DEVELOPMENT APPLICATION

PDPLANPMTD-2025/054216

PROPOSAL: Hours of Operation & Signage (Vehicle Fuel and Sales)

LOCATION: 86 Clarence Street, Bellerive

RELEVANT PLANNING SCHEME: Tasmanian Planning Scheme - Clarence

ADVERTISING EXPIRY DATE: 25 August 2025

The relevant plans and documents can be inspected at the Council offices, 38 Bligh Street, Rosny Park, during normal office hours until 25 August 2025. In addition to legislative requirements, plans and documents can also be viewed at www.ccc.tas.gov.au during these times.

Any person may make representations about the application to the Chief Executive Officer, by writing to PO Box 96, Rosny Park, 7018 or by electronic mail to clarence@ccc.tas.gov.au. Representations must be received by Council on or before 25 August 2025.

To enable Council to contact you if necessary, would you please also include a day time contact number in any correspondence you may forward.

Any personal information submitted is covered by Council's privacy policy, available at www.ccc.tas.gov.au or at the Council offices.

City of Clarence
38 Bligh St Rosny Park
PO Box 96
Rosny Park TAS, 7018

03 6217 9500
clarence@ccc.tas.gov.au
ccc.tas.gov.au

Application for Development / Use or Subdivision

Use this form to obtain planning approval for developing or using land, including subdividing it into smaller lots or lot consolidation.

Proposal: Re-opening of existing fuel station

Location: 84-88 Clarence Street, Bellerive, TAS 7170

Personal Information Removed

Estimated cost of development: $850,000.00

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Is the property on the Tasmanian Heritage Register? Yes ☐ No ■

If yes, we recommend you discuss your proposal with Heritage Tasmania prior to lodgement as exemptions may apply which may save you time on your proposal.

If you had pre-application discussions with City of Clarence, please provide planner's name:

Sally De Little

Current use of site: Fuel Station

Does the proposal involve land administered or owned by the Crown or Council? Yes ☐ No ■

Declaration

- I have read the Certificate of Title and Schedule of Easements for the land and am satisfied that this application is not prevented by any restrictions, easements or covenants.
- I authorise the provision of a copy of any documents relating to this application to any person for the purposes of assessment or public consultation. I agree to arrange for the permission of the copyright owner of any part of this application to be obtained. I have arranged permission for Council's representatives to enter the land to assess this application
- I declare that, in accordance with Section 52 of the Land Use Planning and Approvals Act 1993, that I have notified the owner of the intention to make this application. Where the subject property is owned or controlled by Council or the Crown, their signed consent is attached.
- I declare that the information in this declaration is true and correct.

Acknowledgement

- I acknowledge that the documentation submitted in support of my application will become a public record held by Council and may be reproduced by Council in both electronic and hard copy format in order to facilitate the assessment process; for display purposes during public consultation; and to fulfil its statutory obligations. I further acknowledge that following determination of my application, Council will store documentation relating to my application in electronic format only.

Applicant's signature: **Personal Information Removed**

Date: 7/21/25

Please refer to the development/use and subdivision checklist on the following pages to determine what documentation must be submitted with your application.

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Development/use or subdivision checklist

Mandatory Documents
This information is required for the application to be valid. We are unable to proceed with an application without these documents.

- ☐ Details of the location of the proposed use or development.
- ☐ A copy of the current Certificate of Title, Sealed Plan, Plan or Diagram and Schedule of Easements and other restrictions for each parcel of land on which the use or development is proposed.
- ☐ Full description of the proposed use or development.
- ☐ Description of the proposed operation. May include where appropriate: staff/student/customer numbers; operating hours; truck movements; and loading/unloading requirements; waste generation and disposal; equipment used; pollution, including noise, fumes, smoke or vibration and mitigation/management measures.
- ☐ Declaration the owner has been notified if the applicant is not the owner.
- ☐ Crown or Council consent (if publically-owned land).
- ☐ Any reports, plans or other information required by the relevant zone or code.
- ☐ Fees prescribed by the City of Clarence.

Application fees (please phone 03 6217 9550 to determine what fees apply). An invoice will be emailed upon lodgement.

Additional Documents
In addition to the mandatory information required above, Council may, to enable it to consider an application, request further information it considers necessary to ensure that the proposed use or development will comply with any relevant standards and purpose statements in the zone, codes or specific area plan, applicable to the use or development.

- ☐ Site analysis and site plan, including where relevant:
  - Existing and proposed use(s) on site.
  - Boundaries and dimensions of the site.
  - Topography, including contours showing AHD levels and major site features.
  - Natural drainage lines, watercourses and wetlands on or adjacent to the site.
  - Soil type.
  - Vegetation types and distribution, and trees and vegetation to be removed.

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- Location and capacity of any existing services or easements on/to the site.
- Existing pedestrian and vehicle access to the site.
- Location of existing and proposed buildings on the site.
- Location of existing adjoining properties, adjacent buildings and their uses.
- Any natural hazards that may affect use or development on the site.
- Proposed roads, driveways, car parking areas and footpaths within the site.
- Any proposed open space, communal space, or facilities on the site.
- Main utility service connection points and easements.
- Proposed subdivision lot boundaries.

☐ Where it is proposed to erect buildings, detailed plans with dimensions at a scale of 1:100 or 1:200 showing:

- Internal layout of each building on the site.
- Private open space for each dwelling.
- External storage spaces.
- Car parking space location and layout.
- Major elevations of every building to be erected.
- Shadow diagrams of the proposed buildings and adjacent structures demonstrating the extent of shading of adjacent private open spaces and external windows of buildings on adjacent sites.
- Relationship of the elevations to natural ground level, showing any proposed cut or fill.
- Materials and colours to be used on rooves and external walls.

☐ Where it is proposed to erect buildings, a plan of the proposed landscaping showing:

- Planting concepts.
- Paving materials and drainage treatments and lighting for vehicle areas and footpaths.
- Plantings proposed for screening from adjacent sites or public places.

☐ Any additional reports, plans or other information required by the relevant zone or code.

This list is not comprehensive for all possible situations. If you require further information about what may be required as part of your application documentation, please contact City of Clarence Planning team on (03) 6217 9550.

RESULT OF SEARCH

RECORDER OF TITLES

Issued Pursuant to the Land Titles Act 1980

Tasmanian Government

SEARCH OF TORRENS TITLE

VOLUME	FOLIO
135621	2
EDITION	DATE OF ISSUE
3	18-Jul-2024

SEARCH DATE : 02-May-2025
SEARCH TIME : 11.35 AM

DESCRIPTION OF LAND

City of CLARENCE
Lot 2 on Sealed Plan 135621
Derivation : Part of Location to Jeremiah Harmer.
Prior CTs 106118/1, 106118/2 and 106119/1

SCHEDULE 1

N196695 TRANSFER to BENNETT'S PETROLEUM SUPPLIES PTY LTD
Registered 18-Jul-2024 at noon

SCHEDULE 2

Reservations and conditions in the Crown Grant if any
N190738 MORTGAGE to Australia and New Zealand Banking Group Limited Registered 18-Jul-2024 at 12.01 PM

UNREGISTERED DEALINGS AND NOTATIONS

No unregistered dealings or other notations

OWNER M.C.& P.F. GORDON ~~(Lot 1)~~
CALTEX OIL (AUSTRALIA) PTY. LIMITED
~~(Lot 2)~~

FOLIO REFERENCE F.R.106799/3 F.R.106119/1
F.R.106118/1&2

GRANTEE
Whole of 1296 m Gtd to M.HODGMAN
Part of 10 Ac.Location to Jeremiah HARMER

PLAN OF SURVEY

BY SURVEYOR R.A.CONNOR
J.B.MEDBURY P/L SURVEYORS
OF 224 CAMPBELL STREET, HOBART

LOCATION
CITY OF CLARENCE

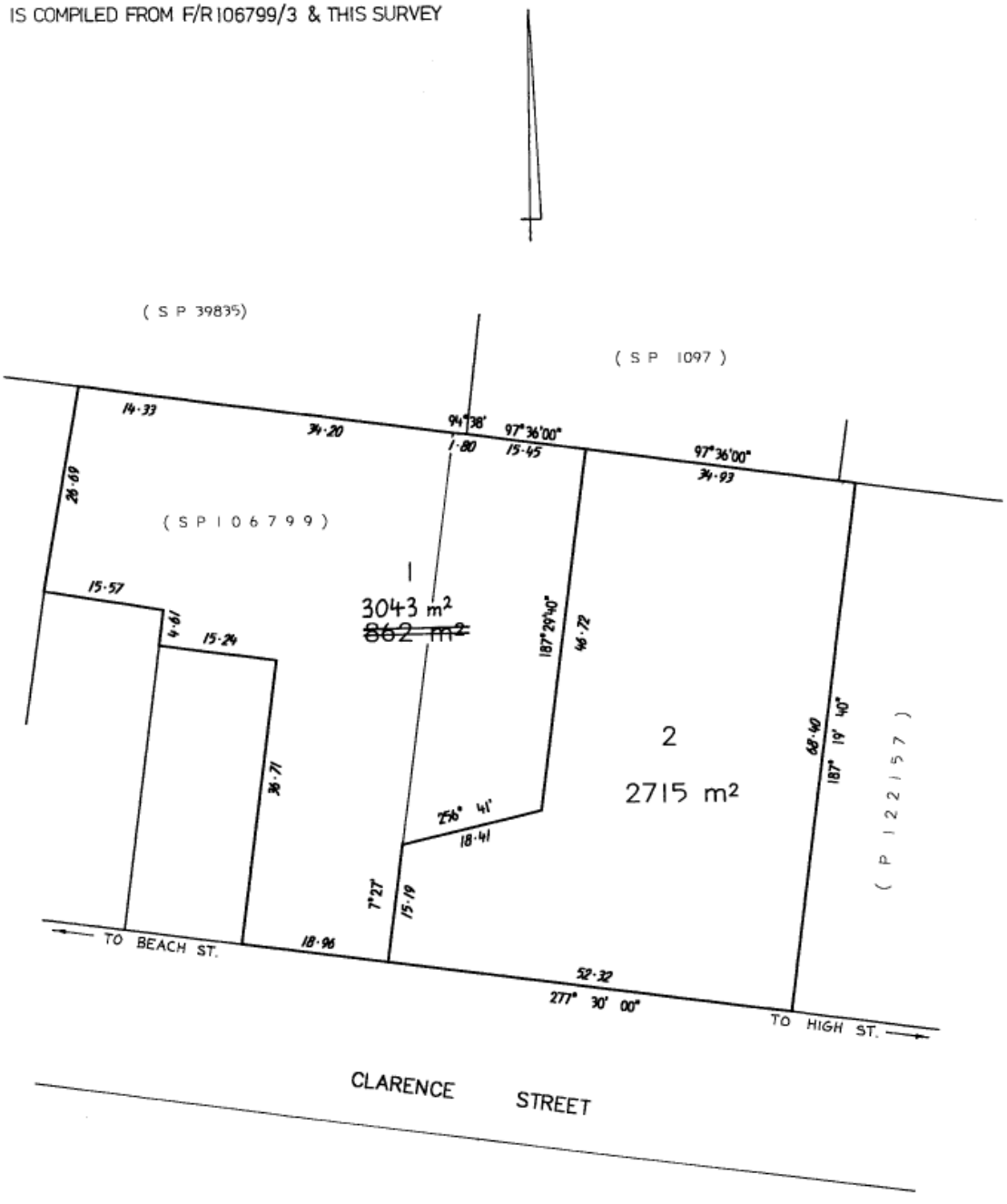
SCALE 1: 500 LENGTHS IN METRES

Registered Number
SP135621

~~APPROVED~~
EFFECTIVE FROM 27 JUN 2001
Alice Kawa
Recorder of Titles

MAPSHEET MUNICIPAL CODE No. 107 (5225-43)	LAST UPI No. 1420812, 1420813 1420823, 1423106	LAST PLAN No. SP106799	ALL EXISTING SURVEY NUMBERS TO BE CROSS REFERENCED ON THIS PLAN

LOT 1 IS COMPILED FROM F/R 106799/3 & THIS SURVEY



SCHEDULE OF EASEMENTS	Registered Number
NOTE: THE SCHEDULE MUST BE SIGNED BY THE OWNERS & MORTGAGEES OF THE LAND AFFECTED. SIGNATURES MUST BE ATTESTED.	SP 135621

EASEMENTS AND PROFITS

Each lot on the plan is together with:-
(1) such rights of drainage over the drainage easements shown on the plan (if any) as may be necessary to drain the stormwater and other surplus water from such lot; and
(2) any easements or profits a prendre described hereunder.
Each lot on the plan is subject to:-
(1) such rights of drainage over the drainage easements shown on the plan (if any) as passing through such lot as may be necessary to drain the stormwater and other surplus water from any other lot on the plan; and
(2) any easements or profits a prendre described hereunder.
The direction of the flow of water through the drainage easements shown on the plan is indicated by arrows.

No easements, profits a prendre or covenants are created to benefit or burden the land shown on the land.

Signed by **MURRAY CALVERN GORDON** and **PATRICIA FAYE GORDON** in the presence of:)

Witness:

Name: Amanda Sinclair

Address: Law Clerk
20 Murray St, Hobart
Tel: (03) 6221 8440

Occupation:

Butler McIntyre & Butler

Per:

Gary R Grant
Solicitors for MC & PF Gordon

The Common Seal of **CALTEX PETROLEUM PTY LTD** (ACN 000 007 876) was hereunto affixed in the presence of:)

Director:

Director/Secretary:

(USE ANNEXURE PAGES FOR CONTINUATION)

SUBDIVIDER: MC & PF GORDON	PLAN SEALED BY: Clarence City Council
FOLIO REF: 106799/3, 106119/1 & 106118/1 & 2	DATE: 9 APRIL 2001
SOLICITOR & REFERENCE: Mr GR Grant, Butler McIntyre & Butler`	SD-2000/58 REF NO.
NOTE: The Council Delegate must sign the Certificate for the purposes of identification.	Council Delegate ~~CORPORATE SECRETARY~~

ANNEXURE TO SCHEDULE OF EASEMENTS PAGE 2 OF 2 PAGES	Registered Number SP. 135621
SUBDIVIDER: MC & PJ GORDON FOLIO REFERENCE: 106799/3, 106119/1, 106118/1 & 2	

Signed on behalf of **CALTEX PETROLEUM PTY LTD** (ACN 000 007 876) by its Attorney under Power of Attorney Regd. No. 72/3028 dated 13/6/2000 (who certifies that he has received no notice of revocation thereof), in the presence of:

SIGNED FOR AND ON BEHALF OF CALTEX PETROLEUM PTY LTD
A.C.N. 000 007 876 BY WILLIAM PULLOCK ITS DULY AUTHORISED ATTORNEY UNDER POWER OF ATTORNEY DATED THE 24TH DAY OF MARCH 2005 REGISTERED No. 72/3028 WHO HEREBY STATES THAT HE HAS NO NOTICE OF REVOCATION OF THE SAID POWER OF ATTORNEY AT THE TIME OF EXECUTING THIS INSTRUMENT AND IN THE PRESENCE OF:

ATTORNEY

WITNESS

HAMISH BATSON

NAME (BLOCK LETTERS)

2 PATRICK STREET, CASULA

ADDRESS & OCCUPATION

DIVESTMENT SALES MANAGER

NOTE: Every annexed page must be signed by the parties to the dealing or where the party is a corporate body be signed by the persons who have attested the affixing of the seal of that body to the dealing.

Re-opening of existing fuel station

Facade update, coffee shop & signage

84-88 Clarence Street, Bellerive, 7018

DRAWING SCHEDULE

DA01	Cover Page
DA02	Site Analysis Plan
DA03	Existing Site Plan
DA04	Site Plan
DA05	Existing Floor Plan
DA06	Demolition Plan
DA07	Proposed Floor Plan
DA08	Elevations 01
DA09	Elevations 02
DA10	Elevations 03
DA11	Elevations 04
DA12	Elevations 05
DA13	Signage 01
DA14	Signage 02
DA15	Detail Survey Plan
DA16	Vehicle & Parking Plan

Opening hours
6am - 10pm Mon-Sat
7am - 9pm Sun & Public Holidays

External Lighting
Existing lighting to be used
No lighting faces residential zones

Commercial vehicle movements
7am - 9pm Mon - Sat
8am - 9pm Sun & Public Holidays

Mechanical plant
Will be minimum 10m from any residential zone boundary

Rev. Amendment Date

All dimensions in millimetres unless noted otherwise. Print in colour.

Project:
84-88 Clarence Street
Bellerive, TAS 7018

Drawing name:
Cover Page

Issue date:
21/07/2025

Project stage:
Development App.

Drawing no:
25.011 - DA01

Scale @ A3:

Revision:

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admin@potterprojects.com
3A/12 Maxwells Road
Cambridge Tasmania 7170

V1

LEGEND AND NOTES

- TasWater Water
- TasWater Sewer
- FH Water Hydrant
- W Water Meter

SITE INFORMATION

Title Reference:	135621/2
Property ID:	2042052
Council:	Clarence
Zone:	Local Business
Planning Overlays:	Airport obstacle limitation area Flood-prone-areas Potentially contaminated land
Aboriginal Heritage:	No registered relics
Water Supply:	20mm connection, fed from 100mm main
Waste Water:	Existing connection 100mm dia. 150mm main in Clarence Street

DEVELOPMENT STANDARDS

Front Setbacks:	Built to the frontage; or Similar to adjacent properties
Setback when beside Residential Zone:	4m to the boundary; or half the wall height
Setback for services when beside Residential Zone:	10m (air extraction, pumping, refrigeration or compressors)
Max. Building Height:	9m
Car Parking Requirements:	1 space per 15m^2 (take-away)
Retail Impact:	250m^2 max floor area for: Bulky Goods Sales; and General Retail & Hire
Design:	Mechanical plant and service infrastructure (HWC, A/C etc) and roof top plant must be screened or contained within the roof. No less than 40% glazing in the facade facing Clarence Street

Rev. Amendment Date

All dimensions in millimetres unless noted otherwise. Print in colour.

