



GLAMORGAN/SPRING BAY COUNCIL
NOTICE OF PROPOSED DEVELOPMENT

Notice is hereby given that an application has been made for planning approval for the following development:

SITE: **21 Tasman Highway, Triabunna**
CT 165614/2

PROPOSAL: **Replacement & Upgrade of Fuel Storage Tanks**

Any person may make representation on the application(s) by letter (PO Box 6, Triabunna) or electronic mail (planning@freycinet.tas.gov.au) addressed to the Chief Executive Officer.

Representations must be received before midnight on 08 July 2026

APPLICANT: **Hazkem Pty Ltd**

DATE: **04/06/2026**

APPLICATION NO: **DA 2026 / 089**

Application for Planning Approval

Advice:

Use this form for all no permit required, permitted and discretionary planning applications including visitor accommodation, subdivision as well as for planning scheme amendment & minor amendments to permits.

Completing this form in full will help ensure that all necessary information is provided and avoid any delay. The planning scheme in clause 6.0 provides details of other information that may be required. A checklist of application documents is provided on page 4 of this form.

Often, it is beneficial to provide a separate written submission explaining in general terms what is proposed and why and to justify the proposal against any applicable performance criteria.

If you have any queries with the form or what information is required, please contact the office.

Details of Applicant and Owner			
Applicant:	HAZKEM (AUST) PTY LTE		
Contact person: (if different from applicant)	APRIL CANLAS		
Address:	UNIT 9/11 FRIARS ROAD		
Suburb:	MOORABBIN	Post Code:	3189
Email:	april@hazkem.solutions	Phone: / Mobile:	03 9842 7300

Note: All correspondence with the applicant will be via email unless otherwise advised

Owner (if different from applicant)			
Address:			
Suburb:		Post Code:	
Email:		Phone: / Mobile:	

Details of Site <i>(Note: If your application is discretionary, the following will be placed on public exhibition)</i>			
Address of proposal:	21 TASMAN HIGHWAY		
Suburb:	TRIABUNNA	Post Code:	7190
Size of site: (m ² or Ha)	3,558m ²		
Certificate of Title(s):	165614/2		
Current use of site:	EXISTING UNMANNED REFUELLING FACILITY WITH UNOCCUPIED AND NON-OPERATIONAL BUILDING		

General Application Details <i>Complete for All Applications</i>	
Description of proposed use or development:	Replacement and upgrade of existing fuel storage, dispensing and other associated equipment at the existing unmanned refuelling facility, including asset removal. The proposed works do not include the demolition, alteration, or redevelopment of the existing unoccupied and non-operational buildings on the site. No new buildings are proposed as part of this application.
Estimated value of works: (design & construction)	
Is the property on the State Heritage Register? (Tick one)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
For all Non-Residential Applications	
Hours of Operation	24/7
Number of Employees	0
Describe any delivery of goods to and from the site, including the types of vehicles used and the estimated average weekly frequency	A 17M Triaxle Fuel Tanker will be used to refill the underground fuel tank. There are no fixed days or time for tank refilling activities as these will depend on fuel demand on site. However, tank refilling activities are not anticipated to exceed three (3) times per week.
Describe any hazardous materials to be used or stored on site	The existing aboveground tanks and underground tanks are to be decommissioned and removed from site. They will be replaced by a 3-compartment underground double-walled tank for the storage and handling of 20kL ULP/20kL PULP/30kL Diesel) for automotive refuelling.
Type & location of any large plant or machinery used (refrigeration, generators)	N/A
Describe any retail and/or storage of goods or equipment in outdoor areas	There will only be retail/sale of fuel for automotive refuelling on site.
Personal Information Protection Statement	

The personal information requested will be managed in accordance with the *Personal Information Protection Act 2004*. The personal information is being collected by Glamorgan Spring Bay Council for the purposes of managing, assessing, advising on, and determining the relevant application in accordance with the *Land Use Planning and Approvals Act 1993*(LUPPA) and other related purposes, including for the purpose of data collection.

The information may be shared with contractors and agents of the Council for this purpose, law enforcement agencies, courts and other organisations and it may also be made publicly available on the Council's website and available for any person to inspect in accordance with LUPAA. If you do not provide the information sought, Council will be unable to accept and/or process your application.

Applicant Declaration

I/we hereby apply for planning approval to carry out the use or development described in this application and the accompanying documents and declare that:


- The information in this application is true and correct.
- I/we authorise Council employees or consultants to enter the site to assess the application.
- I/we have obtained all copy licenses and permission from the copyright owner for the publication, communication and reproduction of the application and reports, plans and materials provided as part of the application and for the purposes of managing, assessing, advising on, and determining the application.

I/we authorise the Council to:

- Make available the application and all information, reports, plans, and materials provided with or as part of the application in electronic form on the Council's website and in hard copy at the Council's office and other locations for public exhibition if and as required;
- Make such copies of the application and all information, reports, plans and materials provided with or as part of the application which are, in the Council's opinion, necessary to facilitate a consideration of the application;
- Publish and or reproduce the application and all information, reports, plans and materials provided with or as part of the application in Council agendas, for representors, referral agencies and other persons interested in the application; and
- provide a copy of any documents relating to this application to any person for the purpose of assessment or public consultation and agree to arrange for the permission of the copyright owner of any part of this application to be obtained.

You indemnify the Council for any claim or action taken against the Council for breach of copyright in respect of the application and all information, report, plan, and material provided with or as part of the application.

I/We declare that the Owner has been notified of the intention to make this application in accordance with section 52(1) of the *Land Use Planning and Approvals Act 1993*.

Applicant Signature:		Date:	03/06/2026
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Owners Consent required if application is on or affects Council or Crown owned or administered land

I declare that I have given permission for the making of this application for use and/or development.

Council General Manager or delegate Signature:		Date:	
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If land affected by this application is owned or administered by the Crown or Council, then the written permission of the relevant Minister (or their delegate) and/or the General Manager must be provided. For Crown land, a copy of the instrument of delegation must be provided.

It is the applicant's responsibility to obtain any owners consent prior to lodgement. Written requests for Council consent are via the General Manager. Request for Ministerial consent is to be directed to the relevant department.

Checklist of application documents:

Taken from Section 6 of the Planning Scheme

An application must include:

- a signed application form;
- any written permission and declaration of notification required under s.52 of the Act and, if any document is signed by the delegate, a copy of the delegation; (**Property Owner's Consent**)
- details of the location of the proposed use or development;
- a copy of the current certificate of title for all land to which the permit sought is to relate, including the title plan; and
- a full description of the proposed use or development.

In addition to the information that is required by clause 6.1.2, a planning authority may, in order to enable it to consider an application, require such further or additional information as the planning authority considers necessary to satisfy it that the proposed use or development will comply with any relevant standards and purpose statements in the zone, codes or a specific area plan, applicable to the use or development including:

- any schedule of easements if listed in the folio of the title and appear on the plan, where applicable;
- a site analysis and site plan at a scale acceptable to the planning authority showing, where applicable:
 - (i) the existing and proposed use(s) on the site;
 - (ii) the boundaries and dimensions of the site;
 - (iii) topography including contours showing AHD levels and major site features;
 - (iv) natural drainage lines, watercourses and wetlands on or adjacent to the site;
 - (v) soil type;
 - (vi) vegetation types and distribution including any known threatened species, and trees and vegetation to be removed;
 - (vii) the location and capacity and connection point of any existing services and proposed services;
 - (viii) the location of easements on the site or connected to the site;
 - (ix) existing pedestrian and vehicle access to the site;
 - (x) the location of existing and proposed buildings on the site;
 - (xi) the location of existing adjoining properties, adjacent buildings and their uses;
 - (xii) any natural hazards that may affect use or development on the site;
 - (xiii) proposed roads, driveways, parking areas and footpaths within the site;
 - (xiv) any proposed open space, common space, or facilities on the site; and
 - (xv) proposed subdivision lot boundaries;
- where it is proposed to erect buildings, a detailed layout plan of the proposed buildings with dimensions at a scale of 1:100 or 1:200 as required by the planning authority showing, where applicable:
 - (xvi) the internal layout of each building on the site;
 - (xvii) the private open space for each dwelling;
 - (xviii) external storage spaces;
 - (xix) parking space location and layout;
 - (xx) major elevations of every building to be erected;
 - (xxi) the relationship of the elevations to existing ground level, showing any proposed cut or fill;
 - (xxii) 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; and
 - (xxiii) materials and colours to be used on roofs and external walls.

SEARCH OF TORRENS TITLE

VOLUME 165614	FOLIO 2
EDITION 7	DATE OF ISSUE 15-Feb-2025

SEARCH DATE : 19-May-2026

SEARCH TIME : 02.31 pm

DESCRIPTION OF LAND

Town of TRIABUNNA

Lot 2 on Sealed Plan [165614](#)

Derivation : Part of 7A-0R-9P Granted to Mary Brown (Section T)

Prior CT [105739/1](#)

SCHEDULE 1

[N231768](#) TRANSFER to OCWEN ENERGY PTY LTD Registered
15-Feb-2025 at noon

SCHEDULE 2

Reservations and conditions in the Crown Grant if any

[SP165614](#) EASEMENTS in Schedule of Easements

[SP165614](#) FENCING PROVISION in Schedule of Easements

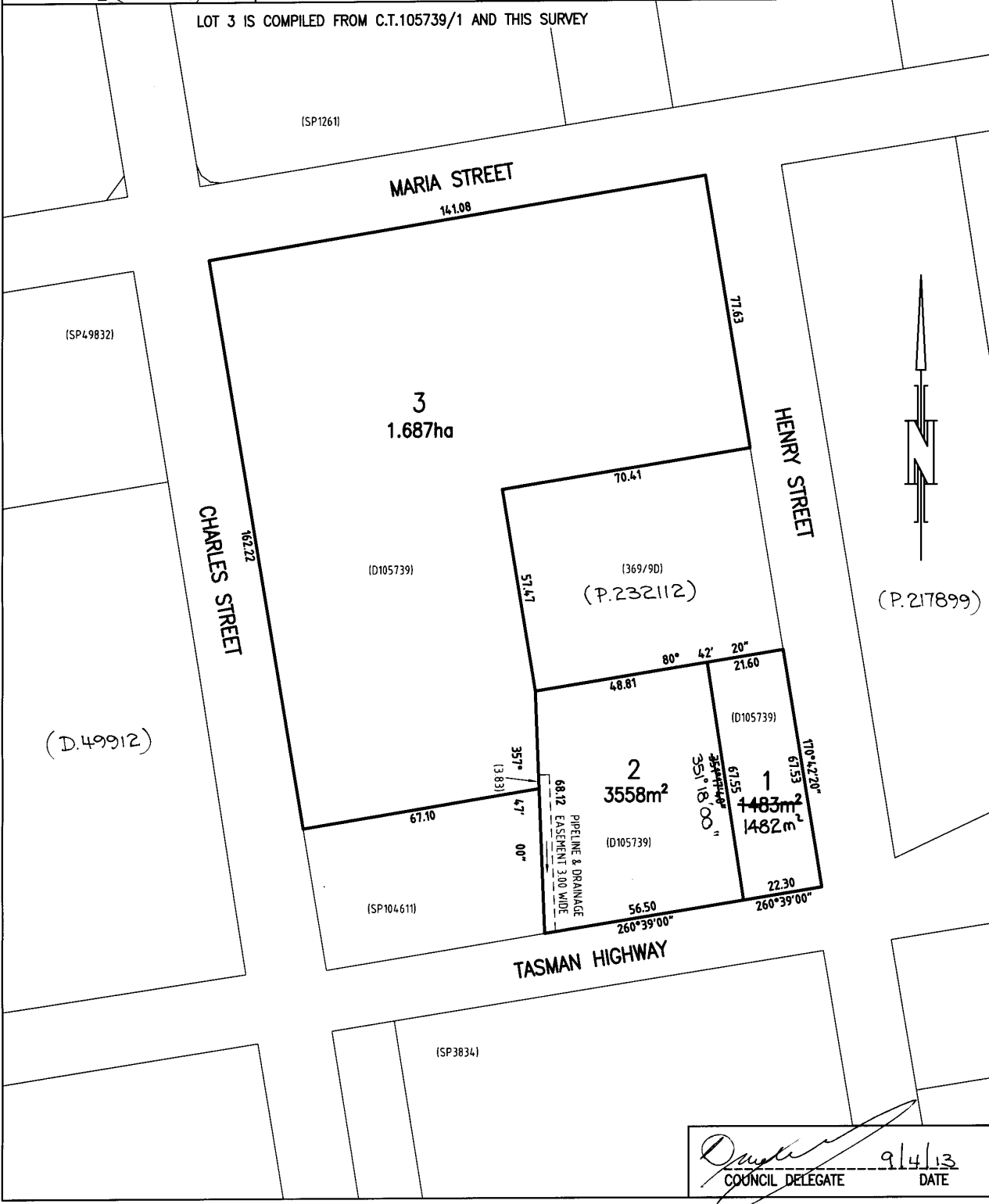
[D80658](#) AGREEMENT pursuant to Section 71 of the Land Use
Planning and Approvals Act 1993 Registered
05-Apr-2013 at 01.00 pm

UNREGISTERED DEALINGS AND NOTATIONS

No unregistered dealings or other notations

<p>OWNER ELAINE KAYE TAYLOR</p> <p>FOLIO REFERENCE C.T.105739/1</p> <p>(7A. OR. 9P)</p> <p>GRANTEE PART OF 7 ACRES GTD TO MARY BROWN (Section T.)</p>	<p>PLAN OF SURVEY</p> <p>BY SURVEYOR DAVID B MILLER BROOKS LARK & CARRICK SURVEYORS UNIT 1B 120 CAMBRIDGE ROAD ROSNY PARK PH 6244-6256 FAX 6244-6221 MOB. 0400-114-824</p> <p>LOCATION TOWN OF TRIABUNNA PARISH OF TRIABUNNA LAND DISTRICT OF PEMBROKE</p> <p>SCALE 1: 1000 LENGTHS IN METRES</p>	<p>REGISTERED NUMBER SP165614</p> <p>APPROVED 18 APR 2013 EFFECTIVE FROM</p> <p><i>Alice Kava</i> Recorder of Titles</p>
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MAPSHEET MUNICIPAL CODE No. 112 (5629-34, 44)	LAST UPI No. 3014164	LAST PLAN No. D105739	ALL EXISTING SURVEY NUMBERS TO BE CROSS REFERENCED ON THIS PLAN
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David 9/4/13
 COUNCIL DELEGATE DATE

COUNCIL APPROVAL

{Insert any qualification to the permit under section 83(5), section 109 or section 111 of the Local Government (Building & Miscellaneous Provisions) Act 1993 }

The subdivision shown in this plan is approved

pursuant to Section 83(5)(a) such that;

– for Lot 3 on the Plan Southern Water cannot provide a means of sewerage disposal for all types of sewage via gravity into Southern Water's sewerage system through the existing property sewerage connection.

Registered Number

SP 165614

In witness whereof the common seal of *Glamorgan Spring Bay Council* has been affixed, pursuant to a resolution of the Council of the said municipality passed the *25th* day of *May* 2012, in the presence of us



Member

Member

General Manager *[Signature]*

Council Reference *S.A. 12.00.5*

NOMINATIONS

For the purpose of section 88 of the Local Government (Building & Miscellaneous Provisions) Act 1993 the owner has nominated

HUNT & HUNT

Solicitor to act for the owner

BROOKS LARK & CARRICK SURVEYORS

Surveyor to act for the owner

OFFICE EXAMINATION:

Indexed

Computed *DH 17/4/13 **

Examined *DH 17/4/13 **

Dave Hamori (DPIPWE)

From: David Miller [david@blcsurveyors.com.au]
Sent: Wednesday, 17 April 2013 1:32 PM
To: Hamori, David (DPIPWE)
Subject: SP165614
Attachments: 762505 - Survey Notes.pdf

Hi David

I have attached a pdf copy of the survey notes showing amendments to dimensions as discussed.

Please contact if you require further information.

Regards

David

DAVID MILLER

BROOKS LARK & CARRICK

Email: david@blcsurveyors.com.au Mob: 0400114824

Ph: 03 62446256 Fax: 03 62446221

Postal Address: PO Box 910

ROSNY PARK TAS 7018

Office Address: Unit 1B, 120 Cambridge Road

ROSNY PARK TAS 7018

SCHEDULE OF EASEMENTS	Registered Number
NOTE: THE SCHEDULE MUST BE SIGNED BY THE OWNERS & MORTGAGEES OF THE LAND AFFECTED. SIGNATURES MUST BE ATTESTED.	SP 165614

PAGE 1 OF 5 PAGE/S

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.

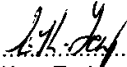
Lot 3 is together with a Right of Drainage over the PIPELINE & DRAINAGE EASEMENT 3.00 WIDE shown on the Plan.

Lot 2 is subject to a Right of Drainage appurtenant to Lot 3 over the PIPELINE & DRAINAGE EASEMENT 3.00 WIDE shown on the Plan.

Lot 2 is subject to a Pipeline Easement (as defined herein) in favour of Southern Water and Glamorgan Spring Bay Council over the PIPELINE & DRAINAGE EASEMENT 3.00 WIDE shown on the Plan.

“**Pipeline Easement**” means THE FULL RIGHT AND LIBERTY for Southern Water and its successors and Glamorgan Spring Bay Council at all times to:

- (1) enter and remain upon the Easement Land with or without employees, contractors, agents and all other persons duly authorised by it and with or without machinery, vehicles, plant and equipment;
- (2) investigate, take soil, rock and other samples, survey, open and break up and excavate the Easement Land for any purpose or activity that Southern Water or Glamorgan Spring Bay Council is authorised to do or undertake;



 Elaine Kaye Taylor

(USE ANNEXURE PAGES FOR CONTINUATION)

SUBDIVIDER: Elaine Kaye Taylor FOLIO REF: 105739/1 SOLICITOR & REFERENCE: Hunt & Hunt (refer 2002425)	PLAN SEALED BY: <i>Glamorgan Spring Bay Council</i> DATE: <i>9/4/13</i> S.A. <i>12005</i> REF NO. <i>Dunlop</i> Council Delegate
NOTE: The Council Delegate must sign the Certificate for the purposes of identification.	

0062254

<p>ANNEXURE TO SCHEDULE OF EASEMENTS</p> <p>PAGE 2 OF 5 PAGES</p>	<p>Registered Number</p> <p>SP 165614</p>
<p>SUBDIVIDER: Elaine Kaye Taylor FOLIO REFERENCE: 105739/1</p>	


- (3) install, retain, operate, modify, relocate, maintain, inspect, cleanse and repair the Infrastructure;
- (4) remove and replace the Infrastructure;
- (5) run and pass sewage and water through and along the Infrastructure;
- (6) do all works reasonably required in connection with such activities or as may be authorised or required by any law:
 - (a) without doing unnecessary damage to the Easement Land; and
 - (b) leaving the Easement Land in a clean and tidy condition; and

if the Easement Land is not directly accessible from a highway, then for the purpose of undertaking any of the preceding activities Southern Water or Glamorgan Spring Bay Council may with or without employees, contractors, agents and all other persons authorised by it, and with or without machinery, vehicles, plant and equipment enter Lots 2 from the highway at any then existing vehicle entry and cross Lots 2 to the Easement Land; and

- (8) use the Easement Land as a right of carriageway for the purpose of undertaking any of the preceding purposes on other land, Southern Water or Glamorgan Spring Bay council reinstating any damage that it causes in doing so to any boundary fence of Lots 2.

PROVIDED ALWAYS THAT:


- (1) The Owner must not without the written consent of Southern Water or Glamorgan Spring Bay Council first had and obtained and only in compliance with any conditions which form the consent:
 - (a) alter, excavate, plough, drill or otherwise penetrate the ground level of the Easement Land;
 - (b) install, erect or plant any building, structure, fence, pit, well, footing, pipeline, paving, tree, shrub or other object on or in the Easement Land;


.....
Elaine Kaye Taylor

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.

<p>ANNEXURE TO SCHEDULE OF EASEMENTS</p> <p>PAGE 3 OF 5 PAGES</p>	<p>Registered Number</p> <p>SP 165614</p>
<p>SUBDIVIDER: Elaine Kaye Taylor FOLIO REFERENCE: 105739/1</p>	

- (c) remove any thing that supports, protects or covers any Infrastructure on or in the Easement Land;
 - (d) do anything which will or might damage or contribute to damage to any of the Infrastructure on or in the Easement Land;
 - (e) in any way prevent or interfere with the proper exercise and benefit of the Easement Land by Southern Water or Glamorgan Spring Bay Council or their employees, contractors, agents and all other persons duly authorised by it; or
 - (f) permit or allow any action which the Owner must not do or acquiesce in that action.
- (2) Southern Water and Glamorgan Spring Bay Council is not required to fence any part of the Easement Land.
- (4) The Owner may erect a gate across any part of the Easement Land subject to these conditions:
- (a) the Owner must provide Southern Water or Glamorgan Spring Bay Council with a key to any lock which would prevent the opening of the gate; and
 - (b) if the Owner does not provide Southern Water or Glamorgan Spring Bay Council with that key or the key provided does not fit the lock, Southern Water or Glamorgan Spring Bay Council may cut the lock from the gate.
- (5) If the Owner causes damage to any of the Infrastructure, the Owner is liable for the actual cost to Southern Water or Glamorgan Spring Bay Council of the repair of the Infrastructure damaged.
- (6) If the Owner fails to comply with any of the preceding conditions, without forfeiting any right of action, damages or otherwise against the Owner, Southern Water or Glamorgan Spring Bay Council may:
- (a) reinstate the ground level of the Easement Land; or
 - (b) remove from the Easement Land any building, structure, pit, well, footing, pipeline, paving, tree, shrub or other object; or
 - (c) replace any thing that supported, protected or covered the Infrastructure.


.....
Elaine Kaye Taylor

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<p>ANNEXURE TO SCHEDULE OF EASEMENTS</p> <p>PAGE 4 OF 5 PAGES</p>	<p>Registered Number</p> <p>SP 165614</p>
<p>SUBDIVIDER: Elaine Kaye Taylor FOLIO REFERENCE: 105739/1</p>	

Interpretation:

In this definition of Pipeline Easement:

"Easement Land" means the land which is subject to this easement.

"Infrastructure" means infrastructure owned or for which Southern Water is responsible and includes but is not limited to:


- (a) sewer pipes and water pipes and associated valves;
- (b) telemetry and monitoring devices;
- (c) inspection and access pits;
- (d) markers or signs indicating the location of the Easement Land, the Infrastructure or any warnings or restrictions with respect to the Easement Land or the Infrastructure;
- (e) anything reasonably required to support, protect or cover any of the Infrastructure;
- (f) any other infrastructure whether of a similar nature or not to the preceding which is reasonably required for the piping of sewage or water through the Easement Land or monitoring or managing that activity; and
- (g) where the context permits, any part of the Infrastructure.

"Owner" means the registered proprietor(s) of the Lots in the folio of the Register from time to time.

"Southern Water" means Tasmanian Water and Sewerage Corporation (Southern Region) Pty Limited.

3. FENCING PROVISION

In respect of each and every Lot shown on the Plan, the Vendor (Elaine Kaye Taylor) shall not be required to fence.

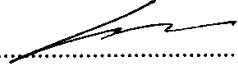

.....
Elaine Kaye Taylor

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<p>ANNEXURE TO SCHEDULE OF EASEMENTS</p> <p>PAGE 5 OF 5 PAGES</p>	<p>Registered Number</p> <p>SP 165 614</p>
<p>SUBDIVIDER: Elaine Kaye Taylor FOLIO REFERENCE: 105739/1</p>	

SIGNED by Elaine Kaye Taylor in the presence of:

Signature: 

Signature: 


Name: Justin McMullen

Address: 9/85 Marguerite St, Hobart


Occupation: Legal Practitioner
Witness

Commonwealth Bank of Australia as mortgagee of folio of the Register Volume 105739 Folio 1 mortgage D24026 consents to this sealed plan and schedule of easements.

RECEIVED, SEALED AND DELIVERED
on behalf of COMMONWEALTH BANK OF AUSTRALIA by its Attorney
under Registration Power of Attorney No. 728177
who certifies that he/she is
of the COMMONWEALTH BANK OF AUSTRALIA
and declares that he/she has received no notice of revocation of the said Power of Attorney and in the presence of:


Lisa Crosby
Manager Post Settlements

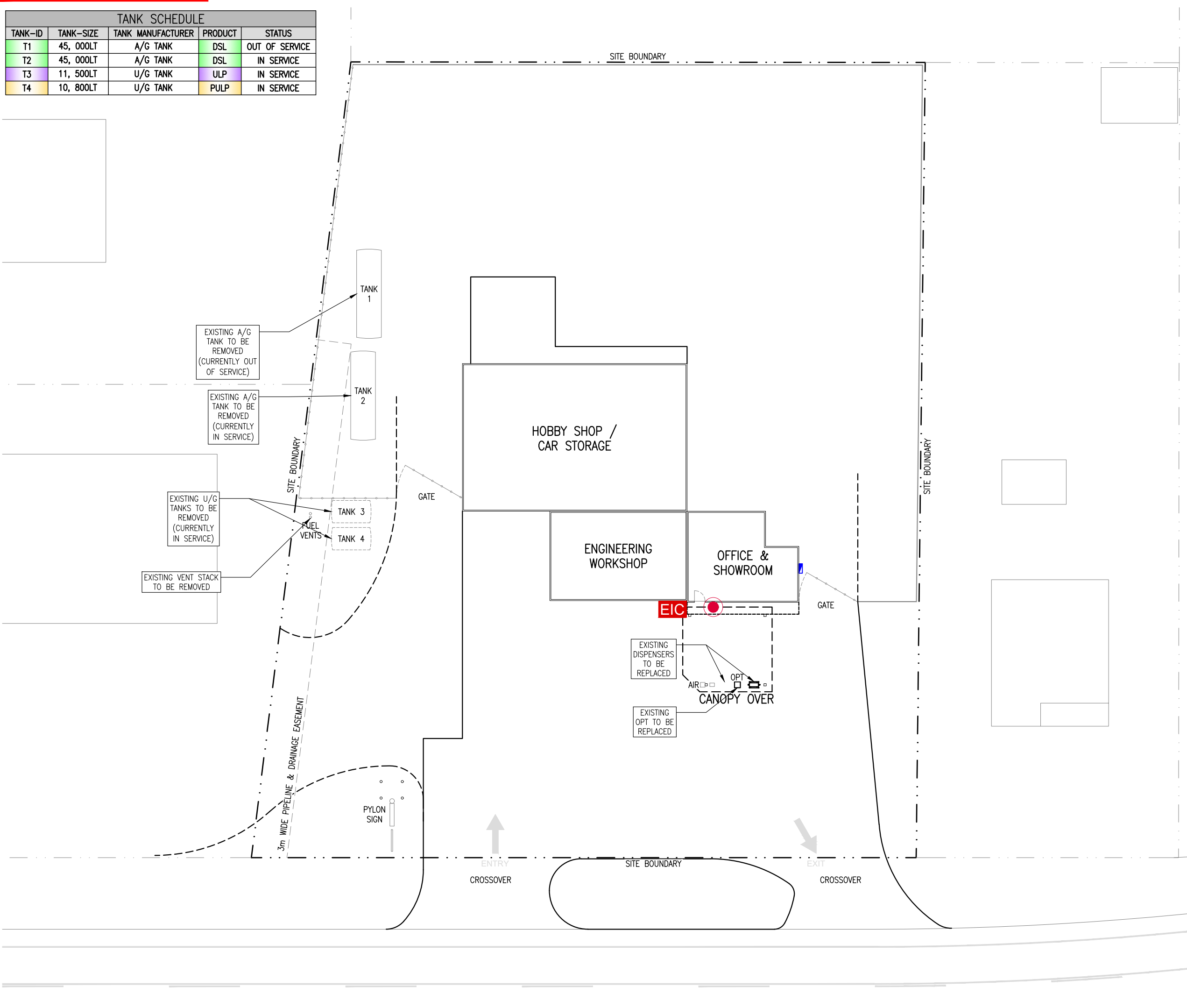
.....
Bank Officer, Sydney


Payal Pandya
150 George Street Parramatta NSW 2150

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TANK SCHEDULE				
TANK-ID	TANK-SIZE	TANK MANUFACTURER	PRODUCT	STATUS
T1	45, 000LT	A/G TANK	DSL	OUT OF SERVICE
T2	45, 000LT	A/G TANK	DSL	IN SERVICE
T3	11, 500LT	U/G TANK	ULP	IN SERVICE
T4	10, 800LT	U/G TANK	PULP	IN SERVICE

LEGEND	DESCRIPTION
	9kg DRY CHEMICAL FIRE EXTINGUISHER
	EMERGENCY INFORMATION CONTAINER



PRELIMINARY ISSUE

ISS/AMT DESCRIPTION	BY	DATE
4 SITE BASE PLAN AND DETAIL AMENDMENTS	EZ	20.05.26
3 DETAIL AMENDMENTS	EZ	29.04.26
2 DETAIL AMENDMENTS	EZ	16.02.26
1 DETAIL AMENDMENTS	EZ	15.01.25
0 INITIAL HAZKEM ISSUE	EZ	20.09.24

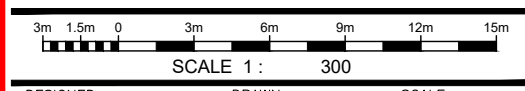


ABN 92 678 045 531
 DANGEROUS GOODS CONSULTING
 FUEL SYSTEM DESIGN & ENGINEERING SERVICES
 UNIT 9/11 FRIARS ROAD, MOORABBIN VIC 3189
 PHONE (03) 9842 7300
 www.hazkem.com.au

