Report created: 26-Mar-2023

Summary
Details
- Matters of NES
- Other Matters Protected by the EPBC Act
- Extra Information

Caveat
Acknowledgements

Summary

Matters of National Environment Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance.

World Heritage Properties:	None
National Heritage Places:	2
Wetlands of International Importance (Ramsar	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	5
Listed Threatened Species:	79
Listed Migratory Species:	60

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at https://www.dcceew.gov.au/parks-heritage/heritage

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Lands:	6
Commonwealth Heritage Places:	1
Listed Marine Species:	79
Whales and Other Cetaceans:	13
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

This part of the report provides information that may also be relevant to the area you have

State and Territory Reserves:	1
Regional Forest Agreements:	None
Nationally Important Wetlands:	None
EPBC Act Referrals:	14
Key Ecological Features (Marine):	None
Biologically Important Areas:	3
Bioregional Assessments:	1
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

National Heritage Places [Resource Information]

Name	State	Legal Status	Buffer Status
Historic			
Bondi Beach	NSW	Listed place	In buffer area only
Bondi Surf Pavilion	NSW	Within listed place	In buffer area only

Listed Threatened Ecological Communities [Resource Information]

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.
Status of Vulnerable, Disallowed and Ineligible are not MNES under the EPBC Act.

Community Name	Threatened Category	Presence Text	Buffer Status
Coastal Swamp Oak (Casuarina glauca) Forest of New South Wales and South East Queensland ecological community	Endangered	Community may occur within area	In feature area
Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland	Endangered	Community may occur within area	In feature area
Coastal Upland Swamps in the Sydney Basin Bioregion	Endangered	Community may occur within area	In feature area
Eastern Suburbs Banksia Scrub of the Sydney Region	Critically Endangered	Community may occur within area	In feature area
River-flat eucalypt forest on coastal floodplains of southern New South Wales and eastern Victoria	Critically Endangered	Community may occur within area	In feature area

Listed Threatened Species [Resource Information]

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.
Number is the current name ID.

Scientific Name	Threatened Category	Presence Text	Buffer Status
BIRD			
Anthochaera phrygia			
Regent Honeyeater [82338]	Critically Endangered	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat known to occur within area	In feature area
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
Callocephalon fimbriatum Gang-gang Cockatoo [768]	Endangered	Species or species habitat likely to occur within area	In feature area
Calyptorhynchus lathami lathami South-eastern Glossy Black-Cockatoo [67036]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Dasyornis brachypterus Eastern Bristlebird [533]	Endangered	Species or species habitat may occur within area	In feature area
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Diomedea antipodensis gibsoni Gibson's Albatross [82270]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Species or species habitat may occur within area	In feature area
Erythrotriorchis radiatus Red Goshawk [942]	Vulnerable	Species or species habitat may occur within area	In feature area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat may occur within area	In feature area
Fregetta grallaria grallaria White-bellied Storm-Petrel (Tasman Sea), White-bellied Storm-Petrel (Australasian) [64438]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Grantiella picta Painted Honeyeater [470]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area	In feature area
Limosa lapponica baueri Nunivak Bar-tailed Godwit, Western Alaskan Bar-tailed Godwit [86380]	Vulnerable	Species or species habitat known to occur within area	In feature area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area	In feature area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Neophema chrysogaster Orange-bellied Parrot [747]	Critically Endangered	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In feature area
Pachyptila turtur subantarctica Fairy Prion (southern) [64445]	Vulnerable	Species or species habitat known to occur within area	In feature area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Pterodroma leucoptera leucoptera Gould's Petrel, Australian Gould's Petrel [26033]	Endangered	Species or species habitat may occur within area	In buffer area only
Pterodroma neglecta neglecta Kermadec Petrel (western) [64450]	Vulnerable	Foraging, feeding or related behaviour may occur within area	In feature area
Pycnoptilus floccosus Pilotbird [525]	Vulnerable	Species or species habitat may occur within area	In feature area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area	In feature area
Sternula nereis nereis Australian Fairy Tern [82950]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche bulleri Buller's Albatross, Pacific Albatross [64460]	Vulnerable	Species or species habitat may occur within area	In feature area
Thalassarche bulleri platei Northern Buller's Albatross, Pacific Albatross [82273]	Vulnerable	Species or species habitat may occur within area	In feature area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Thalassarche cauta			
Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche eremita			
Chatham Albatross [64457]	Endangered	Foraging, feeding or related behaviour may occur within area	In feature area
Thalassarche impavida			
Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area	In feature area
Thalassarche melanophris			
Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche salvini			
Salvin's Albatross [64463]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche steadi			
White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
FISH			
Epinephelus daemelii			
Black Rockcod, Black Cod, Saddled Rockcod [68449]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Hippocampus whitei			
White's Seahorse, Crowned Seahorse, Sydney Seahorse [66240]	Endangered	Species or species habitat known to occur within area	In feature area
Macquaria australasica			
Macquarie Perch [66632]	Endangered	Species or species habitat may occur within area	In feature area
Prototroctes maraena			
Australian Grayling [26179]	Vulnerable	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Seriolella brama			
Blue Warehou [69374]	Conservation Dependent	Species or species habitat known to occur within area	In feature area
Thunnus maccoyii			
Southern Bluefin Tuna [69402]	Conservation Dependent	Species or species habitat likely to occur within area	In feature area
FROG			
Heleioporus australiacus			
Giant Burrowing Frog [1973]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Litoria aurea			
Green and Golden Bell Frog [1870]	Vulnerable	Species or species habitat likely to occur within area	In feature area
MAMMAL			
Balaenoptera musculus			
Blue Whale [36]	Endangered	Species or species habitat may occur within area	In feature area
Chalinolobus dwyeri			
Large-eared Pied Bat, Large Pied Bat [183]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Dasyurus maculatus maculatus (SE mainland population)			
Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184]	Endangered	Species or species habitat likely to occur within area	In feature area
Eubalaena australis			
Southern Right Whale [40]	Endangered	Species or species habitat known to occur within area	In feature area
Isoodon obesulus obesulus			
Southern Brown Bandicoot (eastern), Southern Brown Bandicoot (south-eastern) [68050]	Endangered	Species or species habitat likely to occur within area	In feature area
Notamacropus parma			
Parma Wallaby [89289]	Vulnerable	Species or species habitat may occur within area	In feature area
Petauroides volans			
Greater Glider (southern and central) [254]	Endangered	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Petaurus australis australis			
Yellow-bellied Glider (south-eastern) [87600]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Phascolarctos cinereus (combined populations of Qld, NSW and the ACT)			
Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) [85104]	Endangered	Species or species habitat known to occur within area	In feature area
Pseudomys novaehollandiae			
New Holland Mouse, Pookila [96]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Pteropus poliocephalus			
Grey-headed Flying-fox [186]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
PLANT			
Acacia terminalis subsp. terminalis MS			
Sunshine Wattle (Sydney region) [88882]	Endangered	Species or species habitat likely to occur within area	In feature area
Caladenia tessellata			
Thick-lipped Spider-orchid, Daddy Long-legs [2119]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Cryptostylis hunteriana			
Leafless Tongue-orchid [19533]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Eucalyptus camfieldii			
Camfield's Stringybark [15460]	Vulnerable	Species or species habitat may occur within area	In feature area
Genoplesium baueri			
Yellow Gnat-orchid, Bauer's Midge Orchid, Brittle Midge Orchid [7528]	Endangered	Species or species habitat likely to occur within area	In feature area
Pimelea curviflora var. curviflora			
[4182]	Vulnerable	Species or species habitat may occur within area	In feature area
Prostanthera densa			
Villous Mintbush [12233]	Vulnerable	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Rhodamnia rubescens			
Scrub Turpentine, Brown Malletwood [15763]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
Rhodomyrtus psidioides			
Native Guava [19162]	Critically Endangered	Species or species habitat may occur within area	In feature area
Syzygium paniculatum			
Magenta Lilly Pilly, Magenta Cherry, Daguba, Scrub Cherry, Creek Lilly Pilly, Brush Cherry [20307]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Thesium australe			
Austral Toadflax, Toadflax [15202]	Vulnerable	Species or species habitat may occur within area	In feature area
REPTILE			
Caretta caretta			
Loggerhead Turtle [1763]	Endangered	Species or species habitat known to occur within area	In feature area
Chelonia mydas			
Green Turtle [1765]	Vulnerable	Species or species habitat known to occur within area	In feature area
Dermochelys coriacea			
Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat known to occur within area	In feature area
Eretmochelys imbricata			
Hawksbill Turtle [1766]	Vulnerable	Species or species habitat known to occur within area	In feature area
Natator depressus			
Flatback Turtle [59257]	Vulnerable	Species or species habitat known to occur within area	In feature area
SHARK			
Carcharias taurus (east coast population)			
Grey Nurse Shark (east coast population) [68751]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Carcharodon carcharias			
White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Galeorhinus galeus School Shark, Eastern School Shark, Snapper Shark, Tope, Soupfin Shark [68453]	Conservation Dependent	Species or species habitat may occur within area	In buffer area only
Rhincodon typus Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area	In feature area
Sphyrna lewini Scalloped Hammerhead [85267]	Conservation Dependent	Species or species habitat likely to occur within area	In feature area