N

Project:
84-88 Clarence Street
Bellerive, TAS 7018

Drawing name:
Site Analysis Plan

Issue date: 21/07/2025

Project stage: Development App.

Drawing no:
25.011-DA02

Scale @ A3: 1:500

Revision: V1

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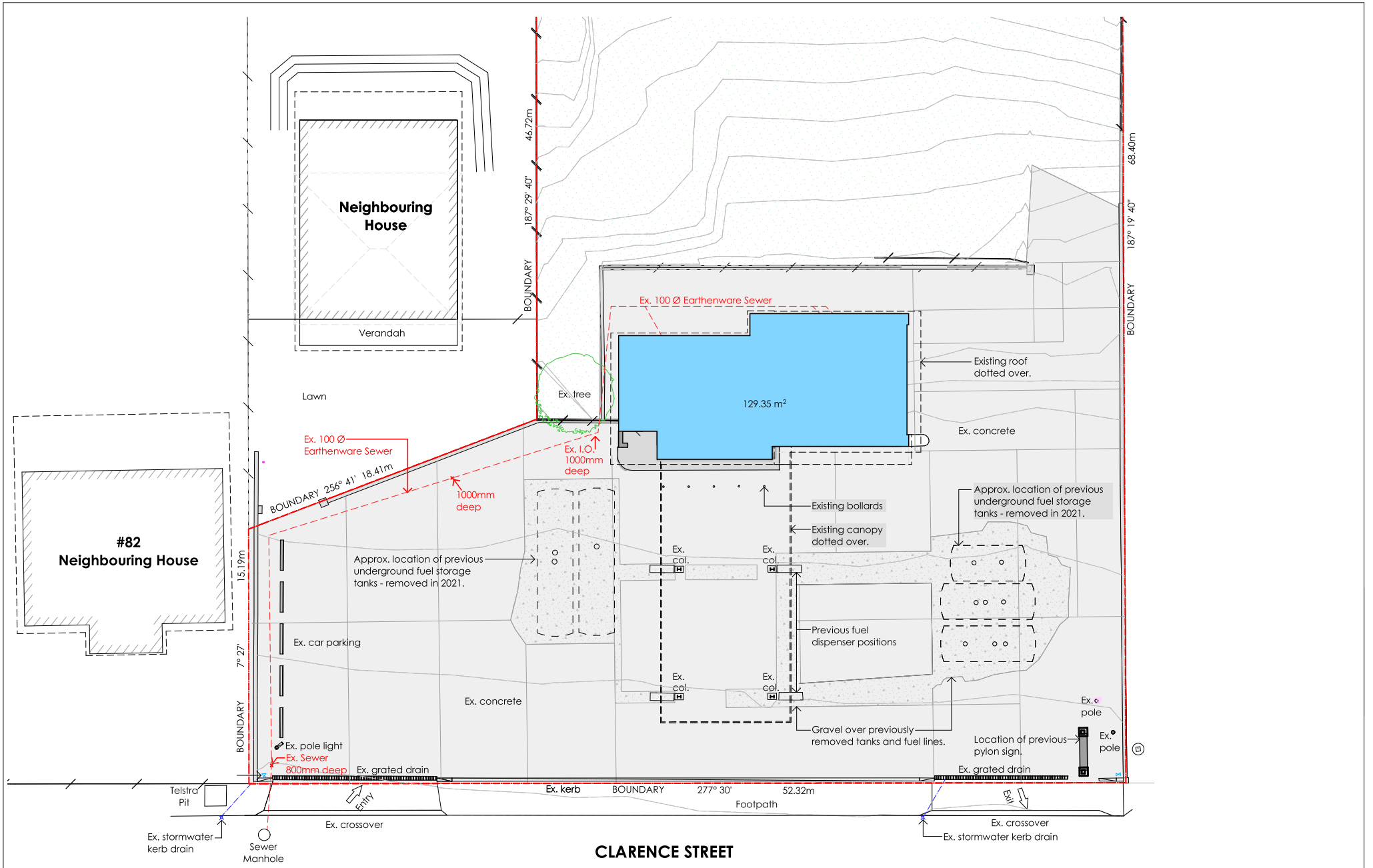

Rev.	Amendment	Date

All dimensions in millimetres unless noted otherwise. Print in colour.

N

Project:
84-88 Clarence Street
Bellerive, TAS 7018

Drawing name:
Existing Site Plan

Issue date:
21/07/2025

Project stage:
Development App.

Drawing no:
25.011 - DA03

Scale @ A3:
1:200

Revision:

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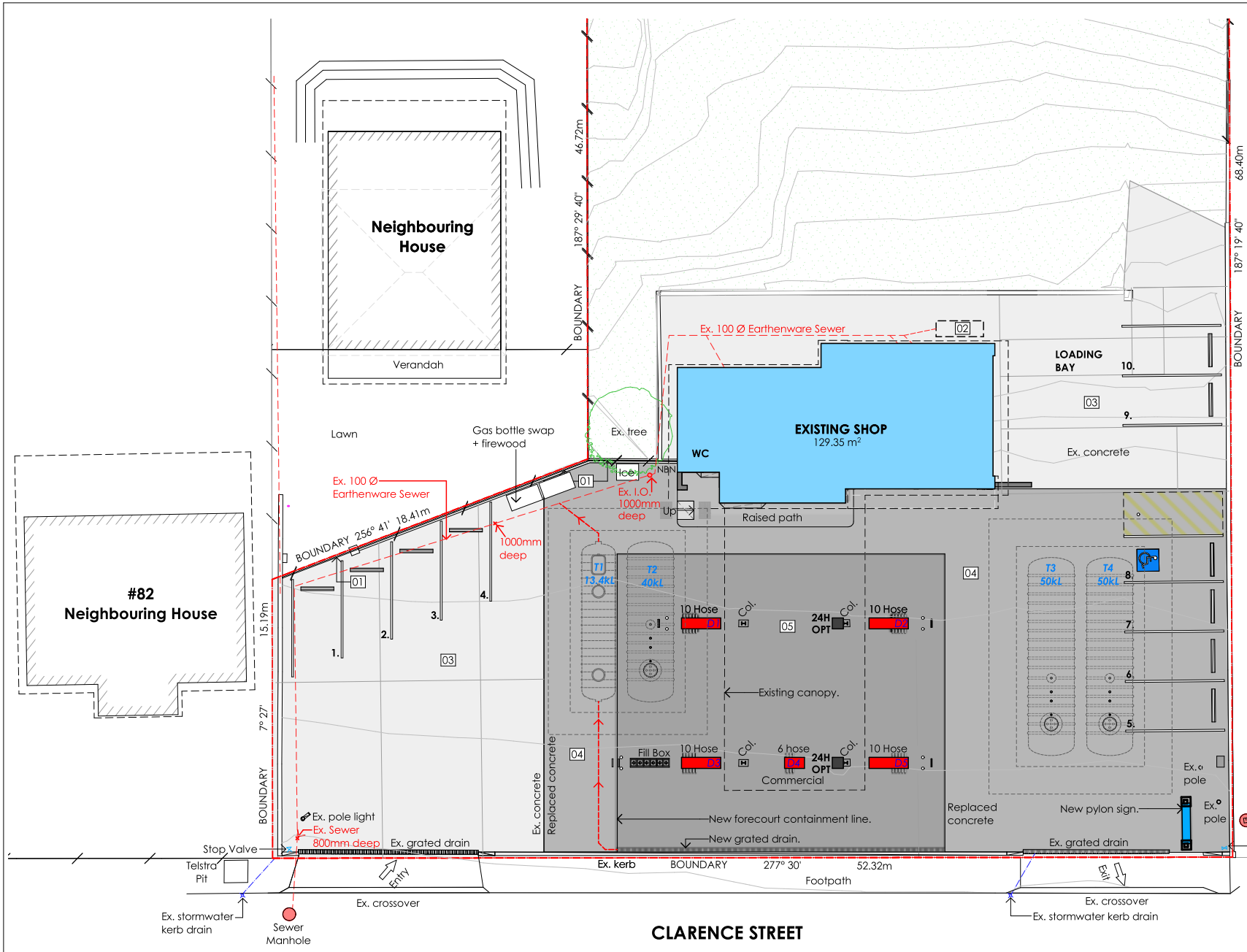
V1



PROJECT AREAS

Land area:	2715m²
Existing building:	129.4m²

LEGEND AND NOTES

Contour interval = 250mm

DISPENSER SCHEDULE:

D1, D2, D3, D5:
PEC Pinnacle 10 hose L series touch screen
ULP | Amplify 95 | Amplify 98 | DSL | Premium DSL

D4:
PEC Pulse CSQ Series CX6B
AdBlue | Premium DSL | DSL
With 2 x high masts, connected to AdBlue & DSL hoses only. Masts set into concrete.

UNDERGROUND TANK SCHEDULE:
Double wall fibreglass

T1.	**13,400L working capacity**	
	Atlan Spillceptor SPI.040.8.C1.2C.	
T2.	**40,000L capacity**	
	DSL	40kL
T3.	**50,000 capacity**	
	ULP91	35kL
	ULP95	15kL
T4.	**50,000L capacity**	
	AdBlue	5kL
	ADSL	30kL
	ULP98	15kL

GENERAL NOTES:

01. Make good existing brick fence. New colorbond fence to top to max. 2300H. from ground level.

02. 2000L underground Hudson Civil Products Grease Trap, ST-1-3000 AS 3500 compliant. 2580 x 860 x 2710H.

03. High pressure clean existing concrete forecourt. Make good as required. Weed kill & remove vegetation in control joints etc.

04. New concrete slab to replace existing concrete.

05. Refuelling forecourt containment area in black concrete and draining to new grated drain.

Rev.	Amendment	Date

All dimensions in millimetres unless noted otherwise. Print in colour.

N

Project:
84-88 Clarence Street
Bellerive, TAS 7018

Drawing name:
Site Plan

Issue date:
21/07/2025

Project stage:
Development App.

Drawing no:
25.011 - DA04

Scale @ A3:
1:250, 1:200

Revision:

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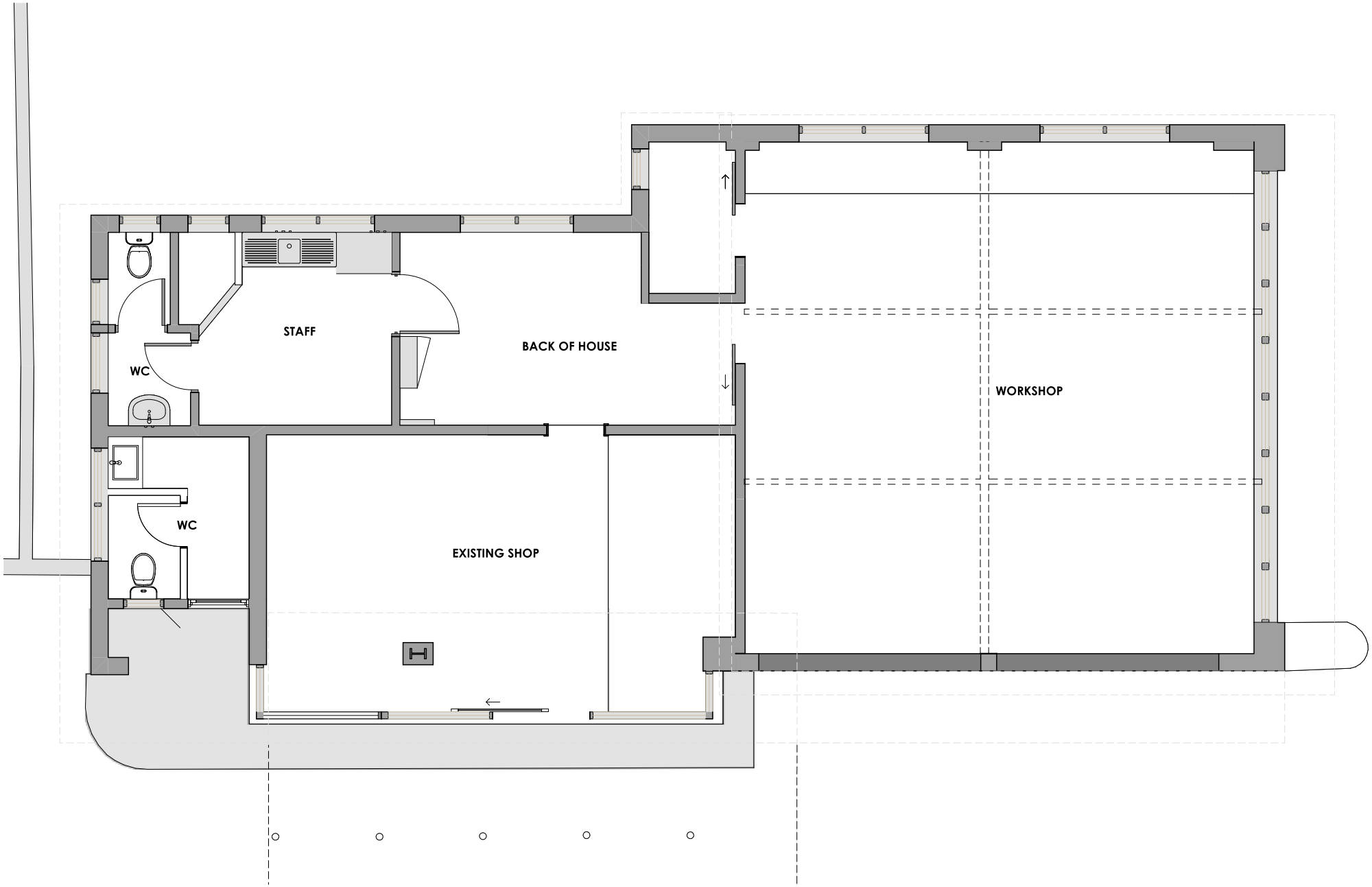

Rev.	Amendment	Date

All dimensions in millimetres unless noted otherwise. Print in colour.

N

Project:
84-88 Clarence Street
Bellerive, TAS 7018

Drawing name:
Existing Floor Plan

Issue date:
21/07/2025

Project stage:
Development App.

Drawing no:
25.011 - DA05

Scale @ A3:
1:50

Revision:

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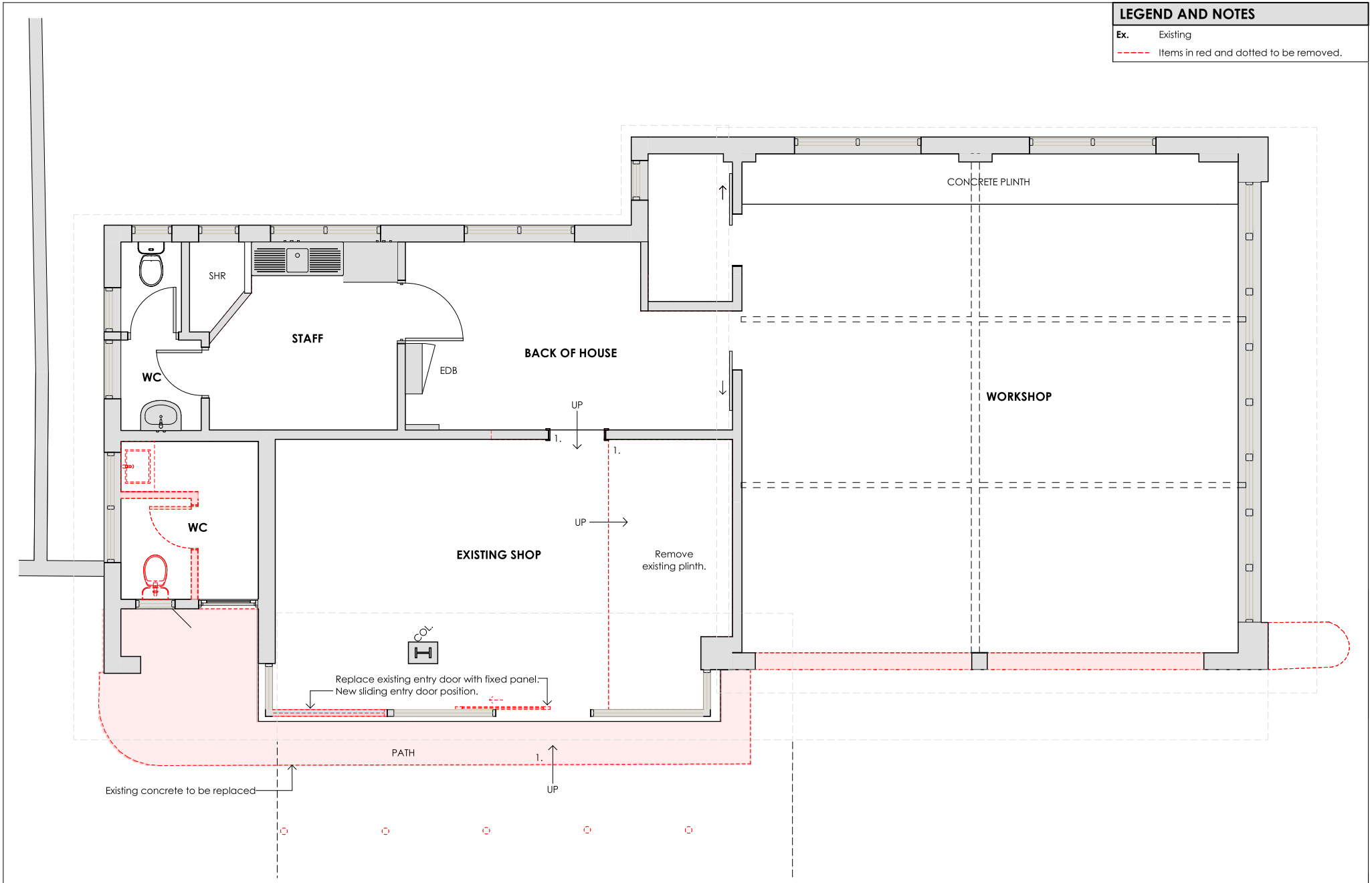

Rev. Amendment Date

All dimensions in millimetres unless noted otherwise. Print in colour.