PROJECT
BP TRIABUNNA
21 TASMAN HIGHWAY
TRIABUNNA, TAS

CLIENT
LENNON ENGINEERING

TITLE
SITE EXISTING & DEMOLITION PLAN



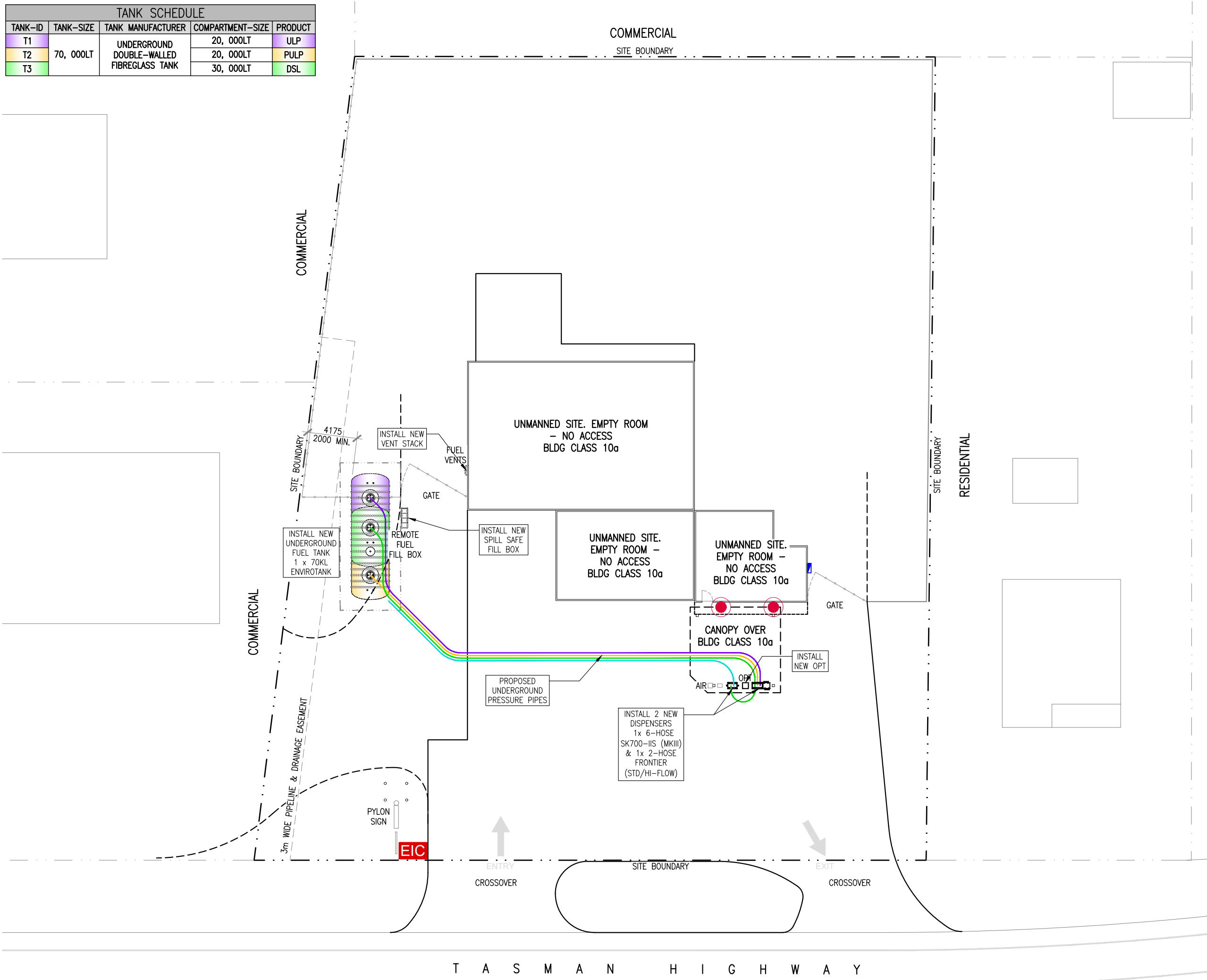
DESIGNED: EZ
 DRAWN: EZ
 SCALE: 1:300 @A3

NORTH: APPROVED

PROJECT No: **HAZ-3339-**
 DRAWING No: **A01**
 ISSUE/AMT: **4**

TANK SCHEDULE				
TANK-ID	TANK-SIZE	TANK MANUFACTURER	COMPARTMENT-SIZE	PRODUCT
T1	70, 000LT	UNDERGROUND DOUBLE-WALLED FIBREGLASS TANK	20, 000LT	ULP
T2			20, 000LT	PULP
T3			30, 000LT	DSL

LEGEND	DESCRIPTION
	9kg DRY CHEMICAL FIRE EXTINGUISHER
	EMERGENCY INFORMATION CONTAINER



LENNON ENGINEERING
& Construction Pty Ltd

PRELIMINARY ISSUE

ISS/AMT DESCRIPTION	BY	DATE
4 SITE BASE PLAN AND DETAIL AMENDMENTS	EZ	20.05.26
3 DETAIL AMENDMENTS	EZ	29.04.26
2 DETAIL AMENDMENTS	EZ	16.02.26
1 SITE LAYOUT AMENDMENTS	EZ	15.01.25
0 INITIAL HAZKEM ISSUE	EZ	20.09.24

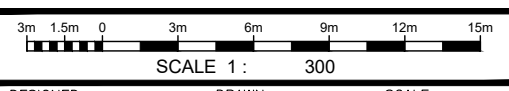


ABN 92 678 045 531
DANGEROUS GOODS CONSULTING
FUEL SYSTEM DESIGN & ENGINEERING SERVICES
UNIT 9/11 FRIARS ROAD, MOORABBIN VIC 3189
PHONE (03) 9842 7300
www.hazkem.com.au

PROJECT
BP TRIABUNNA
21 TASMAN HIGHWAY
TRIABUNNA, TAS

CLIENT
LENNON ENGINEERING

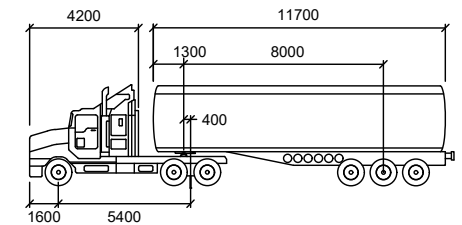
TITLE
PROPOSED SITE PLAN



DESIGNED: EZ DRAWN: EZ SCALE: 1:300 @A3

NORTH: APPROVED

PROJECT No: **HAZ-3339-** DRAWING No: **A02** ISSUE/AMT: **4**



17M TRI AXLE TANKER mm

Tractor Width : 2500	Lock to Lock Time : 6.0
Trailer Width : 2500	Steering Angle : 25.1
Tractor Track : 2500	Articulating Angle : 70.0
Trailer Track : 2500	



LENNON ENGINEERING
& Construction Pty Ltd

PRELIMINARY ISSUE

ISS/AMT DESCRIPTION	BY	DATE
3 SITE BASE PLAN AND DETAIL AMENDMENTS	EZ	20.05.26
2 DETAIL AMENDMENTS	EZ	29.04.26
1 SITE LAYOUT AMENDMENTS	EZ	15.01.25
0 INITIAL HAZKEM ISSUE	EZ	20.09.24

HAZKEM

ABN 92 678 045 531
DANGEROUS GOODS CONSULTING
FUEL SYSTEM DESIGN & ENGINEERING SERVICES
UNIT 9/11 FRIARS ROAD, MOORABBIN VIC 3189
PHONE (03) 9842 7300
www.hazkem.com.au

PROJECT

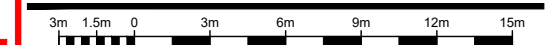
**BP TRIABUNNA
21 TASMAN HIGHWAY
TRIABUNNA, TAS**

CLIENT

LENNON ENGINEERING

TITLE

**TANKER PATH LAYOUT - 17M
TRIAXLE**

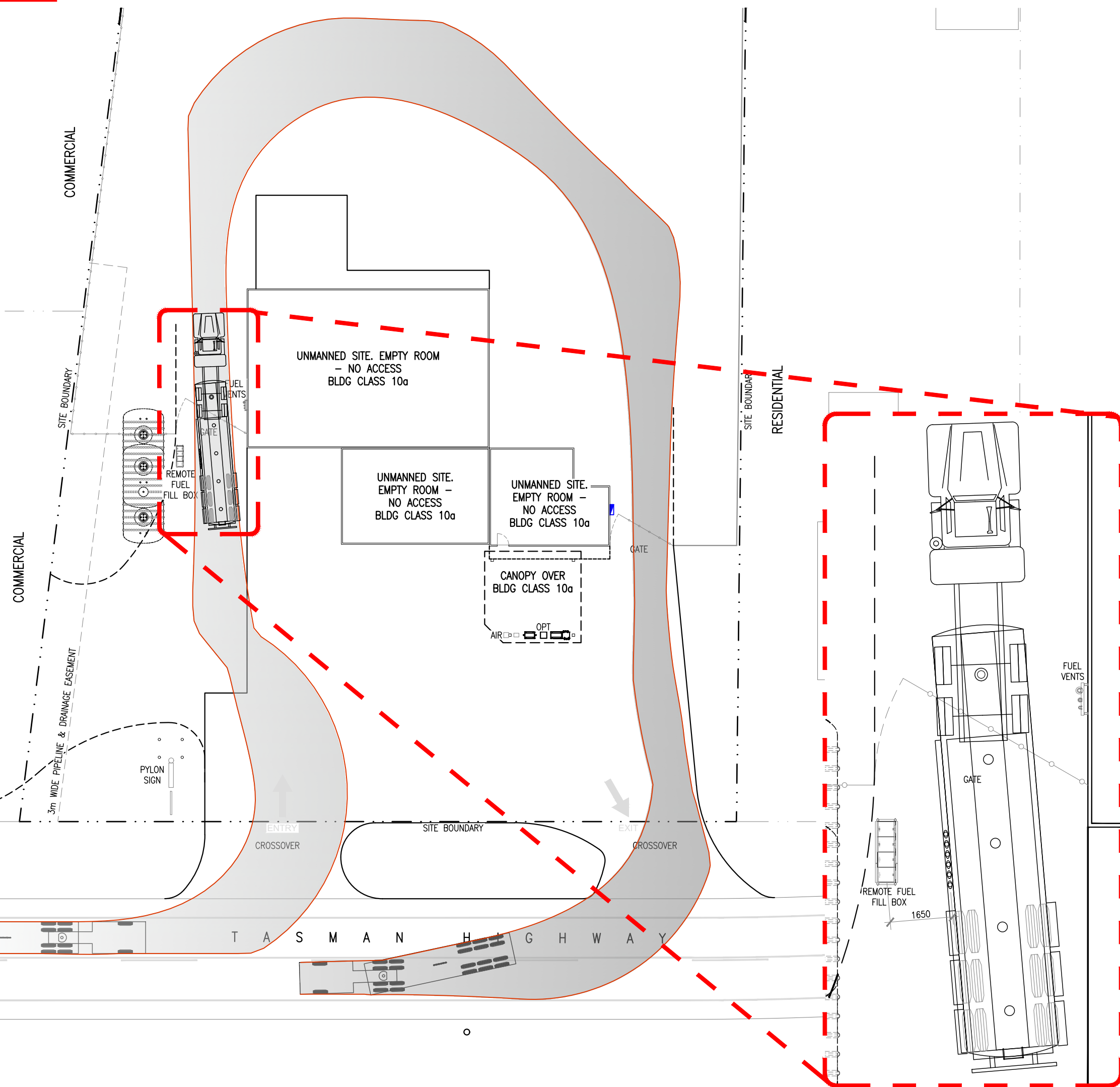


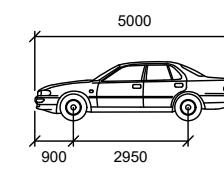
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EZ 1:300 @A3

NORTH APPROVED

PROJECT No DRAWING No ISSUE/AMT
HAZ-3339- A03 3





CAR	mm
Width	: 1900
Track	: 1550
Lock to Lock Time	: 6.0
Steering Angle	: 29.5



PRELIMINARY ISSUE

ISS/AMT DESCRIPTION	BY	DATE
0 INITIAL HAZKEM ISSUE	EZ	20.05.26

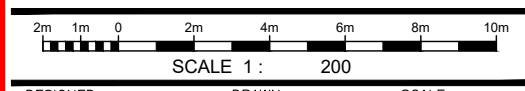


ABN 92 678 045 531
 DANGEROUS GOODS CONSULTING
 FUEL SYSTEM DESIGN & ENGINEERING SERVICES
 UNIT 9/11 FRIARS ROAD, MOORABBIN VIC 3189
 PHONE (03) 9842 7300
 www.hazkem.com.au

PROJECT
BP TRIABUNNA
21 TASMAN HIGHWAY
TRIABUNNA, TAS

CLIENT
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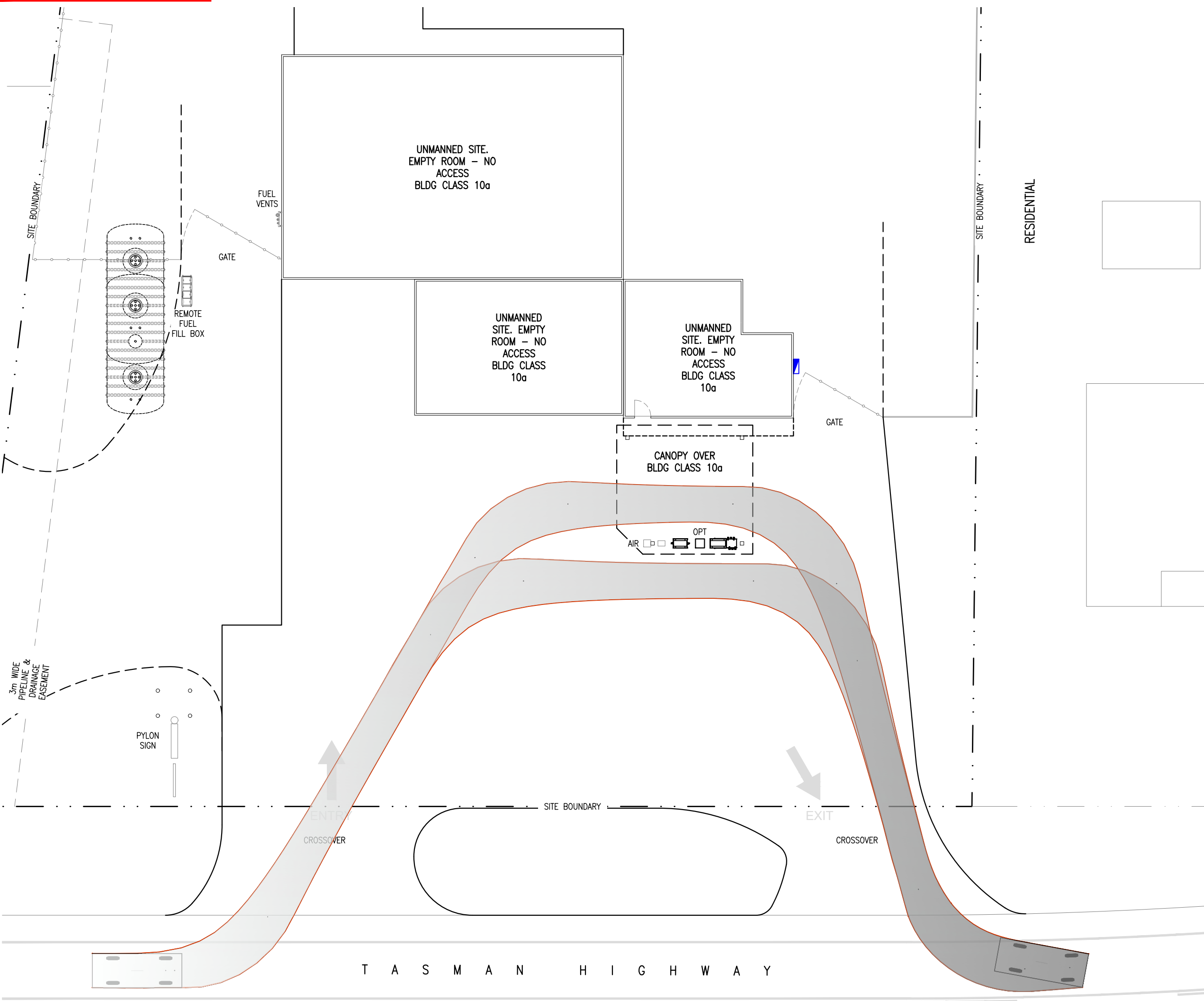
TITLE
CUSTOMER VEHICLE PATH
LAYOUT - CAR



DESIGNED: EZ
 DRAWN: EZ
 SCALE: 1:200 @A3

NORTH APPROVED

PROJECT No: **HAZ-3339-**
 DRAWING No: **A04**
 ISSUE/AMT: **0**



SITE STORAGE MANIFEST						
STORAGE ID	PROPER SHIPPING NAME	UN NUMBER	CLASS	SUB-RISK	PG	MAXIMUM CAPACITY
T1	PETROL	1203	3	-	II	20, 000LT
T2	PETROL	1203	3	-	II	20, 000LT
T3	DIESEL	-	C1	-	-	30, 000LT

MANIFEST LEGEND	
SYMBOL	DESCRIPTION
	9kg DRY CHEMICAL FIRE EXTINGUISHER
	EMERGENCY STOP BUTTON
	MAIN SWITCH BOARD
	FIRE HYDRANT
	EMERGENCY INFORMATION CONTAINER
	SPILL KIT
	TRAFFIC FLOW DIRECTION
	OBSERVATION WELLS



PRELIMINARY ISSUE

ISS/AMT DESCRIPTION	BY	DATE
3 SITE BASE PLAN AND DETAIL AMENDMENTS	EZ	20.05.26
2 DETAIL AMENDMENTS	EZ	29.04.26
1 DETAIL AMENDMENT	EZ	05.03.26
0 INITIAL HAZKEM ISSUE	EZ	16.02.26

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ABN 92 678 045 531
 DANGEROUS GOODS CONSULTING
 FUEL SYSTEM DESIGN & ENGINEERING SERVICES
 UNIT 9/11 FRIARS ROAD, MOORABBIN VIC 3189
 PHONE (03) 9842 7300
 www.hazkem.com.au

PROJECT

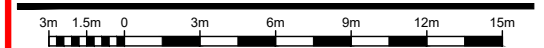
**BP TRIABUNNA
 21 TASMAN HIGHWAY
 TRIABUNNA, TAS**

CLIENT

LENNON ENGINEERING

TITLE

**MANIFEST & FIRE PROTECTION
 PLAN**



SCALE 1 : 300

DESIGNED DRAWN SCALE

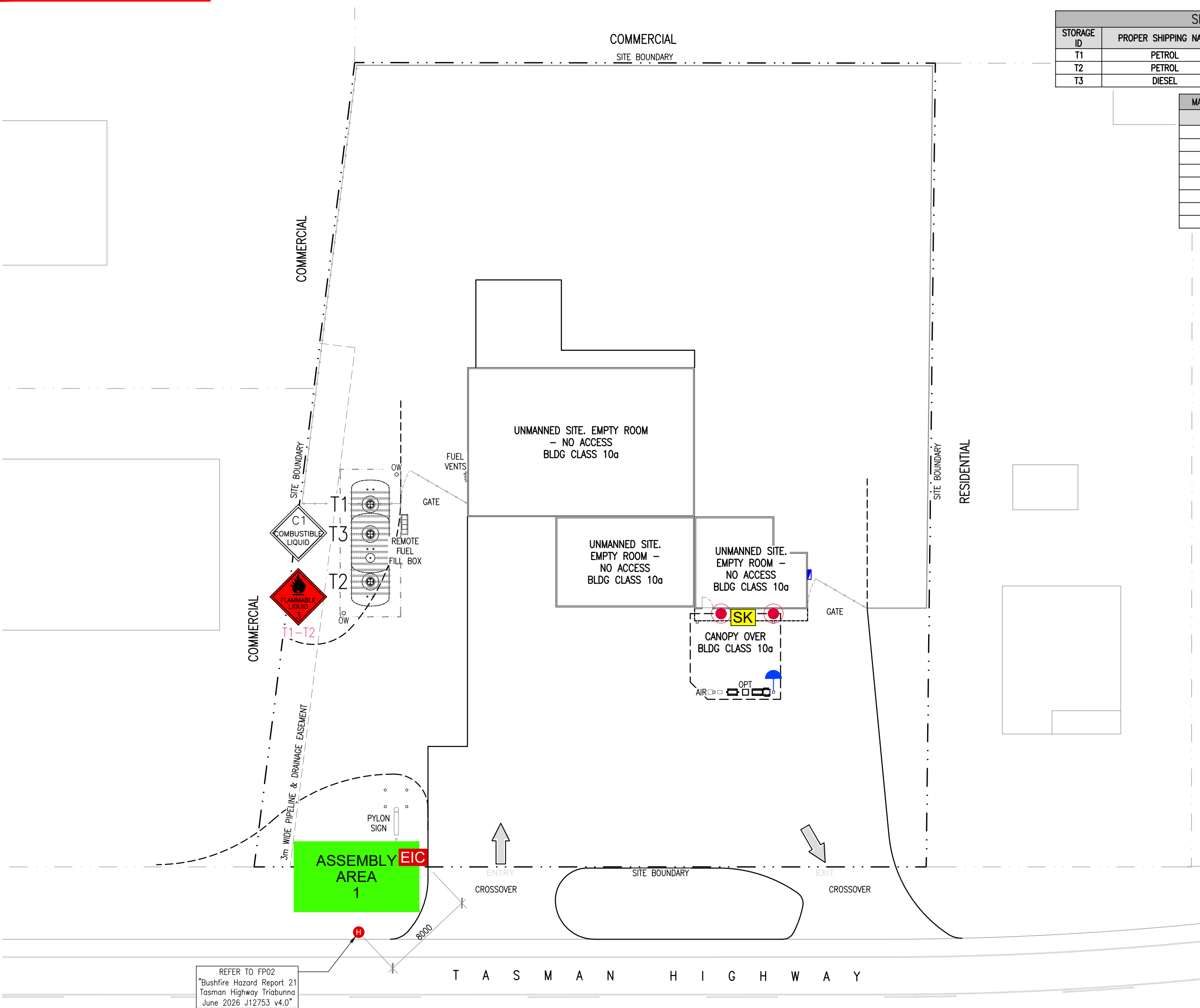
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NORTH APPROVED



PROJECT No DRAWING No ISSUE/AMT

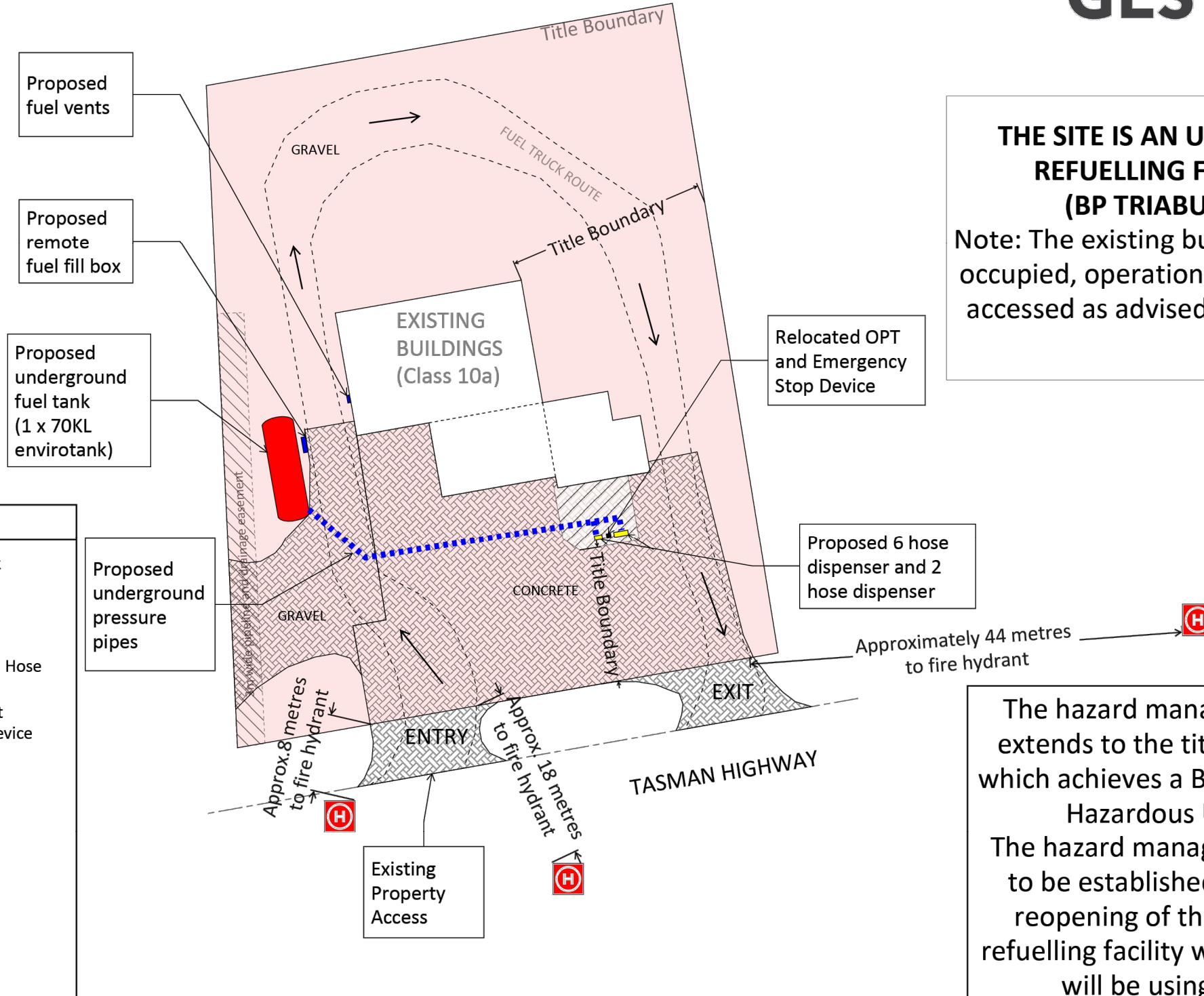
HAZ-3339- FP01 3



REFER TO FP02
 "Bushfire Hazard Report 21
 Tasman Highway Triabunna
 June 2026 J12753 v4.0"

Attachment 1

BUSHFIRE HAZARD MANAGEMENT PLAN 21 Tasman Highway, Triabunna. June 2026. J12753v4.0 Tasmanian Planning Scheme - Glamorgan - Spring Bay



THE SITE IS AN UNMANNED REFUELLING FACILITY (BP TRIABUNNA)
 Note: The existing buildings are not occupied, operational, or regularly accessed as advised by the client.



PRELIMINARY ISSUE

ISS/AMT	DESCRIPTION	BY	DATE
1	DETAIL AMENDMENTS	EZ	03.06.26
0	INITIAL HAZKEM ISSUE	EZ	20.05.26



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 DANGEROUS GOODS CONSULTING
 FUEL SYSTEM DESIGN & ENGINEERING SERVICES
 UNIT 9/11 FRIARS ROAD, MOORABBIN VIC 3189
 PHONE (03) 9842 7300
 www.hazkem.com.au

PROJECT
BP TRIABUNNA
21 TASMAN HIGHWAY
TRIABUNNA, TAS

CLIENT
LENNON ENGINEERING

TITLE
BUSHFIRE HAZARD REPORT 2026
J12753 V4.0

The hazard management area extends to the title boundaries which achieves a BAL 12.5 for the Hazardous Use site. The hazard management area is to be established prior to the reopening of the unmanned refuelling facility when occupants will be using the site

LEGEND	
	Proposed Underground Fuel Tank (70KL Envirotank)
	Proposed Remote Fuel Fill Box and Fuel Vents
	Proposed 6 Hose Dispenser and 2 Hose Dispenser
	Relocated OPT (Outdoor Payment Terminal) and Emergency Stop Device
	Existing Undercover Area
	Existing Buildings
	Existing Property Access
	Hazard Management Area
	Approx. Fire Hydrant Location

Do not scale from these drawings. Dimensions to take precedence over scale. Written specifications to take precedence over diagrammatic representations.

Client Name and Address:
 Hazkem
 Unit 9/11 Friars Road
 Moorabbin, VIC, 3189

C.T.: 165614/2
 PID: 3576865
 Area: 0.3571 Ha

The Bushfire Hazard Management Plan is to be printed at A3 in colour and read in conjunction with the Bushfire Hazard Report and Emergency Management Strategy for the proposed Hazardous Use at 21 Tasman Highway, Triabunna (GES, 2nd of June 2026, J12753v4.0)

Certification No. J12753
 Alice Higgins
 Acc. No. BFP-165
 Scope 1, 2, 3A, 3B, 3C.

Sheet 1 of 2
 Prepared by:
 Alice Higgins

DESIGNED	DRAWN	SCALE
	EZ	NTS @A3
NORTH	APPROVED	

PROJECT No	DRAWING No	ISSUE/AMT
HAZ-3339-	FP02	1

PLANNING REPORT

PROPOSED REDEVELOPMENT OF THE EXISTING UNMANNED REFUELLING FACILITY



**BP Triabunna Service Station
21 Tasman Highway,
TRIABUNNA TAS 7190**



**Hazkem (Aust) Pty Ltd
June 2026**

TELEPHONE
61 3 9842 7300

ADDRESS
Unit 9/11 Friars Road
Moorabbin VIC 3189

WEB
info@hazkem.com.au
www.hazkem.com.au

This report was written by April Gerfi Canlas,
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Last Saved	3 June 2026
Author	April Gerfi Canlas
Name of Organisation	Lennon Engineering & Construction Pty Ltd
Name of Project	BP Triabunna Unmanned Refuelling Facility
Name of Document	Planning Report
Document Version	Rev 0
Project No.	HAZ-3339

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INTRODUCTION

This report has been prepared by Hazkem (Aust) Pty Ltd on behalf of Ocwen Energy Pty Ltd (trading as Lowes Petroleum), through our client Lennon Engineering & Construction, in support of an application for planning approval for the redevelopment of the existing unmanned refuelling facility at 21 Tasman Highway, Triabunna, Tasmania.