Listed Migratory Species		[Resource Information]	
Scientific Name	Threatened Category	Presence Text	Buffer Status
Migratory Marine Birds			
Anous stolidus Common Noddy [825]		Species or species habitat likely to occur within area	In feature area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area	In feature area
Ardenna carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Foraging, feeding or related behaviour likely to occur within area	In feature area
Ardenna grisea Sooty Shearwater [82651]		Species or species habitat likely to occur within area	In feature area
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat known to occur within area	In feature area
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Species or species habitat may occur within area	In feature area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat likely to occur within area	In feature area
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat may occur within area	In feature area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area	In feature area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Phaethon lepturus White-tailed Tropicbird [1014]		Species or species habitat may occur within area	In feature area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Sternula albifrons Little Tern [82849]		Species or species habitat may occur within area	In feature area
Thalassarche bulleri Buller's Albatross, Pacific Albatross [64460]	Vulnerable	Species or species habitat may occur within area	In feature area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Thalassarche cauta			
Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche eremita			
Chatham Albatross [64457]	Endangered	Foraging, feeding or related behaviour may occur within area	In feature area
Thalassarche impavida			
Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area	In feature area
Thalassarche melanophris			
Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche salvini			
Salvin's Albatross [64463]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche steadi			
White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
Migratory Marine Species			
Balaenoptera edeni			
Bryde's Whale [35]		Species or species habitat may occur within area	In feature area
Balaenoptera musculus			
Blue Whale [36]	Endangered	Species or species habitat may occur within area	In feature area
Caperea marginata			
Pygmy Right Whale [39]		Foraging, feeding or related behaviour may occur within area	In feature area
Carcharhinus longimanus			
Oceanic Whitetip Shark [84108]		Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area	In feature area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Species or species habitat known to occur within area	In feature area
Chelonia mydas Green Turtle [1765]	Vulnerable	Species or species habitat known to occur within area	In feature area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat known to occur within area	In feature area
Dugong dugon Dugong [28]		Species or species habitat may occur within area	In buffer area only
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Species or species habitat known to occur within area	In feature area
Eubalaena australis as Balaena glacialis australis Southern Right Whale [40]	Endangered	Species or species habitat known to occur within area	In feature area
Lagenorhynchus obscurus Dusky Dolphin [43]		Species or species habitat may occur within area	In feature area
Lamna nasus Porbeagle, Mackerel Shark [83288]		Species or species habitat likely to occur within area	In feature area
Megaptera novaeangliae Humpback Whale [38]		Species or species habitat known to occur within area	In feature area
Mobula alfredi as Manta alfredi Reef Manta Ray, Coastal Manta Ray [90033]		Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Mobula birostris as Manta birostris			
Giant Manta Ray [90034]		Species or species habitat may occur within area	In feature area
Natator depressus			
Flatback Turtle [59257]	Vulnerable	Species or species habitat known to occur within area	In feature area
Orcinus orca			
Killer Whale, Orca [46]		Species or species habitat likely to occur within area	In feature area
Rhincodon typus			
Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area	In feature area
Migratory Terrestrial Species			
Cuculus optatus			
Oriental Cuckoo, Horsfield's Cuckoo [86651]		Species or species habitat may occur within area	In feature area
Hirundapus caudacutus			
White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area	In feature area
Monarcha melanopsis			
Black-faced Monarch [609]		Species or species habitat known to occur within area	In feature area
Motacilla flava			
Yellow Wagtail [644]		Species or species habitat known to occur within area	In feature area
Myiagra cyanoleuca			
Satin Flycatcher [612]		Species or species habitat known to occur within area	In feature area
Rhipidura rufifrons			
Rufous Fantail [592]		Species or species habitat known to occur within area	In feature area
Symposiachrus trivirgatus as Monarcha trivirgatus			
Spectacled Monarch [83946]		Species or species habitat may occur within area	In feature area
Migratory Wetlands Species			

Scientific Name	Threatened Category	Presence Text	Buffer Status
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat likely to occur within area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area	In feature area
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area	In feature area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat likely to occur within area	In feature area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area	In feature area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In feature area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat likely to occur within area	In feature area

Other Matters Protected by the EPBC Act

Commonwealth Lands [Resource Information]

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Commonwealth Land Name	State	Buffer Status
Communications, Information Technology and the Arts - Australian Postal Corporation		
Commonwealth Land - Australian Postal Commission [13291]	NSW	In buffer area only
Commonwealth Land - Australian Postal Commission [13290]	NSW	In buffer area only
Defence		
Defence - RANDWICK (CARRINGTON RD) [11135]	NSW	In buffer area only
Defence - RANDWICK (CARRINGTON RD) [11133]	NSW	In buffer area only
Defence - RANDWICK (CARRINGTON RD) [11134]	NSW	In buffer area only
Defence - RANDWICK (CARRINGTON RD) [11132]	NSW	In buffer area only

Commonwealth Heritage Places [Resource Information]

Name	State	Status	Buffer Status
Historic			
Bondi Beach Post Office	NSW	Listed place	In buffer area only

Listed Marine Species [Resource Information]

Scientific Name	Threatened Category	Presence Text	Buffer Status
Bird			
Actitis hypoleucos			
Common Sandpiper [59309]		Species or species habitat likely to occur within area	In feature area
Anous stolidus			
Common Noddy [825]		Species or species habitat likely to occur within area	In feature area
Apus pacificus			
Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area	In feature area
Ardenna carneipes as Puffinus carneipes			
Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Foraging, feeding or related behaviour likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Ardenna grisea as Puffinus griseus Sooty Shearwater [82651]		Species or species habitat likely to occur within area	In feature area
Bubulcus ibis as Ardea ibis Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area	In feature area
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area overfly marine area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area overfly marine area	In feature area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area	In feature area
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat known to occur within area	In feature area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Diomedea antipodensis gibsoni as Diomedea gibsoni Gibson's Albatross [82270]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Species or species habitat may occur within area	In feature area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat likely to occur within area	In feature area
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat may occur within area	In feature area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat likely to occur within area overfly marine area	In feature area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area	In feature area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area overfly marine area	In feature area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area	In feature area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area	In feature area
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat known to occur within area overfly marine area	In feature area
Motacilla flava Yellow Wagtail [644]		Species or species habitat known to occur within area overfly marine area	In feature area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat known to occur within area overfly marine area	In feature area
Neophema chrysogaster Orange-bellied Parrot [747]	Critically Endangered	Species or species habitat may occur within area overfly marine area	In feature area
Neophema chrysostoma Blue-winged Parrot [726]		Species or species habitat may occur within area overfly marine area	In feature area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In feature area
Pachyptila turtur Fairy Prion [1066]		Species or species habitat known to occur within area	In feature area
Phaethon lepturus White-tailed Tropicbird [1014]		Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat known to occur within area overfly marine area	In feature area
Rostratula australis as Rostratula benghalensis (sensu lato) Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area overfly marine area	In feature area
Sternula albifrons as Sterna albifrons Little Tern [82849]		Species or species habitat may occur within area	In feature area
Symposiachrus trivirgatus as Monarcha trivirgatus Spectacled Monarch [83946]		Species or species habitat may occur within area overfly marine area	In feature area
Thalassarche bulleri Buller's Albatross, Pacific Albatross [64460]	Vulnerable	Species or species habitat may occur within area	In feature area
Thalassarche bulleri platei as Thalassarche sp. nov. Northern Buller's Albatross, Pacific Albatross [82273]	Vulnerable	Species or species habitat may occur within area	In feature area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche eremita Chatham Albatross [64457]	Endangered	Foraging, feeding or related behaviour may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Thalassarche impavida			
Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area	In feature area
Thalassarche melanophris			
Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche salvini			
Salvin's Albatross [64463]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche steadi			
White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
Tringa nebularia			
Common Greenshank, Greenshank [832]		Species or species habitat likely to occur within area overfly marine area	In feature area
Fish			
Acentronura tentaculata			
Shortpouch Pygmy Pipehorse [66187]		Species or species habitat may occur within area	In feature area
Festucalex cinctus			
Girdled Pipefish [66214]		Species or species habitat may occur within area	In feature area
Filicampus tigris			
Tiger Pipefish [66217]		Species or species habitat may occur within area	In feature area
Heraldia nocturna			
Upside-down Pipefish, Eastern Upside-down Pipefish, Eastern Upside-down Pipefish [66227]		Species or species habitat may occur within area	In feature area
Hippichthys penicillus			
Beady Pipefish, Steep-nosed Pipefish [66231]		Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Hippocampus abdominalis Big-belly Seahorse, Eastern Potbelly Seahorse, New Zealand Potbelly Seahorse [66233]		Species or species habitat may occur within area	In feature area
Hippocampus whitei White's Seahorse, Crowned Seahorse, Sydney Seahorse [66240]	Endangered	Species or species habitat known to occur within area	In feature area
Histiogamphelus briggsii Crested Pipefish, Briggs' Crested Pipefish, Briggs' Pipefish [66242]		Species or species habitat may occur within area	In feature area
Lissocampus runa Javelin Pipefish [66251]		Species or species habitat may occur within area	In feature area
Maroubra perserrata Sawtooth Pipefish [66252]		Species or species habitat may occur within area	In feature area
Notiocampus ruber Red Pipefish [66265]		Species or species habitat may occur within area	In feature area
Phyllopteryx taeniolatus Common Seadragon, Weedy Seadragon [66268]		Species or species habitat may occur within area	In feature area
Solegnathus spinosissimus Spiny Pipehorse, Australian Spiny Pipehorse [66275]		Species or species habitat may occur within area	In feature area
Solenostomus cyanopterus Robust Ghostpipefish, Blue-finned Ghost Pipefish, [66183]		Species or species habitat may occur within area	In feature area
Solenostomus paradoxus Ornate Ghostpipefish, Harlequin Ghost Pipefish, Ornate Ghost Pipefish [66184]		Species or species habitat may occur within area	In feature area
Stigmatopora argus Spotted Pipefish, Gulf Pipefish, Peacock Pipefish [66276]		Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Stigmatopora nigra			
Widebody Pipefish, Wide-bodied Pipefish, Black Pipefish [66277]		Species or species habitat may occur within area	In feature area
Syngnathoides biaculeatus			
Double-end Pipehorse, Double-ended Pipehorse, Alligator Pipefish [66279]		Species or species habitat may occur within area	In feature area
Trachyrhamphus bicoarctatus			
Bentstick Pipefish, Bend Stick Pipefish, Short-tailed Pipefish [66280]		Species or species habitat may occur within area	In feature area
Urocampus carinirostris			
Hairy Pipefish [66282]		Species or species habitat may occur within area	In feature area
Vanacampus margaritifer			
Mother-of-pearl Pipefish [66283]		Species or species habitat may occur within area	In feature area
Mammal			
Arctocephalus forsteri			
Long-nosed Fur-seal, New Zealand Fur-seal [20]		Species or species habitat may occur within area	In feature area
Arctocephalus pusillus			
Australian Fur-seal, Australo-African Fur-seal [21]		Species or species habitat may occur within area	In feature area
Dugong dugon			
Dugong [28]		Species or species habitat may occur within area	In buffer area only
Reptile			
Caretta caretta			
Loggerhead Turtle [1763]	Endangered	Species or species habitat known to occur within area	In feature area
Chelonia mydas			
Green Turtle [1765]	Vulnerable	Species or species habitat known to occur within area	In feature area
Dermochelys coriacea			
Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Species or species habitat known to occur within area	In feature area
Natator depressus Flatback Turtle [59257]	Vulnerable	Species or species habitat known to occur within area	In feature area
Pelamis platurus Yellow-bellied Seasnake [1091]		Species or species habitat may occur within area	In feature area