N

Project:
84-88 Clarence Street
Bellerive, TAS 7018

Drawing name:
Demolition Plan

Issue date: 21/07/2025

Project stage: Development App.

Drawing no:
25.011 - DA06

Scale @ A3: 1:50

Revision:

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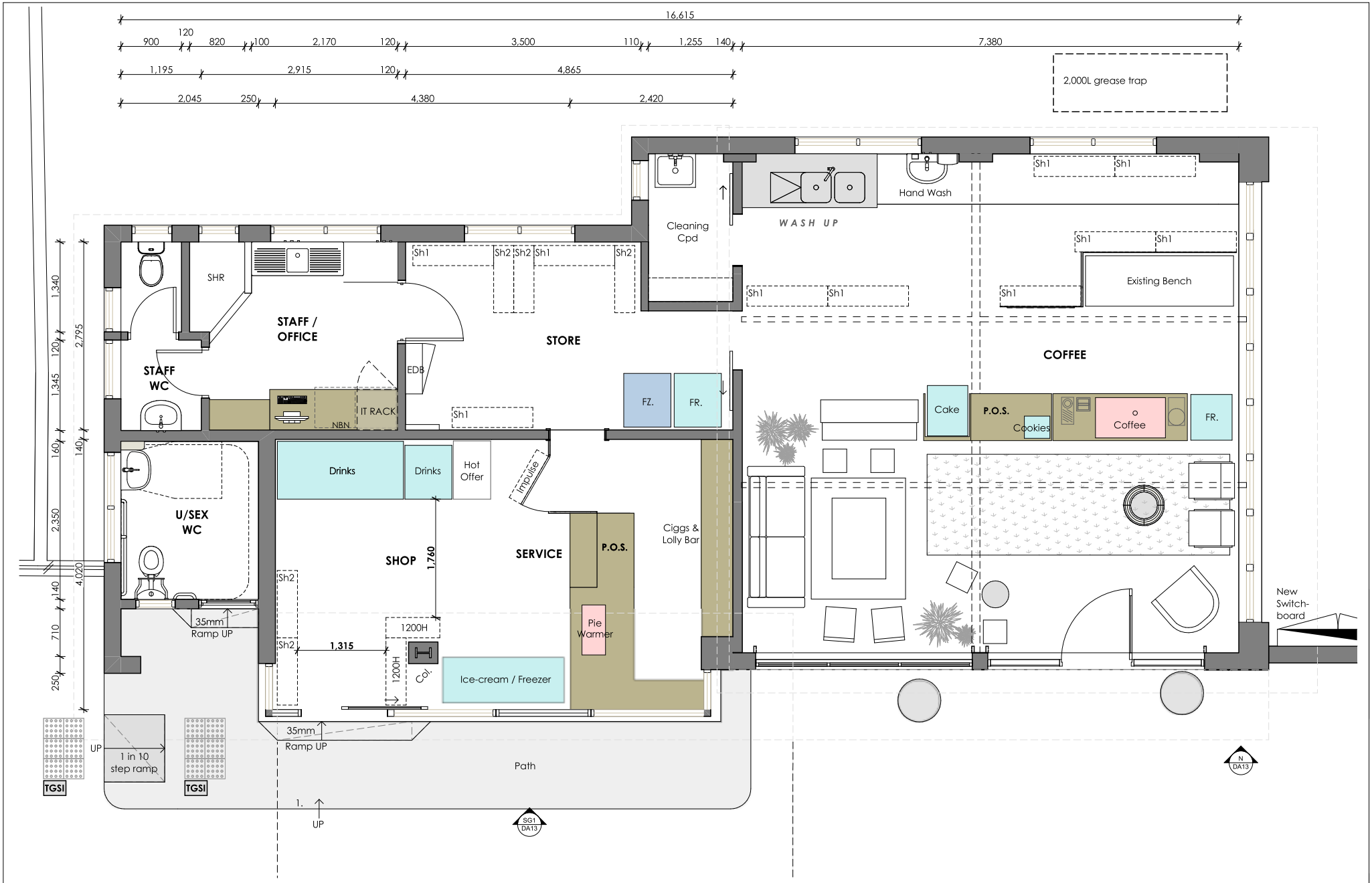

Rev. Amendment Date

All dimensions in millimetres unless noted otherwise. Print in colour.

Project:
84-88 Clarence Street
Bellerive, TAS 7018

Drawing name:
Proposed Floor Plan

Issue date: 21/07/2025

Project stage: Development App.

Drawing no:
25.011 - DA07

Scale @ A3: 1:50

Revision:

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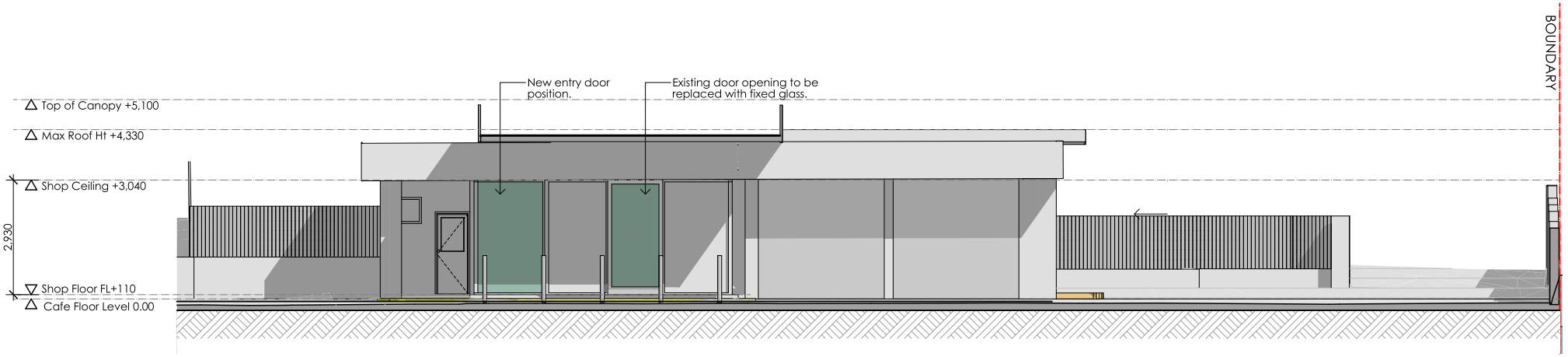

South Elevation - Existing

Scale1:100

South Elevation - Proposed

Scale1:100

Rev. Amendment Date

All dimensions in millimetres unless noted otherwise. Print in colour.

Project:
84-88 Clarence Street
Bellerive, TAS 7018

Drawing name:
Elevations 01

Issue date:
21/07/2025

Project stage:
Development App.

Drawing no:
25.011 - DA08

Scale @ A3:
1:100

Revision:

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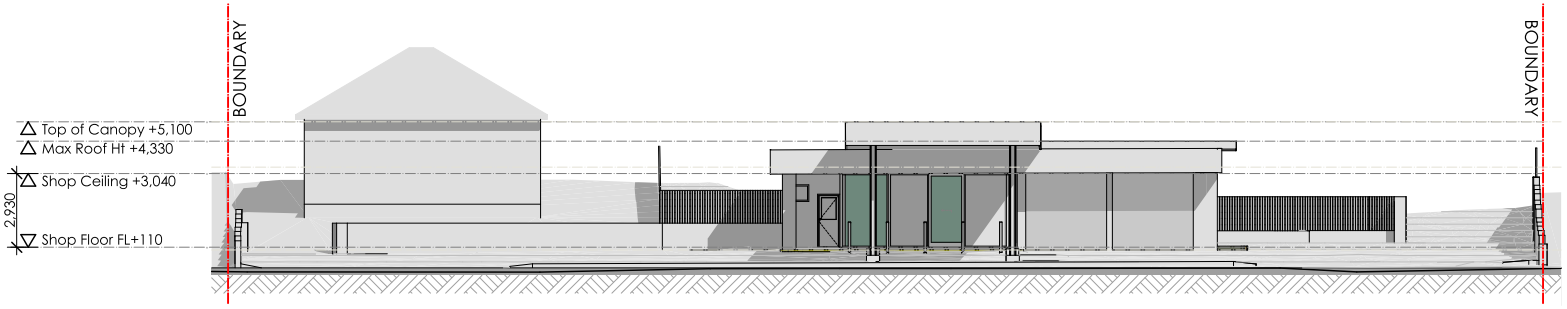
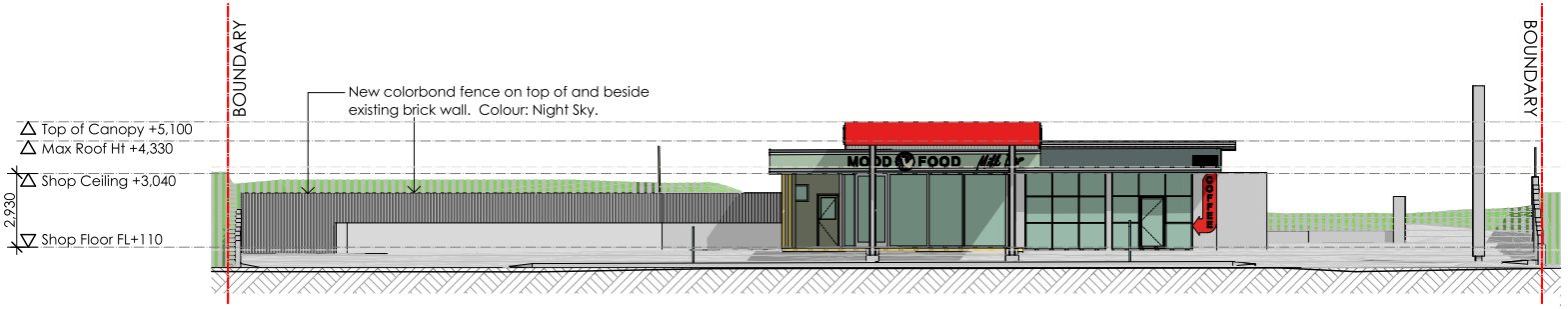


South Street Elevation - Existing

Scale1:200



South Street Elevation - Proposed

Scale1:200

Rev. Amendment Date

All dimensions in millimetres unless noted otherwise. Print in colour.

Project:
84-88 Clarence Street
Bellerive, TAS 7018

Drawing name:
Elevations 02

Issue date:
21/07/2025

Project stage:
Development App.

Drawing no:
25.011 - DA09

Scale @ A3:
1:200

Revision:

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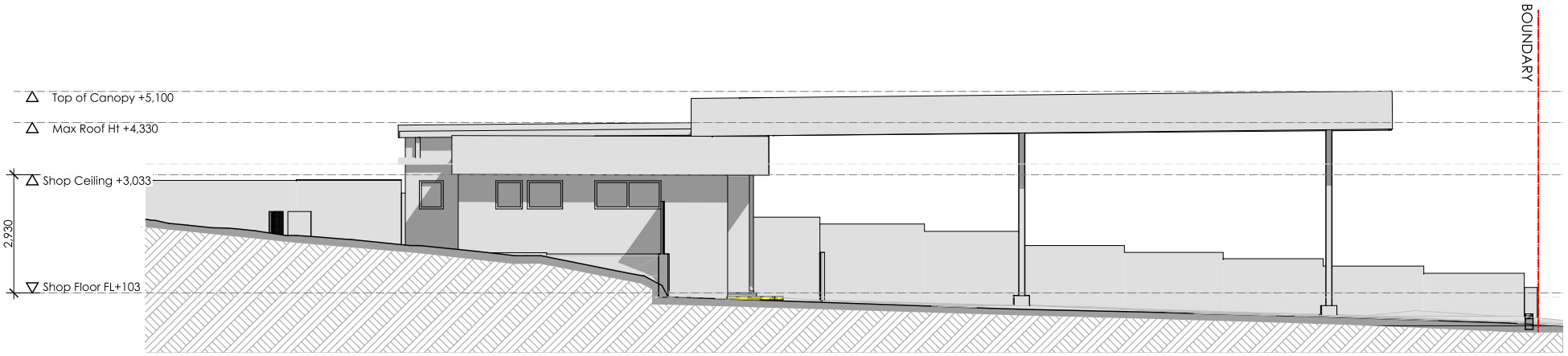
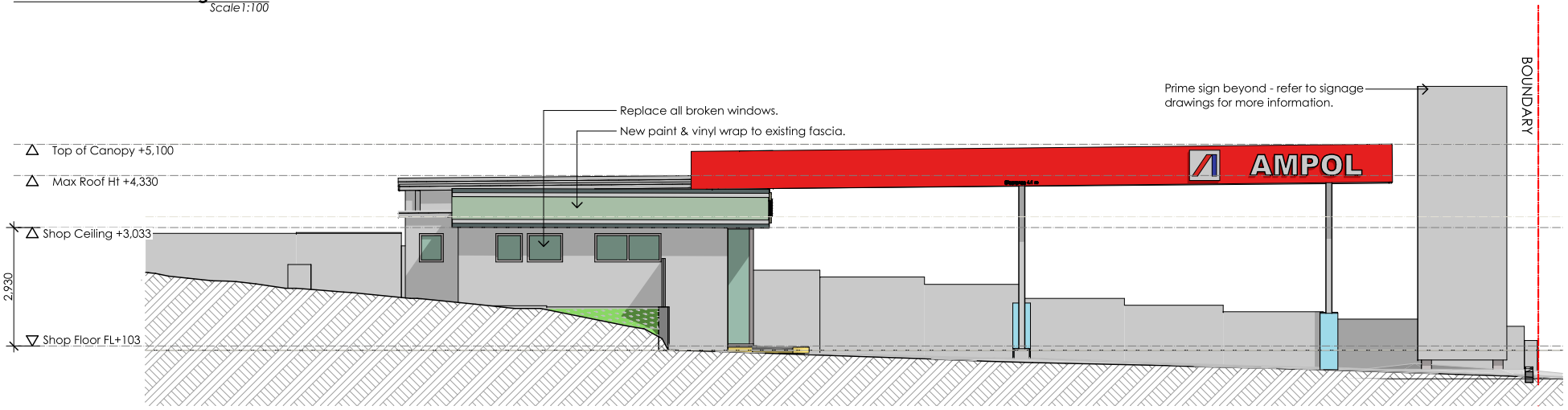


West Elevation - Existing

Scale1:100



West Elevation - Proposed

Scale1:100

Rev.	Amendment	Date

All dimensions in millimetres unless noted otherwise. Print in colour.

Project:
84-88 Clarence Street
Bellerive, TAS 7018

Drawing name:
Elevations 03

Drawing no:
25.011-DA10

Issue date:
21/07/2025

Project stage:
Development App.

Scale @ A3:
1:100

Revision:

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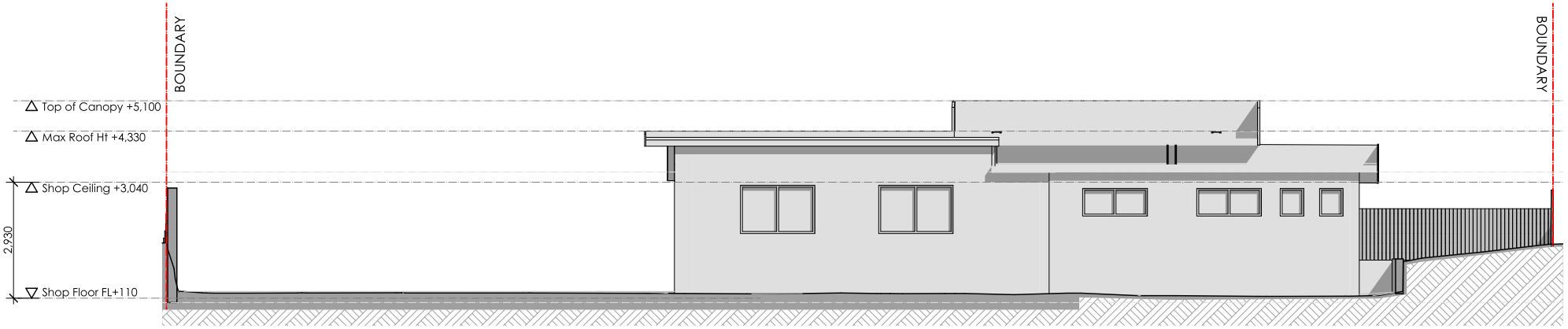
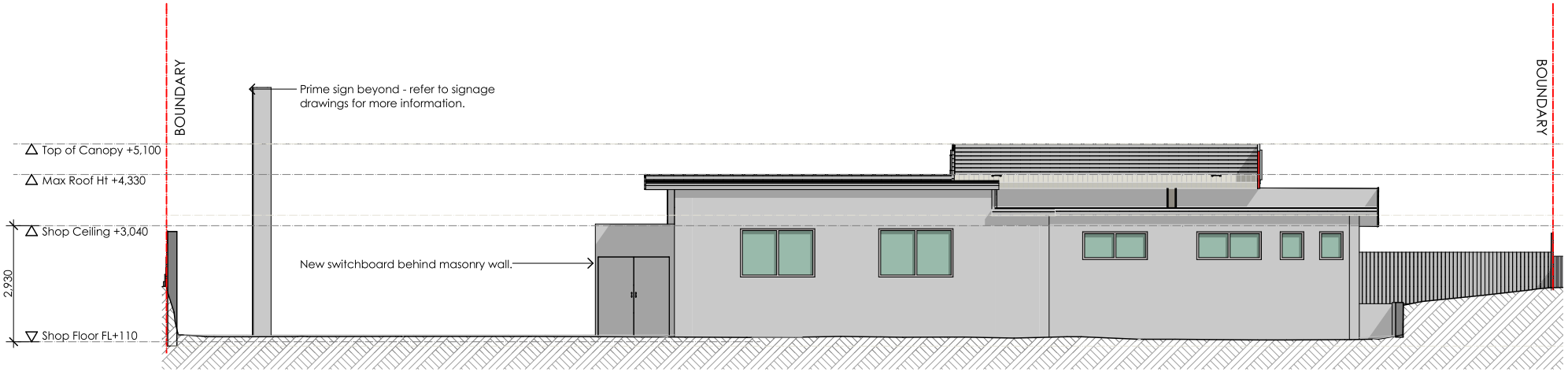


North Elevation - Existing

Scale1:100



North Elevation - Proposed

Scale1:100

Rev.	Amendment	Date

All dimensions in millimetres unless noted otherwise. Print in colour.