The site was previously operated as a truck workshop. Prior to purchasing the property in 2025, Lowes Petroleum operated the existing BP Triabunna Unmanned Refuelling Facility as a lessee under an arrangement with the former private property owner. As the current property owner and site operator, Lowes Petroleum proposes to redevelop the existing facility through the replacement and upgrading of fuel storage, dispensing and associated equipment to improve operational efficiency, safety, and environmental performance.

The proposed redevelopment involves the decommissioning and removal of the existing aboveground and underground fuel storage tanks, together with associated fuel system equipment. The proposal incorporates a tank replacement and fuel system upgrade program, including the installation of a new three-compartment, double-walled underground fibreglass storage tank with a total capacity of 70 kL for the storage and dispensing of petrol and diesel fuels for automotive refuelling. Associated works include the installation of new underground fuel lines, fuel dispensers, and an outdoor payment terminal to replace the existing equipment.

All works will be undertaken in accordance with relevant contemporary standards, regulations, and industry practices relating to the storage and handling of fuels, under the supervision of suitably qualified project managers and environmental consultants experienced in such activities.

The proposed works do not include the demolition, alteration, or redevelopment of the existing unoccupied and non-operational buildings on the site. No new buildings are proposed as part of this application.

Subject Site

<i>Address</i>	21 Tasman Highway, Triabunna, Tasmania
<i>Property Identification Number</i>	3576865
<i>Certificate of Title Reference (Volume/Folio)</i>	165614/2
<i>Locality</i>	Triabunna
<i>Municipality</i>	Glamorgan-Spring Bay
<i>Planning Zone</i>	Light Industrial
<i>Planning Codes Overlay</i>	Bushfire-prone areas
<i>Total Area</i>	3,558 sqm
<i>Planning Scheme</i>	Tasmanian Planning Scheme
<i>Current Use</i>	Existing BP Triabunna Unmanned Refuelling Facility with other unoccupied and non-operational existing buildings on site



Figure 1. Aerial view of site locality

The site currently has two existing crossovers to the Tasman Highway providing vehicle ingress and egress, together with a BP flagpole sign, price board, and entry gates.

The existing unmanned refuelling facility comprises a canopy containing two fuel dispensers, an outdoor payment terminal (OPT), an emergency stop button, an air hose, and a fire extinguisher.

Located behind the canopy is a former office and showroom building, which is currently unoccupied and non-operational. An engineering workshop is situated adjacent to the western side of the office/showroom. A storage shed/warehouse is located further to the rear of the site.

These existing buildings are not occupied or in active use and will remain unchanged as part of the proposed redevelopment. The proposed works are limited to the replacement and upgrading of the existing fuel storage, dispensing, and associated infrastructure servicing the unmanned refuelling facility.

Further west of the warehouse are two existing aboveground diesel storage tanks. In front of these tanks is the farm pit of existing underground petrol storage tanks, with the corresponding vent pipes located immediately to the west.

Existing fuel storage and dispensing infrastructure will be decommissioned and removed as part of the proposed redevelopment works.



Figure 2. Aerial view of site

Adjoining Properties:

The existing unmanned refuelling facility is located within the Light Industrial zone at Triabunna, Tasmania, in a predominantly rural setting. The adjoining properties are also zoned Light Industrial and contain a range of existing industrial and commercial structures. Beyond the immediate industrial area, the surrounding locality is characterised by a mix of low-density residential development, accommodation and camping uses, open grassland, and extensive areas of native forest vegetation.



Figure 3. Zoning map of the subject site and adjoining properties

North

To the north of the site is a property zoned Light Industrial containing existing industrial development. Further north is Maria Street, beyond which are properties zoned Rural.

East

To the east of the site is a Light Industrial zoned property containing existing development. Further east are Rural zoned properties with scattered existing structures.

South

The Tasman Highway forms the southern boundary of the site. Properties located on the opposite side of the highway are zoned General Residential and Recreation.

West

To the west are Light Industrial zoned properties containing automotive repair, body works and storage-related uses. Further west are Local Business and Rural zoned properties.



Figure 4. Zoning map of the subject site

The proposal comprises the redevelopment of an existing unmanned refuelling facility located within the Light Industrial Zone under the Tasmanian Planning Scheme. The development will be assessed against the applicable provisions of the Light Industrial Zone, which governs permissible uses and development standards within the site's zoning context.

PROPOSAL

The proposal seeks planning approval for the redevelopment of the existing unmanned refuelling facility at 21 Tasman Highway, Triabunna, Tasmania. The works comprise the removal of existing aboveground and underground fuel storage tanks and their replacement with a new 70kL triple-compartment, double-walled fibreglass underground fuel storage tank, together with associated replacement of fuel system and refuelling equipment. No new buildings are proposed, and no alterations are proposed to existing buildings on site.

The canopy, being the frontmost structure from the Tasman Highway frontage, is located well within the property boundary and exceeds the minimum 5.5 metre setback requirement from the frontage. The proposed redevelopment maintains existing setbacks from both the frontage and adjoining properties.

The proposal retains the existing general site layout which facilitates safe and efficient vehicle movements, including fuel tanker access from the road for refilling of underground tanks, and customer vehicle access via the existing western crossover, with egress via the existing eastern crossover. The overall circulation arrangement, including tanker and customer vehicle paths, are detailed in Drawing Set HAZ-3339 (Appendix A).

Detailed Proposal Description

Approval is sought from the responsible authority, Glamorgan Spring Bay Council, for the proposed redevelopment works, which include:

- Decommissioning, removal and disposal of two (2) single-walled steel aboveground diesel storage tanks and two (2) underground petrol/motor spirit tanks
- Installation of a 3-compartment, double-walled 70kL fibreglass underground tank (diesel and petrol storage)
- Removal and replacement of existing fuel lines, vent stack and other fuel system equipment with new dual-containment fuel system equipment, underground pressure piping and vent stack
- Installation of a new spill-safe remote fuel fill box
- Replacement of existing pumps and Outdoor Payment Terminal (OPT) with new dispensers and payment terminal

The proposal is detailed in Drawing Set HAZ-3339 (Appendix A), including Drawing HAZ-3339-A01 "Site Existing & Demolition Plan" and Drawing HAZ-3339-A02 "Proposed Site Plan".

Prior to commencement of works, all fuel products will be safely transferred to temporary storage or removed off-site in accordance with applicable Australian Standards. All decommissioned infrastructure, including tanks, fuel lines, pumps, and the OPT, will be removed and disposed of in accordance with relevant regulatory requirements and standards. Any affected fencing or gates will be reinstated to their original locations following completion of works.

The proposed underground tank is located within the central portion of the site with a safe distance from the western site boundary, in close proximity to the location of

the existing underground tanks to be removed. The location has been designed with consideration of the easement along the western boundary. Folio text, folio plan, and schedule of easements have been provided with this application, and the proposed works will not impact easement access or function.

As shown in Drawings HAZ-3339-A03 "Tanker Path Layout – 17m Triaxle" and HAZ-3339-A04 "Customer Vehicle Path Layout – Car", the location of the spill-safe remote fuel fill box enables safe tanker access and operation without disrupting on-site circulation or affecting traffic conditions on the Tasman Highway during delivery activities.

Customer vehicle circulation for refuelling is largely retained, with the new dispensers and Outdoor Payment Terminal installed in a similar location to existing infrastructure.

The proposed storage system comprises a double-walled fibreglass underground tank installed in accordance with AS 4897-2008 "The Design, Installation and Operation of Underground Petroleum Storage Systems". The system incorporates Level 1 environmental protection measures, including secondary contained piping, leak detection monitoring, automatic tank gauging, statistical inventory reconciliation, and observation wells. The interstitial space between tank walls is continuously monitored to confirm system integrity.

The tank is manufactured in accordance with UL 1316 "Glass-Fibre Reinforced Plastic Underground Storage Tanks for Petroleum Products, Alcohols and Alcohol-Gasoline Mixtures" and will be installed in compliance with AS 1940-2017 "The Storage and Handling of Flammable and Combustible Liquids". The facility is designed as an unmanned self-service site in accordance with Clause 7.3.6 of AS 1940-2017 relating to unsupervised self-service systems.

The dual-contained remote fuel fill box is designed to capture any minor residual product release during disconnection of tanker transfer lines.

In accordance with the Dangerous Goods (Storage and Handling) Regulations 2022, placarding will be installed for petrol and diesel storage where required prior to commencement of operations. As the site operates as a retail refuelling facility for automotive use, outer warning placarding requirements will be applied in accordance with regulatory thresholds.

As the quantity of petrol exceeds 500 litres, a Dangerous Goods notification will be submitted to WorkSafe Tasmania. The storage and handling of dangerous goods will be undertaken in accordance with applicable Work Health and Safety requirements and relevant Tasmanian regulatory provisions.

An emergency response plan will be prepared for the site due to the quantity of flammable liquids stored exceeding regulatory thresholds. This plan will be communicated to all relevant personnel and provided to the primary emergency service organisation as required.

Fire protection systems and associated site safety infrastructure are detailed in Drawing Set HAZ-3339-FP01 "Manifest & Fire Protection Plan" and HAZ-3339-FP02 "Bushfire Hazard Report 2026 J12753 V4.0".

PLANNING ZONE ASSESSMENT - STATE PLANNING PROVISIONS

Light Industrial Zone

The site is located within a Light Industrial Zone, whose purpose under the State Planning Provisions of Tasmanian Planning Scheme is:

- “To provide for manufacturing, processing, repair, storage and distribution of goods and materials where off site impacts are minimal or can be mitigated to minimise conflict with, or unreasonable loss of amenity to, any other uses; and,
- To provide for use or development that supports and does not adversely impact on industrial activity.”

“Vehicle fuel sales and service” is a permitted use under 18.2 Use Table of the Light Industrial Zone. The proposed works on the existing unmanned refuelling facility remains to be categorized as vehicle fuel sales and service.

The State Planning Provisions – Miscellaneous Exemptions, Clause 4.6.15, provides that fuel tanks within the Light Industrial Zone are exempt from requiring a permit, provided that the development is located within the Light Industrial Zone and complies with the applicable setback requirements (Acceptable Solutions) for the zone, unless:

- the development involves the storage of hazardous chemicals at manifest quantities; and/or
- the Bushfire-Prone Areas Code applies and requires a permit for the use or development.

The Acceptable Solutions for setbacks within the Light Industrial Zone require buildings to be setback from a frontage by not less than 5.5 m, not less than the setback of existing buildings on the site, or within the range of setbacks of adjoining properties. The proposed redevelopment will not alter the existing setbacks of buildings on site from the Tasman Highway frontage or adjoining properties.

The proposed redevelopment includes the installation of an underground double-walled fibreglass triple-compartment 70 kL petrol and diesel storage tank. The total quantity of diesel to be stored, handled, and dispensed on site is below the manifest quantity threshold for Category 4 flammable liquids (100 kL). However, the total quantity of petrol proposed to be stored, handled, and dispensed on site exceeds the manifest quantity threshold for Category 1 flammable liquids (500 L).

Furthermore, the Bushfire-Prone Areas Code applies to the site, as it is located within a Bushfire-Prone Areas Overlay. Initial enquiries with Council also provided advice to consider the Potentially Contaminated Land Code to address compliance with the applicable acceptable solutions relevant to the proposed redevelopment works. These matters will be discussed in the following section of this document.

PLANNING CODES OVERLAY ASSESSMENT - BUSHFIRE-PRONE AREAS

The site is affected by the Bushfire-Prone Areas Overlay under the Tasmanian Planning Scheme. The purpose of the Bushfire-Prone Areas Code (C13.1) is to ensure that use and development is appropriately designed, located, serviced, and constructed to reduce the risk to human life and property, and the cost to the community, caused by bushfires.



Figure 5. Tasmania Planning Scheme Code Overlay

The proposed redevelopment involves the continued storage, handling and dispensing of petrol and diesel at an existing unmanned refuelling facility. As the site incorporates the storage of flammable liquids exceeding manifest quantities, the development is classified as a hazardous use and is therefore subject to the requirements of Clause C13.5.2 of the Bushfire-Prone Areas Code.

Clause C13.5.2 requires that a hazardous use located within a bushfire-prone area demonstrates that a tolerable level of bushfire risk can be achieved and maintained. Compliance may be achieved through the preparation of an Emergency Management Strategy and a Bushfire Hazard Management Plan certified by the Tasmania Fire Service (TFS) or an accredited person.

As no documentation was available from the previous property owner to demonstrate compliance with the Bushfire-Prone Areas Code, Geo-Environmental Solutions was engaged to undertake a bushfire assessment and prepare the required supporting documentation.

A Bushfire Hazard Report (Annex 1) was prepared by Alice Higgins of Geo-Environmental Solutions to assess bushfire risk and identify appropriate

mitigation measures for the proposed redevelopment. The assessment concludes that a tolerable level of bushfire risk can be achieved and maintained through implementation of the recommended bushfire protection measures.

The site has been assessed as having a Bushfire Attack Level (BAL) of BAL-12.5 in accordance with AS 3959, indicating potential exposure to ember attack and radiant heat flux not exceeding 12.5 kW/m². Required separation distances from surrounding bushfire-prone vegetation have been determined and are fully contained within the site boundary.

As the proposal does not include new buildings, building alterations or a change of use, no additional construction requirements are triggered under the Director's Determination. Existing site access arrangements are less than 30 metres in length and therefore do not require dedicated firefighting access provisions. Firefighting water supply is available from existing TasWater reticulated infrastructure, with multiple hydrants located within 120 metres of the development area.

A Hazard Management Area (HMA) will be established and maintained in accordance with the Bushfire Hazard Management Plan to ensure ongoing compliance with the Code. Ongoing fuel management measures will be implemented for the life of the development.

An Emergency Management Strategy (EMS) has also been prepared to address operational bushfire risks associated with the hazardous use and to demonstrate compliance with Clause C13.5.2(A2). The strategy outlines emergency response procedures, risk mitigation measures and operational controls applicable to the site. The EMS was reviewed and endorsed by the Tasmania Fire Services (Attachment 2 of the Bushfire Hazard Report).

The Bushfire Hazard Management Plan and Emergency Management Strategy have been prepared and certified by an accredited person. In addition, a Bushfire-Prone Areas Code Certificate under Section 51(2)(d) of the Land Use Planning and Approvals Act 1993 (Certificate No. J12753) was issued by Alice Higgins on 2 June 2026 and is included as Attachment 3 to the Bushfire Hazard Report.

Subject to implementation of the recommendations and management measures contained within the Bushfire Hazard Report, the proposed redevelopment is capable of complying with the requirements of the Bushfire-Prone Areas Code and achieving an acceptable level of bushfire risk for the ongoing operation of the facility.

POTENTIALLY CONTAMINATED LAND CODE

The Property Report does not identify the site as being affected by the Potentially Contaminated Land Overlay. However, during preliminary discussions with Glamorgan Spring Bay Council regarding the proposed redevelopment works, it was recommended that due consideration be given to the Potentially Contaminated Land Code due to the site's historical use for petroleum storage and handling.

To support the proposed redevelopment, the following environmental investigations have been undertaken by Resolve Environmental:

- Environmental Site Assessment (ESA) – February 2024;

- Limited Soils Assessment – July 2024; and
- Groundwater Monitoring Event – 2025.

In addition, Resolve Environmental prepared correspondence dated 28 May 2026 (Annex 2) to provide Council with supplementary information regarding the proposed asset removal and tank replacement works at the BP Triabunna Unmanned Refuelling Facility.

The proposed works comprise the decommissioning and removal of the site's Underground Petroleum Storage System (UPSS), two aboveground storage tanks (ASTs), associated fuel lines and dispensers. Approximately 95 m³ of excavation is anticipated to facilitate the removal of the existing underground fuel infrastructure.

While the proposed works trigger consideration of the Potentially Contaminated Land Code due to the historical petroleum storage activities on the site, the environmental investigations undertaken to date have identified only low-level petroleum hydrocarbon impacts within soil and groundwater.

The Environmental Site Assessment completed in February 2024 concluded that the identified impacts do not pose an unacceptable risk to site users or the receiving environment under the current and proposed commercial land use. The proposed redevelopment does not introduce a more sensitive land use and therefore does not increase the risk profile of the site.

To support the removal works, a project-specific Sampling, Analytical and Quality Plan (SAQP) has been prepared to verify that any remaining in-situ soils are suitable for the continued commercial use of the site following completion of the redevelopment works. A Construction Environmental Management Plan (CEMP) has also been prepared to manage potential environmental risks during excavation and construction activities, including dust generation, erosion, sediment transport, stormwater management, and the handling of any unexpected contamination encountered during the works.

Accordingly, the available environmental investigations and management measures demonstrate that the proposed redevelopment can be undertaken without resulting in unacceptable contamination risks to human health or the environment.

ENVIRONMENTAL ASSESSMENT

This section of the report provides a description of the key environmental impacts of the proposal and proposed mitigation measures.

Site Suitability

As previously stated, this application relates to redevelopment and maintenance works at the existing unmanned refuelling facility located at 21 Tasman Highway, Triabunna, Tasmania, within the Light Industrial Zone.

Vehicle fuel sales and service is a permitted use under Clause 18.2 Use Table of the Light Industrial Zone. The proposed works maintain the existing setbacks from the Tasman Highway frontage and adjoining properties and do not involve any change to the existing use of the site.

As the site is affected by the Bushfire-Prone Areas Overlay, and no records were available from either the Tasmania Fire Service or the previous property owner demonstrating that the proposed works qualified for an exemption, planning approval is required. The applicable acceptable solutions under the Bushfire-Prone Areas Code have been assessed, with supporting documentation attached to this application as Annex 1.

The required bushfire protection measures, including the establishment and ongoing maintenance of Hazard Management Areas outlined in the Bushfire Hazard Management Plan, together with the mitigation measures identified to achieve and maintain a tolerable level of risk in the Emergency Management Strategy, will be implemented accordingly by the site operator.

The site is also affected by the Potentially Contaminated Land Code due to the historical and ongoing storage and handling of petroleum products associated with the existing unmanned refuelling facility. To assess the suitability of the land for the proposed redevelopment works, a Preliminary Site Investigation (PSI) was undertaken by a suitably qualified environmental consultant in accordance with the requirements of the Tasmanian Planning Scheme and relevant contaminated land assessment guidelines. The investigation reviewed the historical and current uses of the site, available environmental information, and the potential for contamination associated with former and existing fuel storage and handling activities. The assessment concluded that while the site has a history of fuel-related activities, the proposed redevelopment does not introduce a more sensitive land use and the site is suitable for the continued operation of an unmanned refuelling facility, subject to the implementation of the recommendations and management measures outlined in the investigation. Accordingly, the requirements of the Potentially Contaminated Land Code have been addressed through the preparation of supporting environmental documentation accompanying this application (Annex 2).

Accordingly, the proposed redevelopment and maintenance works at the existing unmanned refuelling facility remain appropriate for the site. The proposal has been assessed against the relevant provisions of both the Bushfire-Prone Areas Code and the Potentially Contaminated Land Code, with supporting investigations demonstrating that the site is suitable for the continued use as an unmanned refuelling facility. The redevelopment will continue to provide an essential refuelling service for local residents, businesses, transport operators and motorists travelling along the Tasman Highway.

Access and traffic - during construction

All proposed works will be undertaken within the site, and it is not anticipated that traffic along the Tasman Highway will be adversely impacted at any stage of construction. Traffic associated with the works will primarily consist of workers' vehicles and a limited number of trucks delivering construction materials.

The work area will be secured to prevent unauthorised access, and the site is of sufficient size to accommodate all construction-related vehicles within the property at all times.

Construction vehicles will utilise the existing site crossovers and internal accessways, enabling vehicles of varying sizes to safely and efficiently enter and exit the site without disruption to surrounding traffic movements.

Access and traffic - post construction

The site has been designed to provide safe and unobstructed access to the refuelling area. The layout has been developed in consultation with the property owner to reflect the existing site conditions and operational requirements, ensuring that traffic associated with both the existing use and the proposed facility is not impeded.

The redevelopment retains the existing circulation arrangement and allows for the continued safe and efficient manoeuvring of customer vehicles and fuel tankers throughout the site. Fuel tanker access arrangements for tank refilling activities and customer vehicle circulation for refuelling activities are demonstrated in Drawings HAZ-3339-A03 "Tanker Path Layout – 17m Triaxle" and HAZ-3339-A04 "Customer Vehicle Path Layout – Car", respectively.

During tank refilling and maintenance activities, the fuel tanker driver and any authorised personnel will unlock the site gates as required and secure them again upon leaving the site, ensuring that the other existing unoccupied and non-operational buildings remain protected from unauthorised access.

Air and noise

The proposed installation works will primarily involve excavation associated with the installation of the underground fuel tank and replacement of underground fuel lines, together with limited use of construction machinery. Sediment and erosion control measures will be implemented as required and as applicable throughout the progression of works on site.

Construction activities are not anticipated to generate noise levels significantly above ambient conditions for extended periods and will be undertaken within the working hours prescribed by Council.

Accordingly, the proposed works are not expected to result in adverse impacts on adjoining properties.

Operation Hours

During the construction phase, contractors will operate within normal working hours as specified in the Planning Permit to be issued by Glamorgan Spring Bay Council.

Following completion of the works, the facility is intended to operate 24/7, providing continuous refuelling access for the community and motorists travelling along the Tasman Highway.

Employees

The redeveloped facility will continue to operate as an unsupervised self-service refuelling facility designed and operated in accordance with AS 1940-2017 *The Storage and Handling of Flammable and Combustible Liquids*, including Clause 7.3.6 relating to unsupervised self-service systems.

The facility will not require permanent on-site staff. However, authorised personnel and contractors will attend the site periodically to undertake inspections, maintenance, servicing, fuel deliveries and other operational activities as required. The authorised personnel shall be duly oriented and trained for inspections, maintenance, monitoring, servicing, fuel deliveries, clean up and other operational activities.

Visual Impact

The site is located within an established industrial area in the Glamorgan-Spring Bay Municipality. The proposal involves the removal of existing aboveground tanks and the replacement of existing underground tanks with a 3-compartment, self-bunded underground petrol and diesel storage tank.

No new buildings or significant aboveground structures are proposed as part of the redevelopment. Existing site buildings will remain unchanged.

Accordingly, the proposed works are not expected to result in any significant change to the existing visual amenity of the site or the surrounding area.

Roof/Canopy

There are no proposed new buildings or alterations to the existing roof or canopy included in this design.

Signage

No signage is proposed as part of the development, other than that required under the applicable Australian Standards for the storage, handling, and dispensing of fuel, and the safe operation of an unmanned refuelling facility.

Lighting

The existing site lighting will be retained to ensure safe access and use for all drivers utilising the facility, without causing nuisance to surrounding properties or distraction to motorists travelling along the Tasman Highway.

Likely Effect on Adjoining Property

The proposed redevelopment is more appropriately characterised as a replacement and upgrading of existing fuel storage and dispensing infrastructure within an established unmanned refuelling facility. The works are intended to improve operational efficiency, safety, and environmental performance while maintaining the existing use of the site. The equipment to be installed incorporates design features that mitigate risk and environmental impacts.

It is not envisaged that the proposal will result in any adverse impacts on adjoining properties, as the facility is existing and will maintain the current traffic flow arrangements.

Waste Management - during construction

The proposal involves excavation works associated with the replacement of the underground tank and fuel lines. Any excavated material will either be reused to backfill excavated areas following installation of the new underground tank and fuel lines, or appropriately redistributed within the site where suitable.

Any remaining surplus soil or locally generated material will be stored on site until appropriate approvals are obtained for disposal at a licensed waste facility, in accordance with relevant regulatory requirements.

Waste Management - post construction

Regular inspection, maintenance and housekeeping activities will be undertaken to ensure the fuel system, spill containment measures and surrounding areas remain in good operating condition and free from waste accumulation.

Environmental Impact

The proposed redevelopment incorporates the replacement of the existing fuel storage and dispensing infrastructure with a modern underground petroleum storage system comprising a 70kL triple-compartment double-walled fibreglass tank, secondary-contained piping, leak detection systems, automatic tank gauging and associated fuel dispensing equipment.

The underground storage system has been designed and will be installed in accordance with AS 4897-2008 *The Design, Installation and Operation of Underground Petroleum Storage Systems* and AS 1940-2017 *The Storage and Handling of Flammable and Combustible Liquids*. The system incorporates Equipment Level 1 environmental protection measures, including secondary containment, continuous leak monitoring, automatic gauging, statistical inventory analysis and observation wells.

The double-walled tank construction complies with UL 1316 *Glass-Fibre Reinforced Plastic Underground Storage Tanks for Petroleum Products, Alcohols and Alcohol-Gasoline Mixtures*. The interstitial space between the inner and outer tank walls is continuously monitored to provide early detection of any loss of integrity.

The proposed facility will continue to operate as an unmanned self-service refuelling facility in accordance with Clause 7.3.6 of AS 1940-2017 (Appendix B).

The new spill-safe remote fill box incorporates integrated spill containment to capture any residual fuel that may be released during tanker hose disconnection following fuel delivery activities.

The proposed works involve excavation associated with removal of existing underground tanks and installation of replacement infrastructure. Excavated

material will be reused on site where suitable or disposed of at an appropriately licensed facility in accordance with relevant regulatory requirements.

Personnel involved in operation, servicing and maintenance of the facility will receive appropriate training in fuel handling, spill response and emergency procedures. Clear operational and emergency instructions will also be displayed on site.

Given the design of the replacement fuel system, the environmental protection measures incorporated into the proposal, and the operational procedures to be implemented, the redevelopment is not expected to result in adverse environmental impacts or impacts on adjoining land uses.

CONCLUSION

In summary, the proposed redevelopment and maintenance works at the existing BP Triabunna unmanned refuelling facility at 21 Tasman Highway, Triabunna, Tasmania constitute a permitted use within the Light Industrial Zone under the Tasmanian Planning Scheme.

The proposal has been assessed against the relevant provisions of the Bushfire-Prone Areas Code and the Potentially Contaminated Land Code, with supporting technical investigations and documentation demonstrating that the site is suitable for the continued operation of a fuel storage and dispensing facility, subject to the implementation of the recommended mitigation measures.

The proposed layout, design, and replacement fuel system components maintain existing site setbacks from the Tasman Highway frontage and adjoining properties, preserve appropriate separation from surrounding land uses, and ensure that no adverse impacts are expected on adjoining properties or the broader locality.

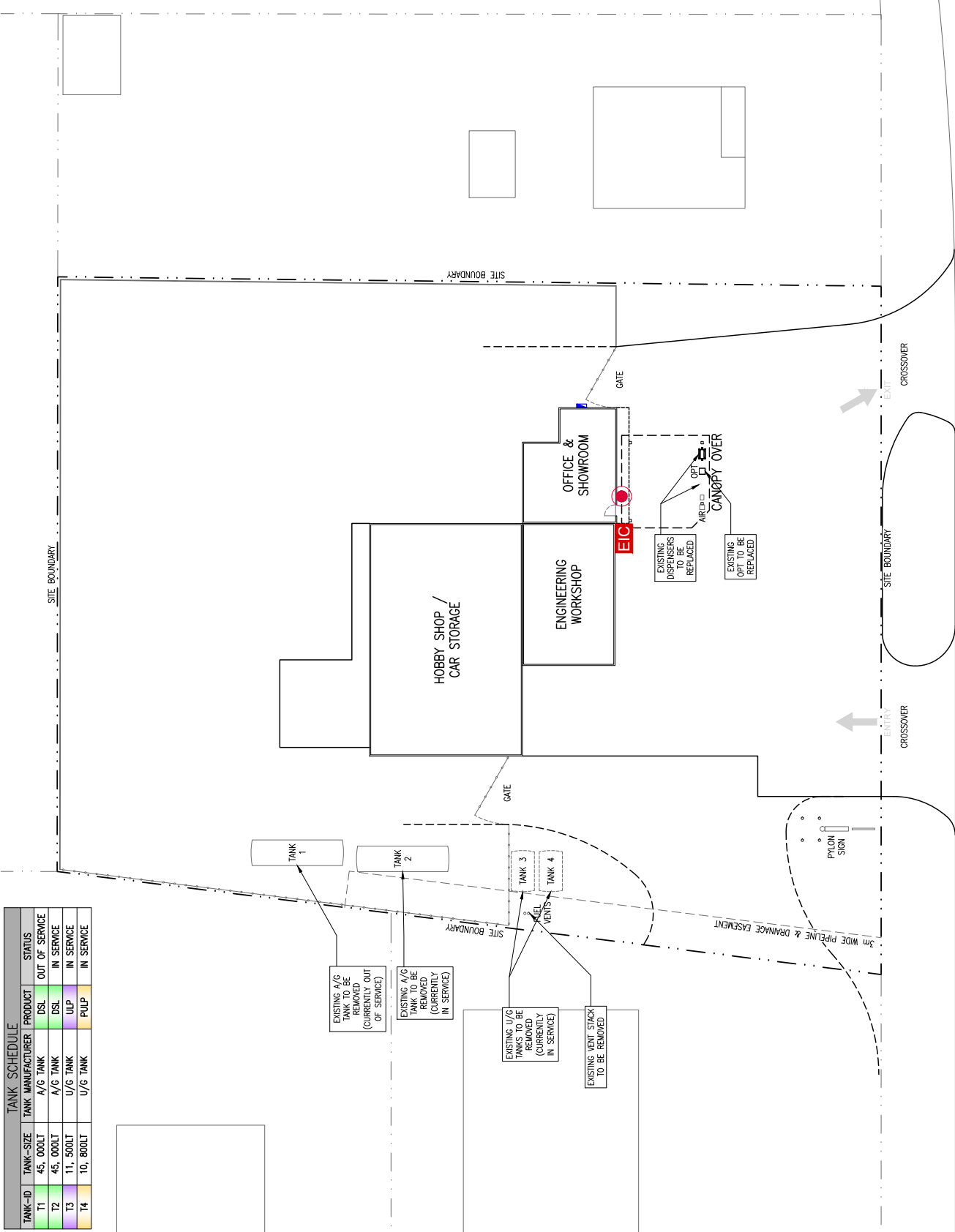
Relevant mitigation measures, management strategies, and operational procedures have been incorporated into the design and will be implemented during both construction and ongoing operation. These measures provide an effective framework for managing bushfire risk, potential land contamination, and general environmental impacts, as well as ensuring appropriate response procedures for any unlikely emergency or incident.