Whales and Other Cetaceans		[Resource Information]	
Current Scientific Name	Status	Type of Presence	Buffer Status
Mammal			
Balaenoptera acutorostrata Minke Whale [33]		Species or species habitat may occur within area	In feature area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat may occur within area	In feature area
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat may occur within area	In feature area
Caperea marginata Pygmy Right Whale [39]		Foraging, feeding or related behaviour may occur within area	In feature area
Delphinus delphis Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area	In feature area
Eubalaena australis Southern Right Whale [40]	Endangered	Species or species habitat known to occur within area	In feature area
Grampus griseus Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area	In feature area

Current Scientific Name	Status	Type of Presence	Buffer Status
Lagenorhynchus obscurus Dusky Dolphin [43]		Species or species habitat may occur within area	In feature area
Megaptera novaeangliae Humpback Whale [38]		Species or species habitat known to occur within area	In feature area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat likely to occur within area	In feature area
Stenella attenuata Spotted Dolphin, Pantropical Spotted Dolphin [51]		Species or species habitat may occur within area	In feature area
Tursiops aduncus Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area	In feature area
Tursiops truncatus s. str. Bottlenose Dolphin [68417]		Species or species habitat may occur within area	In feature area

Extra Information

State and Territory Reserves			[Resource Information]
Protected Area Name	Reserve Type	State	Buffer Status
Bronte-Coogee	Aquatic Reserve	NSW	In feature area

EPBC Act Referrals				[Resource Information]
Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Not controlled action				
Australia-USA Southern Cross NEXT fibre optic cable installation	2019/8405	Not Controlled Action	Completed	In buffer area only
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed	In feature area
INDIGO Central Submarine Telecommunications Cable	2017/8127	Not Controlled Action	Completed	In feature area
Noxious weed removal and controlled burn	2003/1272	Not Controlled Action	Completed	In feature area

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Not controlled action				
Rabbit Control Anzac Rifle Range	2005/1940	Not Controlled Action	Completed	In feature area
Rehabilitation works of the Coogee Sewer Diversion Submain - Maxwell Avenue, Mar	2004/1683	Not Controlled Action	Completed	In feature area
sewage treatmemt plant process and reliability renewals project	2005/2186	Not Controlled Action	Completed	In buffer area only
Sydney Desalination Plant	2005/2331	Not Controlled Action	Completed	In buffer area only
Undertake a controlled burn of the Eastern Suburbs Banksia Scrub at Byrne Cresce	2004/1728	Not Controlled Action	Completed	In feature area
Not controlled action (particular manner)				
INDIGO Marine Cable Route Survey (INDIGO)	2017/7996	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only
International fibre optic submarine cable installation, between Sydney and Honiara, Solomon Islands	2015/7502	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only
Moriah Primary School, Centennial Park, Sydney	2004/1676	Not Controlled Action (Particular Manner)	Post-Approval	In feature area
Southern Cross Australia-New Zealand-America marine acoustic survey of the seabed	2017/7863	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only
Referral decision				
Breeding program for Grey Nurse Sharks	2007/3245	Referral Decision	Completed	In feature area

Biologically Important Areas			
Scientific Name	Behaviour	Presence	Buffer Status
Dolphins			
Tursiops aduncus			
Indo-Pacific/Spotted Bottlenose Dolphin [68418]	Breeding	Likely to occur	In feature area
Sharks			
Carcharias taurus			
Grey Nurse Shark [64469]	Foraging	Known to occur	In feature area
Whales			

Scientific Name	Behaviour	Presence	Buffer Status
Megaptera novaeangliae			
Humpback Whale [38]	Foraging	Known to occur	In feature area

Bioregional Assessments

SubRegion	BioRegion	Website	Buffer Status
Sydney	Sydney Basin	BA website	In feature area

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data are available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance

3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species

Threatened, migratory and marine species distributions have been discerned through a variety of methods. Where distributions are well known and if time permits, distributions are inferred from either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc.) together with point locations and described habitat; or modelled (MAXENT or BIOCLIM habitat modelling) using

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions

4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

The following groups have been mapped, but may not cover the complete distribution of the species:

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded
- seals which have only been mapped for breeding sites near the Australian continent

The breeding sites may be important for the protection of the Commonwealth Marine environment.

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

-Office of Environment and Heritage, New South Wales
-Department of Environment and Primary Industries, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment, Water and Natural Resources, South Australia
-Department of Land and Resource Management, Northern Territory
-Department of Environmental and Heritage Protection, Queensland
-Department of Parks and Wildlife, Western Australia
-Environment and Planning Directorate, ACT
-Birdlife Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-South Australian Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
Forestry Corporation, NSW
-Geoscience Australia
-CSIRO
-Australian Tropical Herbarium, Cairns
-eBird Australia
-Australian Government – Australian Antarctic Data Centre
-Museum and Art Gallery of the Northern Territory
-Australian Government National Environmental Science Program
-Australian Institute of Marine Science
-Reef Life Survey Australia
-American Museum of Natural History
-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania
-Tasmanian Museum and Art Gallery, Hobart, Tasmania
-Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the Contact us page.

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Appendix B – FM Act Schedules

NSW legislation

Fisheries Management Act 1994 No 38

Current version for 20 January 2023 to date (accessed 15 May 2023 at 10:39)

Schedule 4

Schedule 4 Endangered species, populations and ecological communities

(Section 220C)

Part 1 Endangered species

Fish

Archaeophya adamsi Fraser, 1959	Adam's Emerald Dragonfly
Austrocordulia leonardi	Sydney Hawk Dragonfly
**Dendronephthya australis* (Kükenthal, 1905)	Cauliflower Soft Coral
Hippocampus whitei (Bleeker, 1855)	White's Seahorse
**Maccullochella ikei* Rowland	Eastern Freshwater Cod
**Maccullochella macquariensis* (Cuvier)	Trout Cod
**Macquaria australasica* (Cuvier, 1830)	Macquarie Perch
Mogurnda adspersa (Castelnau, 1878)	Southern Purplespotted Gudgeon, Purple Spotted Gudgeon
Nannoperca australis Günther, 1861	Southern Pygmy Perch
**Nannoperca oxleyana* Whitley	Oxleyan Pygmy Perch
**Prototroctes maraena* (Günther, 1864)	Australian Grayling
Sphyrna lewini (Griffith & Smith, 1834)	Scalloped Hammerhead Shark
Thunnus maccoyii	Southern Bluefin Tuna

Marine vegetation

Part 2 Endangered populations

Fish

Ambassis agassizii Steindachner, 1866, Agassiz's glassfish, olive perchlet, western New South Wales population

Craterocephalus amniculus (Crowley and Ivanstoff, 1990), Darling River Hardyhead, Hunter River population

Gadopsis marmoratus, river blackfish, Snowy River population

Tandanus tandanus (Mitchell, 1838), freshwater catfish, eel tailed catfish, Murray-Darling Basin population

Marine vegetation

**Posidonia australis* Hook.*f*. (1858), seagrass, Port Hacking, Botany Bay, Sydney Harbour, Pittwater, Brisbane Waters and Lake Macquarie populations

Part 3 Endangered ecological communities

Aquatic ecological community in the natural drainage system of the lower Murray River catchment (as described in the recommendation of the Fisheries Scientific Committee to list the ecological community)

Aquatic ecological community in the natural drainage system of the lowland catchment of the Darling River (described in the recommendation of the Fisheries Scientific Committee to list that aquatic ecological community, as the area covered by that recommendation)

Aquatic ecological community in the natural drainage system of the lowland catchment of the Lachlan River (described in the recommendation of the Fisheries Scientific Committee to list that aquatic ecological community, as the area covered by that recommendation)

Aquatic ecological community in the catchment of the Snowy River in NSW (as described in the final determination of the Fisheries Scientific Committee to list that aquatic ecological community)

Part 4 Species presumed extinct

Fish

Hadrachaeta aspeta Hutchings, 1977	Marine Worm
**Pristis zijsron* Bleeker, 1851	Green Sawfish
Metaprotella haswelliana Mayer, 1882	Haswells Caprellid

Marine vegetation

**Vanvoorstia bennettiana* (Harvey) Papenfuss (1956)	Bennetts Seaweed

NSW legislation

Fisheries Management Act 1994 No 38

Current version for 20 January 2023 to date (accessed 15 May 2023 at 10:39)