Project:
84-88 Clarence Street
Bellerive, TAS 7018

Drawing name:
Elevations 04

Issue date:
21/07/2025

Project stage:
Development App.

Drawing no:
25.011-DA11

Scale @ A3:
1:100

Revision:

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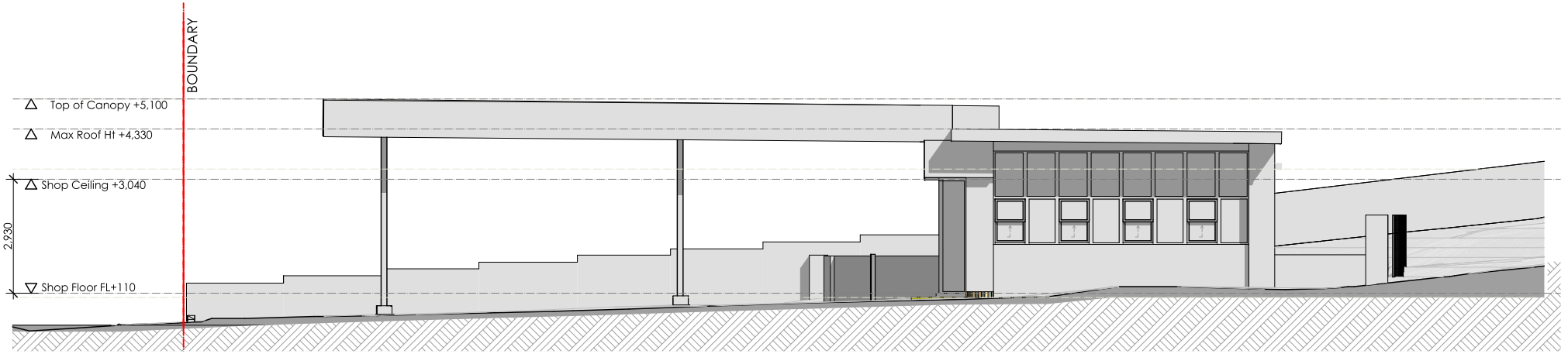
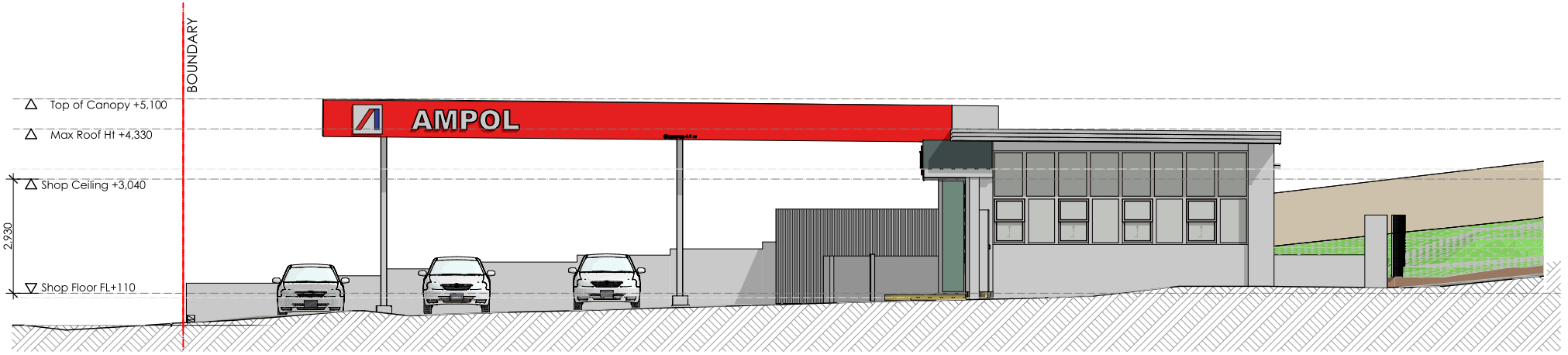
V1



East Elevation - Existing

Scale1:100



East Elevation - Proposed

Scale1:100

Rev.	Amendment	Date

All dimensions in millimetres unless noted otherwise. Print in colour.

Project:
84-88 Clarence Street
Bellerive, TAS 7018

Drawing name:
Elevations 05

Issue date:
21/07/2025

Project stage:
Development App.

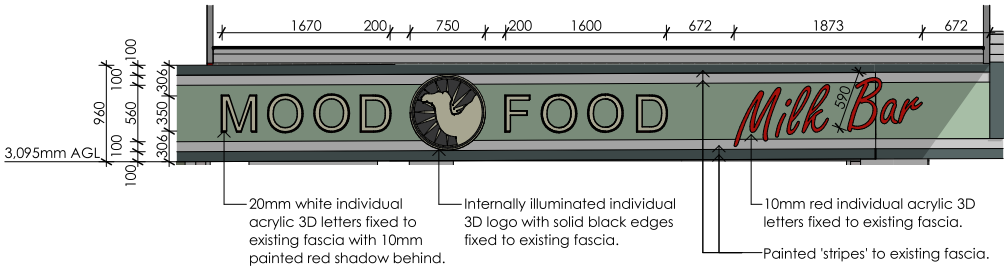
Drawing no:
25.011-DA12

Scale @ A3:
1:100

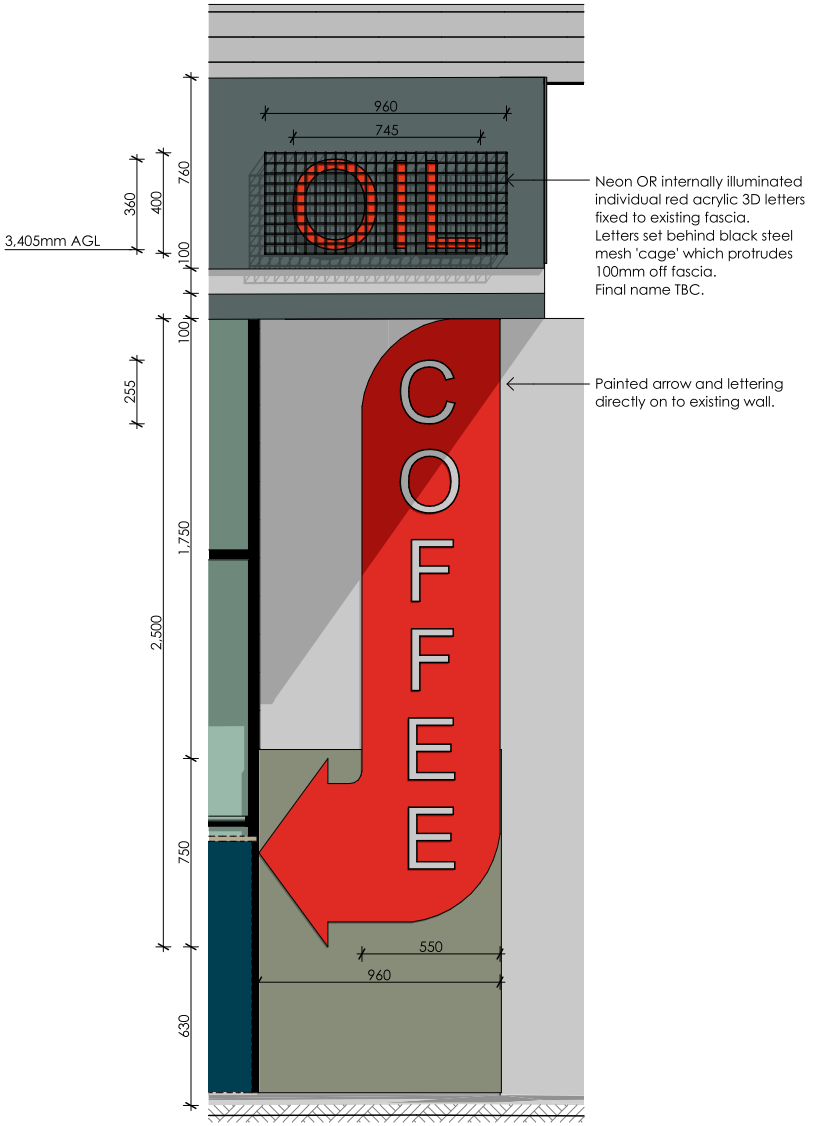
Revision:

POTTER PROJECTS
0408 303 034
admin@potterprojects.com
3A/12 Maxwells Road
Cambridge Tasmania 7170

V1



Mood Food Fascia Sign
Scale1:50



Coffee Signage
Scale1:20

Rev. Amendment Date

All dimensions in millimetres unless noted otherwise. Print in colour.

Project:
84-88 Clarence Street
Bellerive, TAS 7018

Drawing name:
Signage 01

Issue date:
21/07/2025

Project stage:
Development App.

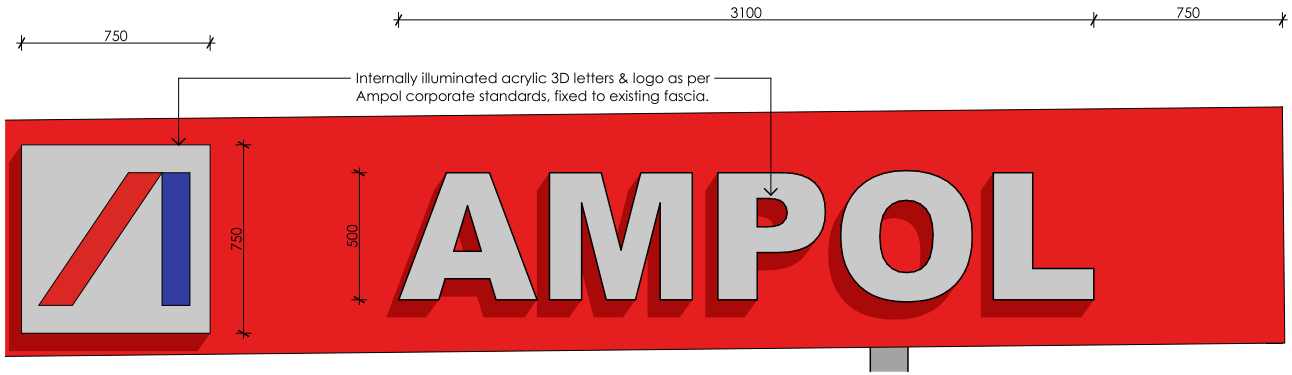
Drawing no:
25.011-DA13

Scale @ A3:
1:50, 1:20

Revision:

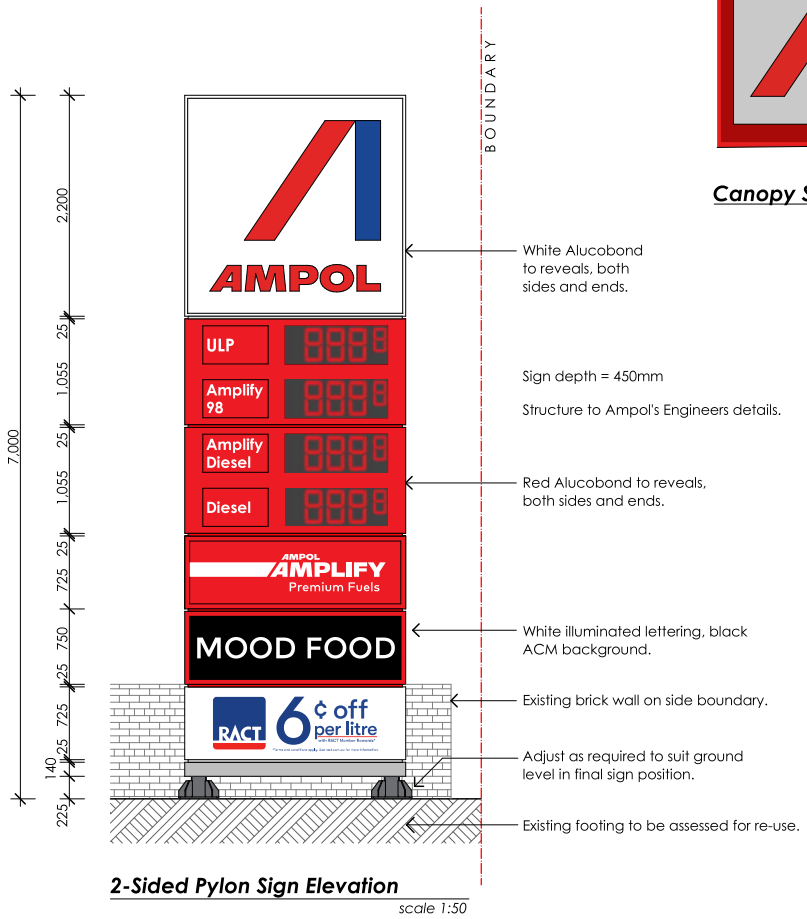
POTTER PROJECTS
0408 303 034
admin@potterprojects.com
3A/12 Maxwells Road
Cambridge Tasmania 7170

V1



Canopy Signage (x 2)

Scale1:20



2-Sided Pylon Sign Elevation

scale 1:50

Rev. Amendment Date

All dimensions in millimetres unless noted otherwise. Print in colour.

Project:
84-88 Clarence Street
Bellerive, TAS 7018

Drawing name:
Signage 02

Issue date:
21/07/2025

Project stage:
Development App.

Drawing no:
25.011-DA14

Scale @ A3:
1:50, 1:20

Revision:

POTTER PROJECTS
0408 303 034
admin@potterprojects.com
3A/12 Maxwells Road
Cambridge Tasmania 7170

V1

- BOUNDARY PRELIMINARY
- BANK TOP
- BANK BOTTOM
- BREAKLINE
- DRAIN
- GRATED PIT
- STORMWATER MANHOLE
- KERB BACK
- CONCRETE SLAB
- ROAD SIGN
- HOUSE
- BUILDING
- VERANDAH
- PIER
- STRUCTURE UNCLASSIFIED
- TEST HOLE
- WALL
- RET WALL
- WINDOW
- RIDGE LINES
- UNDERSIDE OF EAVES
- GUTTER LIP
- CABLE HYDRO OVERHEAD
- TELSTRA PIT
- MANHOLE UNSPECIFIED
- FENCE

- PERM SURVEY MARK
- CONTROL TRAVERSE
- NAIL
- NATURAL SURFACE
- STORMWATER KERB DRAIN
- FINISHED FLOOR LEVEL
- POLE WITH LIGHT
- PYLON
- TELSTRA PIT
- SEWER MANHOLE
- STOP VALVE
- FIRE PLUG
- METER WATER
- MANHOLE UNSPECIFIED

NOTES:

While all reasonable effort has been made to locate all visible above ground services, there may be other services which were not located during the field survey.

The title boundaries as shown on this plan were not marked at the time of the survey and have been determined by existing title dimensions and occupation (where available) only and not by field survey, and as a result are considered approximate only. This plan should not be used for building to boundary, or to prescribed set-backs, without further survey.

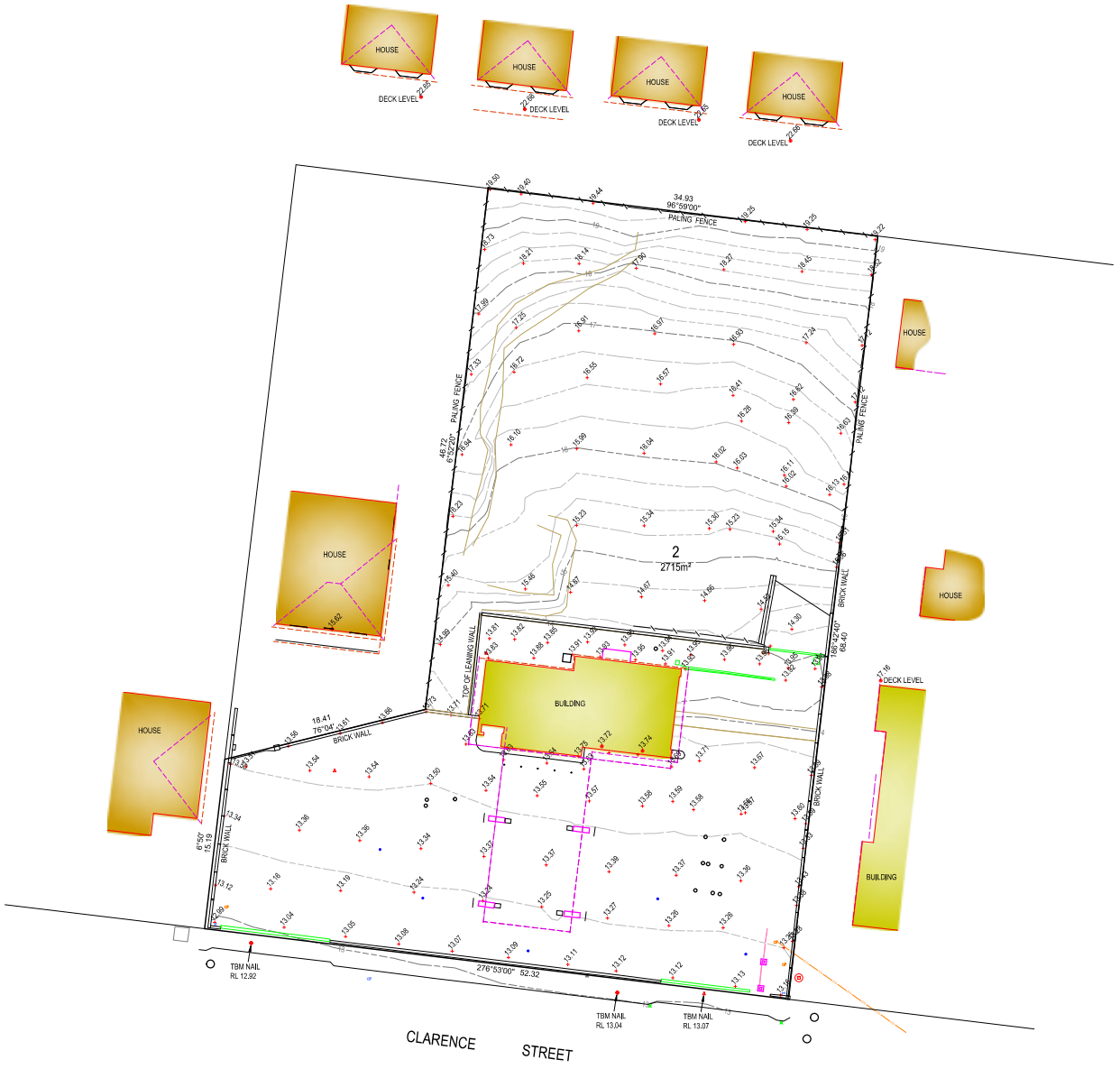
Prior to any demolition, excavation, final design or construction on this site, a full site inspection should be completed by the relevant engineers.