Accordingly, the proposal is considered consistent with the objectives of the Light Industrial Zone under the Tasmanian Planning Scheme and satisfies the intent and performance outcomes of both the Bushfire-Prone Areas Code and the Potentially Contaminated Land Code. The application therefore does not give rise to any land use conflict or inconsistency with the relevant planning controls.

Overall, the redevelopment will facilitate the continued safe and efficient operation of an established unmanned refuelling facility, incorporating modernised infrastructure that improves environmental performance, operational reliability, and compliance with current standards, while ensuring the ongoing provision of 24/7 refuelling services to the community and motorists travelling along the Tasman Highway.

APPENDIX A - DRAWINGS

TANK SCHEDULE				
TANK-ID	TANK-SIZE	TANK MANUFACTURER	PRODUCT	STATUS
T1	45, 000L	A/G TANK	DSL	OUT OF SERVICE
T2	45, 000L	A/G TANK	DSL	IN SERVICE
T3	11, 500L	U/G TANK	ULP	IN SERVICE
T4	10, 800L	U/G TANK	PULP	IN SERVICE



LEGEND	SYMBOL	DESCRIPTION
	●	9kg DRY CHEMICAL FIRE EXTINGUISHER
	EG	EMERGENCY INFORMATION CONTAINER



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& Construction Pty Ltd

PRELIMINARY ISSUE

ISS/AMT DESCRIPTION	BY	DATE
4. SITE BASE PLAN AND DETAIL AMENDMENTS	EZ	20.05.26
3. DETAIL AMENDMENTS	EZ	29.04.26
2. DETAIL AMENDMENTS	EZ	15.04.25
1. DETAIL AMENDMENTS	EZ	15.04.25
0. INITIAL HAZKEM ISSUE	EZ	20.09.24

HAZKEM

ABN 92 678 045 531
DANGEROUS GOODS CONSULTING
FUEL SYSTEM DESIGN & ENGINEERING SERVICES
UNIT 9/11 FRIARS ROAD, MOORABBIN VIC 3189
WWW.HAZKEM.COM.AU

PROJECT

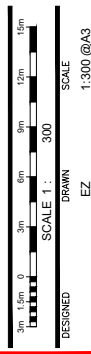
**BP TRIABUNNA
21 TASMAN HIGHWAY
TRIABUNNA, TAS**

CLIENT

LENNON ENGINEERING

TITLE

SITE EXISTING & DEMOLITION PLAN



NORTH

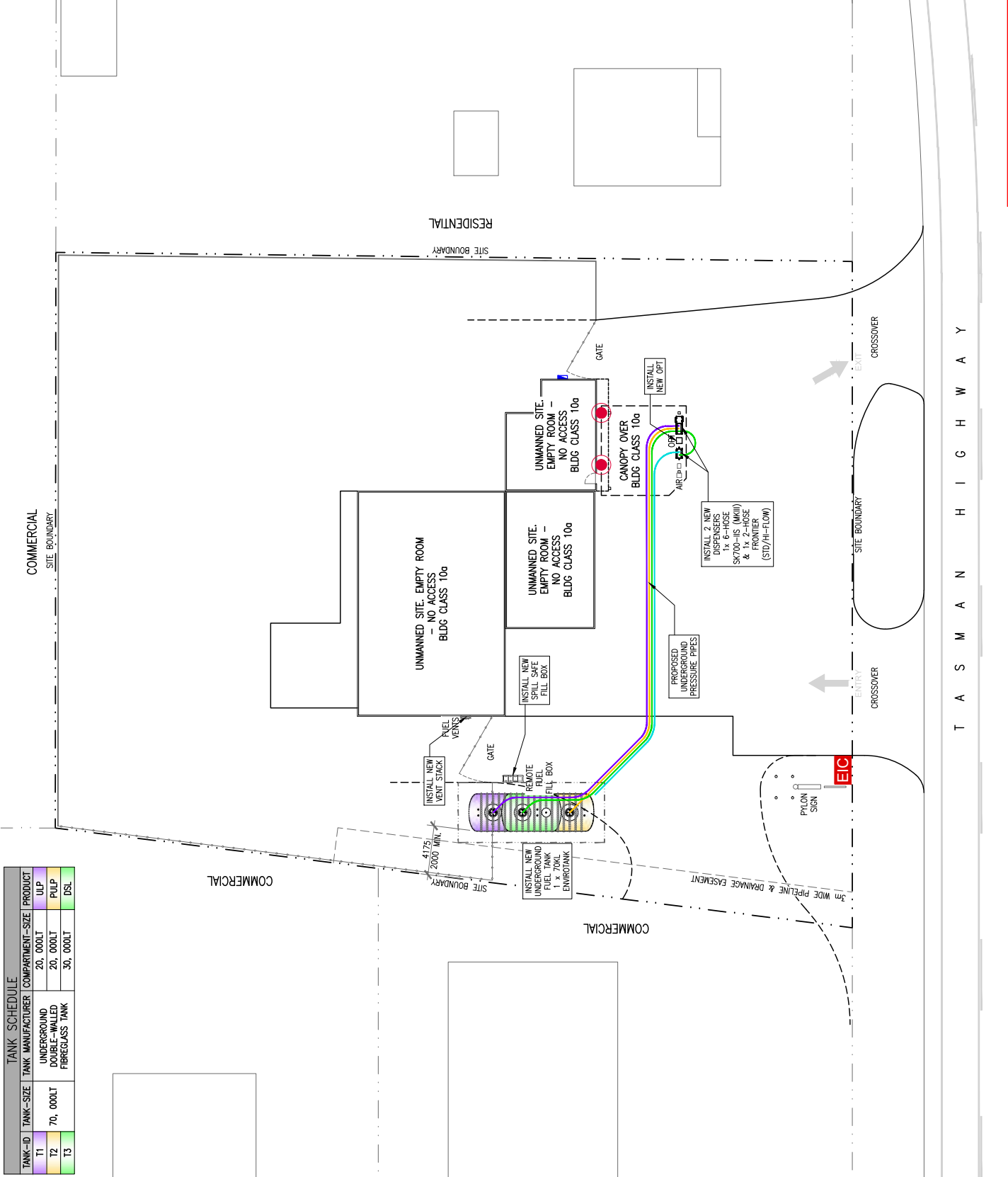
PROJECT No
HAZ-3339-

DRAWING No
A01

ISSUE/AMT
4

TANK SCHEDULE			
TANK-ID	TANK-SIZE	TANK MANUFACTURER	COMPARTMENT-SIZE PRODUCT
T1	70, 000LT	UNDERGROUND DOUBLE-WALLED FIBREGASS TANK	ULP
T2	20, 000LT		PULP
T3	30, 000LT		DSL

COMMERCIAL
SITE BOUNDARY



LEGEND	SYMBOL	DESCRIPTION
	⊙	9kg DRY CHEMICAL FIRE EXTINGUISHER
	EG	EMERGENCY INFORMATION CONTAINER



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& Construction Pty Ltd

PRELIMINARY ISSUE

ISS/AMT DESCRIPTION	BY	DATE
4. SITE BASE PLAN AND DETAIL AMENDMENTS	EZ	20.05.26
3. DETAIL AMENDMENTS	EZ	20.04.26
2. DETAIL AMENDMENTS	EZ	20.04.26
1. SITE LAYOUT AMENDMENTS	EZ	15.01.25
0. INITIAL HAZKEM ISSUE	EZ	20.09.24

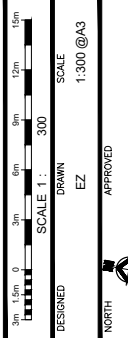
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PROJECT
**BP TRIABUNNA
21 TASMAN HIGHWAY
TRIABUNNA, TAS**

CLIENT
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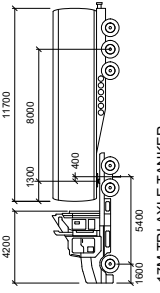
TITLE
PROPOSED SITE PLAN



PROJECT No
HAZ-3339-

DRAWING No
A02

ISSUE/AMT
4



17M TRI AXLE TANKER mm
 Lock to Lock Time : 6.0
 Trailer Width : 2500
 Steering Angle : 25.1
 Trailer Track : 2500
 Articulating Angle : 70.0



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PRELIMINARY ISSUE

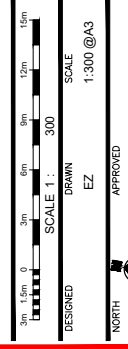
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4. CANOPY OVER	EZ	15.01.25
7. SITE LAYOUT AMENDMENTS	EZ	15.01.25
0. INITIAL HAZKEM ISSUE	EZ	20.09.24

HAZKEM

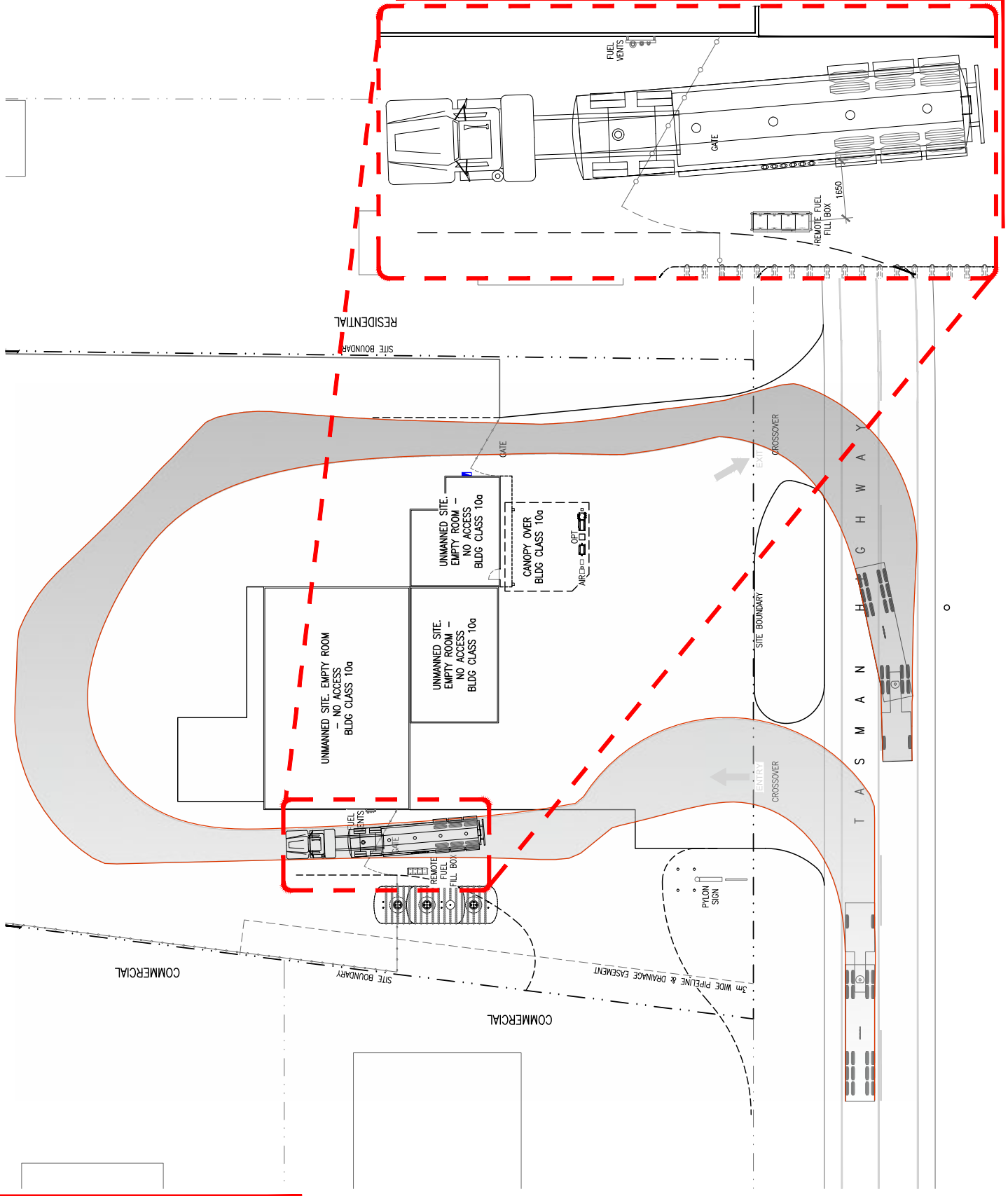
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PROJECT
BP TRIABUNNA
21 TASMAN HIGHWAY
TRIABUNNA, TAS

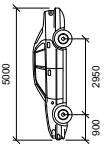
CLIENT
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 TITLE
TANKER PATH LAYOUT - 17M TRIAXLE



PROJECT No: **HAZ-3339-**
 DRAWING No: **A03**
 ISSUE/AMT: **3**



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CAR mm
 Width : 1600
 Track : 1550
 Lock to Lock Time : 6.0
 Steering Angle : 29.5



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PRELIMINARY ISSUE

ISS/AMT DESCRIPTION	BY	DATE
0 - INITIAL HAZKEM ISSUE	EZ	20.05.26

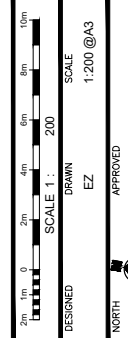


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PROJECT
**BP TRIABUNNA
 21 TASMAN HIGHWAY
 TRIABUNNA, TAS**

CLIENT
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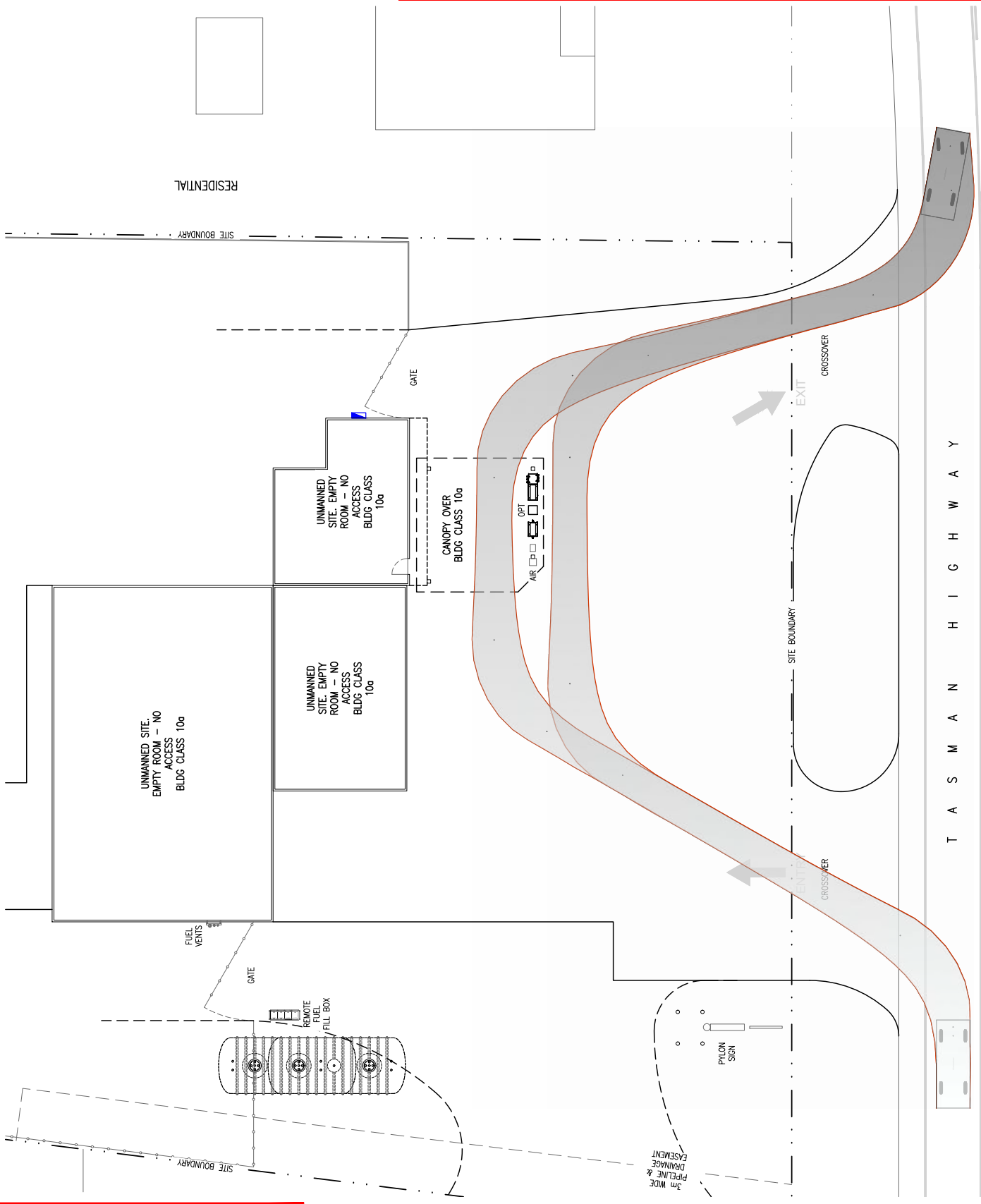
TITLE
**CUSTOMER VEHICLE PATH
 LAYOUT - CAR**



PROJECT No
HAZ-3339-

DRAWING No
A04

ISSUE/AMT
0



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SITE STORAGE MANIFEST					
STORAGE ID	PROPER SHIPPING NAME	UN NUMBER	CLASS	SUB-RISK PG	MAXIMUM CAPACITY
T1	PETROL	1203	3	- II	20,000LIT
T2	PETROL	1203	3	- II	20,000LIT
T3	DIESEL	-	C1	-	30,000LIT

MANIFEST LEGEND SYMBOL	DESCRIPTION
	9kg DRY CHEMICAL FIRE EXTINGUISHER
	EMERGENCY STOP BUTTON
	MAIN SWITCH BOARD
	FIRE HYDRANT
	EMERGENCY INFORMATION CONTAINER
	SPILL KIT
	TRAFFIC FLOW DIRECTION
	OBSERVATION WELLS



PRELIMINARY ISSUE

ISS/AMT DESCRIPTION	BY	DATE
3. SITE BASE PLAN AND DETAIL AMENDMENTS	EZ	20.05.26
4. CANOPY OVER AMENDMENTS	EZ	20.05.26
7. DETAIL AMENDMENTS	EZ	06.03.26
0. INITIAL HAZKEM ISSUE	EZ	16.02.26



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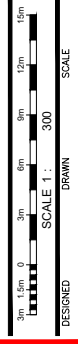
PROJECT

**BP TRIABUNNA
 21 TASMAN HIGHWAY
 TRIABUNNA, TAS**

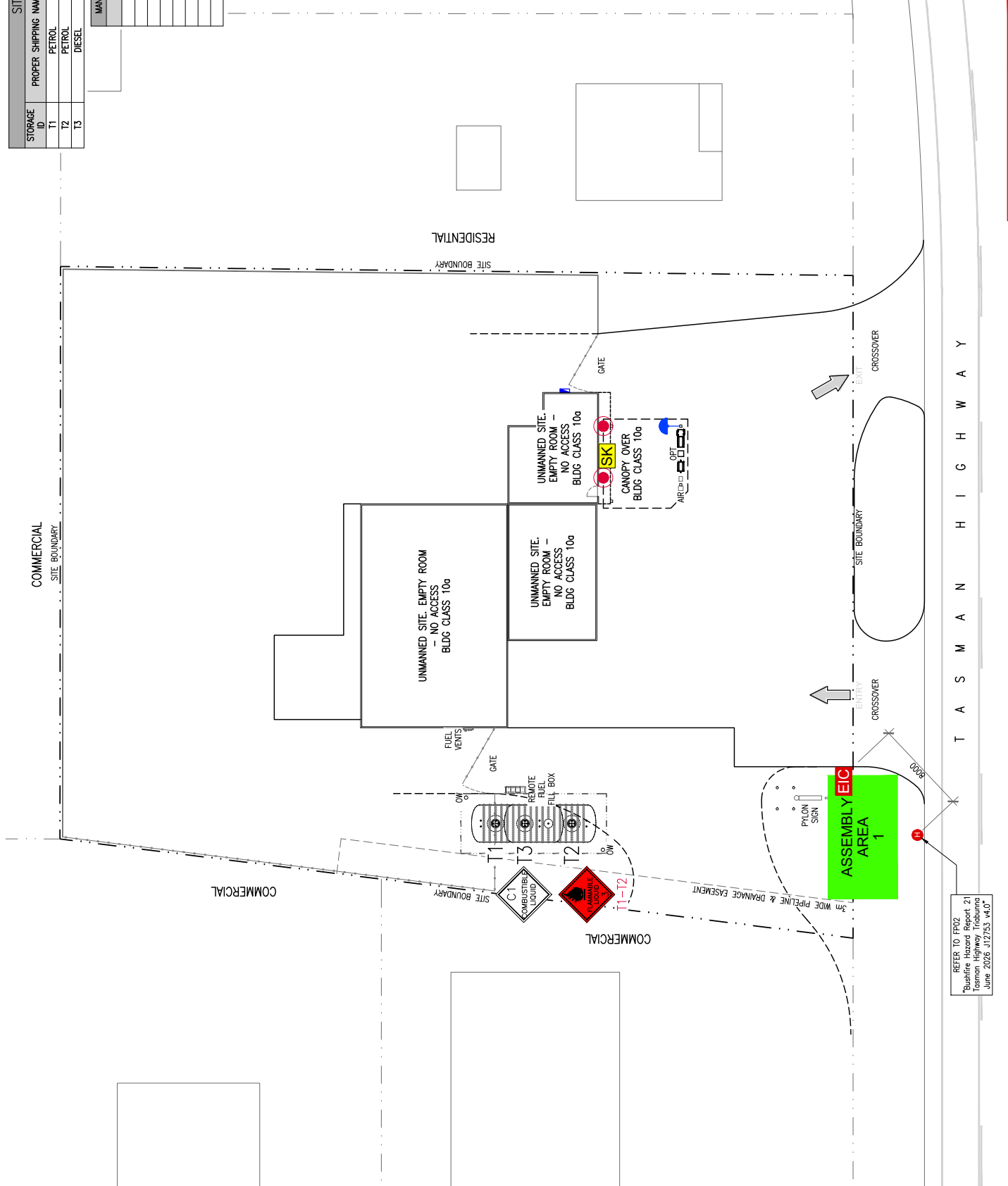
CLIENT

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TITLE
**MANIFEST & FIRE PROTECTION
 PLAN**



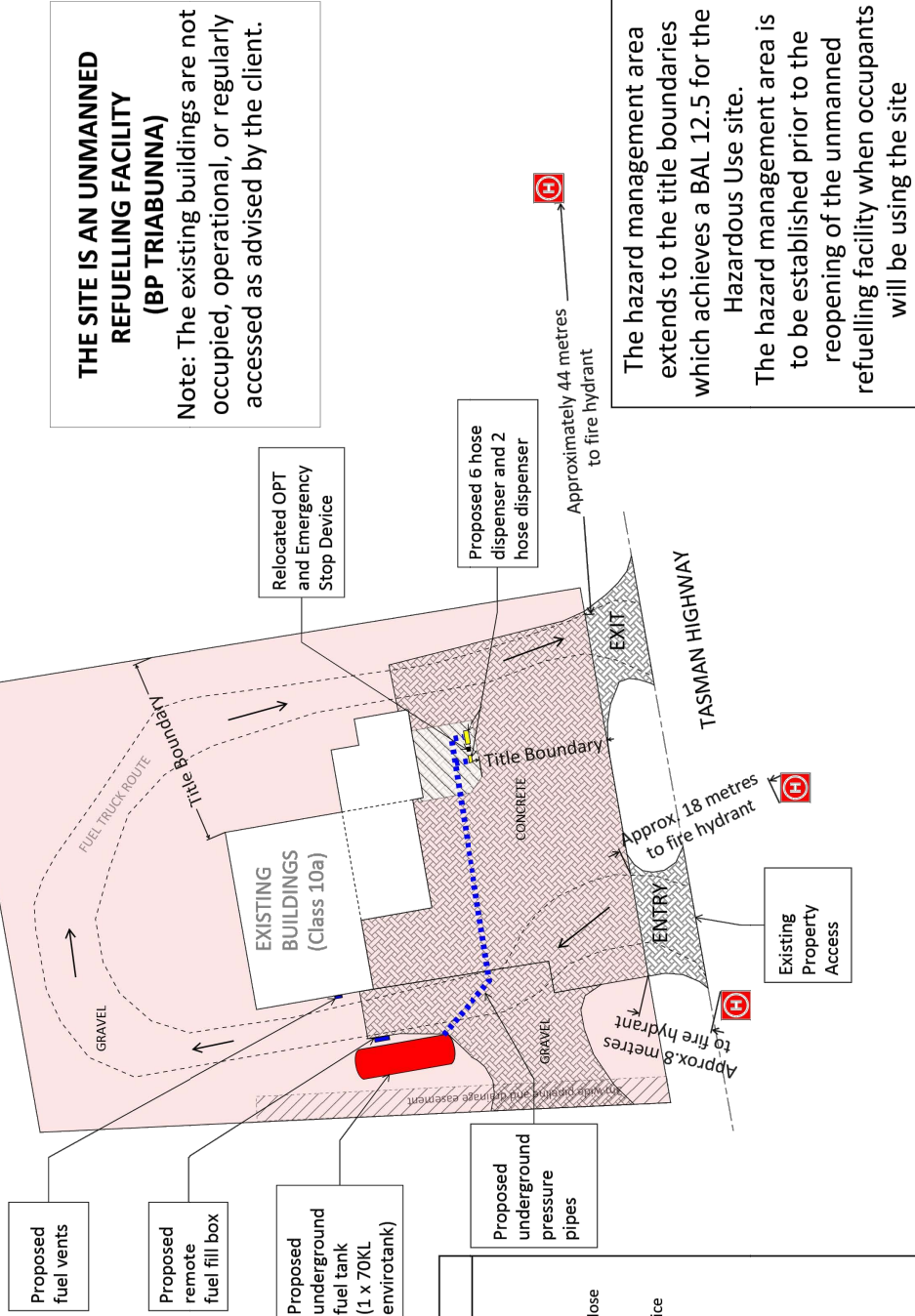
PROJECT NO
HAZ-3339-
 DRAWING NO
FP01 3
 ISSUE/AMT



REFER TO FP02
 Bluefire Hazard Report 21
 Tasman Highway Triabunna
 June 2026 J12763 v4.0

Attachment 1

BUSHFIRE HAZARD MANAGEMENT PLAN 21 Tasman Highway, Triabunna. June 2026. J12753v4.0 Tasmanian Planning Scheme - Glamorgan - Spring Bay



THE SITE IS AN UNMANNED REFUELLING FACILITY (BP TRIABUNNA)
 Note: The existing buildings are not occupied, operational, or regularly accessed as advised by the client.

The hazard management area extends to the title boundaries which achieves a BAL 12.5 for the Hazardous Use site. The hazard management area is to be established prior to the reopening of the unmanned refuelling facility when occupants will be using the site

LEGEND	
	Proposed Underground Fuel Tank (70KL Enviro tank)
	Proposed Remote Fuel Fill Box and Fuel Vents
	Proposed 6 Hose Dispenser and 2 Hose Dispenser
	Relocated OPT (Outdoor Payment Terminal) and Emergency Stop Device
	Existing Undercover Area
	Existing Buildings
	Existing Property Access
	Hazard Management Area
	Approx. Fire Hydrant Location

Do not scale from these drawings. Dimensions to take precedence over scale. Written specifications to take precedence over diagrammatic representations.

Client Name and Address:
 Hazkem
 Unit 9/11 Friars Road
 Moorabbin, VIC, 3189

C.T.: 165614/2
PID: 3576865
Area: 0.3571 Ha

The Bushfire Hazard Management Plan is to be printed at A3 in colour and read in conjunction with the Bushfire Hazard Report and Emergency Management Strategy for the proposed Hazardous Use at 21 Tasman Highway, Triabunna (GES, 2nd of June 2026, J12753v4.0)

Certification No. J12753
 Alice Higgins
 Acc. No. BFP-165
 Scope 1, 2, 3A, 3B, 3C.