Schedule 4A

Schedule 4A Critically endangered species and ecological communities

(Section 220C)

Part 1 Critically endangered species

Fish

**Carcharias taurus* Rafinesque, 1810	Greynurse Shark
**Craterocephalus fluviatilis* (McCulloch, 1913)	Murray Hardyhead
Euastacus dharawalus (Morgan, 1997)	Fitzroy Falls Spiny Crayfish
Galaxias rostratus	Flathead Galaxias
Galaxias tantangara (Raadik, 2014)	Stocky Galaxias
Notopala hanleyi (Frauenfeld, 1864)	Hanley's River Snail
Notopala sublineata (Conrad, 1850)	Darling River Snail
Smeagol hilaris Tillier & Ponder, 1992	Marine Slug

Marine vegetation

Nereia lophocladia J. Agardh (1897)	Marine Brown Alga

Part 2 Critically endangered ecological communities

NSW GOVERNMENT | NSW legislation

Fisheries Management Act 1994 No 38

Current version for 20 January 2023 to date (accessed 15 May 2023 at 10:39)

Schedule 5

Schedule 5 Vulnerable species and ecological communities

(Section 220C)

Part 1 Vulnerable species

Fish

Austropetalia tonyana (Theischinger, 1995)	Alpine Redspot Dragonfly
Bidyanus bidyanus (Mitchell, 1838)	Silver Perch
Branchinella buchananensis Geddes, 1981	Buchanans Fairy Shrimp
**Carcharodon carcharias* (Linnaeus, 1758)	White Shark, Great White Shark
Epinephelus daemelii (Günther, 1876)	Black Rockcod, Black Cod
Euastacus armatus (von Martens 1866)	Murray Crayfish
Microrchestia bousfieldi Lowry & Peart, 2010	Bousfields Marsh-hopper
Sphyrna mokarran Ruppell, 1837	Great Hammerhead Shark

Marine vegetation

Part 2 Vulnerable ecological communities

NSW GOVERNMENT | NSW legislation

Fisheries Management Act 1994 No 38

Current version for 20 January 2023 to date (accessed 15 May 2023 at 10:39)

Schedule 6

Schedule 6 Key threatening processes

(Section 220C)

Degradation of native riparian vegetation along New South Wales water courses

Hook and line fishing in areas important for the survival of threatened fish species

Human-caused climate change

Installation and operation of instream structures and other mechanisms that alter natural flow regimes of rivers and streams

Introduction of fish to waters within a river catchment outside their natural range

Introduction of non-indigenous fish and marine vegetation to the coastal waters of New South Wales

Removal of large woody debris from New South Wales rivers and streams

The current shark meshing program in New South Wales waters

Appendix C – BC Act BioNet Atlas of NSW Wildlife

Data from the BioNet Atlas website, which holds records from a number of custodians. The data are only indicative and cannot be considered a comprehensive inventory, and may contain errors and omissions. Species listed under the Sensitive Species Data Policy may have their locations denatured (^ rounded to 0.1°C; ^^ rounded to 0.01°C. Copyright the State of NSW through the Department of Planning, Industry and Environment. Search criteria : Public Report of all Valid Records of Animals in selected area [North: -33.86 West: 151.22 East: 151.32 South: -33.96] returned a total of 13,452 records of 389 species.

Report generated on 26/03/2023 6:49 PM

Kingdom	Class	Family	Species Code	Scientific Name	Exotic	Common Name	NSW status	Comm. status	Records	Info
Animalia	Actinopterygii	Anguillidae	T056	*Anguilla reinhardtii*		longfin eel			8	
Animalia	Amphibia	Myobatrachidae	3134	*Crinia signifera*		Common Eastern Froglet	P		294	
Animalia	Amphibia	Myobatrachidae	3116	*Pseudophryne australis*		Red-crowned Toadlet	V,P		1	
Animalia	Amphibia	Limnodynastidae	3058	*Limnodynastes dumerilii*		Eastern Banjo Frog	P		5	
Animalia	Amphibia	Limnodynastidae	3061	*Limnodynastes peronii*		Brown-striped Frog	P		211	
Animalia	Amphibia	Limnodynastidae	3063	*Limnodynastes tasmaniensis*		Spotted Grass Frog	P		1	
Animalia	Amphibia	Hylidae	3166	*Litoria aurea*		Green and Golden Bell Frog	E1,P	V	2	
Animalia	Amphibia	Hylidae	3171	*Litoria caerulea*		Green Tree Frog	P		5	
Animalia	Amphibia	Hylidae	3180	*Litoria dentata*		Bleating Tree Frog	P		1	
Animalia	Amphibia	Hylidae	3183	*Litoria fallax*		Eastern Dwarf Tree Frog	P		75	
Animalia	Amphibia	Hylidae	3190	*Litoria jervisiensis*		Jervis Bay Tree Frog	P		1	
Animalia	Amphibia	Hylidae	3204	*Litoria peronii*		Peron's Tree Frog	P		157	
Animalia	Amphibia	Hylidae	3206	*Litoria phyllochroa*		Leaf-green Tree Frog	P		15	
Animalia	Amphibia	Hylidae	3214	*Litoria tyleri*		Tyler's Tree Frog	P		1	
Animalia	Amphibia	Hylidae	3215	*Litoria verreauxii*		Verreaux's Frog	P		1	
Animalia	Reptilia	Cheloniidae	2004	*Caretta caretta*		Loggerhead Turtle	E1,P	E	10	
Animalia	Reptilia	Cheloniidae	2007	*Chelonia mydas*		Green Turtle	V,P	V	10	
Animalia	Reptilia	Cheloniidae	T110	*Cheloniidae sp.*		unidentified sea turtle	P		8	
Animalia	Reptilia	Cheloniidae	2008	*Eretmochelys imbricata*		Hawksbill Turtle	P	V	1	
Animalia	Reptilia	Cheloniidae	2006	*Natator depressus*		Flatback Turtle	P		1	
Animalia	Reptilia	Dermochelyidae	2013	*Dermochelys coriacea*		Leatherback Turtle	E1,P	E	1	
Animalia	Reptilia	Chelidae	2017	*Chelodina longicollis*		Eastern Snake-necked Turtle	P		46	
Animalia	Reptilia	Chelidae	2034	*Emydura macquarii*		Macquarie Turtle	P		2	
Animalia	Reptilia	Chelidae	2951	*Emydura macquarii macquarii*		Macquarie River Turtle	P		1	
Animalia	Reptilia	Chelidae	9057	*Emydura sp.*		Unidentified Emydura	P		1	
Animalia	Reptilia	Emydidae	5120	*Trachemys scripta elegans*	*	Red-eared Slider			1	
Animalia	Reptilia	Carphodactylidae	2129	*Phyllurus platurus*		Broad-tailed Gecko	P		3	
Animalia	Reptilia	Carphodactylidae	2687	*Saltuarius swaini*		Southern Leaf-tailed Gecko	P		1	
Animalia	Reptilia	Carphodactylidae	2138	*Underwoodisaurus milii*		Thick-tailed Gecko	P		1	
Animalia	Reptilia	Diplodactylidae	2118	*Amalosia lesueurii*		Lesueur's Velvet Gecko	P		3	
Animalia	Reptilia	Diplodactylidae	2077	*Diplodactylus vittatus*		Wood Gecko	P		1	
Animalia	Reptilia	Pygopodidae	2170	*Lialis burtonis*		Burton's Snake-lizard	P		5	
Animalia	Reptilia	Pygopodidae	2174	*Pygopus lepidopodus*		Common Scaly-foot	P		12	
Animalia	Reptilia	Scincidae	2464	*Acritoscincus platynotus*		Red-throated Skink	P		2	
Animalia	Reptilia	Scincidae	2559	*Concinnia tenuis*		Barred-sided Skink	P		3	
Animalia	Reptilia	Scincidae	2331	*Cryptoblepharus virgatus*		Cream-striped Shinning-skink	P		1	
Animalia	Reptilia	Scincidae	2375	*Ctenotus robustus*		Robust Ctenotus	P		2	
Animalia	Reptilia	Scincidae	2386	*Ctenotus taeniolatus*		Copper-tailed Skink	P		13	
Animalia	Reptilia	Scincidae	2866	*Cyclodomorphus michaeli*		Mainland She-oak Skink	P		3	
Animalia	Reptilia	Scincidae	2557	*Eulamprus quoyii*		Eastern Water-skink	P		24	
Animalia	Reptilia	Scincidae	2450	*Lampropholis delicata*		Dark-flecked Garden Sunskink	P		22	
Animalia	Reptilia	Scincidae	2451	*Lampropholis guichenoti*		Pale-flecked Garden Sunskink	P		10	
Animalia	Reptilia	Scincidae	T117	*Lampropholis sp.*		unidentified grass skink	P		5	
Animalia	Reptilia	Scincidae	2430	*Liopholis whitii*		White's Skink	P		2	
Animalia	Reptilia	Scincidae	2542	*Saiphos equalis*		Three-toed Skink	P		7	
Animalia	Reptilia	Scincidae	2452	*Saproscincus mustelinus*		Weasel Skink	P		2	
Animalia	Reptilia	Scincidae	2583	*Tiliqua rugosa*		Shingle-back	P		4	
Animalia	Reptilia	Scincidae	2580	*Tiliqua scincoides*		Eastern Blue-tongue	P		110	
Animalia	Reptilia	Agamidae	2194	*Amphibolurus muricatus*		Jacky Lizard	P		4	
Animalia	Reptilia	Agamidae	2252	*Intellagama lesueurii*		Eastern Water Dragon	P		15	
Animalia	Reptilia	Agamidae	2177	*Pogona barbata*		Bearded Dragon	P		8	
Animalia	Reptilia	Varanidae	2271	*Varanus gouldii*		Gould's Goanna	P		1	
Animalia	Reptilia	Varanidae	2283	*Varanus varius*		Lace Monitor	P		1	
Animalia	Reptilia	Typhlopidae	2603	*Anilios proximus*		Proximus Blind Snake	P		1	
Animalia	Reptilia	Colubridae	2630	*Boiga irregularis*		Brown Tree Snake	P		1	
Animalia	Reptilia	Colubridae	2633	*Dendrelaphis punctulatus*		Common Tree Snake	P		13	
Animalia	Reptilia	Elapidae	2742	*Aipysurus laevis*		Olive Seasnake	P		1	
Animalia	Reptilia	Elapidae	2647	*Cacophis squamulosus*		Golden-crowned Snake	P		2	
Animalia	Reptilia	Elapidae	2669	*Furina diadema*		Red-naped Snake	P		4	
Animalia	Reptilia	Elapidae	2674	*Hemiaspis signata*		Black-bellied Swamp Snake	P		5	
Animalia	Reptilia	Elapidae	2770	*Hydrophis platurus*		Yellow-bellied Seasnake	P		6	