All survey data is 3D. The level (z-value) of any specific feature can be interrogated with a suitable CAD package. Spot heights of all features, including pipe inverts, are included in the model space but are not displayed on the PDF. Spot heights are organised into appropriate layers, and can be displayed as required.

DATUM - Vertical : AHD per SPM8663 with reputed AHD level of 13.81

At the time of this survey, C.T.135621/2 was owned by
CALTEX PETROLEUM PTY LTD

Date of Survey : 27-10-2020



AMENDMENTS		
No.	Revision/Issue	Date

LEARYCOX&CRIPPS
LAND & ENGINEERING SURVEYORS

Unit G04 40 Molle Street,
HOBART TAS 7000
P 03 6118 2030
E admin@lccsurvey.com

Project Name and Address
EASTERN STAR SERVICE STATION
84-88 CLARENCE ST
BELLERIVE
TAS 7018

Drawing Title
DETAIL PLAN

Client
POTTER PROJECTS

SCALE
1:200 @ A1

Contour Interval
0.25 m

Date
28-10-2020

SHEET 1 of 1

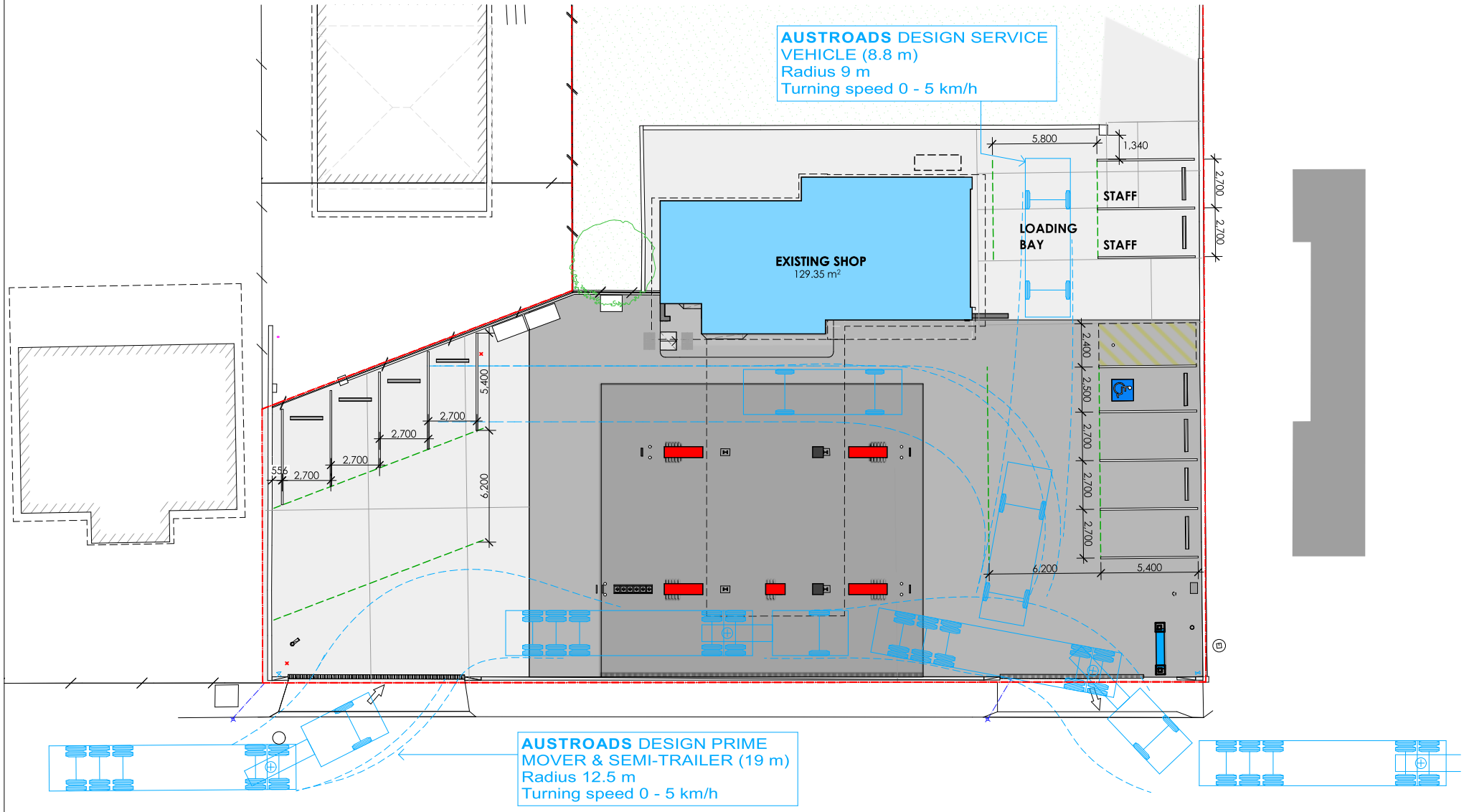
DRAWN MC

CHK'D TC

FILE REF:
DA15

Geocivil Ref 1178301
AutoCAD Ref 1178301

DATUM Horz: GDA2020
Vert: AHD83



Rev.	Amendment	Date

All dimensions in millimetres unless noted otherwise. Print in colour.

N

Project:
84-88 Clarence Street
Bellerive, TAS 7018

Drawing name:
Vehicle & Parking Plan

Issue date:
21/07/2025

Project stage:
Development App.

Drawing no:
25.011-DA16

Scale @ A3:
1:200

Revision:

POTTER PROJECTS
0408 303 034
admin@potterprojects.com
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Cambridge Tasmania 7170

V1

POTTER PROJECTS
BUILDING DESIGN

0408 303 034
admin@potterprojects.com
3a/12 Maxwells Road
Cambridge TAS 7170
potterprojects.com

Our Ref: 25.011

21 July 2025

City of Clarence
38 Bligh Street
ROSNY PARK TAS 7018

Delivered by email: cityplanning@ccc.tas.gov.au

Dear Sir/Madam,

84-88 Clarence Street, Bellerive

Please find below further information in support of our development application for the above-mentioned property.

Design and Siting of Signs

The proposed freestanding pylon sign is located within a Local Business Zone, which is a permissible location under Table C1.6. Such signage is common and expected within commercial and service station contexts, especially along major thoroughfares like Clarence Street.

At 7 m in height, the sign matches the dimensions of a previously approved sign for the site (granted in 1991). The scale and presentation are consistent with similar commercial signage in the area and will not appear excessive or out of character in its setting.

As the sign is freestanding (not attached to a building), it has been proportioned to complement the scale of the fuel canopy and the site's frontage. It will not adversely affect the amenity of nearby properties, given it replicates the dimensions of the former approved signage and is located in a strip of Local Business zoned land with comparable signage along the street.

The sign will not emit excessive light or use flashing elements and has been designed with a clean, professional appearance appropriate to its commercial context.

The sign will only display essential information – business name, fuel prices, and any legally required content – with no repetitive or excessive messaging. Its purpose is to consolidate key information into a single structure, avoiding visual clutter and minimising the need for additional signs across the site.

It will be sited to ensure clear sightlines at ingress/egress points and will not impede pedestrian movement or visibility at footpath level.

Hours of Operation

The proposed hours of operation match those previously approved:

6am – 10pm	Monday to Saturday
7am – 9pm	Sunday and Public Holidays

Commercial vehicle movements:

7am – 9pm	Monday to Saturday
8am – 9pm	Sunday and Public Holidays

In relation to noise, lighting and other emissions:

- The site proposes the use of dispensers rather than traditional fuel pumps. These systems are virtually silent, as the pump mechanisms are housed within the underground tanks.
- Canopy lighting would remain operational overnight for safety and security – as it has in the past - a practice consistent with industry standards on fuel stations for security.
- Given the presence of existing street lighting and vehicle headlights, the canopy lighting is unlikely to detract from residential amenity. In fact, improved lighting may help deter vandalism and graffiti, which have been ongoing concerns in the local area.

External Lighting

Lighting levels and fixture types are consistent with those used during the site's previous operation. Continuous canopy lighting is preferred over motion-activated systems, providing predictable amenity outcomes and deterring anti-social behaviour.

The nearest habitable room window is approximately 15 m from the canopy lighting, with the next closest about 20 m away. Both are located on a neighbouring property to the west. Given existing lighting conditions from streetlights and vehicles, and the presence of internal window treatments, any light spill is expected to result in negligible additional impact.

Potentially Contaminated Land Code

The site is a former service station that was decommissioned in 2021, with all underground tanks, pipework, and fuel dispensers removed. At that time, a comprehensive environmental site assessment was undertaken by GHD, confirming the site is suitable for ongoing commercial use.

Relevant pages from this report have been included in the application. Additionally, the site is not listed as an EPA-regulated premises.

Parking and Sustainable Transport Code

The existing layout provides safe, convenient pedestrian access and satisfies Performance Criteria P1. The site has operated historically as a service station with a similar layout, and the proposed changes are minor. Regular users are familiar with the arrangement, and no additional safety risks are introduced.

Pedestrian access is available from the Clarence Street footpath and multiple entry points, with parking located on both sides of the site. This results in short, visible, and well-circulated pedestrian paths.

The layout is typical of service station sites across Tasmania, where formalised pedestrian paths are uncommon. The addition of painted pedestrian lines would offer limited practical benefit and may introduce unnecessary visual clutter.

The existing site configuration is retained with only minor changes. Commercial vehicle access and movement has historically occurred without issue, and turning paths confirm the layout remains functional for ongoing servicing requirements.

If you require any further information or clarification, please do not hesitate to contact us.

Yours sincerely,

Michael Potter
Potter Projects

500mm Distance

2 Metre Distance

5 Metre Distance

10 Metre Distance of entire site

Page 1 - 35
(of 527 pages)

2023 Report

Ampol Eastern Star (66117)

Validation Report

AMPOL

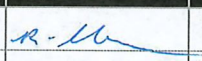
17 May 2022

→ The Power of Commitment

Remediation and Contracting Services Pty Ltd | ABN 90 607 270 940
180 Lonsdale Street, Level 9
Melbourne, Victoria 3000, Australia
T +61 3 8687 8000 | **F** +61 3 8732 7046 | **E** melmail@ghd.com | **ghd.com**

Printed date	17 May 2022
Last saved date	17 May 2022
File name	https://projectsportal.ghd.com/sites/pp12_02/ampolbellerivedemoli/ProjectDocs/12551956_RPT_Ampol Bellerive_Validation Report.docx
Author	Jordan Forster
Project manager	Joshua Scandrett
Client name	AMPOL
Project name	AMPOL - Bellerive (66117)
Document title	Ampol Eastern Star (66117) | Validation Report
Revision version	Rev 0
Project number	12551956

Document status

Status Code	Revision	Author	Reviewer		Approved for issue		
			Name	Signature	Name	Signature	Date
S4	Final 0	J Forster	J Scandrett		R Madsen		17/05/2022

Executive summary

GHD Pty Ltd (GHD) was commissioned by Ampol Australia Petroleum Pty Ltd (Ampol) to complete the decommissioning, remediation, and validation of the underground petroleum storage system (UPSS) at the former 'Caltex Eastern Star' service station located at 86 Clarence Street, Bellerive (herein referred to as 'the site'). The site locality and site layout are shown on Figure 1, within Appendix A.

This report is subject to, and must be read in conjunction with, the limitations set out in Section 12 and the assumptions and qualifications contained throughout the Report.

The objective of this work was to decommission all petroleum related storage and distribution infrastructure at the site, remediate any related hydrocarbon impacts that may present a risk to the proposed future use of the site as a service station.

In order to meet the stated objective, the decommissioning works included the following scope of works at the site:

- Completion of a pre-remediation groundwater monitoring event (GME) at the site
- Prepare relevant safety documentation and environmental planning documentation prior to commencement of site works
- Decommissioning and removal of all petroleum related infrastructure including the underground petroleum storage system (UPSS) in the forecourt, consisting of five underground storage tanks (USTs), the bowsers and the fuel and vent lines. A waste oil UST in the north of the site also required decommissioning and removal.
- Soil validation sampling of all excavations following removal of the UPSS and impacted shallow fill soils associated with the petroleum related infrastructure
- Characterisation of excavated soils for onsite re-use or offsite disposal and removal of soil characterised for disposal, as well as inert wastes (i.e. concrete and steel)
- Backfilling of excavations with material deemed appropriate for re-use or imported clean material
- Restoration of the site
- Completion of a post-remediation groundwater monitoring event
- Preparation of this validation report

Based on this completion of this scope of works, the following conclusions have been made:

- The demolition and decommissioning works successfully removed all known petroleum related infrastructure at the site including six USTs, associated fuel lines, and four fuel bowsers.
- Soil validation results indicated that hydrocarbon impacts associated with the petroleum related infrastructure had been excavated and validated, with all soil validation results below the adopted validation criteria, with the exception of three samples that exceeded NEPM Management Limit criteria. The Management Limit exceedances are localised to a small area under former fuel lines, and are unlikely to be indicative of gross impact that would preclude the ongoing non sensitive use of the site as a service station. All results were less than the CRC Care (2011) Soil Health Screening Levels for Direct Contact for commercial / Industrial and Intrusive Maintenance Workers. Any potential impacts to commercial / industrial workers eg odours should be managed through standard OH&S procedures (e.g. JSEA, PPE etc) if intrusive maintenance or construction works are performed in this area of the site.
- Dissolved phase hydrocarbon concentrations in the pre-remediation and post-restoration groundwater monitoring events were all below adopted screening criteria. BTEXN analytes for all samples were reported below the laboratory LOR. F2 and F3 fraction TRH concentrations above the LORs were reported at MW1, MW3 and MW4, however the low level residual dissolved phase contamination is unlikely to have migrated off site. The groundwater impacts pose a low risk to future occupants or any relevant off-site receptors under a non-sensitive commercial/industrial setting,

Based on the sampling and analysis completed for hydrocarbon related contaminants as part of these works, there were no indications or exceedances of the applied assessment criteria that would preclude the future use of the site as a service station or for non-sensitive (commercial / industrial) uses or impact any relevant off-site receptors.

Glossary table

Abbreviation	Description
ACM	Asbestos Containing Material
ALS	Australian Laboratory Services
AST	Above-ground Storage Tank
BTEXN	Benzene, Toluene, Ethylbenzene, Xylenes and Naphthalene
COC	Chain of Custody
COPC	Contaminants of Potential Concern
CRC CARE	Cooperative Research Centre for Contamination Assessment and Remediation of the Environment
CSM	Conceptual site model
DBYD	Dial Before You Dig
DQO	Data Quality Objective
EIL	Ecological Investigation Level
EPA	Environment Protection Authority
EPS	Enviropacific Services
ERS	Environment Reference Standard
ESL	Ecological Screening Level
GPR	Ground penetrating radar
HIL	Health Investigation Level
HSL	Health Screening Level
JSEA	Job Safety Environmental Analysis
LEL	Lower Explosive Limit
LNAPL	Light non-aqueous phase liquid
LOR	Limit of reporting
m bgl	Metres below ground level
NATA	National Association of Testing Authorities
NDCR	Non-descript Crushed Rock
NEPC	National Environment Protection Council
NEPM	National Environment Protection Measure
PAH	Polycyclic aromatic hydrocarbon
PID	Photo-ionisation detector
QA / QC	Quality assurance/ quality control
RPD	Relative Percent Difference
SWMS	Safe Work Method Statements
TRH	Total recoverable hydrocarbons
UPSS	Underground Petroleum Storage System
UST	Underground storage tank
VOC	Volatile organic compound

Contents

Table index

Appendices

1. Introduction

1.1 Background

GHD Pty Ltd (GHD) was commissioned by Ampol Australia Petroleum Pty Ltd (Ampol) to complete the decommissioning, remediation, and validation of the underground petroleum storage system (UPSS) at the former 'Caltex Eastern Star' service station located at 86 Clarence Street, Bellerive (herein referred to as 'the site'). The site locality and site layout are shown on Figure 1, within Appendix A.

The site is a former service station which ceased operation in May 2020. Ampol intends to divest the site and GHD was commissioned by Ampol to decommission the UPSS, excavate any associated hydrocarbon impacted soil that may present a risk to future site users, validate the excavation in accordance with EPA Tasmania guidelines, and prepare this validation report outlining the results of works undertaken.

A temporary decommissioning UPSS "Ceasing of use" form was submitted to TAS EPA by Ampol on 29 April 2021 (refer Appendix C).