Sheet 1 of 2
 Prepared by:
 Alice Higgins



PRELIMINARY ISSUE

ISS/AMT DESCRIPTION	BY	DATE
1. DETAIL AMENDMENTS	EZ	03.06.26
0. INITIAL HAZKEM ISSUE	EZ	20.05.26



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PROJECT
 BP TRIABUNNA
 21 TASMAN HIGHWAY
 TRIABUNNA, TAS

CLIENT
 LENNON ENGINEERING

TITLE
 BUSHFIRE HAZARD REPORT 2026
 J12753 V4.0

DESIGNED
 DRAWN: EZ
 SCALE: NTS @A3
APPROVED

PROJECT No
 HAZ-3339-
DRAWING No
 FP02
ISSUE/AMT
 1

APPENDIX B - AS 1940 CLAUSE 7.3.6

Note: The following excerpt has been taken from AS 1940 by Hazkem Pty Ltd with permission of Standards Australia under Licence CL1020hpl

7.3.6 Unsupervised self-service systems

Any dispenser that is operated by a customer by means of currency or other means of payment, e.g. credit card, shall comply with the requirements of this Clause (7.3.6) as appropriate, and the following:

- a) The dispenser hose shall be shorter than the distance from the dispenser to the nearest building or to the nearest boundary of an adjacent property.
- b) The area around the dispenser and the payment unit shall be lit in accordance with Clause 3.6 at all times during which the unit is available for service.
- c) The installation shall include an emergency shut-down device having the following functions or features:
 - i) When activated, the emergency device shall shut off the dispenser pump and transmit an alarm to a person or organization capable of responding. NOTE: It may also be used to release the access to fire extinguishers (see Clause 11.9).
 - ii) It shall be readily accessible, and shall be integral with or adjacent to the currency or card receptor.
 - iii) It shall be protected from vandalism or unwarranted operation by a break-glass screen or equivalent.
 - iv) A notice shall be displayed, giving instructions on how to operate the device in the event of a major spill or fire.



Proposed upgrades to an existing hazardous use site – BP Triabunna at 21 Tasman Highway, Triabunna

Bushfire Hazard Report

Applicant: Hakem



June 2026 J12753v4.0

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Attachment 1 – Bushfire Hazard Management Plan

Attachment 2 – Emergency Management Strategy

Attachment 3 – Planning Certificate

Disclaimer

The measures contained in Australian Standard 3959-2018 cannot guarantee that a building will survive a bushfire event on every occasion. This is due to the unpredictable nature and behaviour of fire and extreme weather conditions.

GES has taken reasonable steps to ensure that the information contained within this report is accurate and reflects the conditions on and around the lot at the time of assessment. The assessment has been based on the information provided by you or your designer.

Authorship

This report was prepared by Alice Higgins FPO (planning), Bushfire Practitioner (BFP165) of Geo Environmental Solutions. Base data for mapping: TasMap, aerial photography, and GoogleEarth. On site Photography: Geo Environmental Solutions.



1.0 Purpose

This bushfire hazard report for BP Triabunna at 21 Tasman Highway, Triabunna has been developed for a hazardous use site in a bushfire-prone area as defined under the Tasmanian Planning Scheme – Glamorgan – Spring Bay. Geoenvironmental Solutions have been contracted by Hazkem to undertake assessments for bushfire risk to the hazardous use site. Attached is a certified Bushfire Hazard Management Plan (BHMP) indicating the management and protection measures to be implemented in a form approved by the Chief Fire Officer of the Tasmania Fire Service and an Emergency Management Strategy (EMS) to demonstrate compliance with C13.5.2, P1, A2, and A3 of C13.0 Bushfire-Prone Areas Code.

2.0 Summary

Site details and compliance

Title reference	165614/2
PID	3576865
Address	BP Triabunna at 21 Tasman Highway, Triabunna
Applicant	Hakem
Municipality	Glamorgan – Spring Bay
Planning Scheme	Tasmanian Planning Scheme - Glamorgan – Spring Bay
Zoning	Light Industrial
Land size	~0.3571Ha
Use or Development	Hazardous Use – unmanned refuelling facility
Bushfire Attack Level	BAL – 12.5
Bushfire Hazard Management Plan	Certified and attached
Emergency Management Strategy	Certified and attached
Planning Certificate	Complete and attached

The proposal is for upgrades to an existing unmanned refuelling facility at BP Triabunna at 21 Tasman Highway, Triabunna with an outdoor payment terminal open 24 hours per day, 7 days a week. The proposal consists of new underground fuel storage tank (1 x 70KL enviro tank), a remote fuel fill box, fuel vents, 1 x 6 hose dispenser and 1 x 2 hose dispenser, and relocation of the outdoor payment terminal (OPT). The proposed new underground tank replaces the existing above-ground storage tanks which will increase the volume of fuel stored on site which exceeds the manifest quantity and therefore must meet the requirements of C13.5.2 of the Bushfire-Prone Areas Code of the Tasmanian Planning Scheme.

The Bushfire attack level has been determined as ‘BAL – 12.5’ as defined in AS 3959 - 2018. Provisions for hazard management areas (HMA), property access, water supplies for firefighting, and emergency planning will be required as detailed in this report and the EMS and on the BHMP.



3.0 Introduction

This bushfire hazard report has been completed to form part of supporting documentation for the proposed upgrades to the existing hazardous use site – unmanned refuelling facility. The proposed development site has been identified as being in a bushfire-prone area. A site-specific Bushfire Attack Level (BAL) assessment and BHMP has been provided to ensure compliance with AS 3959 – 2018 Construction of Buildings in Bushfire-Prone Areas, National Construction Code (NCC), version 1.2, 16th July 2024, and the Bushfire-Prone Areas Code.

This report considers the following standards of C13.5.2 of the Code:

- The Performance criteria of P1

A hazardous use must only be located in a bushfire-prone area if a tolerable risk from bushfire can be achieved and maintained, having regard to:

- (a) the location, characteristics, nature and scale of the use,
 - (b) whether there is an overriding benefit to the community,
 - (c) whether there is no suitable alternative lower-risk site,
 - (d) the Emergency Management Strategy (hazardous use) and Bushfire Hazard Management Plan, and
 - (e) other advice, if any, from the TFS.
- Provides an Emergency Management Strategy (EMS) consistent with the requirements of the acceptable solution A2, and
 - Provides a certified Bushfire Hazard Management Plan (BHMP) consistent with the acceptable solution A3.

This report provides an assessment of the BAL and outlines protective features and controls that should be incorporated into the site management.

An EMS has been prepared by Geo – Environmental Solutions for endorsement by the Tasmania Fire Service (TFS). The EMS defines additional requirements specific to the site to achieve and maintain a tolerable level of risk from bushfire.

4.0 Proposal

The proposal is for upgrades to an existing unmanned refuelling facility at BP Triabunna at 21 Tasman Highway, Triabunna with an outdoor payment terminal open 24 hours per day, 7 days a week. The proposal consists of new underground fuel storage tank (1 x 70KL enviro tank), a remote fuel fill box, fuel vents, 1 x 6 hose dispenser and 1 x 2 hose dispenser, and relocation of the outdoor payment terminal (OPT). The proposed new underground tank replaces the existing above-ground storage tanks which will increase the volume of fuel stored on site which exceeds the manifest quantity and therefore must meet the requirements of C13.5.2 of the Bushfire-Prone Areas Code of the Tasmanian Planning Scheme. This assessment is based on plans provided by the client (Appendix B).



5.0 Bushfire Attack Level (BAL) Assessment

5.1 Methods

The bushfire attack level has been determined through the application of section 2 of AS 3959-2018 'Simplified Procedure'. Vegetation has been classified using a combination of onsite observations and remotely sensed data to be consistent with Table 2.3 of AS 3959-2018. Slope and distances have been determined by field measurement and/or the use of remotely sensed data (aerial/satellite photography, GIS layers from various sources) analysed with proprietary software systems. Where appropriate vegetation has been classified as low threat. The fire danger index (FDI) of 50 applies across Tasmania.

5.2 Site Description

The proposal is located at BP Triabunna at 21 Tasman Highway, Triabunna, in the municipality of Glamorgan – Spring Bay and is zoned Light Industrial under the Tasmanian Planning Scheme - Glamorgan – Spring Bay. Access to the lot will be by an existing crossover from the Tasman Highway, a state-maintained road. The lot is ~0.3571 Ha, is rectangular in shape and is located approximately 1.8 km southeast of Brady's Creek Reservoir (Figure 1).

Adjacent lands surrounding the lot are zoned Light Industrial. Further to the south and southwest is zoned General Residential and Recreation with Local Business to the west. Land further to the east, north, and northwest is zoned Rural. The site is in a rural setting characterised by existing residential development, accommodation and camping, and Triabunna Sports Ground to the southeast, south, and west with low density residential development to the northeast, north, and northwest. Further to the northeast, north, northwest and west is large scale grassland transitioning into large scale native forest vegetation to the northwest (Figure 2). The lot has gentle slopes with no dominant aspect with an altitude of approximately 10 metres above sea level and is unlikely to have a significant effect on fire behaviour. There is existing access (entry and exit) to the site with a reticulated water supply including fire hydrants for firefighting.

5.3. Bushfire Attack Level Assessment

Vegetation surrounding the lot was assessed (Table 1) and described as grassland or excluded from the assessment as low threat vegetation (as per AS 3959-2018). The classified vegetation potentially having the greatest impact on the site occurs to the northeast of the site (Figure 2). Given the relatively large areas of grassland to the northeast, north, northwest, and west, in the surrounding landscape, the property could be subject to bushfire attack from multiple direction during extreme conditions. The prevailing fire weather wind direction is from the north and west of the site with local sea breezes from the southeast and east. The vegetation classification system as defined in AS 3959-2018 Table 2.3 and Figure 2.3 (A to H) has been used to determine vegetation types within 150 metres of the site (Table 1).



Figure 1. Site location outlined in pink (Image source: LISTmap 2026).

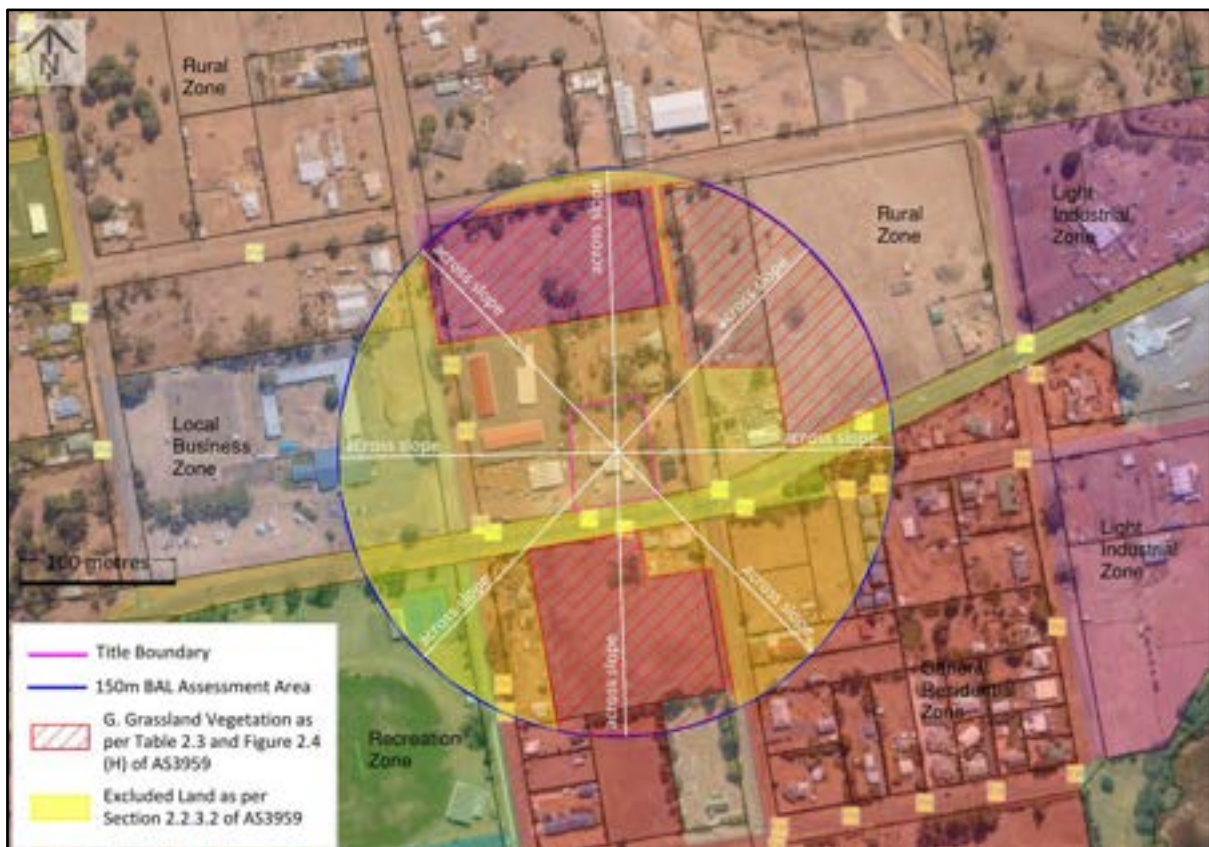


Figure 2. Shows the location of the site (outlined in pink) in the context of the adjacent lands, zoning, classified vegetation, and slopes (Image source: LISTmap 2026).

Table 1. Bushfire Attack Level (BAL) Assessment for the proposed hazardous use site – unmanned refuelling facility

Azimuth	Vegetation Classification	Effective Slope	Distance to Bushfire-prone vegetation	Hazard Management Area Width	Bushfire Attack Level
North	Exclusion 2.2.3.2 (e, f)^	flat 0°	0 to 57 metres	Title Boundary	BAL-LOW
	Grassland^	flat 0°	57 to 150 metres		
	--	--	--		
	--	--	--		
North-east	Exclusion 2.2.3.2 (e, f)^	flat 0°	0 to 42 metres	Title Boundary	BAL-12.5
	Grassland^	flat 0°	42 to 150 metres		
	--	--	--		
	--	--	--		
East	Exclusion 2.2.3.2 (e, f)^	flat 0°	0 to 91 metres	Title Boundary	BAL-LOW
	Grassland^	flat 0°	91 to 150 metres		
	--	--	--		
	--	--	--		
South-east	Exclusion 2.2.3.2 (e, f)^	flat 0°	0 to 150 metres	Title Boundary	BAL-LOW
	--	--	--		
	--	--	--		
	--	--	--		
South	Exclusion 2.2.3.2 (e, f)^	flat 0°	0 to 20 metres	Title Boundary	BAL-12.5
	Grassland^	flat 0°	20 to 150 metres		
	--	--	--		
	--	--	--		
South-west	Exclusion 2.2.3.2 (e, f)^	flat 0°	0 to 150 metres	Title Boundary	BAL-LOW
	--	--	--		
	--	--	--		
	--	--	--		
West	Exclusion 2.2.3.2 (e, f)^	flat 0°	0 to 150 metres	Title Boundary	BAL-LOW
	--	--	--		
	--	--	--		
	--	--	--		
North-west	Exclusion 2.2.3.2 (e, f)^	flat 0°	0 to 80 metres	Title Boundary	BAL-LOW
	Grassland^	flat 0°	80 to 150 metres		
	--	--	--		
	--	--	--		

^ Vegetation classification as per AS 3959-2018, Table 2.3 and Figures 2.4(A) to 2.4 (H).

^^ Exclusions as per AS 3959-2018, section 2.2.3.2, (a) to (f).

6.0 Results

The bushfire attack level for the site has been determined as BAL – 12.5. There is a risk of ember attack. The construction elements are expected to be exposed to a heat flux not greater than 12.5kW/m².

The north-eastern azimuth requires a minimum separation distance from the bushfire-prone vegetation of 14 metres to achieve a BAL of 12.5. This will be contained inside the title boundary.

The southern azimuth requires a minimum separation distance from the bushfire-prone vegetation of 14 metres to achieve a BAL of 12.5. This will be contained inside the title boundary.

6.1 Construction Requirements

There is no proposal for new buildings or alterations and additions including a change of use to the existing buildings. If in future there is a proposal for new buildings or alterations and additions including a change of use to the existing buildings, a new Bushfire Attack Level assessment will be required in accordance with the Bushfire-Prone Areas Code and the Director’s Determination – Bushfire Hazard Areas, version 1.2, 16th July 2024.

6.2 Property Access Requirements

Existing property access is less than 30 metres long, and access is not required for a fire appliance to access a firefighting water point. In this circumstance there are no specific design or construction requirements for property access in accordance with Table 2 Element A of the Director’s Determination - Bushfire Hazard Areas, version 1.2, 16th July 2024.

6.3 Water Supplies for Firefighting Requirements

There are 6 existing fire hydrants located on the Tasman Highway that are within 120 metres of the proposed new underground tank, 4 of which are within 120 metres of the furthest part of the existing buildings.

Dedicated water supplies for firefighting will be provided by the existing fire hydrants connected to a reticulated water supply system managed by Tas Water in accordance with Clause 2.3.3 and Table 3A of the Director's Determination – Bushfire Hazard Areas, version 1.2, 16th July 2024 as shown below:

A. Distance between building to be protected and water supply

The following requirements apply:

- a) the building to be protected must be located within 120 metres of a fire hydrant, and
- b) the distance must be measured as a hose lay between the firefighting water point and the furthest part of the building.

B. Design criteria for proposed fire hydrants

The following requirements apply:

- a) fire hydrant system must be designed and constructed in accordance with Tas Water Supplement to Water Supply Code of Australia WSA 03 – 2011-3.1 MRWA Edition V2.0 as amended from time to time, and
- b) fire hydrants are not installed in parking areas.

C. Hardstand associated with proposed fire hydrants

A hardstand area for fire appliances must be provided:

- a) no more than thirty metres from the hydrant measured as a hose lay,
- b) no closer than six metres from the building to be protected,
- c) with a minimum width of three metres and a minimum length of six metres constructed to the same standard as the carriageway, and
- d) connected to the property access by a carriageway equivalent to the standard of the property access.

6.4 Hazard Management Area Requirements

The Bushfire Attack Level for this site is BAL – 12.5. Table 1 above shows the separation distances (hazard management area width) for each azimuth of the site that will result in a bushfire attack level of BAL – 12.5.

A HMA will need to be established and maintained for the life of the development and is shown on the BHMP. The hazard management area is to be established prior to the reopening of the unmanned refuelling facility when visitors will be using the site. Guidance for the establishment and maintenance of the HMA is given below and on the BHMP.

A HMA is the area, between the hazardous use area and the bushfire-prone vegetation, which provides access to a fire front for firefighting. The HMA is to be maintained in a minimal fuel condition and in which there are no other hazards present which will significantly contribute to the spread of a bushfire. This can be achieved through but is not limited to the following strategies.

- Remove fallen limbs, sticks, leaf and bark litter,
- Maintaining grass at less than 100 mm height,
- Avoid or minimise the use of flammable mulches (especially against buildings),
- Thin out under-story vegetation to provide horizontal separation between fuels,
- Prune low-hanging tree branches (<2 metres from the ground) to provide vertical separation between fuel layers,
- Remove and or prune larger trees to maintain a 6-metre horizontal separation between canopies,
- Minimise the storage of flammable materials such as firewood,
- Maintaining vegetation clearance around vehicular access,
- Use low-flammability plant species for landscaping purposes where possible, and
- Clear out any accumulated leaf and other debris from roof gutters and other debris accumulation points.

HMA Maintenance

The established HMA must be maintained in a minimal fuel state for bushfire protection mechanisms to be effective. The need to maintain an effective HMA into the future must be considered when planting gardens and landscaping. An annual inspection and maintenance of the HMA should be conducted prior to the bushfire season. It is particularly important that any flammable fine fuels at ground level such as leaves, litter and wood piles are suitably managed.

Any additional fire protection measures implemented by the owners such as fire pumps and sprinkler systems must be tested regularly to ensure functionality.

6.5 Bushfire Emergency Planning

There is no proposal for new buildings or alterations and additions including a change of use to the existing buildings. Therefore, the Director's Determination - Bushfire Hazard version 1.2, 16th July 2024 does not apply. A separate Bushfire Emergency and Action Plan under the Director's Determination is not required.

An EMS has been developed (Attachment 2) to demonstrate compliance with C13.5.2, A2, of C13.0 Bushfire-Prone Areas Code. The EMS defines additional requirements specific to the site to achieve and maintain a tolerable level of risk from bushfire.

Note: Version 4 of the Bushfire Hazard Report and BHMP includes the amendments shown on the site plan (Rev 5) in Appendix 2. The amendment includes an additional 2 hose dispenser and a 3-metre-wide drainage and pipeline easement. The additional 2 hose dispenser is unlikely to affect the proposed emergency response procedures in the Emergency Management Strategy and does not require an amendment. The TFS endorsed version 3 of the Emergency Management Strategy is shown in Attachment 2.

7.0 Compliance

There is no acceptable solution (A1) for hazardous use and development within a bushfire-prone area.

Table 2. Compliance with the Bushfire-Prone Areas Code (C13.5.2)

Requirement	Response
<p>Performance Criteria P1 A hazardous use must only be located in a bushfire-prone area if a tolerable risk from bushfire can be achieved and maintained, having regard to:</p> <p>(a) the location, characteristics, nature and scale of the use;</p> <p>(b) whether there is an overriding benefit to the community;</p> <p>(c) whether there is no suitable alternative lower-risk site;</p> <p>(d) the emergency management strategy (hazardous use) and bushfire management plan; and</p> <p>(e) other advice, if any, from the TFS.</p>	<p>The proposal is for upgrades to an existing unmanned refuelling facility at BP Triabunna at 21 Tasman Highway, Triabunna with an outdoor payment terminal open 24 hours per day, 7 days a week. The proposal consists of new underground fuel storage tank (1 x 70KL enviro tank), a remote fuel fill box, fuel vents, 1 x 6 hose dispenser and 1 x 2 hose dispenser, and relocation of the outdoor payment terminal (OPT). The proposed new underground tank replaces the existing above-ground storage tanks which will increase the volume of fuel stored on site which exceeds the manifest quantity and therefore must meet the requirements of C13.5.2 of the Bushfire-Prone Areas Code of the Tasmanian Planning Scheme.</p> <p>A tolerable level of risk has been achieved through a combination of measures which are required for compliance through the BHMP and EMS. Consideration has been given to the performance criteria (P1) whilst developing the BHMP and EMS. The proposed development is consistent with the primary function of the site and is unlikely to increase the bushfire risk to onsite infrastructure.</p> <p>The location of the site is essential for fuel supply to the residents, tourism industry, and transport network. There is a lack of lower-risk alternatives in the general area.</p> <p>Existing property access and water supplies for firefighting will provide appropriate access from the site and access to adequate water supplies for firefighting.</p> <p>A BAL 12.5 hazard management area will need to be established and maintained for the life of the development and is shown on the BHMP. The hazard management area is to be established prior to the reopening of the unmanned refuelling facility when visitors will be using the site.</p>
<p>Acceptable Solutions A2 An emergency management strategy (hazardous use) endorsed by the TFS or accredited person.</p>	<p>A bushfire Emergency Management Strategy (EMS) is provided in Attachment 2 and has been endorsed by the TFS.</p>
<p>Acceptable Solutions A3 A bushfire hazard management plan that contains appropriate bushfire protection measures that is certified by the TFS or an accredited person.</p>	<p>A Bushfire Hazard Management Plan (BHMP) is provided in Attachment 1 and has been certified by an accredited person (Alice Higgins, BFP-165).</p>

8.0 Summary

- This report has been prepared to support the development application for upgrades to an existing hazardous use site and demonstrate where a tolerable risk from bushfire is achieved and maintained. The report has reviewed the bushfire risks associated with the site and determined the bushfire management strategies that should be carried out to ensure a reduced risk from bushfire attack. Provided the conditions detailed in this report are implemented, the development on the site is capable of compliance with the Code.
- The proposed development and use occur within a bushfire-prone area and is defined as a hazardous use under the Tasmania Planning Scheme – Glamorgan Spring Bay. The vegetation is classified as grassland, with the highest risk presented by vegetation to the northeast of the site.
- A Bushfire Hazard Management Plan (BHMP) has been developed and details bushfire protection measures including the requirements for hazard management areas.
- An Emergency Management Strategy (EMS) has been developed for the site and endorsed by the TFS which provides mitigation measures which will achieve a tolerable level of risk given the characteristics of the site, surrounding landscape and use.

8.1 Recommendations

- Should the risk of bushfire be extreme in eastern Tasmania it is recommended that any mobile dangerous goods be removed from the site to a safe place in another part of the State.

9.0 Glossary

AS – Australian Standard

BAL – Bushfire Attack Level – A means of measuring the severity of a building’s potential exposure to ember attack, radiant heat, and direct flame contact, using increments of radiant heat expressed in kilowatts per metre squared, and the basis for establishing the requirements for construction to improve protection of building elements from attack by bushfire (AS 3959-2018).

BFP – Bushfire Practitioner – An accredited practitioner recognised by Tasmania Fire Service.

BHMP – Bushfire Hazard Management Plan – A plan for a development identifying separation distances required between the development and bushfire-prone vegetation based on the BAL for the site. The BHMP also indicates requirements for construction, property access and firefighting water.

deg – degrees

Emergency Management Strategy - means a strategy that provides for mitigation measures to achieve and maintain a level of tolerable risk that is specifically developed to address the characteristics, nature and scale of the use.

FDI – fire danger index – Relates to the chance of a fire starting, its rate of spread, its intensity, and the difficulty of its suppression, according to various combinations of air temperature, relative humidity, wind speed and both the long- and short-term drought effects (AS 3959-2018).

ha – hectares

Hazardous use means a use where:

- (a) hazardous chemicals of a manifest quantity are stored on a site; or
- (b) explosives are stored on a site and where classified as an explosives location or large explosives location as specified in the *Explosives Act 2012*.

HMA – Hazard Management Area – The area, between a habitable building or building area and the bushfire-prone vegetation, which provides access to a fire front for firefighting, which is maintained in a minimal fuel condition and in which there are no other hazards present which will significantly contribute to the spread of a bushfire.

km - kilometres

m – metres

mm – millimetres

NASH – National Association of Steel Framed Housing

t – tonnes

10.0 References

Australian Building Codes Board, National Construction Code, Building Code of Australia, Australian Building Codes Board, Canberra.

Building Act 2016. The State of Tasmania Department of Premier and Cabinet.

Building Regulations 2016. The State of Tasmania Department of Premier and Cabinet.

Bushfire Emergency Planning Guidelines. Bushfire Risk Unit. Tasmania Fire Service, v3.1, April 2025.

Director's Determination – Bushfire Hazard Areas, version 1.2 16th July 2024. Director of Building Control.

LISTmap 2026. Land Information System Tasmania, Tasmania Government.

Standards Australia, AS 3959-2018 Construction of buildings in bushfire-prone areas. Sydney, NSW., Australia.

Tasmania Fire Service 2020, Building for Bushfire – Planning and Building in Bushfire-Prone Areas for Owners and Builders. Tasmania Fire Service, Tasmania.

Tasmanian Planning Scheme – Glamorgan – Spring Bay, Tasmanian Planning Commission 2015, Tasmanian Planning Commission, Hobart.

11.0 Limitations Statement

This Bushfire Hazard Report has been prepared in accordance with the scope of services between Geo-Environmental Solutions Pty. Ltd. (GES) and the applicant named in section 2. To the best of GES's knowledge, the information presented herein represents the Client's requirements at the time of printing of the Report. However, the passage of time, manifestation of latent conditions or impacts of future events may result in findings differing from that described in this Report. In preparing this Report, GES has relied upon data, surveys, analyses, designs, plans and other information provided by the Client and other individuals and organisations referenced herein. Except as otherwise stated in this Report, GES has not verified the accuracy or completeness of such data, surveys, analyses, designs, plans and other information.

The scope of this study does not allow for the review of every possible bushfire hazard condition and does not provide a guarantee that no loss of property or life will occur because of bushfire. As stated in AS 3959-2018 "It should be borne in mind that the measures contained in this Standard cannot guarantee that a building will survive a bushfire event on every occasion. This is substantially due to the degree of vegetation management, the unpredictable nature and behaviour of fire, and extreme weather conditions". In addition, no responsibility is taken for any loss which is a result of actions contrary to AS 3959-2018 or the Tasmanian Planning Commission Bushfire code.

This report does not purport to provide legal advice. Readers of the report should engage professional legal practitioners for this purpose as required. No responsibility is accepted for use of any part of this report in any other context or for any other purpose by third party.

Appendix A – Site Photos



Figure 3. North-eastern azimuth from the site of the proposed development looking at grassland across slope.



Figure 4. South-eastern azimuth from the site of the proposed development looking at excluded land across slope.



Figure 5. Southern azimuth from the site of the proposed development looking at grassland across slope.



Figure 6. South-western azimuth from the site of the proposed development looking at excluded land across slope.