Animalia	Reptilia	Elapidae	2693	*Pseudechis porphyriacus*		Red-bellied Black Snake	P		30	
Animalia	Reptilia	Elapidae	2699	*Pseudonaja textilis*		Eastern Brown Snake	P		8	
Animalia	Reptilia	Elapidae	2726	*Suta dwyeri*		Dwyer's Snake	P		1	
Animalia	Reptilia	Elapidae	2734	*Vermicella annulata*		Bandy-bandy	P		4	
Animalia	Aves	Megapodiidae	0008	*Alectura lathami*		Australian Brush-turkey	P		2	
Animalia	Aves	Phasianidae	9046	*Coturnix sp.*		Unidentified Quail	P		12	
Animalia	Aves	Phasianidae	0950	*Phasianus colchicus*	*	Common Pheasant			1	
Animalia	Aves	Phasianidae	0012	*Synoicus chinensis*		King Quail	P		1	
Animalia	Aves	Phasianidae	0011	*Synoicus ypsilophora*		Brown Quail	P		11	
Animalia	Aves	Anseranatidae	0199	*Anseranas semipalmata*		Magpie Goose	V,P		9	
Animalia	Aves	Anatidae	0210	*Anas castanea*		Chestnut Teal	P		6	
Animalia	Aves	Anatidae	0211	*Anas gracilis*		Grey Teal	P		5	
Animalia	Aves	Anatidae	0948	*Anas platyrhynchos*	*	Mallard			10	
Animalia	Aves	Anatidae	0208	*Anas superciliosa*		Pacific Black Duck	P		182	
Animalia	Aves	Anatidae	0215	*Aythya australis*		Hardhead	P		4	
Animalia	Aves	Anatidae	0217	*Biziura lobata*		Musk Duck	P		4	
Animalia	Aves	Anatidae	0202	*Chenonetta jubata*		Australian Wood Duck	P		28	
Animalia	Aves	Anatidae	0203	*Cygnus atratus*		Black Swan	P		65	
Animalia	Aves	Anatidae	0906	*Cygnus olor*	*	Mute Swan			1	
Animalia	Aves	Anatidae	0213	*Malacorhynchus membranaceus*		Pink-eared Duck	P		1	
Animalia	Aves	Podicipedidae	0060	*Podiceps cristatus*		Great Crested Grebe	P		1	
Animalia	Aves	Podicipedidae	0062	*Poliocephalus poliocephalus*		Hoary-headed Grebe	P		1	
Animalia	Aves	Podicipedidae	0061	*Tachybaptus novaehollandiae*		Australasian Grebe	P		7	
Animalia	Aves	Columbidae	0028	*Columba leucomela*		White-headed Pigeon	P		2	
Animalia	Aves	Columbidae	0957	*Columba livia*	*	Rock Dove			151	
Animalia	Aves	Columbidae	0031	*Geopelia cuneata*		Diamond Dove	P		1	
Animalia	Aves	Columbidae	0032	*Geopelia humeralis*		Bar-shouldered Dove	P		2	
Animalia	Aves	Columbidae	9931	*Geopelia striata*		Peaceful Dove	P		3	
Animalia	Aves	Columbidae	0044	*Leucosarcia melanoleuca*		Wonga Pigeon	P		1	
Animalia	Aves	Columbidae	0027	*Lopholaimus antarcticus*		Topknot Pigeon	P		5	
Animalia	Aves	Columbidae	0043	*Ocyphaps lophotes*		Crested Pigeon	P		103	
Animalia	Aves	Columbidae	0035	*Phaps elegans*		Brush Bronzewing	P		1	
Animalia	Aves	Columbidae	0023	*Ptilinopus superbus*		Superb Fruit-Dove	V,P		4	
Animalia	Aves	Columbidae	0989	*Spilopelia chinensis*	*	Spotted Turtle-Dove			77	
Animalia	Aves	Podargidae	0313	*Podargus strigoides*		Tawny Frogmouth	P		68	
Animalia	Aves	Apodidae	0334	*Hirundapus caudacutus*		White-throated Needletail	P	V,C,J,K	1	
Animalia	Aves	Oceanitidae	0065	*Pelagodroma marina*		White-faced Storm-Petrel	P		1	
Animalia	Aves	Diomedeidae	0090	*Thalassarche chrysostoma*		Grey-headed Albatross	P	E	1	
Animalia	Aves	Procellariidae	0072	*Ardenna carneipes*		Flesh-footed Shearwater	V,P	J,K	1	
Animalia	Aves	Procellariidae	0070	*Ardenna grisea*		Sooty Shearwater	P	J	1	
Animalia	Aves	Procellariidae	0069	*Ardenna pacifica*		Wedge-tailed Shearwater	P	J	5	
Animalia	Aves	Procellariidae	0071	*Ardenna tenuirostris*		Short-tailed Shearwater	P	C,J,K	8	
Animalia	Aves	Procellariidae	0929	*Macronectes giganteus*		Southern Giant Petrel	E1,P	E	1	
Animalia	Aves	Procellariidae	0083	*Pachyptila turtur*		Fairy Prion	P		3	
Animalia	Aves	Procellariidae	0068	*Puffinus gavia*		Fluttering Shearwater	P		4	
Animalia	Aves	Spheniscidae	0005	*Eudyptula minor*		Little Penguin	P		47	
Animalia	Aves	Sulidae	0825	*Morus capensis*		Cape Gannet	P		3	
Animalia	Aves	Sulidae	0104	*Morus serrator*		Australasian Gannet	P		8	
Animalia	Aves	Anhingidae	8731	*Anhinga novaehollandiae*		Australasian Darter	P		13	
Animalia	Aves	Phalacrocoracidae	0100	*Microcarbo melanoleucos*		Little Pied Cormorant	P		16	
Animalia	Aves	Phalacrocoracidae	0096	*Phalacrocorax carbo*		Great Cormorant	P		21	
Animalia	Aves	Phalacrocoracidae	T021	*Phalacrocorax sp.*		Unidentified Cormorant	P		34	
Animalia	Aves	Phalacrocoracidae	0097	*Phalacrocorax sulcirostris*		Little Black Cormorant	P		22	
Animalia	Aves	Phalacrocoracidae	0099	*Phalacrocorax varius*		Pied Cormorant	P		35	
Animalia	Aves	Pelecanidae	0106	*Pelecanus conspicillatus*		Australian Pelican	P		23	
Animalia	Aves	Ardeidae	0186	*Ardea intermedia*		Intermediate Egret	P		2	
Animalia	Aves	Ardeidae	0189	*Ardea pacifica*		White-necked Heron	P		6	
Animalia	Aves	Ardeidae	T179	*Ardea/Egretta sp.*		Unidentified Egret	P		1	
Animalia	Aves	Ardeidae	0197	*Botaurus poiciloptilus*		Australasian Bittern	E1,P	E	1	
Animalia	Aves	Ardeidae	0977	*Bubulcus ibis*		Cattle Egret	P		4	
Animalia	Aves	Ardeidae	0193	*Butorides striata*		Striated Heron	P		2	
Animalia	Aves	Ardeidae	8712	*Casmerodius modesta*		Eastern Great Egret	P		3	
Animalia	Aves	Ardeidae	0185	*Egretta garzetta*		Little Egret	P		2	
Animalia	Aves	Ardeidae	0188	*Egretta novaehollandiae*		White-faced Heron	P		16	
Animalia	Aves	Ardeidae	8703	*Ixobrychus dubius*		Australian Little Bittern	P		2	
Animalia	Aves	Ardeidae	0192	*Nycticorax caledonicus*		Nankeen Night Heron	P		3	
Animalia	Aves	Threskiornithidae	0182	*Platalea flavipes*		Yellow-billed Spoonbill	P		1	