1.2 Purpose

The purpose of this document is to assist Ampol in meeting their statutory obligations under the EPA Tasmania Environmental Management and Pollution Control Act 1994 (EMPCA), specifically the decommissioning requirements specified in the Environmental Management and Pollution Control (Underground Petroleum Storage Systems) Regulations 2020.

1.3 Objectives

The objective of this work was to decommission all petroleum related storage and distribution infrastructure at the site, remediate any related hydrocarbon impacts that may present a risk to the proposed future use of the site as a service station, as far as reasonably practicable, validate all excavations in compliance with the requirements of the following guidelines and legislation:

- Environmental Management and Pollution Control (Underground Petroleum Storage Systems) Regulations 2020
- EPA Tasmania – Technical Guideline – Underground Petroleum Storage Systems: Decommissioning Assessment Sampling and Risk Assessment Requirements
- EPA Tasmania – Technical Guideline – Underground Petroleum Storage Systems: Decommissioning Assessment Report Requirements
- State Policy on Water Quality Management 1997
- EPA Tasmania – Information Bulletin No 105 – Classification and Management of Contaminated Soil for Disposal – Version 3, 2018
- Tasmanian Interim Planning Scheme – E2.0 Potentially Contaminated Land Code
- National Environment Protection (Assessment of Site Contamination) Measure 1999 as amended 2013

This validation report documents the scope of works undertaken to meet both the purpose and objectives.

1.4 Scope of work

In order to meet the stated objective, the decommissioning works included the following scope of works at the site:

- Completion of a pre-remediation groundwater monitoring event (GME) at the site
- Preparation of all relevant safety documentation and environmental planning documentation prior to commencement of site works

- Decommissioning and removal of all petroleum related infrastructure including the underground petroleum storage system (UPSS) in the forecourt, consisting of five underground storage tanks (USTs), the bowsers and the fuel and vent lines. A waste oil UST in the north of the site also required decommissioning and removal.
- Soil validation sampling of all excavations following removal of the UPSS and impacted shallow fill soils associated with the petroleum related infrastructure
- Characterisation of excavated soils for onsite re-use or offsite disposal and removal of soil characterised for disposal, as well as inert wastes (i.e. concrete and steel)
- Backfilling of excavations with material deemed appropriate for re-use or imported clean material
- Restoration of the site
- Completion of a post-remediation groundwater monitoring event
- Preparation of this validation report

2. Site setting

The site identification details are summarised in Table 1. The site layout and neighbouring properties are shown in Figure 1.

Table 1 Site identification details

Item	Description
Site name	Caltex Eastern Star Service Station
Site Ampol ID	66117
Street address	86 Clarence Street, Bellerive, TAS 7018
Title Reference	135621/2
Property Identification Number (PID)	2042052
Current land use	Disused service station
Current zoning	Tasmanian Interim Planning scheme classifies the site as "Local Business"
Landowner	Ampol Australia Petroleum Pty Ltd
UPSS Infrastructure Owner	Ampol Australia Petroleum Pty Ltd

2.1 Site description

The site was comprised of a former service station located on the southern portion of the site and a vacant lot used for car parking located on the northern portion. On-site structures present on the southern portion of the site at the commencement of the remediation works included six underground storage tanks (USTs); one building containing a sales/retail shop, mechanics workshop and toilets; and a canopy. The four above ground bowsers had been removed from the site. The site has a moderate slope towards the south and is predominantly covered with concrete hardstand, with the exception of the grassed car parking present on the northern portion of the site.

Anecdotal information reported by AECOM (2013) indicated that in approximately 1997 a diesel UST was leaking on the eastern boundary of the site and was removed. The area was backfilled, and the concrete slab was reinstalled. There was no evidence of concrete reinstatement work or from GPR survey that supported this information and is instead likely to refer to the abandoned T5 UST.

A summary of the six USTs prior to the remediation works is provided in Table 2.

Table 2 Service station storage details

Tank ID	Type	Status (at start of project)	Product	Capacity (kL)
T1	UST	Not in use	Diesel	4.5
T2	UST	Not in use	Premium Unleaded petrol	27
T3	UST	Not in use	Unleaded petrol	18
T4	UST	Not in use	Unleaded petrol	27
T5	UST	Abandoned in-situ	Unleaded petrol	18
T6	UST	Not in use	Waste Oil	1.5

2.2 Surrounding land use

Details of surrounding land use are presented below in Table 3.

Table 3 Summary of surrounding land use

Direction	Description
North	Residential properties
East	Residential and small commercial/industrial premises
South	Clarence Street, beyond which are residential properties
West	Residential properties

2.3 Site environmental setting

A summary of the site setting is outlined in Table 4.

Table 4 Summary of environmental site setting

Item	Details
Topography	The site has a moderate slope towards the south. The regional terrain slopes south towards Derwent River. Surface water drains to the road frontages at the Clarence Street boundary of the site.
Hydrology	The nearest major water body is the Derwent River, located approximately 400 m to the south of the site. The site is concrete sealed. Surface water at the site is expected to run off into onsite drainage and then to the local stormwater drainage network.
Geology and Lithology	The Mineral Resources Tasmania (MRT) 1:25,000 scale Prospect geology map (2003) indicates that the site is underlain by Triassic period undifferentiated Upper Parmeener Supergroup Rocks consisting primarily of sandstone, siltstone and mudstone. Excavation logs indicated that there is a 0.7 – 1.0 m thick layer of sand FILL beneath the concrete hardstand on the site, below which is natural sandy clay (approximately 0.7 – 1.7 m bgl), followed by hard sandstone (1.7+ m bgl).
Hydrogeology	Based on GHD gauging data, groundwater hydraulic head is approximately 4.04 – 4.23 m bgl (9.104 – 9.236 mAHD), however AECOM (2013) found that groundwater is confined within the fractured bedrock and was not intercepted during drilling until 8-9 m bgl (refer section 2.4.2). In 2013 it was suggested (AECOM 2013) that sandstone at the site is representative of the regional fractured rock aquifer, and that the hill north of the site provided the pressure head to elevate groundwater levels once conductive fractures were intercepted. The inferred groundwater flow direction is south-easterly towards Derwent River.
Acid Sulphate Soils	A review of the Acid Sulfate Soils (ASS) database available through the Department of Primary Industries, Water, and Environment LIST map services, indicates that the site is not mapped as having ASS occurrence.

2.4 Previous environmental investigations

Following the initial groundwater well installation works completed by AECOM in February 2013 that reported soil and groundwater hydrocarbon concentrations exceeding the adopted human health and ecological criteria, EPA Tasmania was notified in accordance with Section 74B of the Environmental Management and Pollution Control Act.

A subsequent screening risk assessment was completed by Parsons Brinckerhoff in July 2013 to address EPA communication regarding contamination at the site, which indicated that there were no unacceptable health risks that preclude the site from use as a service station.

The references below outline the main investigations that have been conducted and reports that have been prepared to date.

- AECOM (2013) Groundwater Monitoring Well Installation Report. May 2013
- Parsons Brinckerhoff (2013) Screening Risk Assessment – 86 Clarence Street, Bellerive Tasmania. July 2013

2.4.1 Soil investigations

Five soil bores (later converted to monitoring wells) were drilled adjacent the on-site UPSS by AECOM in February 2013. No investigation was undertaken within other potential source areas at the site, such as the mechanics workshop or adjacent the waste oil UST (T6) in the northern part of the service station area of the site.

Benzene, total xylene and C6-C10 Fraction hydrocarbons (minus BTEX) were reported at concentrations exceeding the HSL D vapour intrusion criteria and below the HSL D direct contact criteria (for commercial / industrial and uses), at two soil bores located south of the canopy (BH3/MW3) and south of USTs T1, T3 & T5 (BH5/MW5).

A HSL extension model was used in the Screening Risk Assessment completed by Parsons Brinckerhoff (PB, 2013), to provide a scenario specific risk estimation for potential vapour migration from BH3 to the retail building. The results of the extension model suggested that hydrocarbon concentrations at BH3 were not likely to pose vapour intrusion risks to the on-site building.

The assessment also highlighted the absence of soil exceedances of the HSL for vapour intrusion under the intrusive maintenance work setting, and that based on this, the risk of vapour intrusion to intrusive maintenance workers from soil hydrocarbon contamination is low and acceptable. The assessment concluded that there were no unacceptable health risks that precluded the site from being used as a service station.

2.4.2 Groundwater investigations

A monitoring well network of five (5) wells was installed at the site by AECOM in February 2013 and was followed by a groundwater monitoring event (GME). The monitoring wells are all located adjacent or down gradient to the UPSS on site. No wells were located near UST T6. No groundwater monitoring events were completed at the site between February 2013 and the July 2021 pre-remediation monitoring event completed by GHD.

All groundwater analytical results were below the applied HSLs in the February 2013 GME by AECOM, however a total recoverable hydrocarbons (TRH) exceedance of the NHMRC Health Drinking Water Guidelines was reported for benzene at MW3. The adopted ANZECC Marine Water 95% Protection criteria were also exceeded at MW3 (south of the canopy).

No light non-aqueous phase liquid (LNAPL), hydrocarbon odours or sheens were observed during the 2013 GME.

Groundwater elevation results indicated that the excavation of the UPSS would not intercept the groundwater table. The drilling logs and subsequent gauging data indicate that groundwater was confined within the fractured bedrock aquifer at the site and was not intercepted until approximately 8-9 m bgl. Once intercepted, groundwater stabilised at approximately 3.6 – 3.8 m bgl.

3. Data Quality Objectives (DQOs)

The amount, nature and quality of the data are determined by establishing Data Quality Objectives (DQO). The major advantage of the DQO approach is that the investigation planning is carried out in a structured way with the questions of environmental significance identified and posed at an early stage and timely, necessary and purpose driven data are collected to resolve the identified uncertainties.

The DQOs provide the framework for the investigation design and are intended to ensure that representative data are collected to address residual data uncertainties in the preliminary CSM.

In accordance with AS 4482.1 *'Guide to the Sampling and Investigation of Potentially Contaminated Soil, Part 1: Non Volatile and Semi-Volatile Compounds'* (Standards Australia, 2005) and the ASC NEPM for the assessment of site contamination, the DQOs for these works are qualitative and quantitative criteria that:

- Clarify study objectives
- Define appropriate types of data to collect
- Specify the tolerable levels of potential decision-making errors

The DQO process, as defined in AS 4482.1 (Standards Australia, 2005) and ASC NEPM, consists of seven distinct steps, as shown in Table 5:

The DQOs for these works are outlined in Table 5.

Table 5 ***Data quality objectives***

Step	Data Quality Objective
Step 1: State the problem	The site is a former service station containing UPSS infrastructure, a sales shop, mechanics workshop and canopy. To enable divestment of the site as suitable for ongoing use as a service station under the current land zoning of "Local Business" the UPSS infrastructure needs to be removed, and the contamination status of the area in the vicinity of the UPSS needs be assessed after the removal.
Step 2: Identify the decision / goal of the study	The key study questions to be answered by the UPSS decommissioning assessment are: – Have the contaminant sources been removed to the extent practicable? – Does residual contaminated soil (if present) and/or groundwater present a potential risk to future site users? Should contamination present at the site pose a potentially unacceptable risk to human health for the future land uses or the environment, the other decisions to be made are: – Is the soil contamination or dissolved phase hydrocarbon plume in groundwater adequately delineated? – Is further assessment or remediation/management required?
Step 3: Identify the information inputs	The following inputs are required for the decision: – Confirmation of removal of identified contaminant sources (i.e. tank destruction certificates, collection of validation samples in excavations) – Soil validation sampling and laboratory analysis to assess if residual soil contamination is present and poses potentially unacceptable risk – Groundwater sampling pre and/ or post remediation works and laboratory analysis to assess if groundwater contamination poses potentially unacceptable risk – Selection of appropriate guideline values for the COPCs – Confirmation that data generated by sampling and analysis are of a suitable quality to allow reliable comparison to assessment criteria as per the assessment of the Data Quality Indicators

Step	Data Quality Objective
Step 4: Define the boundaries of the study	**Define the spatial boundaries of the decision** The vertical extent of the remediation is up to 4 m bgl for excavations, and 1 m in each direction from a tanks outer edge. **Define the temporal boundaries of the decision** The timeframe for this investigation's scope of work primarily defined to the period of works undertaken at the site as part of the validation assessment, and historic site data has also been included as part of the project. **Define the scale of decision making** The scale of the decision making is limited to the lateral extent of the monitoring well network, the current site configuration and excavation areas and identified current and future receptors. **Identify any potential constraints on data collection** Excavation activities near site boundaries may result in residual contamination remaining where soil is unable to be removed due to geotechnical stability issues and adjacent structures (fences and buildings). Shallow bedrock at the site may inhibit the collection of appropriate 'base' samples from UST pit excavations.
Step 5: Develop the analytical approach	The degree of impact by contaminants and the decisions associated with accepting data will be assessed with reference to the chosen site investigation levels. The criteria which will be used for screening validation results are discussed in Section 4. The decision rule was considered to be: If concentrations of the COPC in soil or groundwater on or off-site are above the adopted criteria for current and/or future land use(s), then further assessment, remediation and/or management may be required. Conversely, no further action may be required in the event that concentrations are below adopted site criteria.
Step 6: Specify performance or acceptance criteria	Data quality indicators were applied to assess the usability of the data prior to making decisions, based on precision, accuracy, representativeness, comparability and completeness. Data generated during the validation assessment must be appropriate to allow decisions to be made with confidence. Specific limits for this investigation have been adopted in accordance with the appropriate guidance from the AS4482.1 which includes appropriate indicators of data quality (data quality indicators [DQIs] used to assess QA/QC, and GHD's Standard Field Operating Procedures). DQIs for the investigation have been discussed below. **Precision** - measures the reproducibility of measurements under a given set of conditions. The precision of the laboratory data and sampling techniques is assessed by calculating the Relative Percentage Difference (RPD) of duplicate samples. **Accuracy** - measures the bias in a measurement system. The accuracy of the laboratory data that are generated during the validation is a measure of the closeness of the analytical results obtained by a method to the 'true' (or standard) value. Accuracy is assessed by reference to the analytical results of laboratory control samples, laboratory spikes and analyses against reference standards. **Representativeness** - expresses the degree to which sample data accurately and precisely represent a characteristic of a population or an environmental condition. Representativeness is achieved by collecting samples on a representative basis across the site, and by using an adequate number of sample locations to characterise the site to the required accuracy. **Comparability** - expresses the confidence with which one data set can be compared with another. This is achieved through maintaining a level of consistency in techniques used to collect samples; ensuring analysing laboratories use consistent analysis techniques and reporting methods. **Completeness** - is defined as the percentage of measurements made which are judged to be valid measurements. If any of the DQIs are not met, further investigation will be necessary to determine whether the non-conformance will significantly affect the usefulness of the data.
Step 7: Develop the plan for obtaining data	The validation strategy for the site will be a targeted sampling process for UPSS removal (validation sampling) and completion of a post remediation GME. Excavation validation sampling will be based on EPA Tasmania *Technical Guideline UPSS 2: Underground Petroleum Storage Systems Decommissioning Assessment Sampling and Risk Assessment Requirements (Version 3, 2018).*

4. Adopted validation criteria

4.1 Soil criteria

The ASC NEPM (1999) provides a range of investigation levels for the protection of ecosystems and human health, referred to as Ecological Investigation Levels (EILs), Ecological Screening Levels (ESLs), Health Investigation Levels (HILs), and Health Screening Levels (HSLs). These are generic assessment levels, designed to be used in the first stage (Tier 1 or 'screening' level) of an assessment of potential risks to human health and land dependent ecosystems from chronic exposure to contaminants in soil.

The ASC NEPM (1999) also presents Management Limits that have been developed to assess petroleum hydrocarbons where human health and ecological risks have been addressed but where other effects need to be considered. These effects include aesthetics, formation of free phase, fire and explosion and impacts on buried infrastructure.

Given direct contact HSLs are not published in the ASC NEPM (1999), the HSLs provided in CRC CARE (2011) were adopted for the assessment of direct contact pathways to human health of commercial/industrial end-use and intrusive maintenance workers.

The typical assessment criteria for commercial land uses are considered appropriate to provide a screening level risk assessment of the analytical data.

For this assessment, the criteria for sand and coarse soil has been adopted considering the soil lithology of the site varies between sandy fill material underlain by natural sandy clay, and gravel used to backfill UPSS excavations.

Table 6 summarises the assessment criteria used to assess soil quality at the Site.

Table 6 Adopted soil assessment criteria – human health and ecological health

Environmental value	Land Use	Adopted assessment criteria	Analytes
Human health	Commercial/ Industrial	NEPM (1999) - Human Health Investigation Level (HIL)	Lead
		NEPM (1999) - Human Health Screening Level (HSL D) for vapour intrusion in soil – sand	TRH (F1-F2), BTEXN
		CRC Care (2011) - Intrusive Works and HSL D commercial/industrial Direct Contact	TRH (F1-F4), BTEXN
Ecosystem protection		NEPM (1999) - Ecological Investigation Levels (EIL)	Heavy metals, naphthalene
		NEPM (1999) - Ecological Screening Levels (ESL D) – coarse soil	TRH (F1-F4), BTEX
Other		NEPM (1999) - Management Levels - coarse soil	TRH

4.2 Groundwater criteria

The Tasmanian State Policy on Water Quality Management (SPWQM, 1997) (DPIWE, 1997) manages the quality of groundwater in Tasmania. This applies the water quality management approach recommended by the National Water Quality Management Strategy (NWQMS) and the management framework in the Australian New Zealand Guideline for Fresh and Marine Water Quality 2018 (ANZG 2018).

The SPWQM (1997), defines a range of protected environmental values (PEV's) for surface and groundwaters, which are uses of the water resource that are to be protected. AECOM (2013) reported the total dissolved solid (TDS) range for the site to be 4,879-6,265 mg/L, however in the groundwater monitoring event completed by GHD in April 2022, TDS was between 66 – 1,000 mg/L, indicating the groundwater at the site should be classified as Category A (SPWQM, 1997). As a conservative measure, Category A has been adopted.