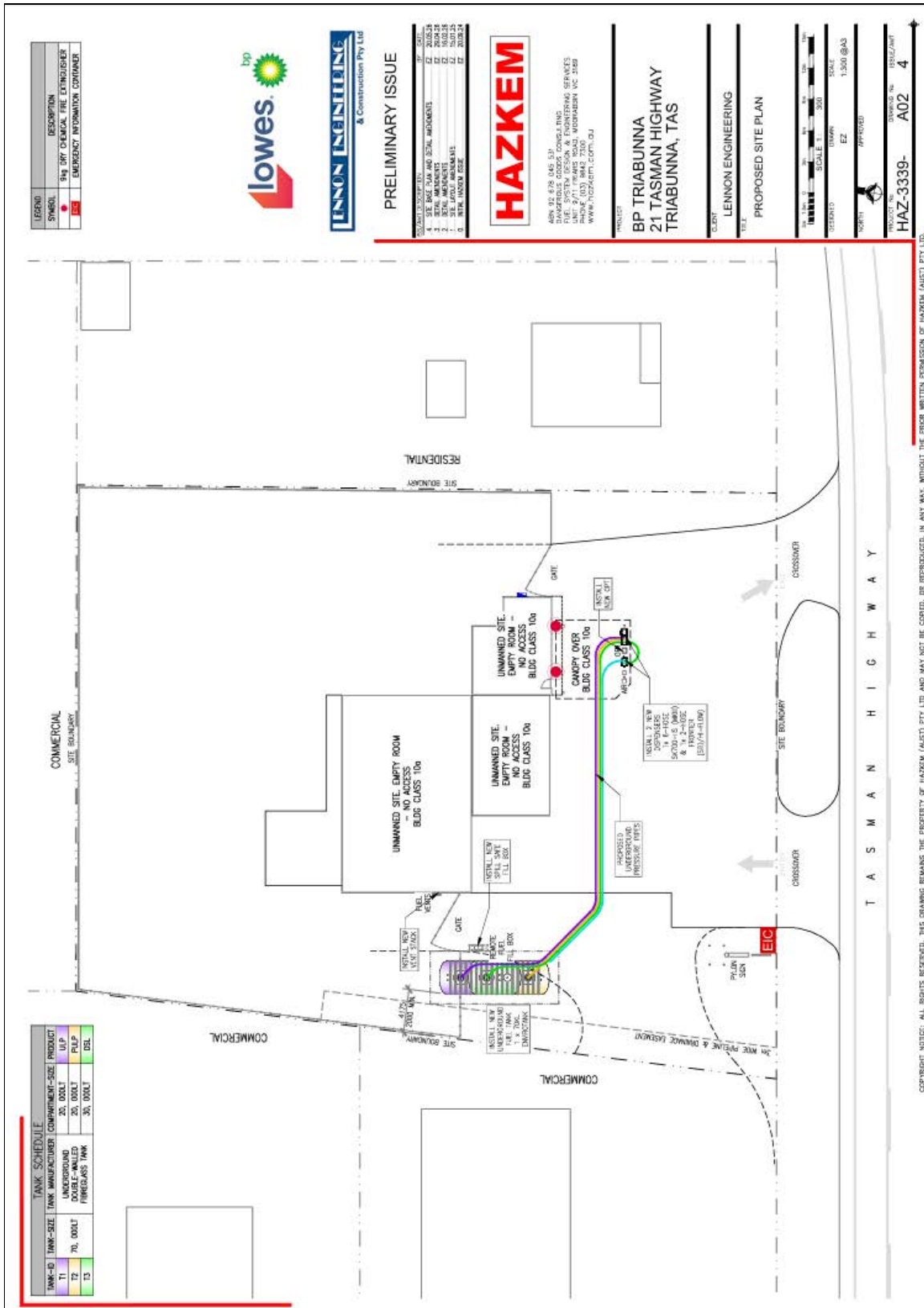


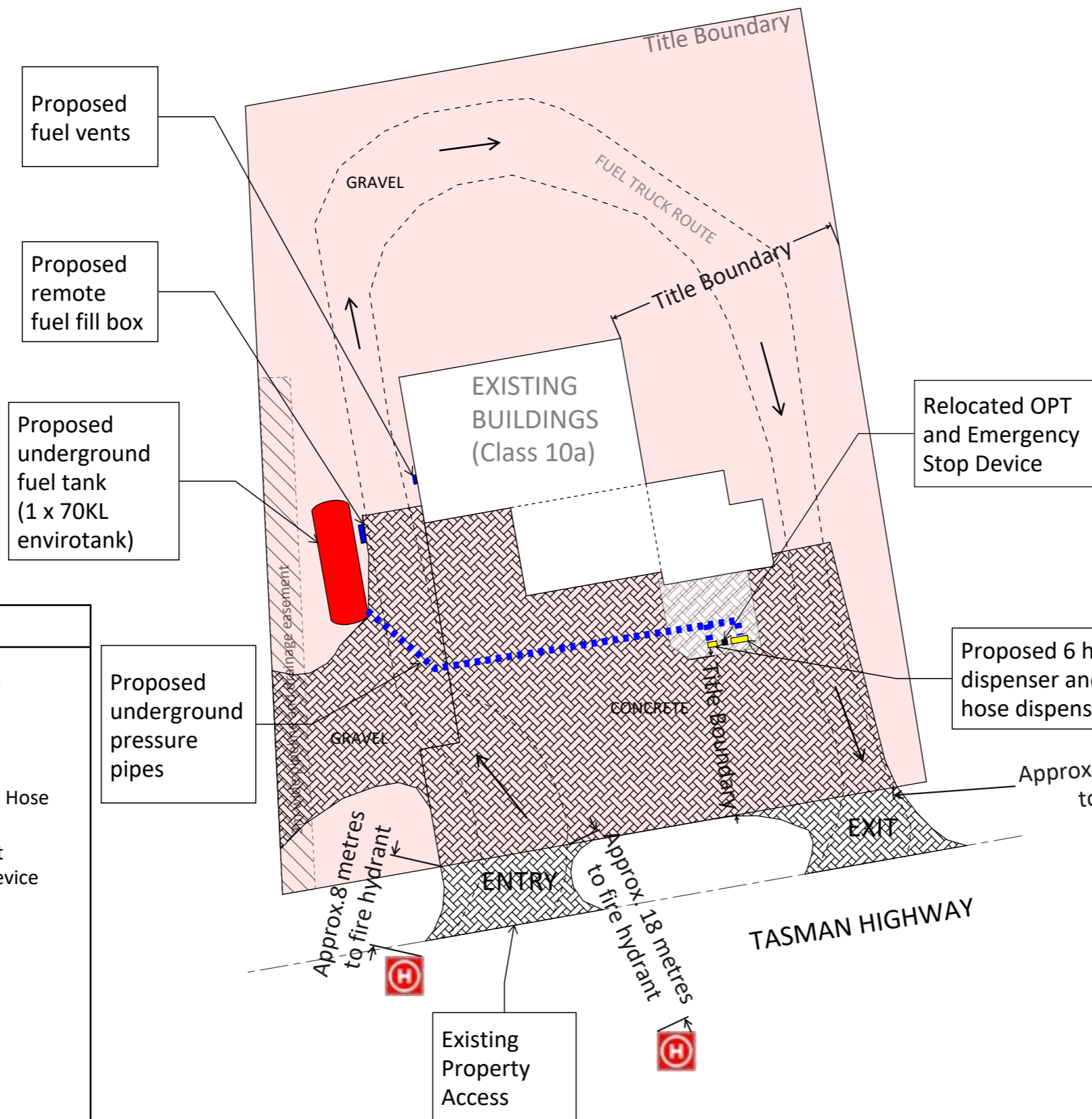
Figure 7. Looking north at the site of the proposed underground fuel storage tanks replacing the existing tanks.



Figure 8. Looking north at the site of the proposed replacement 6 hose dispenser and relocation of the outdoor payment terminal.

Appendix B - Site Plan





THE SITE IS AN UNMANNED REFUELLING FACILITY (BP TRIABUNNA)
 Note: The existing buildings are not occupied, operational, or regularly accessed as advised by the client.

LEGEND	
	Proposed Underground Fuel Tank (70KL Envirotank)
	Proposed Remote Fuel Fill Box and Fuel Vents
	Proposed 6 Hose Dispenser and 2 Hose Dispenser
	Relocated OPT (Outdoor Payment Terminal) and Emergency Stop Device
	Existing Undercover Area
	Existing Buildings
	Existing Property Access
	Hazard Management Area
	Approx. Fire Hydrant Location

The hazard management area extends to the title boundaries which achieves a BAL 12.5 for the Hazardous Use site. The hazard management area is to be established prior to the reopening of the unmanned refuelling facility when occupants will be using the site

Do not scale from these drawings. Dimensions to take precedence over scale. Written specifications to take precedence over diagrammatic representations.

Client Name and Address:
 Hazkem
 Unit 9/11 Friars Road
 Moorabbin, VIC, 3189

C.T.: 165614/2
 PID: 3576865
 Area: 0.3571 Ha

The Bushfire Hazard Management Plan is to be printed at A3 in colour and read in conjunction with the Bushfire Hazard Report and Emergency Management Strategy for the proposed Hazardous Use at 21 Tasman Highway, Triabunna (GES, 2nd of June 2026, J12753v4.0)

Certification No. J12753
 Alice Higgins
 Acc. No. BFP-165
 Scope 1, 2, 3A, 3B, 3C.

Sheet 1 of 2
 Prepared by:
 Alice Higgins

Design and Specification Requirements

Requirements for Construction

There is no proposal for new buildings or alterations and additions including a change of use to the existing buildings.

Any future proposed new buildings or alterations and additions including a change of use to the existing buildings requires a new Bushfire Attack Level assessment in accordance with the Directors Determination - Bushfire Hazard Areas, v1.2, 16th July 2024.

Requirements for Property Access

Existing property access is less than 30 metres long, or access is not required for a fire appliance to access a firefighting water point. In this circumstance there are no specific design or construction requirements for property access in accordance with Table 2 Element A of the Directors Determination - Bushfire Hazard Areas, version 1.2, 16th July 2024.

Requirements for Reticulated Water Supplies for Firefighting

Dedicated water supplies for firefighting will be provided by fire hydrants connected to a reticulated water supply system managed by Tas Water in accordance with Clause 2.3.3 and Table 3A of the Directors Determination – Bushfire Hazard Areas, v1.2, 16th July 2024.

A. Distance between building to be protected and water supply
 The following requirements apply:

- (a) the building to be protected must be located within 120 metres of a fire hydrant, and
- (b) the distance must be measured as a hose lay between the firefighting water point and the furthest part of the building.

B. Design criteria for proposed fire hydrants

The following requirements apply:

- (a) fire hydrant system must be designed and constructed in accordance with TasWater Supplement to Water Supply Code of Australia WSA 03 – 2011-3.1 MRWA Edition V2.0 as amended from time to time, and
- (b) fire hydrants are not installed in parking areas.

C. Hardstand associated with proposed fire hydrants

A hardstand area for fire appliances must be provided:

- (a) no more than thirty metres from the hydrant measured as a hose lay,
- (b) no closer than six metres from the building to be protected,
- (c) with a minimum width of three metres and a minimum length of six metres constructed to the same standard as the carriageway, and
- (d) connected to the property access by a carriageway equivalent to the standard of the property access.

Requirements for Hazard Management Area

A hazard management area is required to be established and maintained for the life of the hazardous use site and is shown on this BHMP. The hazard management area is to be established prior to the reopening of the unmanned refuelling facility when visitors will be using the site. Guidance for the establishment and maintenance of the hazard management area is also provided below:

A HMA is the area, between the hazardous use area and the bushfire-prone vegetation, which provides access to a fire front for firefighting, which is maintained in a minimal fuel condition and in which there are no other hazards present which will significantly contribute to the spread of a bushfire. This can be achieved through, but is not limited to the following actions;

- Remove fallen limbs, sticks, leaf and bark litter,
- Maintain grass at less than a 100mm height,
- Remove pine bark and other flammable mulch (especially from against buildings),
- Thin out under-story vegetation to provide horizontal separation between fuels,
- Prune low-hanging tree branches (<2m from the ground) to provide (vertical separation between fuel layers,
- Prune larger trees to maintain a 6 metre horizontal separation between canopies,
- Minimise the storage of flammable materials such as firewood,
- Maintain vegetation clearance around vehicular access and water supply points,
- Use low-flammability species for landscaping purposes where appropriate,
- Clear out any accumulated leaf and other debris from roof gutters and other accumulation points.

It is not necessary to remove all vegetation from the hazard management area, trees may provide protection from wind borne embers and radiant heat under some circumstances.

Do not scale from these drawings. Dimensions to take precedence over scale. Written specifications to take precedence over diagrammatic representations.	Client Name and Address: Hazkem Unit 9/11 Friars Road Moorabbin, VIC, 3189	C.T.: 165614/2 PID: 3576865 Area: 0.3571 Ha	The Bushfire Hazard Management Plan is to be printed at A3 in colour and read in conjunction with the Bushfire Hazard Report and Emergency Management Strategy for the proposed Hazardous Use at 21 Tasman Highway, Triabunna (GES, 2 nd of June 2026, J12753v4.0)	Certification No. J12753 Alice Higgins Acc. No. BFP-165 Scope 1, 2, 3A, 3B, 3C.	Sheet 2 of 2 Prepared by: Alice Higgins
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Emergency Management Strategy

Unmanned Refuelling Facility
(BP Triabunna)

21 Tasman Highway

May 2026, v3.0



Tasmania Fire Service

(Q G R U V H G
05 / 05 / 2026

Attachment 2

Document control

Version	Prepared by	Description	EPC approval (name/date)
Draft v1.0	Alice Higgins	Draft Bushfire Emergency Management Strategy for a Hazardous Use site developed by Geo Environmental Solutions 16 th March 2026.	
Draft v2.0	Alice Higgins	Draft Bushfire Emergency Management Strategy for a Hazardous Use site developed by Geo Environmental Solutions 27 th April 2026.	
Draft v3.0	Alice Higgins	Draft Bushfire Emergency Management Strategy for a Hazardous Use site developed by Geo Environmental Solutions 5 th May 2026.	

TFS EMS Template v1.0

Attachment 2

Table of Contents

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5.3	Response	13
5.4	Recovery	14
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Attachment 2

1 Purpose, Scope and Application

This emergency management strategy relates to a hazardous use site (unmanned refuelling facility) at 21 Tasman Highway, Triabunna.

An endorsed emergency management strategy is required for compliance with clause C13.5.2 A2 of the Tasmanian Planning Scheme.

Emergency planning is a key risk mitigation for hazardous uses. Early consideration of emergency planning is required to ensure that a workable outcome is likely to be achievable.

This emergency management strategy has been prepared to demonstrate how risk to visitors will be managed to a tolerable level through contextualised emergency planning responses. It has been prepared in accordance with the TFS Bushfire Emergency Planning Guideline.

2 Overview of Proposal

The proposal is for upgrades to an existing unmanned refuelling facility with an outdoor payment terminal open 24 hours per day, 7 days a week.

The proposal is for a new underground fuel storage tank (1 x 70KL enviro tank), a remote fuel fill box, fuel vents, 1 x 6 hose dispenser, and relocation of the outdoor payment terminal (OPT). The proposed new underground tank replaces the existing above ground storage tanks.

The proposed hazardous use site is on land that is located within a bushfire prone area and the amount of fuel stored onsite exceeds the manifest quantity and therefore must meet the requirements of C.13.5.2 of the Bushfire Prone Areas Code of the Tasmanian Planning Scheme.

There are existing buildings onsite which have been identified as class 10a buildings on the site plan provided by the client as follows:

- 1) Storage shed/ warehouse,
- 2) Engineering workshop, and
- 3) Office and showroom (unattended).

The client has indicated that the existing buildings are considered:

- 1) Unoccupied,
- 2) Not operational,
- 3) Not regularly accessed, and
- 4) Are not a part of the proposed development works.

If in future there is a proposal for new buildings or alterations and additions including a change of use to the existing buildings, a new Bushfire Attack Level assessment will be required in accordance with the Bushfire Prone Areas Code and the Directors Determination - Bushfire Hazard Areas.

Attachment 2

Existing site details

The site currently includes the following above ground dangerous goods storage tanks and LPG cylinder storage:

- Tank 1 – Combustible Liquid (Diesel), 45 KL – *Out of service*
- Tank 2 – Combustible Liquid (Diesel), 45 KL – *In service*
- Tank 3 – Flammable Liquid (Petrol – ULP), 11.5 KL – *In service*
- Tank 4 – Flammable Liquid (Petrol – PULP)
- PS1 – LPG cylinders:
 - 22 L bottles (maximum quantity 440 L)
 - 9.5 L bottles (maximum quantity 66.5 L)

Proposed development

As part of the proposed works:

- All existing tanks and two dispensers will be removed
- No LPG (22 L or 9.5 L) cylinders will be stored on site
- A new 70 KL triple-compartment underground fuel tank will be installed, comprising:
 - 30 KL Diesel
 - 20 KL Petrol (91)
 - 20 KL Petrol (95)
- A new 6-hose dispenser will be installed
- The OPT will be relocated

3 Relevant Details

Section 4.2.2(2) of the TFS Bushfire Emergency Planning Guideline lists relevant details to be considered. Each item is addressed sequentially below.

a. Occupancy characteristics.	<ul style="list-style-type: none">• The number of visitors using the site are variable,• There are times when the site is unoccupied,• When the site is occupied, there can be up to seven people onsite using the refuelling facility at any given time,• It is expected visitors will most likely be onsite using the refuelling facility for a short period of time (<10 minutes),• It is expected that fuel trucks servicing the site will be onsite for longer periods of time as follows:<ul style="list-style-type: none">• 1 to 1.5 hours to fill a 30 KL diesel compartment, and approximately 45 minutes to 1 hour to fill a 20-kL petrol compartment,• The age range may be variable,• It is anticipated the site does not need to cater for people with disabilities,• There may be language barriers, and• It is anticipated the owner/ site emergency contacts are familiar with the site and local area. <p>Based on the identified characteristics, the visitors with language barriers or a disability might be vulnerable before, during and after an emergency. Language barriers may impede visitors' ability to interpret cues (e.g. alerts, verbal instructions) and take appropriate action (e.g. evacuate).</p>
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Attachment 2

<p>b. Emergency management structure and capability.</p>	<p>The site is currently unmanned and will continue to be unmanned in the future.</p> <p>There is a draft emergency plan (Hazkem, March 2026) which has been considered.</p> <p>This draft emergency plan includes hazards and control procedures for:</p> <ul style="list-style-type: none"> • Fuel spills at the dispenser • Fuel spills at the fill point • Fuel spills during maintenance of the tank/ tank equipment • Small fire at the fuel fill point/ fuel tank pit • Large fire at the fuel fill point/ fuel tank pit • Fire at vehicle • Fire on or off site (away from the dispensing area) • Natural events – floods, earthquake, cyclones, wind and electrical storms • Bomb threat <p>Control Procedures include:</p> <ul style="list-style-type: none"> • Shut down the dispenser • Activate Emergency Stop • No vehicle engine to be started • Clean up spill utilising on site spill kit and PPE • Use the appropriate extinguisher if safe to do so • Keep any persons from immediate area • Call the fire authority: 000 • Call fire authority: 000 - Call Fuel Provider (1800 638 556) • Evacuate site if necessary <p>This draft emergency plan also includes evacuation procedures due to an emergency.</p>
<p>c. The building(s) and/or site vulnerability.</p>	<p>The existing buildings are unoccupied, not operational, not regularly accessed, and are not a part of the proposed development works. The existing buildings were constructed pre-code and are likely to have low resistance to flames, radiant heat, smoke and ember attack. The existing buildings are not suitable as an onsite refuge and visitors are to relocate to an offsite refuge, personal residence, or accommodation.</p> <p>The site is an unmanned refuelling facility and the visitors using the site are of a public nature and it is expected the visitors (up to seven at any one time) will most likely be onsite using the refuelling facility for a short period of time (<10 minutes).</p> <p>It is expected that fuel trucks servicing the site will be onsite for longer periods of time as follows:</p> <p>1 to 1.5 hours to fill a 30 KL diesel compartment, and approximately 45 minutes to 1 hour to fill a 20-kL petrol compartment.</p>

Attachment 2

	<p>The dangerous goods (hazardous chemicals) onsite are the main threat to the visitors. The bulk of the flammable liquid and combustible liquid storage are located underground.</p> <p>The 6-hose hazardous chemical dispensers could cause minor spills resulting in fire and explosion. Any incident should be assessed at the time of the incident, and the dispensing system may need to be shut down (Emergency Stop adjacent to the OPT), call 000, and evacuate the site.</p> <p>The main probable cause of a major spill would be during fuel deliveries. The site is equipped with adequate signage outlining safety operation procedures, location of emergency equipment, and emergency procedures. The dispensing system may need to be shut down (Emergency Stop adjacent to the OPT), call 000, and evacuate the site.</p> <p>Fire resulting from an explosion at the unmanned refuelling facility has the potential to threaten human life onsite, within adjacent residential and industrial buildings, people outside and driving past. The fire has potential to burn surrounding buildings and large-scale grassland to the northeast, north, northwest, and west transitioning into native forest vegetation to the northwest within 2km of the site.</p> <p>There is existing property access directly off the Tasman Highway. If evacuating the site, the egress route may have poor visibility due to smoke.</p>
<p>d. Complementary bushfire protection strategies (existing /proposed).</p>	<p>There is existing property access directly off the Tasman Highway. Existing property access to the proposed new 6 hose dispenser and OPT is concrete and undercover.</p> <p>Existing property access for fuel trucks to access the proposed underground fuel tank is compacted gravel. There is one entry point and one exit point off the Tasman Highway, with a one-way route circulating the existing buildings for the fuel trucks.</p> <p>There are 6 existing fire hydrants located on the Tasman Highway that are within 120 metres of the proposed new underground tank, 4 of which are within 120 metres of the furthest part of the existing buildings.</p> <p>A bushfire hazard management plan (BHMP) has been designed that contains appropriate bushfire protection measures. The BHMP provides a hazard management area with BAL 12.5 separation distances. These separation distances will reduce the risk of bushfire impacting the dangerous goods onsite.</p> <p>The Triabunna fire station is approximately 0.7 km south of the site at 35 Vicary Street, Triabunna.</p> <p>The upgrade to the site includes remote monitoring however the facility cannot be shut down remotely.</p>

Attachment 2

<p>e. Possible bushfire scenarios.</p>	<p><u>Overview</u></p> <p>There is a small patch of grassland >1 ha to the south and grassland within 50 metres to the northeast. The remaining azimuths supports existing residential development, light industrial buildings, visitor accommodation and camping, and the Triabunna Sports Ground, all of which are considered managed land.</p> <p>There is large scale grassland within approximately 0.5 km to the northeast, north, northwest, and west including small (<8 ha) remnant patches of native forest vegetation to the northwest. There is large scale native forest vegetation within 2km of the site to the northwest.</p> <p>The site and surrounding land are generally flat with uphill slopes further to the northeast, north, and northwest.</p> <p><u>Fire Scenario 1</u></p> <p>The site could be impacted by a bushfire from the south. There is a 1 ha patch of grassland directly across the Tasman Highway, which is on flat ground, and is surrounded by existing residential development with managed gardens. At the time of the site assessment the grassland was <100mm tall and supported livestock (sheep). There is no guarantee that livestock will always be on this site, which allows for the grass to grow >100mm tall and be considered bushfire-prone vegetation. The fire path length will be no greater than 100 metres and a fire front no wider than 70 metres. The prevailing wind direction is from the north and west with the possibility of local sea breezes from the southeast and east. This scenario is considered a low risk, and the site may be subject to ember attack and smoke.</p> <p><u>Fire Scenario 2</u></p> <p>The site could be impacted by a fully developed large-scale bushfire from the north, northeast, northwest, and west which may threaten the site and/or the Triabunna township. There is large scale grassland within approximately 0.5 km to the northeast, north, northwest, and west including small (<8 ha) remnant patches of native forest vegetation to the northwest. There is large scale native forest vegetation within 2km of the site to the northwest. A bushfire from these directions will approach the site on downhill slopes and across flat ground. The prevailing wind direction is from the north and west with the possibility of local sea breezes from the southeast and east. This scenario is considered high risk; and the site may be subject to flames, radiant heat, ember attack and smoke.</p> <p><u>Fire Scenario 3</u></p> <p>The dangerous goods (hazardous chemicals) onsite are the main threat to the visitors.</p>
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Attachment 2

	<p>Fire resulting from an explosion at the unmanned refuelling facility has the potential to threaten human life onsite, within adjacent residential and industrial buildings, and people outside or driving past, and for surrounding buildings to catch on fire. The fire has potential to burn surrounding and large-scale grassland to the northeast, north, northwest, and west transitioning into native forest vegetation to the northwest within 2km of the site.</p> <p>See Figure 1 below showing potential fire scenarios.</p>
f. Primary and contingency bushfire safety options.	<p>Pre-emptive procedures will be implemented by the owner/ Chief Fire Warden between 1st of September and 30th April annually. The pre-emptive procedures allow for daily monitoring of the Fire Danger Rating (FDR), monitoring the bushfire emergency alerts via Tas Alert app/ website, consider rescheduling fuel trucks deliveries, consider closing the site early to avoid having people onsite during dangerous conditions.</p> <p>The existing buildings are not suitable as an onsite refuge. A conservative approach is required considering the site is not suitable as an onsite refuge.</p> <p>The primary response is for visitors to evacuate and relocate to an offsite refuge, personal residence, or accommodation depending on which direction the fire is approaching.</p>
g. Firefighter access, firefighting services, and firefighter protection.	<p>Refer to section d above</p>
h. Likelihood and consequence if hazardous materials or explosives are impacted by fire.	<p>The site is a hazardous use (refuelling facility), and the proposal is for a new underground fuel storage tank (1 x 70KL enviro tank), a remote fuel fill box, fuel vents, 1 x 6 hose dispenser. The proposed new underground tank replaces the existing underground storage tanks.</p> <p>Existing site details</p> <p>The site currently includes the following above ground dangerous goods storage tanks and LPG cylinder storage:</p> <ul style="list-style-type: none"> • Tank 1 – Combustible Liquid (Diesel), 45 kL – <i>Out of service</i> • Tank 2 – Combustible Liquid (Diesel), 45 kL – <i>In service</i> • Tank 3 – Flammable Liquid (Petrol – ULP), 11.5 kL – <i>In service</i> • Tank 4 – Flammable Liquid (Petrol – PULP) • PS1 – LPG cylinders: <ul style="list-style-type: none"> ○ 22 L bottles (maximum quantity 440 L) ○ 9.5 L bottles (maximum quantity 66.5 L)

Attachment 2

	<p>Proposed development As part of the proposed works:</p> <ul style="list-style-type: none">• All existing tanks and two dispensers will be removed• No LPG (22 L or 9.5 L) cylinders will be stored on site• A new 70 kL triple-compartment underground fuel tank will be installed, comprising:<ul style="list-style-type: none">○ 30 kL Diesel○ 20 kL Petrol (91)○ 20 kL Petrol (95)• A new 6-hose dispenser will be installed <p>If the hazardous materials are exposed to bushfire, there is potential to threaten human life onsite, within adjacent residential and industrial buildings, people outside or driving past, and for surrounding buildings to catch on fire. The fire also has potential to burn surrounding large-scale grassland to the northeast, north, northwest, and west transitioning into native forest vegetation to the northwest within 2km of the site if the FDR and site conditions are unfavourable.</p>
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Attachment 2

Figure 1 – Potential fire scenarios



4 Risk Analysis

Section 4.2.2(3) of the TFS Bushfire Emergency Planning Guideline requires a risk analysis in accordance with Section 5 of the Guideline. Some elements listed in Section 5.3 of the Guideline are described previously in this document.

<p>a. Potential bushfire scenarios.</p>	<p>The potential bushfire scenarios are described in section 2 in of this document.</p>
<p>b. The likelihood of the identified bushfire scenarios.</p>	<p>It is foreseeable bushfire will occur during the life of the proposed land use and buildings. Bushfire can be expected to be more likely to occur between the months of September-April but may occur outside of this window.</p> <p>Prevailing wind during bushfire conditions indicates that a fully developed, large scale fire is most likely to approach the site from the northeast, north, northwest, and west.</p> <p>During a bushfire it is likely the site will be exposed to ember attack, radiant heat flux up to 12.5kW/sqm and smoke.</p>

Attachment 2

<p>c. The possible consequences for visitors and assets.</p>	<p>Bushfire will foreseeably pose risks to human life safety, built assets and business continuity. Emergency planning for the facility will be primarily focused on risk to life safety over other objectives.</p> <p>Visitors could be exposed to life-threatening conditions in the event:</p> <ul style="list-style-type: none"> • They are present onsite and unprepared or unable to take appropriate action to protect themselves. • There is no designated onsite refuge. • They attempt to evacuate when it is too late to safely evacuate. <p>The potential consequences for life safety are unacceptable and warrant emergency planning procedures to mitigate the above risks.</p>
<p>d. Any existing controls that modify the risk.</p>	<p>Existing controls are described in section 2 in of this document.</p>
<p>e. Scenario testing for both shelter and evacuation options across a range of bushfire scenarios.</p>	<p>The existing buildings are not suitable as an onsite refuge and visitors are to relocate to an offsite refuge, personal residence, or accommodation.</p> <p>Visitors using the refuelling facility (up to seven at any one time) will most likely be onsite using the refuelling facility for a short period of time (<10 minutes). It is expected evacuation can be achieved within 45 minutes.</p> <p>It is expected that fuel trucks servicing the site will be onsite for up to 3.5 hours, it is expected evacuation can be achieved within 45 minutes.</p>

5 Proposed Emergency Management Responses

Section 4.2.2(4) of the TFS Bushfire Emergency Planning Guideline requires that the proposed emergency management responses be determined.

In response to the risk analysis, the following actions are relevant to all stages of future bushfire emergencies

5.1 Prevention

Pre-emptive procedures will reduce the likelihood of onsite ignition and the likelihood of visitors being present during dangerous conditions.

Pre-emptive procedures will be implemented by the owner/ Chief Fire Warden between 1st of September and 30th April annually.

Attachment 2

Pre-emptive procedures include:

- Owner/ Chief Warden will monitor Fire Danger Rating forecasts and Total Fire Bans via the Tasmania Fire Service website. This check will be completed daily by 10am,
- Owner/ Chief Warden will monitor bushfire emergency alerts via the Tas Alert website / app. Alerts will be checked at least twice per day – in the morning by 10am and afternoon by 3pm,
- Owner/ Chief Warden will install Tas Alert application on their phone, create a Watch Zone (minimum 10km) around the facility and ensure notifications are enabled,
- Consider rescheduling fuel trucks deliveries, and
- Consider closing the site early to avoid having people onsite during dangerous conditions when incidents are active in the local area within 10 km and when forecasted FDR is Extreme or above.

5.2 Preparedness

Site preparations and maintenance is to be implemented prior to the bushfire season. This will include:

- Maintenance of hazard management areas, and
- Maintenance and preparation of buildings.

5.3 Response

Emergency response procedures will prioritise early evacuation, as shelter-in-place is not an option.