Animalia	Aves	Threskiornithidae	0181	*Platalea regia*	Royal Spoonbill	P		3
Animalia	Aves	Threskiornithidae	0179	*Threskiornis moluccus*	Australian White Ibis	P		190
Animalia	Aves	Threskiornithidae	0180	*Threskiornis spinicollis*	Straw-necked Ibis	P		2
Animalia	Aves	Accipitridae	0222	*Accipiter cirrocephalus*	Collared Sparrowhawk	P		1
Animalia	Aves	Accipitridae	0221	*Accipiter fasciatus*	Brown Goshawk	P		4
Animalia	Aves	Accipitridae	0220	*Accipiter novaehollandiae*	Grey Goshawk	P		1
Animalia	Aves	Accipitridae	T047	*Accipiter sp.*	Unidentified goshawk	P		1
Animalia	Aves	Accipitridae	0224	*Aquila audax*	Wedge-tailed Eagle	P		1
Animalia	Aves	Accipitridae	0234	*Aviceda subcristata*	Pacific Baza	P		2
Animalia	Aves	Accipitridae	0219	*Circus approximans*	Swamp Harrier	P		1
Animalia	Aves	Accipitridae	0232	*Elanus axillaris*	Black-shouldered Kite	P		5
Animalia	Aves	Accipitridae	0226	*Haliaeetus leucogaster*	White-bellied Sea-Eagle	V,P		4
Animalia	Aves	Accipitridae	0228	*Haliastur sphenurus*	Whistling Kite	P		2
Animalia	Aves	Accipitridae	0225	*Hieraaetus morphnoides*	Little Eagle	V,P		2
Animalia	Aves	Accipitridae	8739	*^^Pandion cristatus*	Eastern Osprey	V,P,3		1
Animalia	Aves	Falconidae	0240	*Falco cenchroides cenchroides*	Nankeen Kestrel	P		11
Animalia	Aves	Falconidae	0235	*Falco longipennis*	Australian Hobby	P		5
Animalia	Aves	Falconidae	0237	*Falco peregrinus*	Peregrine Falcon	P		18
Animalia	Aves	Falconidae	9119	*Raptor sp.*	Unidentified Raptor	P		2
Animalia	Aves	Rallidae	0059	*Fulica atra*	Eurasian Coot	P		12
Animalia	Aves	Rallidae	0056	*Gallinula tenebrosa*	Dusky Moorhen	P		19
Animalia	Aves	Rallidae	0046	*Hypotaenidia philippensis*	Buff-banded Rail	P		2
Animalia	Aves	Rallidae	0045	*Lewinia pectoralis*	Lewin's Rail	P		2
Animalia	Aves	Rallidae	0058	*Porphyrio porphyrio*	Purple Swamphen	P		19
Animalia	Aves	Rallidae	0050	*Porzana pusilla*	Baillon's Crake	P		2
Animalia	Aves	Rallidae	0051	*Porzana tabuensis*	Spotless Crake	P		2
Animalia	Aves	Haematopodidae	0131	*Haematopus fuliginosus*	Sooty Oystercatcher	V,P		1
Animalia	Aves	Recurvirostridae	0146	*Himantopus himantopus*	Black-winged Stilt	P		1
Animalia	Aves	Charadriidae	0140	*Charadrius bicinctus*	Double-banded Plover	P		1
Animalia	Aves	Charadriidae	0144	*Elseyornis melanops*	Black-fronted Dotterel	P		2
Animalia	Aves	Charadriidae	0132	*Erythrogonys cinctus*	Red-kneed Dotterel	P		1
Animalia	Aves	Charadriidae	0136	*Pluvialis squatarola*	Grey Plover	P	C,J,K	4
Animalia	Aves	Charadriidae	0133	*Vanellus miles*	Masked Lapwing	P		115
Animalia	Aves	Charadriidae	0134	*Vanellus miles novaehollandiae*	[Spur-winged Plover]	P		1
Animalia	Aves	Charadriidae	0135	*Vanellus tricolor*	Banded Lapwing	P		2
Animalia	Aves	Scolopacidae	0129	*Arenaria interpres*	Ruddy Turnstone	P	C,J,K	1
Animalia	Aves	Scolopacidae	0892	*Bartramia longicauda*	Upland Sandpiper	P		1
Animalia	Aves	Scolopacidae	0163	*Calidris acuminata*	Sharp-tailed Sandpiper	P	C,J,K	2
Animalia	Aves	Scolopacidae	0978	*Calidris melanotos*	Pectoral Sandpiper	P	J,K	1
Animalia	Aves	Scolopacidae	0168	*Gallinago hardwickii*	Latham's Snipe	P	J,K	5
Animalia	Aves	Scolopacidae	0151	*Numenius minutus*	Little Curlew	P	C,J,K	1
Animalia	Aves	Scolopacidae	0158	*Tringa nebularia*	Common Greenshank	P	C,J,K	1
Animalia	Aves	Scolopacidae	0159	*Tringa stagnatilis*	Marsh Sandpiper	P	C,J,K	1
Animalia	Aves	Turnicidae	0014	*Turnix varius*	Painted Button-quail	P		3
Animalia	Aves	Turnicidae	0018	*Turnix velox*	Little Button-quail	P		1
Animalia	Aves	Stercorariidae	0980	*Catharacta skua*	Great Skua	P		1
Animalia	Aves	Stercorariidae	0128	*Stercorarius parasiticus*	Arctic Jaeger	P	C,J,K	1
Animalia	Aves	Stercorariidae	0945	*Stercorarius pomarinus*	Pomarine Jaeger	P	C,J,K	1
Animalia	Aves	Laridae	0110	*Chlidonias hybrida*	Whiskered Tern	P		2
Animalia	Aves	Laridae	0125	*Chroicocephalus novaehollandiae*	Silver Gull	P		166
Animalia	Aves	Laridae	0953	*Sterna hirundo*	Common Tern	P	C,J,K	9
Animalia	Aves	Laridae	0114	*Sterna striata*	White-fronted Tern	P		3
Animalia	Aves	Laridae	0117	*Sternula albifrons*	Little Tern	E1,P	C,J,K	2
Animalia	Aves	Laridae	0115	*Thalasseus bergii*	Crested Tern	P	J	12
Animalia	Aves	Cacatuidae	0269	*Cacatua galerita*	Sulphur-crested Cockatoo	P		194
Animalia	Aves	Cacatuidae	0271	*Cacatua sanguinea*	Little Corella	P		24
Animalia	Aves	Cacatuidae	T187	*Cacatua sp.*		P		5
Animalia	Aves	Cacatuidae	0272	*Cacatua tenuirostris*	Long-billed Corella	P		6
Animalia	Aves	Cacatuidae	0265	*^Calyptorhynchus lathami*	Glossy Black-Cockatoo	V,P,2	V	3
Animalia	Aves	Cacatuidae	9070	*Calyptorhynchus sp.*	Unidentified Black-cockatoo	P		1
Animalia	Aves	Cacatuidae	0273	*Eolophus roseicapilla*	Galah	P		30
Animalia	Aves	Cacatuidae	0274	*Nymphicus hollandicus*	Cockatiel	P		6
Animalia	Aves	Cacatuidae	0267	*Zanda funereus*	Yellow-tailed Black-Cockatoo	P		11
Animalia	Aves	Psittacidae	0281	*Alisterus scapularis*	Australian King-Parrot	P		4
Animalia	Aves	Psittacidae	0280	*Aprosmictus erythropterus*	Red-winged Parrot	P		1
Animalia	Aves	Psittacidae	0294	*Barnardius zonarius*	Australian Ringneck	P		2
Animalia	Aves	Psittacidae	0258	*Glossopsitta concinna*	Musk Lorikeet	P		8