The PEV's under Category A include drinking water, industry, stock watering, irrigation, and ecosystem protection. Considering the site is in an urbanised area, where water is provided by reticulated sources and surrounding zoning is defined as 'residential', industrial and stock PEV's are unlikely to be realised. The use of groundwater as drinking water is also very unlikely, however human health criteria from the Australian Drinking Water Guidelines (2011) have been utilised for reference.

There is a potential ecological receptor south of the site, considering groundwater at the site is inferred to discharge to the marine water environment (River Derwent). The River Derwent is considered to be a slightly to moderately disturbed marine ecosystem. Therefore, in the context of the ANZG (2018) guidelines, a protection level of 95% has been adopted for the assessment of groundwater contamination.

HSL D (commercial use) provided in the ASC NEPM (2013) for selected petroleum hydrocarbon compounds in groundwater have been adopted to assess human health risk via inhalation. Considering the soil lithology of the site, as stated in section 4.1, the criteria for sand has been adopted for both on-site and off-site.

Table 7 Adopted groundwater assessment criteria

Environmental value	Land Use	Criteria	Analytes
Drinking water	-	ADWG 2011 Health criteria	Lead, BTEX, B(a)P, Total PAHs
Irrigation	-	ANZECC 2000 Irrigation - Long-term Trigger Values ANZECC 2000 Irrigation - Short-term Trigger Values	Lead
Human health	Commercial / Industrial (D)	NEPM (2013) - Human Health Screening Level (HSL D and HSL A) for vapour intrusion – sand (2m to >4m)	TRH, BTEXN
Ecosystem protection	-	ANZG (2018) - Ecosystem protection – marine waters – 95% species protection	Lead, TRH, BTEXN, B(a)P, Fluoranthene, Phenanthrene

4.3 Waste classification for offsite disposal

The Tasmanian EPA (2018) Information Bulletin No. 105 presents guidelines for offsite disposal of contaminated soils, including criteria to determine the soil classification for landfill disposal. These criteria have been adopted in this assessment to indicate offsite disposal requirements for the material.

5. Remediation and validation methodology

Enviropacific Services (EPS) were engaged by GHD to undertake remediation works which included the removal of all fuel storage and distribution infrastructure and associated hydrocarbon impacted soils.

5.1 Chronology

The remediation works were commenced following completion of the service location undertaken at the site. A photo log of the work has been included in Appendix I. A summary of site works is included in Table 8.

Table 8 Chronology of site works

Dates	Event
30 July 2021	Pre-remediation groundwater monitoring event
3 March 2022	Service Location
4 - 16 March 2022	UPSS removal and soil remediation works
	Soil validation sampling
	Backfilling of excavations
4 April 2022	Post-remediation groundwater monitoring event, off-site disposal of impacted soils and final site restoration

5.2 Project planning

GHD prepared a site-specific HSE plan to outline controls to manage risk to site workers and visitors during remediation activities. The HSE plan include a Job Safety and Environmental Analysis (JSEA) and also subcontractor Safe Work Method Statements (SWMS), which were kept on site, reviewed, and signed by site workers prior to the commencement of those tasks.

5.3 Service location

A Telstra-accredited service locator from Protech Underground Asset Locations completed service location of underground services on-site. Dial Before You Dig (DBYD) and Ampol-provided site service plans were reviewed by the service locator prior to on-the-ground service location. Service locating was undertaken on the 3 March 2022. Service alignments were identified using ground penetrating radar (GPR), pipe & cable locator, site plans and a Trimble GPS (1 cm accuracy).

5.4 UPSS removal and soil remediation works

Excavation of the UPSS began on 4 March 2022. The concrete was cut and removed from above the UPSS and the tanks exposed by hand. Residual waste oil from T6 and oily water from T5 totalling 18,000 L was extracted from the following tanks prior to their removal.

Following residual product removal, the tanks were washed out as required, all fuel lines were cold cut, and the required tanks degassed prior to decommissioning. The USTs were sheared, removed and disposed of off-site as scrap. T4 was constructed of steel wrapped in fibreglass, which was removed and appropriately disposed of prior to the shearing of the internal steel. The remaining fuel tanks (T1, T2, T3 and T5) were constructed of steel with a bitumen coating which was confirmed not to contain asbestos fibres (refer to Appendix F for SGC Safety asbestos identification report). Tank destruction certificates have been provided in Appendix D.

The former underground fuel lines and associated bowser bases were removed. The waste oil tank (T6) line was capped and left in-situ at the rear of the workshop. The above ground multiproduct dispensers located at the rear of the workshop were removed and scraped. The concrete hardstand present below the dispenses left in place as there was no evidence of potential contamination (i.e. no visible staining on concrete surface).

Following removal of the UPSS infrastructure, impacted soil was excavated and stockpiled based on field screening of hydrocarbon impact (refer to Section 7 below). The extent of excavations was directed utilising visual indications of staining and through the use of a handheld Photo-ionisation detector (PID).

Standing water was observed within the tank sands in both the T2/T4 pit and T1/T3/T5 pit during excavation. The water did not appear to be inflowing, and was interpreted to be perched water sitting within the pit above the bedrock. The perched water did not have an odour or appear to be hydrocarbon impacted.

The condition of the UPSS infrastructure removed and excavation details are summarised in Table 9 below. For field observations of soil contamination observed during the works refer to Section 6.1.

Table 9 Excavation details

Excavation Area	UPSS infrastructure condition	Volume of excavated material (m^3)	Excavation depth (m bgl)
T1, T3, T5 tank pit	All tanks noted to be in good condition with no visible holes or rusting.	~100	2.9
T2, T4 tank pit	All tanks noted to be in good condition with no visible holes or rusting.	~100	3.5
T6 waste oil tank pit	No evidence of a tank remaining at the site. Evidence of waste oil tank product line leaking due to visible product (inferred to be waste oil) present in the soil upon exposure of the top tank. Further there was visible sheen and dried product on the underside of the tank.	~10	1.8
Forecourt bowsers and fuel lines	Multiple holes visible along the length of the south eastern fuel lines running from bowser to T1, T3, T5 tank pit.	~50	0.4-1.5

5.5 Soil validation sampling

A summary of the soil validation methodology is included in Table 10. Validation sample locations for the different areas of the site are presented in Figure 2 and Figure 3, Appendix A.

Table 10 Soil validation methodology

Item	Description
Dates of fieldwork	– 5 March 2022: validation sampling of T2, T4 pit walls and base – 9 March 2022: validation sampling of T1, T3, T5 pit walls and base – 10 March 2022: validation sampling of T6 pit walls and base – 16 March 2022: validation sampling of forecourt bowsers and fuel lines – 4 April 2022: backfill and compaction of fuel lines / bowsers, off-site disposal of SP04
Excavation technique	Bucket excavation using and 11 tonne or 20 tonne excavator.
Soil logging	Field observations and subsurface conditions were recorded on the validation sample log (Appendix F).
Field screening	Field screening for volatiles using a PID as well as observations for visual or olfactory indicators of impact determined the extent of excavations. PID calibration certificates are included in Appendix G.
Soil sampling	Discrete soil samples were collected from walls and bases of excavations, as well as the base of fuel lines and beneath the bowsers. Wall and base samples were taken as per *UPSS 2 Technical Guideline – Underground Petroleum Storage Systems: Decommissioning Assessment Sampling and Risk Assessment Requirements (EPA Tasmania 2018b)*. Care was taken during the sampling to obtain representative samples from each target depth. Soil samples were stored in laboratory provided glass jars. All samples were labelled with an indelible marker pen on water resistant labels attached to the sample jars. Each label contained the project number, site number, sample location and depth sampler initials and sample collection date.

Item	Description
Sample Analysis	Soil samples were submitted for laboratory analysis of the COPCs at NATA accredited laboratories under chain of custody documentation.
Sample handling and transport	Following collection, soil samples were immediately placed on ice and stored in a cool, dark environment (ice box) prior to being forwarded to the analytical laboratory within the specified holding times along with a chain of custody (COC) form.
QA/QC	A site based QA/QC sampling procedure was implemented and further details are described in Appendix H.

5.6 Disposal and reuse

Excavated soils associated with the UPSS infrastructure were screened with a PID and segregated based on evidence of impact. The stockpiles were then sampled, and the results compared against the adopted validation criteria in Section 4, to assess if soils could be reused on-site or required off-site disposal.

Soils requiring disposal were categorised in accordance with appropriate waste classification criteria and reported in a waste categorisation letter, which is included in Appendix J. Refer to Section 7.1 below for further reuse suitability outcomes and material endpoints.

5.7 Backfilling and site restoration

All excavations on-site were validated and then backfilled with either site-won soils that had been classified as suitable for on-site reuse (refer to Section 7.1 below) or imported clean material. Approximately 294 tonnes of clean crushed rock material was imported for backfill purposes. Site won materials were placed at the base of the excavations, overlain by imported material and then compacted with the excavator bucket to grade level. As part of final site restoration all remaining waste was disposed of off-site, and the site and surrounding roads cleared of any obvious sediment.

5.8 Groundwater monitoring

Two groundwater monitoring events (GMEs) were completed; a pre-remediation groundwater monitoring event (GME) on 30 July 2021, and a post-restoration GME on 4 April 2022.

During both GMEs monitoring wells MW1-MW5 were sampled. Monitoring well locations are presented in Figure 1.

In the July 2021 GME all monitoring wells were gauged with an interface probe in order to infer the hydraulic gradient on site, and physico-chemical parameters were collected from monitoring wells using a YSI water quality meter. Calibration certificates for this equipment are provided in Appendix G. Monitoring wells were sampled using disposable bailers, following removal of 40 - 65 L of water and stabilisation of physico-chemical parameters.

Hydrasleeves were utilised in the April 2022 post-remediation GME to collect representative groundwater samples from the monitoring well network. The water column in each well was left to stabilise for at least two hours following installation, before the Hydrasleeves were retrieved. Physico-chemical parameters and groundwater elevations were not recorded as the remediation activities were expected to have temporarily disturbed the groundwater flow dynamics at the site.

6. Validation results

This section presents the results of field works completed during the decommissioning and validation sampling undertaken on the site by GHD during March 2022.

6.1 Field observations

Notable field observations of soil contamination observed during the decommissioning and validation works undertaken are summarised in Table 11. The full set of validation sample descriptions and PID measurements is provided in Appendix F, Table G1.

Table 11 Field observations of contamination during soil works

Stage of works	Area	Comments	Range of PID measurements (ppm)
Remediation	T1, T3, T5 tank pit	Strong hydrocarbon odour and significant PID readings from fill material (tank sands) exposed during excavation of USTs. This material was stockpiled as (SP02). Water, inferred to be perched groundwater was intercepted at 2.9 m bgl. No sheen or LNAPL was visible.	422-1,213
	T2, T4 tank pit	Faint hydrocarbon odour from fill material (tank sands) exposed during excavation of USTs. This material was stockpiled as (SP01). Water, inferred to be perched groundwater was intercepted at 2.0 m bgl. No sheen or LNAPL was visible.	43
	T6 waste oil tank pit	Strong hydrocarbon odour and significant PID readings from both fill material and natural soils exposed during excavation of UST. This material was stockpiled as (SP03).	185-450
	Forecourt bowsers and fuel lines	Strong hydrocarbon odour and high PID readings from both fill material and natural soils exposed during excavation of the forecourt bowsers and fuel lines. With the most notable impacts present around the two eastern bowsers and associated fuel lines, requiring the material to be excavated and validated laterally (VS49-VS57) in these areas. This material was stockpiled as (SP04).	205-1,107
Validation	T1, T3, T5 tank pit	Excavation at the base of the pit was terminated upon refusal on sandstone. Samples collected from the sandstone had variable hydrocarbon odour and PID readings, with obvious hydrocarbon staining on the bedrock.	2.9-277
	T6 waste oil tank pit	Excavation of the pit was terminated upon refusal on sandstone present along the walls and base. Samples collected from the sandstone had variable hydrocarbon odour and PID readings, with obvious hydrocarbon staining.	11.4-227
	Forecourt bowsers and fuel lines	Validation samples were collected from sandstone beneath the former south eastern fuel lines (VS29-VS32). The sandstone was noted as visibly hydrocarbon stained.	151-275

6.2 UPSS excavations

Following the UPSS decommissioning and excavation of impacted soils, validation sampling of the base and walls of the excavations was completed. A total of 67 validation samples were collected during the remedial works. A register of all validation samples collected is included in Table G1, Appendix F.

All validation samples were analysed for lead, BTEXN and TRHs. Samples associated with the waste oil tank (T6) received additional analyse for metals, VOCs and SVOCs. All results are summarised in Table G2, Appendix F.

Laboratory certificates of analysis and chain of custody documentation are presented in Appendix K. All validation soil sample locations are presented in Appendix A, Figure 2.

Criteria exceedances by final validation samples

Table 12 provides a summary of all final validation results that exceeded the adopted assessment criteria. These exceedances are from soils at the final extent of remedial excavation. Sample locations exceeding the NEPM Management Limits are presented in Figure 4.

Table 12 Validation sample criteria exceedances

Adopted criteria	Area	Analyte	Criteria value (mg/kg)	Contamination location (concentration (mg/kg))
NEPM ESL for Commercial/Industrial Soil, Coarse Soil	T2/T4 excavation	>C10-C16 Fraction	170	VS04 (560)
	Waste oil tank (T6) excavation	>C10-C16 Fraction	170	VS24 (370) VS27 (190) VS28 (420)
		F3 (>C16-C34 Fraction)	1,700	VS24 (2,600) VS27 (2,200) VS28 (3,100)
	Bowser and fuel lines	>C10-C16 Fraction	170	VS29 (5,100) VS30 (4,700) VS31 (180) VS46 (2,400)
		F3 (>C16-C34 Fraction)	1,700	VS29 (3,300) VS30 (3,000) VS46 (2,400)
NEPM Management Limits for Commercial / Industrial Soil Coarse Soil	Bowser and fuel lines	>C10-C16 Fraction	1,000	VS29 (5,100) VS30 (4,700) VS46 (2,400)

Further to this the samples exceeding the management limits were also compared to the soil health screening levels for direct contact that are specified in Table B4 of CRC Care (2011), as shown in Table 14.

Table 13 Soil health screening levels for direct contact

Chemical	HSL D Commercial / Industrial	Intrusive Maintenance Worker
>C10-C16 Fraction	20,000 mg/kg	62,000 mg/kg

All reported results were less than these criteria.

6.3 Groundwater monitoring

July 2021 pre-remediation GME

In the July 2021 pre-remediation GME depth to groundwater was reported to be in the range of 4.04 - 4.23 m bgl, and groundwater elevation between 9.104 - 9.236 m AHD. The inferred groundwater flow direction was east/southeast, consistent with historic monitoring records. Inferred groundwater contours are presented in Figure 5.

Hydrocarbon odours or sheens were not reported at any monitoring wells. Physico-chemical parameters are presented in the purge and sampling records in Appendix G. Groundwater at all monitoring wells was oxidative (+51 - 125 mV) and weakly acidic (5.70 – 6.11 pH units). EC measurements indicated that groundwater was brackish (2,726 – 7,421 µS/cm EC).

All samples were analysed for BTEXN, TRHs, PAHs and lead. All analytes were below the laboratory LOR for MW1, MW3, MW4 and MW5 for all analytes tested. The sample from MW2 reported concentrations of >C10 - C16 Fraction and >C10 - C40 Fraction (sum) hydrocarbons equal to the LOR (100 µg/L). No exceedances of the adopted screening criteria were reported.

The full set of analytical results are summarised in Table F4 of Appendix F. Laboratory certificates of analysis and chain of custody documentation are presented in Appendix K.

April 2022 post-restoration GME

Samples were analysed for TDS, BTEXN, TRHs, PAHs and lead. The full set of analytical results are summarised in Table F4 of Appendix F. Laboratory certificates of analysis and chain of custody documentation are presented in Appendix K.

All analytical results were below the adopted screening criteria, and all BTEXN analytes were reported below the laboratory LOR. Samples collected at MW1 and MW4 reported F2 (>C10-C16 minus Naphthalene) and F3 (>C16-C34 Fraction) concentrations above LOR, but below the adopted screening criteria.

6.4 Stockpile validation sampling

Stockpile validation results for material that was retained on site is summarised in Table 14. Refer to section 7.1 for additional information on stockpiles constructed on site during the decommissioning works.

Table 14 Re-use stockpile sample criteria exceedances

Adopted criteria	Stockpile	Analyte	Criteria value (mg/kg)	Contamination location (concentration (mg/kg))
NEPM ESL for Commercial/Industrial Soil, Coarse Soil	SP02 (T1, T3, T5 excavation – tank sands)	>C10-C16 Fraction	170	SP02_A (200) SP02_K (310) SP02_L (1200) SP02_M (430) SP02_N (1000) SP02_O (590) SP03_A (560) SP03_B (1400) SP03_C (800)
	SP03 (T6 excavation)	F1 (C6-C10 minus BTEX)	215	SP03_B (240)
		>C10-C16 Fraction	170	SP03_A (560) SP03_B (1,400) SP03_C (800)
		F3 (>C16-C34 Fraction)	1,700	SP03_A (4,700)

Adopted criteria	Stockpile	Analyte	Criteria value (mg/kg)	Contamination location (concentration (mg/kg))
				SP03_B (14,000) SP03_C (8,600)
		F4 (>C34-C40 Fraction)	3,300	SP03_B (4,200)
NEPM Management Limits for Commercial / Industrial Soil Coarse Soil	SP02 (T1, T3, T5 excavation – tank sands)	>C10-C16 Fraction	1000	SP02_L (1,200)
	SP03 (T6 excavation)	>C10-C16 Fraction	1000	SP03_B (1400)
		F3 (>C16-C34 Fraction)	3,500	SP03_A (4,700) SP03_B (14,000) SP03_C (8,600)
NEPM 2013 EIL-Commercial/Industrial >=0m, <2m	SP03 (T6 excavation)	Zinc	110	SP03_A (180) SP03_B (1,300)

6.5 Quality assurance/quality control

A Quality Assurance and Control (QA/QC) assessment was completed for all analytical sample data, in order to determine whether it is of suitable quality on which to base the site assessment. This included the collection and review of inter- and intra-laboratory duplicates and trip blanks.