It is estimated that approximately 45 minutes will be required to initiate and complete full site evacuation to offsite refuges. This is based on the following analysis of the required steps:

Step	Estimated required time
Detection	5 minutes
Raising the alarm	5 minutes
ECO briefing / coordination	10 minutes
Occupant instruction and coordination	10 minutes
Movement to offsite refuge (visitors and non-ECO staff)	5 minutes
Facility check and closure	5 minutes
Movement to offsite refuge (ECO staff)	5 minutes

Attachment 2

On this basis, the proposed triggers for evacuation include:

- The existing buildings are not suitable as an onsite refuge and the primary response is for visitors to evacuate and relocate to an offsite, personal residence, or accommodation depending on which direction the fire is approaching. A conservative approach is required considering the site is not suitable as an onsite refuge, and
- Rescheduling fuel trucks deliveries and closing the site early to avoid having people onsite during dangerous conditions and allowing time required to complete evacuation and prior to the egress route becoming compromised. Evacuation should occur when incidents are active in the local area within 10 km and when forecasted FDR is Extreme or above.

5.4 Recovery

After a bushfire emergency has occurred, the site is to be assessed by the owner or delegate for damage, and any hazards identified that require mitigation for safety purposes prior to reopening the site to visitors.

6 Implementation

The strategies outlined in this document have been prepared in accordance with the TFS Bushfire Emergency Planning Guideline.

The existing buildings are not suitable as an onsite refuge and the primary response is for visitors to evacuate and relocate to an offsite refuge, personal residence, or accommodation depending on which direction the fire is approaching. A conservative approach is required considering the site is not suitable as an onsite refuge.

Rescheduling fuel trucks deliveries and closing the site early to avoid having people onsite during dangerous conditions and allowing time required to complete evacuation and prior to the egress route becoming compromised. Evacuation should occur when incidents are active in the local area within 10 km and when forecasted FDR is Extreme or above.



BUSHFIRE-PRONE AREAS CODE

CERTIFICATE¹ UNDER S51(2)(d) *LAND USE PLANNING AND APPROVALS ACT 1993*

1. Land to which certificate applies

The subject site includes property that is proposed for use and development and includes all properties upon which works are proposed for bushfire protection purposes.

Street address:

21 Tasman Highway, Triabunna

Certificate of Title / PID:

CT: 165614/2 and PID: 3576865

2. Proposed Use or Development

Description of proposed Use and Development:

Hazardous Use – Unmanned Refuelling Facility (BP Triabunna)

Applicable Planning Scheme:

Tasmanian Planning Scheme – Glamorgan – Spring Bay

3. Documents relied upon

This certificate relates to the following documents:

Title	Author	Date	Version
Bushfire Hazard Report 21 Tasman Highway, Triabunna, June 2026, J12753v4.0	Geo – Environmental Solutions - Alice Higgins	2/06/2026	4.0
Bushfire Hazard Management Plan 21 Tasman Highway, Triabunna, June 2026, J12753v4.0	Geo – Environmental Solutions - Alice Higgins	2/06/2026	4.0
Emergency Management Strategy (Hazardous Use) 21 Tasman Highway, Triabunna, May 2026, J12753v3.0	Geo – Environmental Solutions - Alice Higgins	5/05/2026	3.0
Site Plan, HAZ-3339-Triabunna (Rev 5)	Lennon Engineering	20/05/2026	5.0

¹ This document is the approved form of certification for this purpose and must not be altered from its original form.

Attachment 3

4. Nature of Certificate

The following requirements are applicable to the proposed use and development:

<input type="checkbox"/> E1.4 / C13.4 – Use or development exempt from this Code	
Compliance test	Compliance Requirement
<input type="checkbox"/> E1.4(a) / C13.4.1(a)	Insufficient increase in risk

<input type="checkbox"/> E1.5.1 / C13.5.1 – Vulnerable Uses	
Acceptable Solution	Compliance Requirement
<input type="checkbox"/> E1.5.1 P1 / C13.5.1 P1	<i>Planning authority discretion required. A proposal cannot be certified as compliant with P1.</i>
<input type="checkbox"/> E1.5.1 A2 / C13.5.1 A2	Emergency management strategy
<input type="checkbox"/> E1.5.1 A3 / C13.5.1 A2	Bushfire hazard management plan

<input checked="" type="checkbox"/> E1.5.2 / C13.5.2 – Hazardous Uses	
Acceptable Solution	Compliance Requirement
<input type="checkbox"/> E1.5.2 P1 / C13.5.2 P1	<i>Planning authority discretion required. A proposal cannot be certified as compliant with P1.</i>
<input checked="" type="checkbox"/> E1.5.2 A2 / C13.5.2 A2	Emergency management strategy
<input checked="" type="checkbox"/> E1.5.2 A3 / C13.5.2 A3	Bushfire hazard management plan

<input type="checkbox"/> E1.6.1 / C13.6.1 Subdivision: Provision of hazard management areas	
Acceptable Solution	Compliance Requirement
<input type="checkbox"/> E1.6.1 P1 / C13.6.1 P1	<i>Planning authority discretion required. A proposal cannot be certified as compliant with P1.</i>
<input type="checkbox"/> E1.6.1 A1 (a) / C13.6.1 A1(a)	Insufficient increase in risk
<input type="checkbox"/> E1.6.1 A1 (b) / C13.6.1 A1(b)	Provides BAL-19 for all lots (including any lot designated as 'balance')

Attachment 3

<input type="checkbox"/>	E1.6.1 A1(c) / C13.6.1 A1(c)	Consent for Part 5 Agreement
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<input type="checkbox"/> E1.6.2 / C13.6.2 Subdivision: Public and fire fighting access		
	Acceptable Solution	Compliance Requirement
<input type="checkbox"/>	E1.6.2 P1 / C13.6.2 P1	<i>Planning authority discretion required. A proposal cannot be certified as compliant with P1.</i>
<input type="checkbox"/>	E1.6.2 A1 (a) / C13.6.2 A1 (a)	Insufficient increase in risk
<input type="checkbox"/>	E1.6.2 A1 (b) / C13.6.2 A1 (b)	Access complies with relevant Tables

<input type="checkbox"/> E1.6.3 / C13.1.6.3 Subdivision: Provision of water supply for fire fighting purposes		
	Acceptable Solution	Compliance Requirement
<input type="checkbox"/>	E1.6.3 A1 (a) / C13.6.3 A1 (a)	Insufficient increase in risk
<input type="checkbox"/>	E1.6.3 A1 (b) / C13.6.3 A1 (b)	Reticulated water supply complies with relevant Table
<input type="checkbox"/>	E1.6.3 A1 (c) / C13.6.3 A1 (c)	Water supply consistent with the objective
<input type="checkbox"/>	E1.6.3 A2 (a) / C13.6.3 A2 (a)	Insufficient increase in risk
<input type="checkbox"/>	E1.6.3 A2 (b) / C13.6.3 A2 (b)	Static water supply complies with relevant Table
<input type="checkbox"/>	E1.6.3 A2 (c) / C13.6.3 A2 (c)	Static water supply consistent with the objective

Attachment 3

5. Bushfire Hazard Practitioner

Name:	Alice Higgins	Phone No:	62 23 18939
Postal Address:	29 Kirksway Place Battery Point, TAS, 7005	Email Address:	ahiggins@geosolutions.net.au
Accreditation No:	BFP – 165	Scope:	1, 2, 3a, 3b, and 3c

6. Certification

I certify that in accordance with the authority given under Part 4A of the *Fire Service Act 1979* that the proposed use and development:

- Is exempt from the requirement Bushfire-Prone Areas Code because, having regard to the objective of all applicable standards in the Code, there is considered to be an insufficient increase in risk to the use or development from bushfire to warrant any specific bushfire protection measures, or
- The Bushfire Hazard Management Plan/s identified in Section 3 of this certificate is/are in accordance with the Chief Officer's requirements and compliant with the relevant **Acceptable Solutions** identified in Section 4 of this Certificate.

Signed:
certifier



Name:

Alice Higgins

Date: 2/06/2026

Certificate
Number: J12753

(for Practitioner Use only)

28 May 2026

ATTN: Director of Works and Infrastructure
Glamorgan Spring Bay Council

9 Melbourne Street
Triabunna, TAS 7190
sent via email: admin@freycinet.tas.gov.au

Dear Sir/Madam,

Re: Potentially Contaminated Land Code (PCLC) Assessment – Proposed BP Triabunna Outdoor Payment Terminal (OPT) Asset Removal Works

Project No. 002249-002

1 Introduction

This letter has been prepared to provide Glamorgan Spring Bay Council (Council) with additional information in relation to the planning application being prepared for asset removal work at the BP Triabunna Outdoor Payment Terminal (OPT) located at 21 Tasman Highway, Triabunna, TAS, herein referred to as 'the site'. The location of the site is shown on **Figure 1, Attachment B**. The proposed asset removal works include the decommissioning and removal of the site's Underground Petroleum Storage System (UPSS) and above ground storage tanks (ASTs) as well as the demolition of a wire gate and BP branded sign. The site UPSS to be removed comprises two underground storage tanks (USTs), two ASTs, connected fuel lines and dispensers.

2 Potentially Contaminated Land Code

The proposed works at the site triggers the application of the C14.0 Potentially Contaminated Land Code (PCLC) under of the Tasmanian Planning Scheme (TPS) in accordance with the *Land Use Planning and Approvals Act 1993* (the Act). Specifically the PCLC applies to the site given its historical use for petroleum storage, which is listed as a potentially contaminating activity in Table C14.2 of the PCLC.

It is noted that C14.0 of the PCLC states that the purpose of the Land Code is to ensure that use or development of potentially contaminated land does not adversely impact on human health or the environment.

3 PCLC Assessment

Based on the volume of the two USTs on site and the extent of connected fuel lines, the excavation required to decommission and remove the existing UPSS is anticipated be approximately 95m³.

An Environmental Site Assessment (ESA) was completed at the site in February 2024 by Resolve Environmental (Resolve, 2024¹) and has been attached to this letter (**Attachment C**). The ESA identified low level petroleum hydrocarbon impact in the soil at the western boundary adjacent to the ASTs as well as petroleum hydrocarbon impacts in the groundwater. However the ESA concluded that further assessment or remediation of the site was not necessary under the commercial land use conditions assessed, noting that '*...groundwater concentrations at the site do not pose an unacceptable risk to the*

¹ 'Environmental Site Assessment, 21 Tasman Highway, Triabunna, TAS 7190' reference P001954-001, dated 13 March 2024 (Resolve 2024)

site users in the current context... as well as *'...groundwater conditions are not considered to pose an unacceptable risk to the receiving aquatic environment...'*.

On this basis, despite the historical use of a UPSS and ASTs on site, the ESA (Resolve 2024) confirms that the level of contamination identified at the site does not present a risk to human health or the environment. This is considered to be consistent with the objectives of the PCLC to ensure that use or development of potentially contaminated land does not adversely impact on human health or the environment. Furthermore a project specific sampling, analytical and quality plan (SAQP) has been prepared to ensure that once the fuel storage infrastructure has been removed any soil material left in-situ in the work area is suitable for continued commercial land use. Under this approach the proposed asset removal works will only serve to improve subsurface conditions across the site.

Additionally to ensure the objectives of the PCLC continue to be met a Construction Environmental Management Plan (CEMP) has also been prepared for the scope of asset removal works. The CEMP is also attached to this letter (**Attachment D**) and includes management measures for:

- Emergency procedures
- Environmental pollution emergencies
- Dust
- Erosion and Sediment
- Stormwater runoff
- Waste minimisation
- Noise, Vibration and Odour control
- Stockpiled Soil
- Excavations
- Offsite disposal of soils
- Importation of clean fill

The implementation of the CEMP during the proposed excavation works will act as an additional control of potential risk during the excavation.

Yours sincerely,



Name: Ben Thomas
Position: Environmental Engineer
Email: bthomas@resolveenvironmental.com.au



Name: Sumi Dorairaj, CEnvP-SC (No. 40986)
Position: Senior Principal Environmental Engineer
Email: sdorairaj@resolveenvironmental.com.au

Attachments:

- (A) Statement of Limitations
- (B) Figure 1, Site Location
- (C) Resolve (2024)
- (D) CEMP

Attachment A Statement of Limitations

Resolve Environmental Pty Ltd (Resolve) has prepared this Potentially Contaminated Land Code (PCLC) Assessment – Proposed BP Triabunna Outdoor Payment Terminal (OPT) Asset Removal Works (Report) in accordance with generally accepted industry practices and standards prevailing at the time this Report was prepared. In preparing this Report, Resolve has applied the level of care and degree of skill ordinarily exercised by reputable members of the Environmental Consulting Profession in the preparation of environmental assessment and remediation reports.

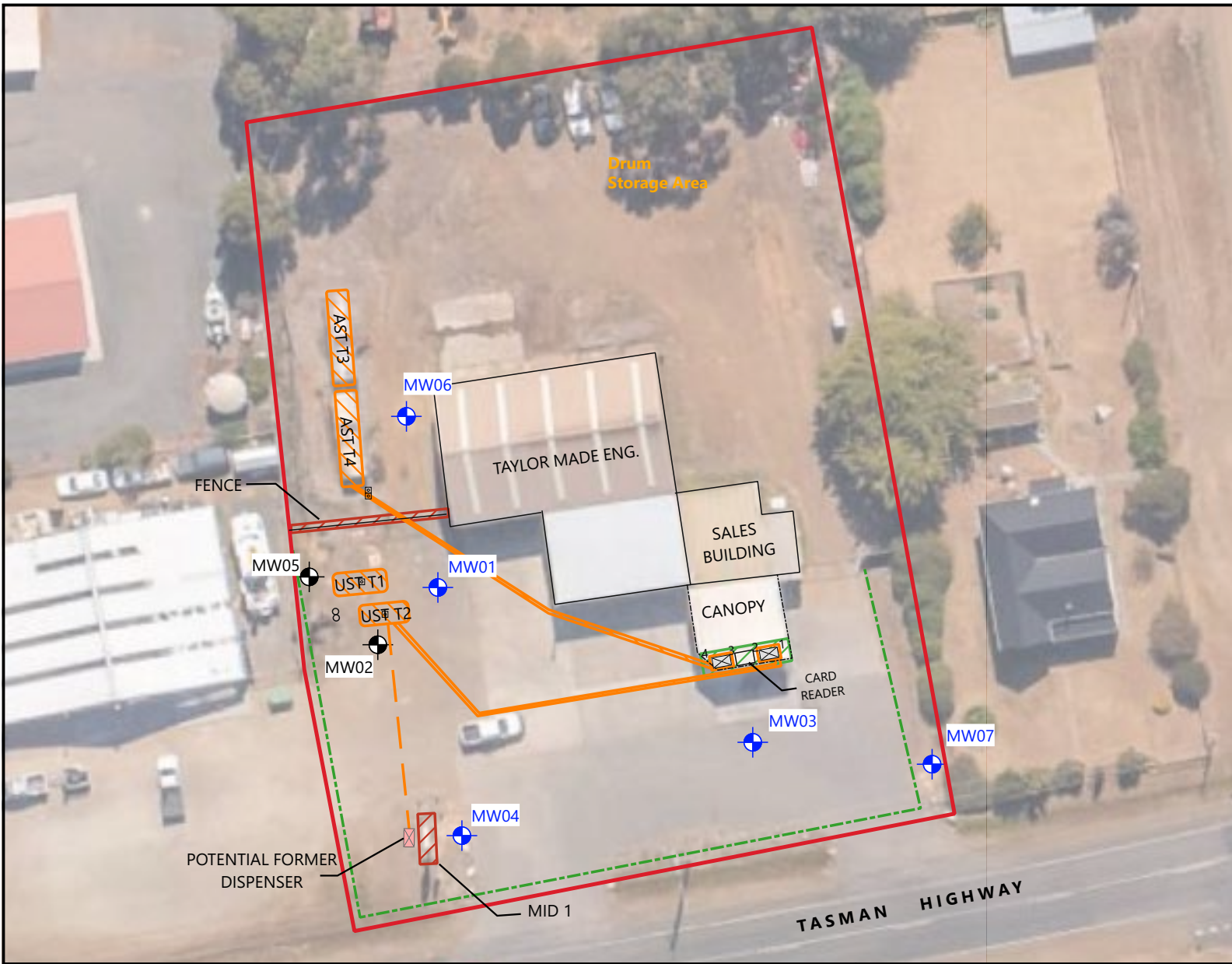
This Report has been prepared for the exclusive use by Glamorgan Spring Bay Council.

The Report is made without any warranty by Resolve either express or implied.

Findings, statements, and conclusions provided in this Report are based on the limited assessment of geological and chemical conditions encountered at the site at the time of investigation.

Subsurface conditions including contaminant concentrations can vary significantly across a site and over time and as such, results, findings, and proposed works expressed in this Report may not represent the extremes of conditions at the site. Site conditions (including subsurface) may change over time and the conclusions in this Report, while accurate at the time of writing, may or may not be affected by such changes. Resolve confirms that Resolve takes no responsibility or liability for the accuracy or validity of third-party information, reports, correspondence and/or data referred to in this Report. This Report does not purport to provide legal advice.

Attachment B Figure 1, Site Location



- LEGEND:**
- SITE BOUNDARY
 - ⊕ GROUNDWATER MONITORING WELL
 - ⊕ GROUNDWATER MONITORING WELL POTENTIALLY DESTROYED
 - ▣ FILL POINT
 - VENT
 - ⊞ DISPENSER
 - ⊞ POTENTIAL FORMER DISPENSER LOCATION
 - ⊞ ABOVEGROUND / UNDERGROUND STORAGE TANK
 - ▨ INFRASTRUCTURE LOWES WILL REMOVE
 - ▨ INFRASTRUCTURE TO BE DEMOLISHED
 - ▨ UPSS INFRASTRUCTURE TO BE REMOVED
 - PROPOSED TEMPORARY FENCING
 - POTENTIAL FUEL LINE

DISPENSER	PRODUCT
1	PULP
2	ULP
3 + 4	DIESEL

TANK	PRODUCT	VOLUME (L)
AST T3	DIESEL	26,000
AST T4	DIESEL	26,000
UST T1	ULP	11,500
UST T2	PULP	10,800

the list © Aerial Imagery. Revision 12 March 2025



Resolve Environmental
 239(G) Bay Street, Brighton VIC 3186
 Tel: (03) 9591 0173
 www.resolveenvironmental.com.au

Triabunna OPT
Asset Removal Plan

Client: Lennons Engineering Pty Ltd		Address: 21 Tasman Highway, Triabunna TAS		FIGURE No: 1
DESIGNED: MK	DRAWN: AW	DATE: NOV 2025	PROJECT: 002249-001	

The information included in this graphic representation has been compiled from a variety of sources and is subject to change without notice. The provider of this document makes no representations or warranties, expressed or implied, as to accuracy, completeness, timeliness or rights to the use of such information. This document is not intended for use as a land survey product. The use or misuse of the information contained on this graphic is at the sole risk of the party using or misusing the information.

Attachment C Resolve (2024)



Environmental Site Assessment

21 Tasman Highway, Triabunna, TAS 7190

Ocwen Energy Pty Ltd



Resolve Environmental Pty Ltd
239G Bay Street
Brighton VIC 3189



Resolve
Environmental

ENVIRONMENTAL SITE ASSESSMENT

Ocwen Energy Pty Ltd | 21 Tasman Highway, Triabunna, TAS 7190
Project No. P001954-001



Prepared for

Ocwen Energy Pty Ltd
305 Tingira Street, Pinkenda, QLD, 4008

Prepared by

Resolve Environmental Pty Ltd
239G Bay Street
Brighton VIC 3186
ABN: 42 609 904 056

Document control

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Authored by

Name: Lexus Hughes
Position: Environmental Scientist
Email: lhughes@resolveenvironmental.com.au
Phone: 0435 441 533

Authorisation

Reviewed by

Name: Luke Cattlin
Position: Senior Principal Scientist
Email: lcattlin@resolveenvironmental.com.au
Phone: 0428 608 726

Certified Environmental Practitioner (CEnvP) No. 1315
Site Contamination Certification No. SC41133

Approved by

Name: Andrew Johnston
Position: Senior Principal Engineer
Email: ajohnston@resolveenvironmental.com.au
Phone: 0437 591 111

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Acronyms

AHD	Australian Height Datum
ALS	Australian Laboratory Services
ANZECC	Australian and New Zealand Environment and Conservation Council
ARMCANZ	Agriculture and Resources Management Council of Australia and New Zealand
AS	Australian Standard
COC	Chain of Custody
DO	Dissolved Oxygen
EC	Electrical conductivity
EPA	Environment Protection Authority
EMPCA	Environmental Management and Pollution Control Act 1994
GDA	Geocentric Datum of Australia
GME	Groundwater Monitoring Event
GPS	Global Positioning System
LOR	Limit of Reporting
mAHD	Metres Australian Height Datum
mBGL	Meters Below Ground Level
mBTOC	Meters Below Top of Casing
NATA	National Association of Testing Authorities
NEMP	National Environmental Management Plan
NHMRC	National Health and Medical Research Council
HASP	Occupational Health and Safety Plan
QA	Quality Assurance
QC	Quality Control
RPD	Relative Percentage Difference
TDS	Total Dissolved Solids
TOC	Top of Casing

Units

µg/L	Micrograms Per Litre
km	Kilometre
m	Metre
mg/L	Milligrams Per Litre
ppm	Parts Per Million

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1 Introduction

Resolve Environmental Pty Ltd (Resolve) was engaged by Ocwen Energy Pty Ltd (the client) to complete an Environmental Site Assessment (ESA) for the Triabunna service station, located at 21 Tasman Highway, Triabunna, TAS 7190 (the site). The site location is provided in **Figure 1, Appendix A**. The site is currently a BP branded Outdoor Payment Terminal (OPT) and associated petroleum storage and distribution system.

1.1 Background

Resolve completed a Groundwater Monitoring Event (GME) in October 2023 and identified elevated dissolved phase petroleum hydrocarbon concentrations suggestive of the presence of LNAPL as per UPSS 2020 regulations at groundwater monitoring well MW02. In accordance with Regulation 21 of the Environmental Management and Pollution Control (Underground Petroleum Storage Systems) Regulations 2020 (UPSS Regulations), the LNAPL was reported to the Tasmanian Environmental Protection Authority (TAS EPA).

In response to the notification TAS EPA required the following, in accordance with the Tas EPA UPSS Regulations (2020):

- 1. an Environmental Site Assessment (ESA) is commenced within 15 days of you becoming aware of the LNAPL contamination;*
- 2. the ESA is conducted in accordance with Part 5 of the UPSS Regulations;*
- 3. the ESA is managed and the ESA Report is prepared by an environmental consultant who holds site contamination specialist certification under the Certified Environmental Practitioner (CEnvP(SC)) Scheme;*
- 4. you receive the ESA Report within 4 months of the ESA commencing; and*
- 5. you submit the ESA Report to the Director within 7 days of it being received.*

2 Objective

The objective of the ESA is to comply with TAS EPA UPSS Regulations (2020) to ensure ongoing protection of human health and to determine the lateral extent of dissolved phase hydrocarbons in groundwater and soil at the site.

2.1 Regulatory Requirements and Guidance Documents

All investigation works and reporting of this ESA were developed and conducted in general accordance with the following guidelines, standards and codes of practice:

- Australian Standards, AS5667.11-1998, Water quality – Sampling – Guidance on sampling of groundwaters, Standards Australia;
- National Environment Protection Council, National Environment Protection (Assessment of Site Contamination) Measure 1999 amended 2013, April 2013;
- EPA Tasmania, Environmental Management and Pollution Control Act 1994 (EMPCA);
- Standards Australia: Guide to the investigation and sampling of sites with potentially contaminated soil. Part 1: Non-volatile and semi-volatile compounds, AS4482.1 (2005) and Part 2: Volatile substances, AS4482.2 (1999).
- EPA Tasmania, Environmental Management and Pollution Control (Underground Petroleum Storage Systems) Regulation 2020 (TAS UPSS Regulations); and

2.2 Scope of Works

To meet the above objectives and the compliance of the Notice, Resolve completed the following scope of works.

- Development of a site-specific Health and Safety Plan and task specific Safe Work Method Statements for each work tasks to be undertaken;
- Completed a Hot Work Permit and Gas Free Certificate for all hot works undertaken in accordance with the Work Place Clearance Group (WPCG) checklist;
- Completed an inspection of the site to identify potential sources of contamination;
- Completed underground service location using radio detection equipment and Ground Penetrating Radar to identify services in the vicinity of drilling locations;
- Completed intrusive soil investigation activities including drilling two soil bores at locations targeting the components of the system infrastructure (one adjacent to UPSS infrastructure and one adjacent to UPSS service lines);
- Logged the encountered lithology at each of the soil bores including field screening of soil for Volatile Organic Compounds (VOCs) using a hand held Photo-Ionisation Detector (PID);
- Collection of discrete soil samples from both fill and natural soils, at notable changes in the soil strata and where field observations indicate potential impacts by petroleum hydrocarbons (i.e. soil staining and/or odours);
- Conversion of four soil bores to groundwater monitoring wells (MW04, MW05, MW06 and MW07) utilising 50 mm Class 18 Poly-vinyl Chloride (PVC) with screened intervals across the observed water table to delineate potential contamination and assess risk to sensitive receptors;
- Development of the groundwater monitoring wells;
- Completed a Groundwater Monitoring Event (GME) comprising; gauging each of the groundwater monitoring wells for the presence of Light Non-Aqueous Phase Liquid (LNAPL), standing water level and total depth; and collection of groundwater samples from each groundwater monitoring well using the insitu hydrasleeve sampling technique;
- Laboratory analysis of soil and groundwater samples for Contaminants of Potential Concern (CoPC) related to operation of the system, and a review of analytical data against applicable assessment criteria;
- Surveyed each groundwater monitoring wells by a licensed surveyor to Australian Height Datum (AHD); and
- Prepared this report documenting the findings of the ESA.

3 Site Setting and Surrounding Environment

3.1 Site Location and Site Description

The site address is 21 Tasman Highway, Triabunna, Tasmania, located approximately 64 kilometres (km) north-east of Hobart. The site location and features are presented in **Figures 1 and 2, Appendix A**, respectively. Site details are detailed in **Table 3.1**.

Table 3.1: Site Details

Item	Description
Street Address	21 Tasman Highway, Triabunna, TAS 7190
Legal Description	PID 3576865 or 3231605

Item	Description
Approximate Area	Approx. 3,358 m ²
Site Owner	Elaine Kay TAYLOR
Site Occupant	Ocwen Energy Pty Ltd T/A Lowes Petroleum Service
Nearby surface water receptors	<ul style="list-style-type: none"> Vicarys Rivulet estuary, located approximately 430 m south east of the site. Spring Bay, located approximately 1.1 km south of the site.
Site Zoning	The site resides within the Glamorgan-Spring Bay Council and is currently zoned as Light Industrial Zone. The site and immediate surrounding sites are subject to a designated Attenuation Area overlay. The overlay restricts land use and development type to Industrial use.

3.2 Site Features

The UPSS infrastructure that has been identified onsite is summarised in **Table 3.2** and is shown on **Figure 2, Appendix A**.

Table 3.2: UPSS Summary

Tank/ Dispenser Number	Type	Capacity (L)	Product	Use
UST 1	UST	11,500	PULP	Active
UST 2	UST	10,800	ULP	Active
AST1	AST	26,000	Diesel	Active
AST2	AST	26,000	Diesel	Active
1 & 2	Dispenser	-	ULP	Active
3 & 4	Dispenser	-	Diesel	Active

Notes:

- UST – Underground Storage Tank
- AST – Above ground Storage Tank
- ULP – Unleaded Petroleum

3.3 Surrounding Land Use

The land use surrounding the site and respective planning zones are summarised in **Table 3.3** as follows:

Table 3.3: Surrounding Land Use

Direction	Description
North	To the north of the site are residential properties, a storage area to the north west, and vacant cleared land beyond.
East	To the east of the site are residential properties and large areas of cleared vacant land.
South	The site is bound to the south by Tasman Highway, beyond which are residential properties and large areas of cleared vacant land.
West	To the west of the site is an auto bodywork workshop and shop, beyond which is cleared vacant land.

3.4 Topography, Elevation and Drainage

The site is located at approximately 12m Australian Height Datum (m AHD). The area surrounding the site is topographically flat.

Surface water on the sealed portion of the site is expected to collect in the on-site drainage network and/or within the Tasman Highway channel drainage system. Surface water associated with the rest of the site, or where the on-site drainage network is inundated, is likely to pool on-site and gradually migrate to the subsurface or evaporate.

The nearest surface water body is Vicarys Rivulet estuary, located approximately 430 m south east of the site at its nearest point. Spring Bay is located approximately 1.1 km south of the site. It is noted that Vicarys Rivulet and Spring Bay foreshore areas are subject to a Waterway and Coastal Protection Area Overlay and a Biodiversity Protection Area Overlay.

3.5 Regional Geology

The Geological Atlas 1:63,360 Series, Sheet 76 Buckland, indicates that the site is underlain by the Tertiary aged gravels and clay. During intrusive assessment works, the encountered soils were fills overlying siltstone, sand and clay.

3.6 Site Specific Geology

The site-specific geology encountered during the current and previous investigations is summarised in **Table 3.4** below.

Table 3.4: General Site Geological Profile

Depth (m BGS)	Geology
0 – 0.5	FILL (clayey gravel, sandy gravel, gravelly clay or sand) – fine to coarse, sub angular gravels and sand, low to high plasticity clay, grey/brown, moist.
0.5 – 1.0	Silty CLAY and CLAY: medium-high plasticity, grey/grey with brown or dark grey mottling, soft to stiff, dry to moist.
1.0 – 1.5	SILTSTONE, grey, dry to moist, highly-weathered, friable
1.5 – 7.0	Sandy CLAY and clayey SANDSs – Low to medium plasticity, brown and yellow-brown, dry to moist, with gravel and silt

3.7 Regional and Site Hydrogeology

Information pertaining to regional hydrogeology (including depth to groundwater and Total Dissolved Solids (TDS)) was not available from the Tasmanian Groundwater Information Access Portal, with these details for nearby bores indicated to be “unknown”.

Based on topography and distance to the site, regional groundwater is expected to flow in a south easterly direction towards Vicarys Rivulet or to the south towards Spring Bay.