Animalia	Aves	Psittacidae	0260	*Glossopsitta pusilla*	Little Lorikeet	V,P		1
Animalia	Aves	Psittacidae	0309	*Lathamus discolor*	Swift Parrot	E1,P	CE	2
Animalia	Aves	Psittacidae	0310	*Melopsittacus undulatus*	Budgerigar	P		6
Animalia	Aves	Psittacidae	0305	*^^Neophema chrysogaster*	Orange-bellied Parrot	E4A,P,3	CE	1
Animalia	Aves	Psittacidae	0286	*Platycercus adscitus*	Pale-headed Rosella	P		1
Animalia	Aves	Psittacidae	0282	*Platycercus elegans*	Crimson Rosella	P		4
Animalia	Aves	Psittacidae	0288	*Platycercus eximius*	Eastern Rosella	P		10
Animalia	Aves	Psittacidae	0289	*Platycercus icterotis*	Western Rosella	P		1
Animalia	Aves	Psittacidae	T039	*Platycercus sp.*	Unidentified Rosella	P		27
Animalia	Aves	Psittacidae	0295	*Psephotus haematonotus*	Red-rumped Parrot	P		5
Animalia	Aves	Psittacidae	9947	*Trichoglossus haematodus*	Rainbow Lorikeet	P		2670
Animalia	Aves	Psittacidae	8882	*Trichoglossus haematodus moluccanus*		P		4
Animalia	Aves	Cuculidae	0338	*Cacomantis flabelliformis*	Fan-tailed Cuckoo	P		8
Animalia	Aves	Cuculidae	0339	*Cacomantis variolosus*	Brush Cuckoo	P		1
Animalia	Aves	Cuculidae	0342	*Chalcites basalis*	Horsfield's Bronze-Cuckoo	P		7
Animalia	Aves	Cuculidae	0343	*Chalcites lucidus*	Shining Bronze-Cuckoo	P		5
Animalia	Aves	Cuculidae	0347	*Eudynamys orientalis*	Eastern Koel	P		51
Animalia	Aves	Cuculidae	8930	*Eudynamys orientalis cyanocephala*		P		2
Animalia	Aves	Cuculidae	0337	*Heteroscenes pallidus*	Pallid Cuckoo	P		2
Animalia	Aves	Cuculidae	0348	*Scythrops novaehollandiae*	Channel-billed Cuckoo	P		47
Animalia	Aves	Strigidae	9922	*Ninox novaeseelandiae*	Southern Boobook	P		19
Animalia	Aves	Strigidae	0248	*^^Ninox strenua*	Powerful Owl	V,P,3		76
Animalia	Aves	Tytonidae	9923	*Tyto javanica*	Eastern Barn Owl	P		16
Animalia	Aves	Tytonidae	0250	*^^Tyto novaehollandiae*	Masked Owl	V,P,3		2
Animalia	Aves	Alcedinidae	0319	*Ceyx azureus*	Azure Kingfisher	P		4
Animalia	Aves	Alcedinidae	0322	*Dacelo novaeguineae*	Laughing Kookaburra	P		287
Animalia	Aves	Alcedinidae	0324	*Todiramphus macleayii*	Forest Kingfisher	P		1
Animalia	Aves	Alcedinidae	0326	*Todiramphus sanctus*	Sacred Kingfisher	P		60
Animalia	Aves	Meropidae	0329	*Merops ornatus*	Rainbow Bee-eater	P		1
Animalia	Aves	Coraciidae	0318	*Eurystomus orientalis*	Dollarbird	P		2
Animalia	Aves	Pittidae	0352	*Pitta versicolor*	Noisy Pitta	P		2
Animalia	Aves	Ptilonorhynchidae	0679	*Ptilonorhynchus violaceus*	Satin Bowerbird	P		2
Animalia	Aves	Maluridae	0529	*Malurus cyaneus*	Superb Fairy-wren	P		35
Animalia	Aves	Maluridae	0536	*Malurus lamberti*	Variegated Fairy-wren	P		5
Animalia	Aves	Maluridae	0526	*Stipiturus malachurus*	Southern Emu-wren	P		1
Animalia	Aves	Acanthizidae	0486	*Acanthiza chrysorrhoa*	Yellow-rumped Thornbill	P		8
Animalia	Aves	Acanthizidae	0471	*Acanthiza nana*	Yellow Thornbill	P		8
Animalia	Aves	Acanthizidae	0454	*Gerygone mouki*	Brown Gerygone	P		1
Animalia	Aves	Acanthizidae	0453	*Gerygone olivacea*	White-throated Gerygone	P		1
Animalia	Aves	Acanthizidae	0488	*Sericornis frontalis*	White-browed Scrubwren	P		2
Animalia	Aves	Pardalotidae	0565	*Pardalotus punctatus*	Spotted Pardalote	P		16
Animalia	Aves	Pardalotidae	T023	*Pardalotus sp.*	Unidentified Pardalote	P		2
Animalia	Aves	Meliphagidae	0640	*Acanthagenys rufogularis*	Spiny-cheeked Honeyeater	P		1
Animalia	Aves	Meliphagidae	0591	*Acanthorhynchus tenuirostris*	Eastern Spinebill	P		4
Animalia	Aves	Meliphagidae	0638	*Anthochaera carunculata*	Red Wattlebird	P		53
Animalia	Aves	Meliphagidae	0710	*Anthochaera chrysoptera*	Little Wattlebird	P		12
Animalia	Aves	Meliphagidae	T210	*Anthochaera sp.*	Unidentified Wattlebird	P		50
Animalia	Aves	Meliphagidae	0614	*Caligavis chrysops*	Yellow-faced Honeyeater	P		5
Animalia	Aves	Meliphagidae	0448	*Epthianura albifrons*	White-fronted Chat	V,P		1
Animalia	Aves	Meliphagidae	0448	*Epthianura albifrons*	White-fronted Chat population in the Sydney Metropolitan Catchment Management Area	E2,V,P		1
Animalia	Aves	Meliphagidae	0634	*Manorina melanocephala*	Noisy Miner	P		651
Animalia	Aves	Meliphagidae	0578	*Melithreptus lunatus*	White-naped Honeyeater	P		1
Animalia	Aves	Meliphagidae	0645	*Philemon corniculatus*	Noisy Friarbird	P		2
Animalia	Aves	Meliphagidae	0632	*Phylidonyris niger*	White-cheeked Honeyeater	P		3
Animalia	Aves	Meliphagidae	0631	*Phylidonyris novaehollandiae*	New Holland Honeyeater	P		36
Animalia	Aves	Meliphagidae	0625	*Ptilotula penicillata*	White-plumed Honeyeater	P		1
Animalia	Aves	Psophodidae	0421	*Psophodes olivaceus*	Eastern Whipbird	P		1
Animalia	Aves	Campephagidae	0424	*Coracina novaehollandiae*	Black-faced Cuckoo-shrike	P		19
Animalia	Aves	Campephagidae	0429	*Edolisoma tenuirostris*	Cicadabird	P		1
Animalia	Aves	Campephagidae	0430	*Lalage sueurii*	White-winged Triller	P		2
Animalia	Aves	Pachycephalidae	0398	*Pachycephala pectoralis*	Golden Whistler	P		2
Animalia	Aves	Pachycephalidae	0401	*Pachycephala rufiventris*	Rufous Whistler	P		9
Animalia	Aves	Oriolidae	0671	*Oriolus sagittatus*	Olive-backed Oriole	P		5
Animalia	Aves	Oriolidae	0432	*Sphecotheres vieilloti*	Australasian Figbird	P		111
Animalia	Aves	Artamidae	0543	*Artamus leucoryn*	White-breasted Woodswallow	P		3

Animalia	Aves	Artamidae	0544	*Artamus personatus*		Masked Woodswallow	P		1
Animalia	Aves	Artamidae	0700	*Cracticus nigrogularis*		Pied Butcherbird	P		2
Animalia	Aves	Artamidae	T022	*Cracticus sp.*		Unidentified Butcherbird	P		23
Animalia	Aves	Artamidae	0702	*Cracticus torquatus*		Grey Butcherbird	P		44
Animalia	Aves	Artamidae	0705	*Gymnorhina tibicen*		Australian Magpie	P		683
Animalia	Aves	Artamidae	8499	*Gymnorhina tibicen tibicen*			P		2
Animalia	Aves	Artamidae	0694	*Strepera graculina*		Pied Currawong	P		353
Animalia	Aves	Artamidae	T906	*Strepera sp.*			P		61
Animalia	Aves	Artamidae	0697	*Strepera versicolor*		Grey Currawong	P		24
Animalia	Aves	Dicruridae	0673	*Dicrurus bracteatus*		Spangled Drongo	P		4
Animalia	Aves	Rhipiduridae	0361	*Rhipidura albiscapa*		Grey Fantail	P		4
Animalia	Aves	Rhipiduridae	0364	*Rhipidura leucophrys*		Willie Wagtail	P		58
Animalia	Aves	Rhipiduridae	0362	*Rhipidura rufifrons*		Rufous Fantail	P		3
Animalia	Aves	Corvidae	0930	*Corvus coronoides*		Australian Raven	P		178
Animalia	Aves	Corvidae	0954	*Corvus mellori*		Little Raven	P		9
Animalia	Aves	Corvidae	9902	*Corvus orru*		Torresian Crow	P		1
Animalia	Aves	Corvidae	9067	*Corvus sp.*		Unidentified Corvid	P		42
Animalia	Aves	Monarchidae	0415	*Grallina cyanoleuca*		Magpie-lark	P		77
Animalia	Aves	Monarchidae	0373	*Monarcha melanopsis*		Black-faced Monarch	P		7
Animalia	Aves	Monarchidae	0366	*Myiagra cyanoleuca*		Satin Flycatcher	P		2
Animalia	Aves	Monarchidae	9955	*Myiagra inquieta*		Restless Flycatcher	P		1
Animalia	Aves	Monarchidae	0365	*Myiagra rubecula*		Leaden Flycatcher	P		2
Animalia	Aves	Petroicidae	0392	*Eopsaltria australis*		Eastern Yellow Robin	P		3
Animalia	Aves	Petroicidae	0377	*Microeca fascinans*		Jacky Winter	P		3
Animalia	Aves	Petroicidae	0380	*Petroica boodang*		Scarlet Robin	V,P		1
Animalia	Aves	Petroicidae	0384	*Petroica rosea*		Rose Robin	P		1
Animalia	Aves	Alaudidae	0993	*Alauda arvensis*	*	Eurasian Skylark			4
Animalia	Aves	Cisticolidae	0525	*Cisticola exilis*		Golden-headed Cisticola	P		1
Animalia	Aves	Acrocephalidae	0524	*Acrocephalus australis*		Australian Reed-Warbler	P		6
Animalia	Aves	Locustellidae	0522	*Poodytes gramineus*		Little Grassbird	P		2
Animalia	Aves	Hirundinidae	0357	*Hirundo neoxena*		Welcome Swallow	P		86
Animalia	Aves	Hirundinidae	0360	*Petrochelidon ariel*		Fairy Martin	P		6
Animalia	Aves	Hirundinidae	0359	*Petrochelidon nigricans*		Tree Martin	P		3
Animalia	Aves	Pycnonotidae	0990	*Pycnonotus jocosus*	*	Red-whiskered Bulbul			9
Animalia	Aves	Turdidae	0991	*Turdus merula*	*	Eurasian Blackbird			7
Animalia	Aves	Sturnidae	0998	*Acridotheres tristis*	*	Common Myna			84
Animalia	Aves	Sturnidae	0999	*Sturnus vulgaris*	*	Common Starling			96
Animalia	Aves	Zosteropidae	0574	*Zosterops lateralis*		Silvereye	P		30
Animalia	Aves	Dicaeidae	0564	*Dicaeum hirundinaceum*		Mistletoebird	P		1
Animalia	Aves	Estrildidae	0657	*Lonchura castaneothorax*		Chestnut-breasted Mannikin	P		1
Animalia	Aves	Estrildidae	0983	*Lonchura punctulata*	*	Nutmeg Mannikin			2
Animalia	Aves	Estrildidae	0664	*Neochmia phaeton*		Crimson Finch	P		1
Animalia	Aves	Estrildidae	0662	*Neochmia temporalis*		Red-browed Finch	P		13
Animalia	Aves	Estrildidae	8621	*Neochmia temporalis temporalis*			P		2
Animalia	Aves	Estrildidae	0652	*Stagonopleura guttata*		Diamond Firetail	V,P		1
Animalia	Aves	Estrildidae	0655	*Stizoptera bichenovii*		Double-barred Finch	P		1
Animalia	Aves	Estrildidae	0653	*Taeniopygia guttata*		Zebra Finch	P		1
Animalia	Aves	Passeridae	0995	*Passer domesticus*	*	House Sparrow			18
Animalia	Aves	Motacillidae	0647	*Anthus novaeseelandiae*		Australian Pipit	P		6
Animalia	Aves	Fringillidae	0996	*Carduelis carduelis*	*	European Goldfinch			1
Animalia	Aves	Fringillidae	0997	*Chloris chloris*	*	European Greenfinch			5
Animalia	Mammalia	Tachyglossidae	1003	*Tachyglossus aculeatus*		Short-beaked Echidna	P		6
Animalia	Mammalia	Dasyuridae	T093	*Antechinus sp.*		Unidentified Antechinus	P		1
Animalia	Mammalia	Dasyuridae	1674	*Antechinus stuartii*		Brown Antechinus	P		3
Animalia	Mammalia	Dasyuridae	1008	*Dasyurus maculatus*		Spotted-tailed Quoll	V,P	E	3
Animalia	Mammalia	Peramelidae	T081	*Isoodon/Perameles sp.*		unidentified Bandicoot	P		1
Animalia	Mammalia	Peramelidae	1097	*Perameles nasuta*		Long-nosed Bandicoot	P		1
Animalia	Mammalia	Phascolarctidae	1162	*Phascolarctos cinereus*		Koala	E1,P	E	2
Animalia	Mammalia	Vombatidae	1165	*Vombatus ursinus*		Bare-nosed Wombat	P		2
Animalia	Mammalia	Pseudocheiridae	1129	*Pseudocheirus peregrinus*		Common Ringtail Possum	P		996
Animalia	Mammalia	Phalangeridae	T082	*Trichosurus sp.*		brushtail possum	P		147
Animalia	Mammalia	Phalangeridae	1113	*Trichosurus vulpecula*		Common Brushtail Possum	P		1140
Animalia	Mammalia	Potoroidae	1187	*Aepyprymnus rufescens*		Rufous Bettong	V,P		1
Animalia	Mammalia	Macropodidae	1265	*Macropus giganteus*		Eastern Grey Kangaroo	P		4
Animalia	Mammalia	Macropodidae	T085	*Macropus sp.*		kangaroo / wallaby	P		2
Animalia	Mammalia	Macropodidae	1261	*Notamacropus rufogriseus*		Red-necked Wallaby	P		1
Animalia	Mammalia	Macropodidae	1242	*Wallabia bicolor*		Swamp Wallaby	P		2