The QA/QC assessment found that GHD QA/QC Data Quality Indicators (DQIs) were within the specified requirements. The data is therefore considered to be valid and of sufficient quality to rely on for the purpose and objectives of this assessment. A copy of the detailed QA/QC report is provided in Appendix H.

7. Material and spoil management

7.1 Classification of stockpiles for on-site reuse

During the decommissioning works, excavated soils were field screened for contamination (visual, olfactory and with a PID) and segregated for confirmation of suitability for reuse on-site. Details of the stockpiles confirmed suitable for on-site reuse and their material end points are summarised in Table 15.

Table 15 Description of stockpiles

Stockpile ID	Source/ Description	Volume (m^3)	Material end-point
-	T2, T4 excavation – pea gravel	~30	Analysis of pea gravel not required. Material used to backfill T2, T4 pit.
SP01	T2, T4 excavation – tank sands	~70	Laboratory classification indicated no exceedances of adopted re-use criteria and therefore soil was suitable for re-use onsite. Soil was used to backfill T2,T4 pit below two metres.
SP02	T1, T3, T5 excavation – tank sands	~100	Stockpiles SP02 and SP03 were mixed and treated as one stockpile for sampling purposes. Laboratory classification indicated minor exceedances of both ESLs and management limits by TRHs. As well as exceedance of the EIL criteria for zinc. The soil was deemed suitable for re-use onsite to backfill the T1,T3,T5 pit below one metre, and overlain by a minimum of one metre of imported clean material. Refer to Section 9.3 for further discussion regarding the suitability and reuse of this stockpile.
SP03	T6 excavation – clayey SAND	~10	

7.2 Material disposal

7.2.1 Impacted stockpile disposal

During the decommissioning works, impacted soil was stockpiled separately and classified for off-site disposal. The stockpiles and their waste classification information are provided in waste classification letters included in Appendix L and summarised in Table 16 below. Waste record documents are included in Appendix D.

Table 16 Waste classification information

Source	Stockpile IDs	Amount (tonnes)	Waste Type	Material Fate
Excavation of forecourt bowsers and fuel lines	SP04	46.46	Level 2 – Low Level Contaminated Soil	Southern Waste Solutions – Copping Site

7.2.2 Concrete and recyclable materials disposal

Wastes were segregated, loaded out and disposed of at recycling facilities. The recyclable material movement is detailed in Table 17. 61.4 m^3 of concrete material was removed from the site and disposed of (refer to Appendix E for relevant disposal documentation).

Table 17 Recyclable materials disposal

Material	Amount (tonnes)	Material fate
Concrete	61.4	ReProcess Tas, Moonah, TAS
Scrap Metal/Steel	All USTs – 1 bin	ReProcess Tas, Moonah, TAS

7.2.3 Liquid waste disposal

Prior to site closure, Ampol removed the majority of remaining fuel from the site. Waste liquids were generated from the residual product and cleanout of USTs remaining on site. Waste liquids requiring disposal during the decommissioning works are summarised in Table 18. Waste record documents are included in Appendix D.

Table 18 Summary of waste liquids requiring disposal

Material	Origin	Volume (L)	Material fate
Oily water	T5 and T6	18,000	All Pumping Solutions (TAS) Pty Ltd, Old Beach, TAS

8. Conceptual site model

The following conceptual site model (CSM) has been developed based on GHD's understanding of the site setting, including geology, hydrogeology and surrounding land use in order to identify potentially significant source-pathway-receptor (SPR) linkages in respect of risks to human health and the environment.

8.1 Contaminants of concern

Based on the review of the previous works, other available information for the site, and the remediation works, the contaminants of potential concern (COPC) in media beneath the site which are likely to be associated with the service station and workshop operations are considered to comprise:

- Total recoverable hydrocarbons (TRH)
- Benzene, toluene, ethylbenzene, xylenes and naphthalene (BTEXN)
- Lead

8.2 Sources

The primary historical source of identified soil and groundwater contamination at the site was considered to be from the UPSS located on the service station. Residual contamination in soil and groundwater (if any) could be a secondary source of contamination.

Original known/suspected sources and associated areas of contamination at the site include:

- USTs (fuel and waste oil)
- Filling points
- Fuel bowsers and fuel lines
- Mechanics workshop

No triple interceptor traps were identified on Ampol site plans, nor were any encountered during service location or site works. Given that UPSS at the site have been decommissioned and removed and the mechanics workshop is no longer in use, only residual soil and groundwater contamination are considered potential remaining sources.

8.3 Pathways

The identified exposure pathways for potential soil and groundwater impacts include:

- Direct contact with contaminated soil and groundwater (both human and ecological receptors)
- Inhalation of vapours from volatilisation of residual petroleum hydrocarbon impact in soil and groundwater that are present in excavations or migrate into enclosed spaces on site.
- Leaching/dissolution of residual soil contamination into the groundwater at the site
- Lateral migration of contaminated groundwater towards offsite or vertical migration to an underlying aquifer

8.4 Receptors

8.4.1 Human Receptors

Potential human receptors of concern for the site include:

- On-site demolition and construction workers during site redevelopment
- On-site future commercial site operators, users and workers on-site
- On-site intrusive construction or maintenance workers
- Off-site adjacent intrusive maintenance workers
- Off-site adjacent residential and commercial land users

8.4.2 Ecological Receptors

Potential ecological receptors include:

- On-site future vegetation (commercial land use)
- Off-site trees are located in adjacent residential properties to the west, north, and east. However, given that groundwater is inferred to the south east, mature vegetation is generally up-gradient of potential groundwater contaminant sources.

8.5 Assessment of source pathway receptor given linkages

An assessment of SPR linkages identified for the site is summarised in Table 19. The SPR linkages are based on current and future on-site use which is commercial (non-sensitive) in line with the overall divestment objective.

Table 19 ***Assessment of SPR linkages***

Source	Pathway	Receptor	Potentially Complete SPR Linkage?	Risk assessment
Residual contamination associated with UPSS infrastructure	Volatilisation of residual soil and groundwater petroleum hydrocarbon contamination (if any) to air and subsequent inhalation	On-site future commercial site operators, users and workers; On-site demolition and construction workers during site redevelopment; On-site intrusive maintenance workers	Unlikely – Areas of contaminated soil associated with UPSS were excavated to bedrock and disposed during the remediation works. Groundwater sampling completed pre-remediation and post-rehabilitation indicated that some TRH contaminants are present in groundwater within the site at concentrations below the adopted screening criteria. BTEXN was below LOR in all wells. The stabilised groundwater height was approximately 4.04 – 4.23 m bgl. AECOM (2013) found that groundwater was not intercepted until 8-9 m bgl during well drilling, and was confined within fractured bedrock.	Low risk – residual contaminant concentrations do not exceed relevant soil vapour criteria
		Off-site adjacent intrusive maintenance workers; Off-site adjacent residential and commercial land users	Unlikely – Contaminated soil associated with UPSS were excavated to bedrock and disposed during the remediation works, and no off-site soil impact is expected. Groundwater sample results from the down-gradient perimeter well MW5 reported all dissolved hydrocarbon analytes below LOR.	Low risk – SPR linkage unlikely to be complete
	Direct contact with contaminated soil and groundwater (if any)	On-site future commercial site operators, users and workers; On-site demolition and construction workers during site redevelopment; On-site intrusive maintenance workers	Unlikely – Contaminated soil was excavated to bedrock during remediation works and backfilled with imported crushed rock. While residual dissolved phase impacts may remain within groundwater at the site, these are below adopted human health assessment criteria for a commercial/industrial land use, and close to the laboratory LOR.	Low risk – residual contaminant concentrations do not exceed relevant management limit criteria
		Off-site adjacent intrusive maintenance workers	No – Off-site soil impact is considered unlikely. Groundwater sample results from the down-gradient perimeter well MW5 reported all dissolved hydrocarbon analytes below LOR. Additionally, the water table is within fractured rock, approximately 4 m bgl.	Very low risk – SPR linkage very unlikely to be complete
		On-site future vegetation	Unlikely – contaminated soil on site was excavated to bedrock beyond the root zone of most vegetation. Planting of vegetation in the impacted area is unlikely given the location of the contamination and the proposed on-going use of the site as a service station.	Low risk – SPR linkage unlikely to be complete
	Migration of contaminated groundwater (if any	Off-site adjacent intrusive maintenance workers; Off-site adjacent residential and commercial land users	Unlikely – Groundwater sample results from the down-gradient perimeter well MW5 reported all dissolved hydrocarbon analytes below LOR. All groundwater monitoring results for 2021/2022 indicated that dissolved phase hydrocarbon concentrations at the site were at or below laboratory LOR, and well below adopted screening criteria levels. See dot points below.	Low risk – SPR linkage unlikely to be complete

Source	Pathway	Receptor	Potentially Complete SPR Linkage?	Risk assessment
	Leaching/dissolution of residual soil contamination into the groundwater at the site	On-site future commercial site operators, users and workers; On-site demolition and construction workers during site redevelopment; On-site intrusive maintenance workers	No – Off-site soil impact is considered unlikely. Groundwater sample results from the down-gradient perimeter well MW5 reported all dissolved hydrocarbon analytes below LOR. Additionally, the water table is within fractured rock, approximately 4 m bgl. While there is some potential for storm water infiltration through the tank pits, this is not expected to cause significant leaking into groundwater on the basis that: – All primary (i.e the UPSS) of potential hydrocarbon impact have been removed from site. 46 tonnes of Level 2 contaminated soil have also been removed from site with only minor quantities exceeding the adopted criteria. – All groundwater analytical results from previous monitoring have indicated groundwater downgradient of the former UPSS was largely free of hydrocarbon impact – Storm water bunding to limit runoff into this area is still present – Residual contamination is generally heavier end hydrocarbons (>C10), with no BTEX that is the most soluble and toxic hydrocarbon fraction – The more contaminated material from the excavation of forecourt bowsers and fuel lines has been removed from site – Given the small amount of contamination remaining and the limited contamination currently present in groundwater, migration of any leached product would be expected to be very limited by physical and chemical attenuation – Concrete would be expected to be reinstated for any final use of the site, limiting the opportunity for any water infiltration	Very low risk – SPR linkage very unlikely to be complete
		Off-site adjacent intrusive maintenance workers; Off-site adjacent residential and commercial land users	No – off-site soil impact associated with the former onsite fuel infrastructure is considered unlikely.	Very low risk – SPR linkage very unlikely to be complete
Historical on-site auto repair activities	Direct contact with contaminated soil and groundwater (if any)	On-site demolition and construction workers during site redevelopment; On-site future commercial site operators, users and workers on-site; On-site intrusive maintenance workers On-site future vegetation (commercial land use)	Uncertain – Site office and mechanics workshop have not been demolished, and the soil beneath the workshop has not been validated. There is the potential for hydrocarbon contamination in shallow sub-soil in the immediate vicinity of sumps within the workshop. This should recognised and managed during future site development works. The potential for groundwater contamination associated with the mechanics workshop is unlikely, given the depth to groundwater of 4 m and very low hydrocarbon concentrations detected in monitoring wells at the site.	Low risk – SPR linkage possibly complete.

9. Discussion of results

9.1 UPSS validation

Final validation results from the T1/T3/T5 tank pit excavation reported no criteria exceedances, indicating that all primary and secondary sources of contamination associated with this tank had been vertically and laterally delineated.

One sample (VS04) from the north wall of the T2/T4 tank pit excavation exceeded the adopted NEPM ESL criteria for >C10-C16 Fraction hydrocarbons. No hydrocarbon odour or staining were reported at this sample location, and the sample material had a reported PID reading of 1.0 ppm, indicating that remaining contamination is residual rather than gross.

Other exceedances of the adopted NEPM ESL criteria for >C10-C16 Fraction and F3 fraction hydrocarbons included the north wall (VS24), west wall (VS27) and base (1.8 mbgl) of the T6 waste oil tank excavation (VS28). Excavations were not extended beyond these areas due to the encountering of bedrock. While the ESL guidelines are applicable to two meters depth to account for the root and habitation zone of many plant species, the proposed on-going use of the site as a service station means that gardens are unlikely to be planted in this area. Given the remedial works to date, the extent of the impacted material is also expected to be limited, limiting the impact on any gardens in any case.

However these localised areas of soil exceeding the ecological direct contact guidelines remain at the site, and their presence needs to be given consideration for future development of the site, particularly if this material is excavated or the overlying fill material removed, thereby increasing the likelihood that contact with potential ecological receptors occurs.

9.2 Bowsers and fuel lines

Concentrations of >C10-C16 Fraction hydrocarbons exceeded the NEPM Management Limits at three sample locations VS29, VS30, and VS46) within the footprint of the excavated fuel lines. However, all results were less than the CRC Care (2011) Soil Health Screening Levels for Direct Contact for commercial / Industrial and Intrusive Maintenance Workers. It is understood that the management limits are an odour threshold and given the temporary nature of any exposure of these soils during maintenance or construction, this is not considered to present a risk to uses of the site, provided odour issues are managed during this time.

Consideration should be given to the future excavation and handling of soils in these locations, however they are not considered to pose a risk to on-site commercial / industrial workers providing the identified impact is appropriately managed through standard OH&S procedures (e.g. JSEA, PPE etc) if intrusive maintenance or construction works are performed in this area of the site.

Four sample locations (VS29, VS30, VS31 and VS46) within the footprint of the excavated fuel lines reported exceedances of the adopted NEPM ESL criteria for >C10-C16 Fraction and F3 fraction hydrocarbons. Given the commercial land use, and location within the forecourt, it is unlikely any ecological risk will be realised.

9.3 Stockpiles for on-site re-use

Stockpile validation samples from SP01, SP02 and SP03 reported several TRH and Zinc concentrations exceeding the adopted ecological criteria, and five instances of TRH concentrations exceeding the NEPM Management Limits for commercial/industrial land use.

Given the current and intended future commercial/industrial land use, and the fact that stockpiled soil was used to backfill at depths deeper than 1 m bgl (but above the water table level), the exceedances of the adopted ecological criteria in re-used soil are not expected to represent an actual a risk to current and future receptors.

9.4 Groundwater monitoring

The inferred groundwater flow direction is east, consistent with historic monitoring. In both the pre-remediation and post-rehabilitation monitoring events, all measured concentrations of groundwater CoPCs were below the adopted screening criteria, and BTEXN analytes were reported below the laboratory LORs (1–2 µg/L). F2 and F3 fraction TRH analytes were reported at concentrations below the adopted screening criteria levels at MW1, MW3 and MW4, indicating that some dissolved phase contamination of groundwater at the site has occurred. However, all hydrocarbon analytes were reported below LOR at the down-gradient boundary well MW5 in both monitoring rounds, suggesting this contamination is confined to within the site boundary.

10. Conclusions

Based on the scope of work presented in Section 1.4 and subject to limitations in Section 12, the following conclusions have been made:

- The demolition and decommissioning works successfully removed all known petroleum related infrastructure at the site including six USTs, associated fuel lines, and four bowsers
- Excavated stockpiled material was appropriately classified and either re-used on site or disposed off-site depending on the stockpile sampling result comparison to criteria
- Soil validation results indicated that hydrocarbon impacts associated with the petroleum related infrastructure had been excavated and validated, with all soil validation results below the adopted validation criteria, with the exception of three samples that exceeded NEPM Management Limit criteria. The Management Limit exceedances are localised to a small area under former fuel lines, and are unlikely to be indicative of gross impact that would preclude the ongoing non sensitive use of the site as a service station. All results were less than the CRC Care (2011) Soil Health Screening Levels for Direct Contact for commercial / Industrial and Intrusive Maintenance Workers. It is understood that the management limits are an odour threshold and given the temporary nature of any exposure of these soils during maintenance or construction, this is not considered to present a risk to uses of the site, provided odour issues are managed during this time. Any potential impacts to commercial / industrial workers should be managed through standard OH&S procedures (e.g. JSEA, PPE etc) if intrusive maintenance or construction works are performed in this area of the site.
- Groundwater monitoring indicated that the current hydraulic gradient is consistent with historic monitoring, and the inferred groundwater flow direction is east/southeast
- Dissolved phase hydrocarbon concentrations in the pre-remediation and post-restoration groundwater monitoring events were all below adopted screening criteria. BTEXN analytes for all samples were reported below the laboratory LOR. F2 and F3 fraction TRH concentrations above the LORs were reported at MW1, MW3 and MW4, however the low level residual dissolved phase contamination is unlikely to have migrated off site. The groundwater impacts pose a low risk to future occupants or any relevant off-site receptors under a non-sensitive commercial/industrial setting.
- Based on the sampling and analysis completed for hydrocarbon related contaminants as part of these works, there were no indications or exceedances of the applied assessment criteria that would preclude the future use of the site as a service station or for non-sensitive (commercial / industrial) uses or impact any relevant off-site receptors.

11. References

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12. Limitations

This report: has been prepared by GHD for Ampol Australia Petroleum Pty Ltd and may only be used and relied on by Ampol Australia Petroleum Pty Ltd for the purpose agreed between GHD and the Ampol Australia Petroleum Pty Ltd as set out Section 1.2 of this report.

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The opinions, conclusions and any recommendations in this report are based on information obtained from, and testing undertaken at or in connection with, specific sample points. Site conditions at other parts of the site may be different from the site conditions found at the specific sample points.

Investigations undertaken in respect of this report are constrained by the particular site conditions, such as the location of buildings, services and vegetation. As a result, not all relevant site features and conditions may have been identified in this report.

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Appendices

Appendix A

Figures