Animalia	Mammalia	Pteropodidae	1282	*Pteropus alecto*		Black Flying-fox	P		16
Animalia	Mammalia	Pteropodidae	1280	*Pteropus poliocephalus*		Grey-headed Flying-fox	V,P	V	515
Animalia	Mammalia	Pteropodidae	T087	*Pteropus sp.*		Flying-fox	P		252
Animalia	Mammalia	Rhinolophidae	1303	*Rhinolophus megaphyllus*		Eastern Horseshoe-bat	P		1
Animalia	Mammalia	Molossidae	1324	*Austronomus australis*		White-striped Freetail-bat	P		5
Animalia	Mammalia	Molossidae	T454	*Molossidae sp.*		unidentified mastiff bat	P		4
Animalia	Mammalia	Molossidae	1938	*Ozimops ridei*		Eastern Free-tailed Bat	P		11
Animalia	Mammalia	Vespertilionidae	1353	*Chalinolobus dwyeri*		Large-eared Pied Bat	V,P	V	3
Animalia	Mammalia	Vespertilionidae	1349	*Chalinolobus gouldii*		Gould's Wattled Bat	P		65
Animalia	Mammalia	Vespertilionidae	1357	*Myotis macropus*		Southern Myotis	V,P		19
Animalia	Mammalia	Vespertilionidae	1335	*Nyctophilus geoffroyi*		Lesser Long-eared Bat	P		2
Animalia	Mammalia	Vespertilionidae	T092	*Nyctophilus sp.*		long-eared bat	P		7
Animalia	Mammalia	Vespertilionidae	1365	*Scotorepens orion*		Eastern Broad-nosed Bat	P		1
Animalia	Mammalia	Vespertilionidae	1377	*Vespadelus pumilus*		Eastern Forest Bat	P		1
Animalia	Mammalia	Vespertilionidae	1378	*Vespadelus regulus*		Southern Forest Bat	P		1
Animalia	Mammalia	Vespertilionidae	1379	*Vespadelus vulturnus*		Little Forest Bat	P		2
Animalia	Mammalia	Miniopteridae	1346	*Miniopterus australis*		Little Bent-winged Bat	V,P		7
Animalia	Mammalia	Miniopteridae	3330	*Miniopterus orianae oceanensis*		Large Bent-winged Bat	V,P		26
Animalia	Mammalia	Muridae	1415	*Hydromys chrysogaster*		Water-rat	P		3
Animalia	Mammalia	Muridae	1412	*Mus musculus*	*	House Mouse			7
Animalia	Mammalia	Muridae	1395	*Rattus fuscipes*		Bush Rat	P		6
Animalia	Mammalia	Muridae	1409	*Rattus norvegicus*	*	Brown Rat			17
Animalia	Mammalia	Muridae	1408	*Rattus rattus*	*	Black Rat			92
Animalia	Mammalia	Muridae	T094	*Rattus sp.*		rat	P		1
Animalia	Mammalia	Dugongidae	1558	*Dugong dugon*		Dugong	E1,P		5
Animalia	Mammalia	Otariidae	1543	*Arctocephalus forsteri*		New Zealand Fur-seal	V,P		19
Animalia	Mammalia	Otariidae	1882	*Arctocephalus pusillus doriferus*		Australian Fur-seal	V,P		13
Animalia	Mammalia	Otariidae	T099	*Arctocephalus sp.*		Unidentified Fur-seal	P		4
Animalia	Mammalia	Otariidae	1013	*Arctocephalus tropicalis*		Subantarctic Fur-seal	P		2
Animalia	Mammalia	Otariidae	1539	*Neophoca cinerea*		Australian Sea-lion	P		4
Animalia	Mammalia	Otariidae	9040	*Seal sp.*		Unidentified Seal	P		53
Animalia	Mammalia	Phocidae	1549	*Hydrurga leptonyx*		Leopard Seal	P		15
Animalia	Mammalia	Canidae	1905	*Canis familiaris*	*	Dog			6
Animalia	Mammalia	Canidae	1531	*Canis lupus*	*	Dingo, domestic dog			3
Animalia	Mammalia	Canidae	1904	*Canis lupus dingo*	*	Dingo			2
Animalia	Mammalia	Canidae	1532	*Vulpes vulpes*	*	Fox			93
Animalia	Mammalia	Felidae	1536	*Felis catus*	*	Cat			17
Animalia	Mammalia	Leporidae	1510	*Oryctolagus cuniculus*	*	Rabbit			12
Animalia	Mammalia	Cervidae	9112	*Cervus sp.*	*	Unidentified Deer			4
Animalia	Mammalia	Cervidae	1523	*Dama dama*	*	Fallow Deer			1
Animalia	Mammalia	Balaenidae	1561	*Eubalaena australis*		Southern Right Whale	E1,P	E	4
Animalia	Mammalia	Balaenopteridae	1570	*Balaenoptera acutorostrata*		Dwarf Minke Whale	P		1
Animalia	Mammalia	Balaenopteridae	1567	*Balaenoptera musculus*		Blue Whale	E1,P	E	1
Animalia	Mammalia	Balaenopteridae	1575	*Megaptera novaeangliae*		Humpback Whale	P		29
Animalia	Mammalia	Balaenopteridae	9041	*Whale sp.*		Unidentified Whale	P		2
Animalia	Mammalia	Kogiidae	1581	*Kogia breviceps*		Pygmy Sperm Whale	P		4
Animalia	Mammalia	Ziphiidae	1591	*Mesoplodon layardii*		Strap-toothed Beaked Whale	P		2
Animalia	Mammalia	Delphinidae	1616	*Delphinus delphis*		Common Dolphin	P		14
Animalia	Mammalia	Delphinidae	9039	*Dolphin sp.*		Unidentified Dolphin	P		4
Animalia	Mammalia	Delphinidae	1609	*Grampus griseus*		Risso's Dolphin	P		3
Animalia	Mammalia	Delphinidae	1621	*Stenella attenuata*		Pantropical Spotted Dolphin	P		3
Animalia	Mammalia	Delphinidae	1899	*Tursiops aduncus*		Indo-Pacific Bottlenose Dolphin	P		1
Animalia	Mammalia	Delphinidae	1900	*Tursiops truncatus*		Bottlenose Dolphin	P		2
Animalia	Arachnida	Araneidae	I203	*Argiope keyserlingi*		St Andrew's Cross spider			2
Animalia	Arachnida	Tetragnathidae	I132	*Nephila plumipes*					1
Animalia	Arachnida	Tetragnathidae	I103	*Phonognatha graeffei*		leafcurling spider			2
Animalia	Gastropoda	Camaenidae	I2177	*Meridolum maryae*		Maroubra Woodland Snail	E1		9
Animalia	Unknown	Unknown Fauna	T350	*Fauna sp.*		Unidentified Fauna			103
Animalia	Unknown	Unknown Fauna	T351	*Mammal sp.*		Unidentified Mammal			9
Animalia	Unknown	Unknown Fauna	T202	*Microchiroptera suborder*		Unidentified Microbat			5
Animalia	Unknown	Unknown Fauna	T1049	*Possum sp.*		unidentified possum			49
Animalia	Unknown	Unknown Fauna	9117	*Reptile sp.*		Unidentified Reptile			5