Groundwater encountered across the site appears to be associated with a local shallow aquifer present at approximately 3-5 mbgs. New Groundwater Monitoring Wells MW04 to MW07 were screened between 3 to 7 mBGL.

4 Field Activities

Field activities were undertaken or supervised by Resolve Environmental professionals, the sequence of works is outlined in **Table 4.1** below.

Table 4.1: Field work dates

Date	Task
8 and 9 February 2024	Advancement of six soil bores, four were converted into groundwater monitoring wells (MW04 – MW07)
19 February 2024	Groundwater monitoring event

A summary of the fieldwork methodologies are outlined in **Table 4.2**.

Table 4.2: Summary of Filed Activities

Date	Task
Underground Service Location	Underground services or structures in the vicinity of each borehole location and service connections to the site were identified by an accredited underground service locating specialist using non-intrusive electronic scanning technology including radio detection and ground penetrating radar.
Hand Augering	Six investigation locations (SB01 to SB02 and MW04 to MW07) were advanced using a hand auger to a depth 1.5 and 1.7 mBGL for SB01 and SB02 respectively and a minimum depth of 1.2 mBGL for MW04 to MW07. The locations of boreholes were selected to target the existing system infrastructure. The locations of investigation locations are presented in Figure 2, Appendix A . Soil bore logs are presented as Appendix D . Soil bores were backfilled using soil cuttings and reinstated or converted to groundwater monitoring wells.
Drilling	Monitoring well MW04 to MW07 were advanced by hand auger to a depth of 1.2 m BGL and by solid stem auger or air hammer to 7.0 m BGL.
Soil Logging	The geological profile was logged by an experienced Resolve Environmental Field Scientist. Soil classifications and descriptions were based on Australian Standard AS1726-2017. Potential indicators of contamination (hydrocarbon odour or staining and PID results) were noted as well as the depth of water bearing zones encountered. Borelogs including all soil descriptions and PID results are provided in Appendix D .
Field Screening and sampling	Soil field screening from boreholes were typically collected at 0.2 m BGS, 0.5 m BGS, 1.0 m BGS and every metre thereafter, as well as changes in geology or based on visual or olfactory observations. A PID was used to assess for the presence of volatile organic compounds (VOCs) in the field. PID values recorded during this investigation are presented on the borelogs in Appendix D , and PID calibration certificates included in Appendix E . Soil samples were collected at the sample intervals as screening using 150mL glass jars and 100mL unpreserved zip lock bags.
Groundwater Well Installation	Groundwater well MW04 to MW07 were converted to a groundwater monitoring well by installing 50 mm Class 18 Poly-Vinyl Chloride (PVC) screen and casing, installed by a licensed driller in accordance with the Minimum Construction Requirements for Water Bore in Australia (2020) and completed with a flush gatic cover. Construction details of the well is provided on the borehole log found in Appendix D .
Groundwater Well Development	Monitoring well MW03 to MW07 were developed to activate the filter pack and remove any sediment collected during installation, using well-dedicated disposable bailer purging until dry and allowed to recharge prior to sampling. All wells were purged dry with the exception of MW05 which could not be purged dry and had 5 well volumes removed as an alternative.
Groundwater Gauging	All groundwater monitoring wells (MW01 to MW07) were gauged using an oil/water interface probe to identify the presence (and thickness if present) of LNAPL as well as to measure the depth to water and total well depth.
Groundwater Monitoring Event	All groundwater wells were sampled using the hydrasleeve methodology.

Date	Task
	The hydrasleeve was installed within the centre of the well screen. Groundwater was monitored for field parameters including dissolved oxygen, electrical conductivity, pH, redox potential and temperature. The water quality meter calibration certificate is included in Appendix E .
Monitoring Well Survey	All groundwater monitoring wells were surveyed by a licenced surveyor to Map Grid Australia (MGA) coordinates and m Australian Height Datum (mAHD). A copy of the well survey report is included in Appendix F .
Sample Preservation	Soil and groundwater samples were stored in eskies chilled with ice whilst on site and in transit to National Association of Testing Authorities (NATA) accredited laboratories. Samples were transported under Chain of Custody (CoC) protocol. Laboratory certificates of analysis and CoC documentation are attached in Appendix G .
Decontamination Procedures	The hand auger, interface probe and water quality probe were decontaminated between each use with Decon90 solution and rinsed with potable and deionised water. A new hydrasleeve was used for each monitoring well and disposable nitrile gloves were changed between handling of each sample.
Waste Disposal	No significant volumes of drill cuttings or purge water was generated during works. Drill cuttings were used to back fill soil bores where applicable.

5 Assessment Criteria and Applicable Environmental Values

5.1 Soil Assessment

Primary soil samples were submitted to ALS Laboratories (ALS) located in Springvale, Victoria. ALS are accredited by the National Association of Testing Authorities (NATA) for the analytical testing conducted.

A total of 19 primary soil samples were collected by Resolve personnel and submitted to the laboratory for analysis. Soil samples were analysed for any of the following CoPC:

- Total Recoverable Hydrocarbons (TRH); and
- Benzene, Toluene, Ethylbenzene, Xylenes and Naphthalene (BTEXN).

Soil analytical results are presented in Table 3, **Appendix B**. Complete copies of the laboratory certificates of analysis and accompanying CoC documentation are provided in **Appendix G**.

5.1.1 Soil Assessment Criteria

The framework for relevant beneficial uses and environmental values of land to be protected within Tasmania is set out in the Environmental Management and Pollution Control Act 1994 (EMPCA) which states that:

An area of land is contaminated if –

- (a) there is in, on or under that area of land a pollutant in a concentration that –
- (i) is above the background concentration; and

(ii) is causing or is likely to be causing serious or material environmental harm or environmental nuisance, or is likely to cause serious or material environmental harm or environmental nuisance in the future if not appropriately managed;

In order to assess if an area of the land is contaminated (in accordance with the EMPCA), the assessment was undertaken in accordance with the National Environment Protection (Assessment of Site Contamination) Measure (NEPM) 1999 (amended 2013). In order to identify if CoPC concentrations are present or are likely to be causing serious or material environmental harm or nuisance, soil results were screened against adopted soil assessment criteria, based on the current land use of the site as commercial/industrial use, as follows:

- **Maintenance of Ecosystems** – NEPM 2013 Ecological Investigation Levels (EILs) and Ecological Screening Levels (ESLs) (Commercial/Industrial). Given the site is an active service station and the surface is either sealed and used as an active driveway or above ground petroleum storage, the ecosystem is considered highly modified. As such the maintenance of ecological values is not considered further
- **Buildings and Structures** – Australian Standard 2159-2009 Piling Design and Installation. The CoPC assessed during this investigation are not considered to be corrosive to buildings and structures and as such this use has not been assessed further.
- **Aesthetics** – The Aesthetics beneficial use was assessed qualitatively based on field olfactory and visual observations, with the assessment works undertaken in general accordance with Section 3.6, Schedule B(1) NEPM 2013. Given that the site is an active service station this is not further considered.

5.2 Groundwater Assessment

A total of four primary groundwater samples were submitted to ALS for analysis of the following CoPC:

- TRH; and
- BTEXN.

Groundwater analytical results are presented in **Table 5, Appendix B**. Complete copies of the laboratory certificates of analysis and accompanying CoC documentation are provided in **Appendix G**.

5.2.1 Groundwater Assessment Criteria

Groundwater water quality is managed in Tasmania under Department of Primary Industries, Park, Water and Environment publication State Policy on Water Quality Management 1997 (the policy) which provides a framework for assessment, management and regulation of sources of pollution to Tasmanian waterways. The policy provides a list of environmental values to be protected based on the TDS concentration of groundwater at the site as summarised in

Table 5.1 below. During the GME, TDS was found to be in the range of 1,144 to 4,967 mg/L placing it conservatively within TDS category B.

Table 5.1: Groundwater Protected Environmental Values

Protected Environmental Values	TDS Category (mg/L)			
	A Less than 1,000	B 1,000 – 3,500	C 3,500 – 13,000	D Greater than 13,000
Drinking Water	✓			
Irrigation	✓	✓		
Industry	✓	✓	✓	
Stock	✓	✓	✓	
Ecosystem Protection	✓	✓	✓	✓

Notes:

TDS denotes 'Total Dissolved Solids'

mg/L denotes 'milligrams per litre'

✓ indicates the environmental value is applicable to the TDS category

Grey shading denotes the TDS category to be applied to the site.

The policy requires assessment of groundwater against water quality guidelines to determine if an environmental value is protected and references the following sources for guideline values:

- Human Health – the National Health and Medical Research Council; and
- Other – Australian Water Quality Guidelines.

It should be noted that since the production of the policy (1997), several updates to sources for guideline values within Australia have occurred and as such, the primary sources for groundwater assessment criteria adopted for this assessment are:

- Australian and New Zealand Environment and Conservation Council (ANZECC) Guidelines for Fresh and Marine Water Quality (2018);
- National Health and Medical Research Council (NHMRC) Australian Drinking Water Guidelines (2018); and
- NHMRC Guidelines for Managing Risks in Recreational Water (2008).

In addition, the NEPM presents screening levels for protection of human health via the vapour intrusion pathway, these levels have also been adopted.

A summary of the adopted groundwater assessment criteria, based on the current land use of the site as commercial/industrial use, is provided below:

- **Drinking Water** – The National Health and Medical Research Council (NHMRC) Drinking Water Guidelines 2016 have conservatively been adopted for this environmental value.
- **Irrigation** – The use of groundwater for irrigation is considered unlikely given the industrial setting of the site and surrounding land. In the absence of specific irrigation criteria, the NHMRC Drinking Water Guidelines values have been adopted. Extractive uses would be limited by the potential flow rates of the greater table aquifer.
- **Industrial** – Water quality for industrial water use is highly dependent upon the particular industrial process for which water will be utilised. Screening of groundwater concentrations against drinking water guideline values is considered a conservative approach in the protection of industrial water use.
- **Stock Watering** - The use of groundwater for stock watering is considered possible given the rural setting of the site and surrounding land. In the absence of specific irrigation criteria, the NHMRC Drinking Water Guidelines values have been adopted.
- **Ecosystem Protection** – Regional groundwater beneath the site is anticipated to flow towards the Vicarys Rivulet estuary. As such trigger values that represent 95% level of protection for marine water ecosystems have been adopted. Criteria for the protection of marine aquatic ecosystems are provided in the Australian and New Zealand Environment and Conservation Council (ANZECC, 2000) Australian and New Zealand Guidelines for Fresh and Marine Water Quality.
- **Recreational Water Quality and Aesthetics** – Use of the receiving water body for recreational purposes is possible. The NHMRC Guidelines for Managing Risks in Recreational Water (NHMRC 2008) have been adopted as the investigation levels relevant for the protection of this environmental value.

5.3 Quality / Quality Control

The NEPM specifies a seven step Data Quality Objective (DQO) process to inform decision making relating to environmental assessment. The DQO process involves the following steps:

- a) State the problem;
- b) Identify the goal of the study;
- c) Identify the information inputs;

- d) Define the boundaries of the study;
- e) Develop a decision rule;
- f) Specify performance or acceptance criteria; and
- g) Develop the plan of obtaining data.

The adopted QA/QC program and results including a description of how the DQOs have been implemented in the assessment and are provided in **Appendix H**. Based on review of the QA/QC results, Resolve considers the overall quality of analytical data presented within this report to be acceptable for interpretive use.

6 Results and Discussion

6.1 Soil Field Observations

The general sub-surface profile encountered at the site consisting of the following:

- Fill (comprising clays, sands and gravels) (0 – 1.0 m BGL): grey/brown, brown and yellow, fine to coarse grained sand, fine to coarse angular gavel, slightly moist to wet;
- Clayey SAND / Sandy CLAY / SAND (1.0 – 7.5 m BGL): Light brown, pale brown/orange brown/yellow brown, fine to coarse grained sand, firm, medium dense to dense, low plasticity, slightly moist to wet, trace fine to coarse subangular gravel;
- PID values recorded during drilling ranging from 0 to 68 parts per million (ppm).
- Groundwater was encountered between approximately 4.0 m BGL – 7.0 m BGL during drilling.

6.2 Soil Analytical Results

Soil analytical results and adopted assessment criteria are presented in **Table 3, Appendix B**. The NATA certified laboratory reports and accompanying CoC documentation are included with the laboratory reports included within **Appendix G**.

All analytical concentrations were below the laboratory Limit of Reporting (LOR) or below assessment criteria with the exception of those detailed in **Table 6.1** below.

Table 6.1: Summary of Soil Exceedances

Sample ID	Location	Depth mBGL	Analyte/ Exceedance Concentration	Sample Concentration	Criteria
SB02_1.6-1.7	West of Diesel ASTs – Western Boundary of the Site	1.6	(TRH) >C10-C16 Fraction (F2 minus Naphthalene) 170mg/kg	240mg/kg	NEPM 2013 Table 1B(6) ESLs - Commercial/Industrial, Coarse Soil, 0-2m ¹

Notes:

1. National Environment Protection (Assessment of Site Contamination) Measure 1999, updated 2013 (NEPM 2013).
2. TRH – Total Recoverable Hydrocarbons
3. mg/kg – milligrams per kilogram

6.3 Groundwater Field Observations

Groundwater gauging details are presented in **Table 1, Appendix B** and groundwater elevation contours and interpreted flow direction are depicted on **Figure 3, Appendix A**.

New monitoring wells were installed 7 mBGL with a 3-7 mBGL screen with the exception of MW07 which was installed to 6 mBGL with a 3 – 6 mBGL screen. A summary of hydrogeological information for those locations where groundwater was encountered is summarised in **Table 6.2**.

Table 6.2: Site Hydrogeological Information

Item	Hydrogeological Information
Range of depth to groundwater	3.501 m BTOC (MW01) to 3.701 m BTOC (MW06)
Range of groundwater elevation	7.314 m AHD (MW06) to 7.409 m AHD (MW01)
Inferred groundwater flow direction	Regional groundwater flows to the south-east towards the bay. Groundwater onsite indicates a south to south-east flow direction, however there is minor mounding in the centre of site which causes a radial groundwater flow direction adjacent to the USTs.
LNAPL	No measurable LNAPL observed.
Hydrocarbon Odour	MW01, MW02, MW05

Groundwater quality parameters measured during sampling including temperature, dissolved oxygen (DO), Electrical Conductivity (EC), TDS, pH and redox potential were collected for each monitoring well during this assessment. Groundwater field water quality parameters are presented in **Table 6.3** below.

Table 6.3: Summary of Groundwater Field Quality Parameters

Field Parameter	Range	Comment
Dissolved Oxygen	0.94 mg/L (MW05) to 3.70 mg/L (MW07).	Suggests low to moderate content is present in groundwater across the site.
Electrical Conductivity	1,512 µS/cm (MW06) to 6,679 µS/cm (MW07)	Variability was observed in EC across the site, even within wells in close proximity to each other.
pH	6.02 (MW03) to 6.55 (MW05)	Groundwater conditions are slightly acidic.
Redox Potential	-129.1 mV (MW02) to 149.1 mV (MW07)	Variable conditions are present across the site, consistent with hydrocarbon impacted groundwater naturally attenuating.
Temperature	15.5°C (MW05) to 19.1°C (MW03)	Consistent temperature with variability attributed to changes in ambient temperature during sampling.

6.4 Groundwater Analytical Results

Historical groundwater analytical results screened against the adopted assessment criteria are presented in **Table 5, Appendix B**. The NATA certified laboratory reports and accompanying COC documentation are included within **Appendix G** and summarised below:

- No measurable LNAPL was observed at any locations on the site;
- No inferred LNAPL was detected

- BTEXN was detected above adopted guidelines at three locations.
- All monitoring wells were below the adopted guidelines for the protection of Marine Ecosystems.

7 Conceptual Site Model

A Conceptual Site Model (CSM) was developed for the site based on the results of this assessment. A CSM is an iterative process and continually updated throughout assessment works and is used to clearly organise site information in a methodical way to increase understanding of potential environmental and human health issues and identify data gaps or requirements for further investigation based on historical site uses.

The CSM has been developed from the information provided in **Section 3** to **Section 6**.

Based on the review of site and surrounding area, key currently occurring potentially contaminating activities include:

- On-site: Use of the site as an ongoing OPT facility and
- Off-site: No identified potentially contaminating activities.

Table 7.1 below summarises the potential sources of contamination, pathways, receptor and analysis of the source-receptor pathway.

Table 7.1: Potential Source-Pathway-Receptor (SPR) Linkages

Potential Source	Pathway	Receptor	Source-Receptor-Pathway complete?
Petroleum hydrocarbon contaminated soils on site (impacted by potential, historic leaks or spills from the system)	Direct contact (i.e. dermal contact / ingestion of soil)	Intrusive maintenance workers in the vicinity of the potentially impacted soil.	Incomplete, given that all concentrations were reported below the adopted HSL assessment criteria for direct contact, however any intrusive works in vicinity of the system to be conducted under a health and safety / management plan.
		Ecological	Unlikely, given the highly developed nature of the site and surrounds, the limited access to soil (hardstand) and the planned continued use of the site as an outdoor payment terminal facility. Further, ESL exceedances within soil were at a depth of 1.7 mBGL within the site boundary.
	Vapour inhalation from the volatilisation of CoPC to indoor air	Commercial workers associated with the site.	Incomplete, given soil concentrations reported below HSL assessment criteria.
	Vapour inhalation from the volatilisation of CoPC to outdoor air	Intrusive workers in the vicinity of the potentially impacted soil.	Unlikely, given soil concentrations were reported below HSL assessment criteria. However, any intrusive works in vicinity of the system to be under a health and safety / management plan.
Petroleum hydrocarbons contaminated groundwater beneath the site.	Direct contact	Customers onsite.	Incomplete, given soil concentrations reported below HSL assessment criteria.
	Vapour inhalation from the volatilisation of CoPC to indoor air	Intrusive maintenance workers in the vicinity of the potentially impacted groundwater.	Unlikely, given depth to groundwater (~4m). Any intrusive works in vicinity of the system to be conducted under a management plan.
	Vapour inhalation from the volatilisation of CoPC to outdoor air	Workers and customers in the vicinity of the potentially impacted groundwater.	Incomplete, given groundwater concentrations reported below HSL assessment criteria.

Potential Source	Pathway	Receptor	Source-Receptor-Pathway complete?
	Lateral migration in groundwater	Groundwater extraction for drinking water, recreational, irrigation or stock watering use.	Unlikely, impact reported in groundwater monitoring well MW02 was delineated hydraulically downgradient by MW03 and MW05 for drinking water use (health).
		Ecological receptors associated with the receiving water body.	Unlikely, as groundwater contamination has been delineated to below the relevant ecological assessment criteria hydraulically downgradient within the site boundary.

8 Findings

Resolve Environmental Pty Ltd (Resolve) was engaged by Ocwen Energy Pty Ltd (the client) to complete an Environmental Site Assessment (ESA) for the Triabunna service station, located at 21 Tasman Highway, Triabunna, TAS 7190 (the site).

A summary of the works undertaken, and findings are presented below.

- Six soil bores were advanced targeting locations around the system infrastructure.
 - One soil bore was advanced in the vicinity of the fuel lines.
 - One soil bore was advanced adjacent to existing ASTs.
 - Four soil bores were converted into groundwater monitoring wells with concurrent soil sampling from the bores. Groundwater monitoring bores were installed up-gradient, down-gradient and cross-gradient of existing monitoring well network to delineate potential contamination.
- The depth to groundwater ranged from 3.501 m BTOC (MW01) to 3.701 m BTOC (MW06).
- Soil samples were selected for analysis from all locations and where field indicators suggested the COPCs may be present.
 - Soil analytical results indicated no exceedances with the exception of SB02_1.6-1.7 exceeded the adopted ESL criteria for TRH.
- Groundwater samples were obtained from all seven groundwater monitoring wells.
 - Groundwater analytical results indicated no exceedances with the exception of BTEXN exceeding the adopted guidelines in three monitoring wells.
 - Measurable or inferred LNAPL was not detected in this investigation.
 - All dissolved phase concentrations were delineated on site.
- Groundwater concentrations at the site do not pose an unacceptable risk to the site users in the current context as an ongoing service station facility.
- Groundwater conditions are not considered to pose an unacceptable risk to the receiving aquatic environment.
- Further assessment or remediation activities are not considered to be required.
- It is recommended that groundwater monitoring continue to assist in UPSS management.

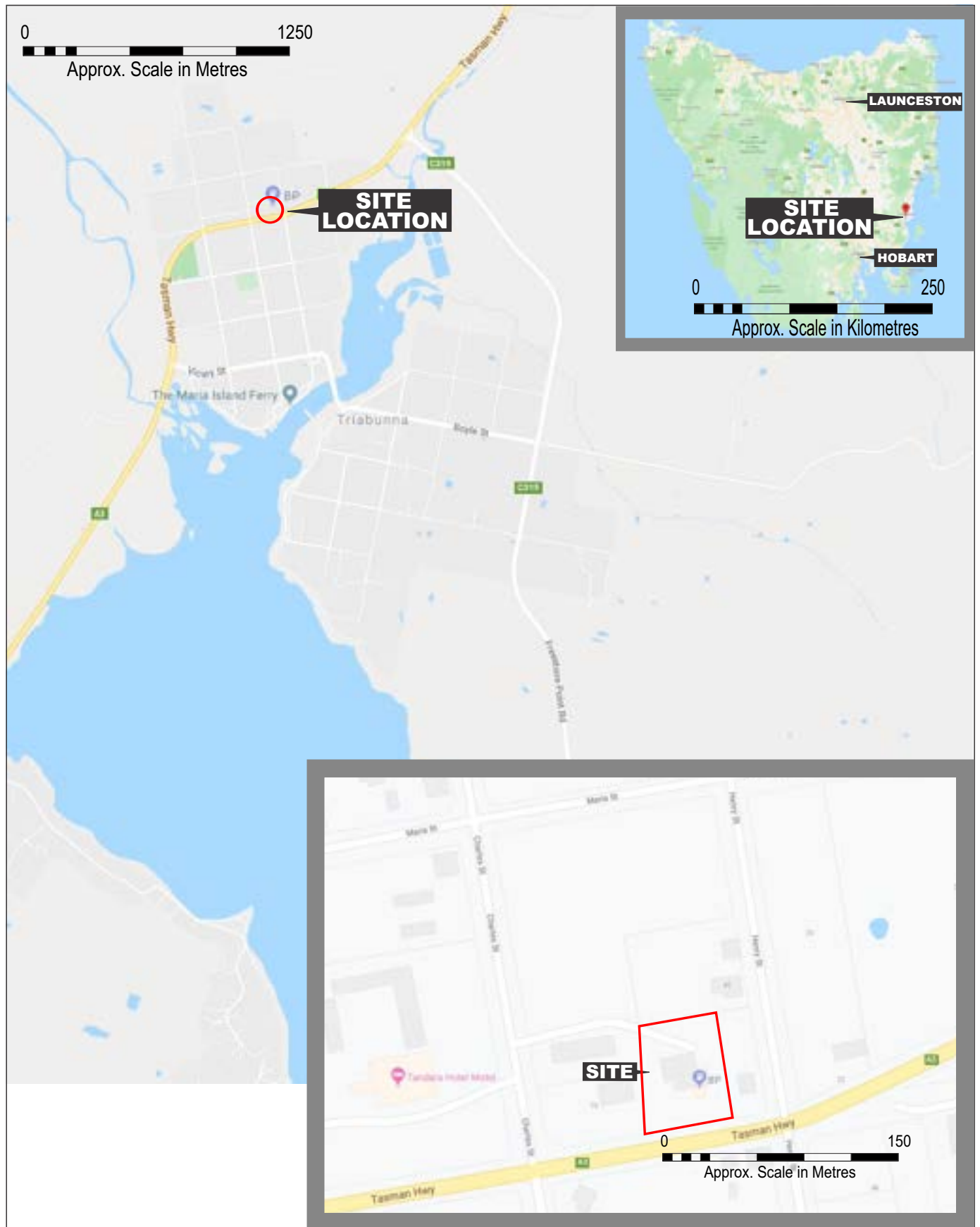
All assessment, conclusions and statements contained within this report are subject to the **Statement of Limitations**.

ENVIRONMENTAL SITE ASSESSMENT

Ocwen Energy Pty Ltd | 21 Tasman Highway, Triabunna, TAS 7190
Project No. P001954-001



Appendix A Figures



Source: Map Data © 2019 Google



Resolve
Environmental

239G Bay Street, Brighton VIC 3186
Tel: (03) 9591 0173
www.resolveenvironmental.com.au

Triabunna OPT
Detailed Site Investigation
Site Location Plan

CLIENT:
Ocwen Energy Pty Ltd

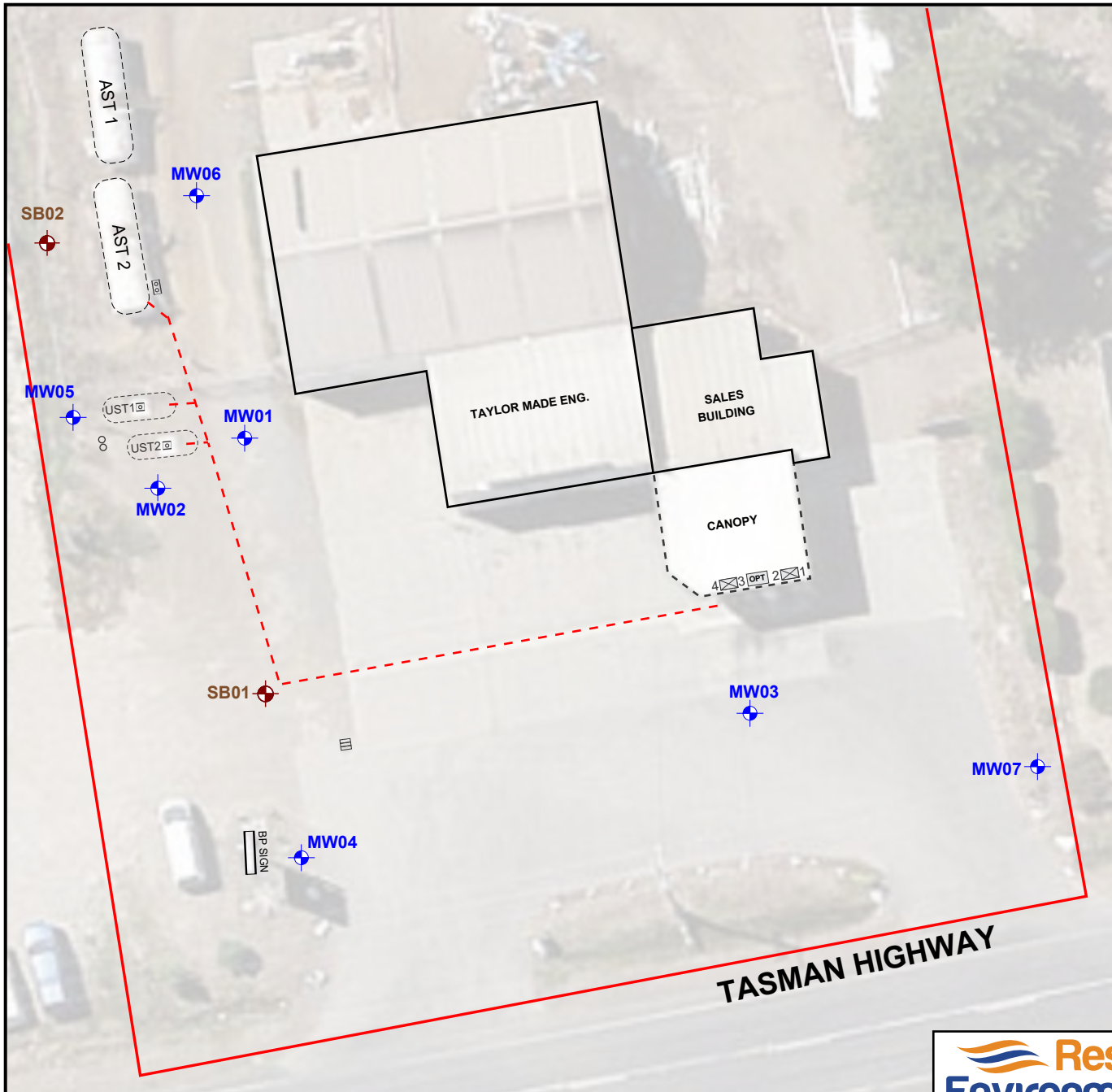
LOCATION:
21 Tasman Hwy, Triabunna TAS 7190

FIGURE No.

DESIGNED: CA DRAWN: AB

DATE: February 2024 PROJECT: P001954-001

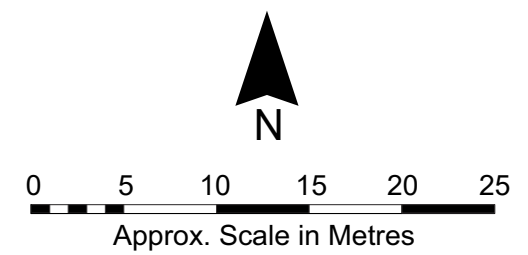
1



STORAGE TANKS		
AST1	26,000L	DIESEL
AST2	26,000L	DIESEL
UST1	11,500L	ULP
UST2	10,800L	PULP

DISPENSERS	
1	PULP
2	ULP
3 + 4	DIESEL

- LEGEND:**
- SITE BOUNDARY
 - + GROUNDWATER MONITORING WELL LOCATION
 - + SOIL BORE LOCATION
 - ABOVEGROUND / UNDERGROUND STORAGE TANK
 - ∞ VAPOUR RECOVERY VENTS
 - DISPENSER
 - DRAIN
 - FILL POINTS
 - INFERRED GROUNDWATER FLOW DIRECTION
 - - - UNDERGROUND FUEL LINE



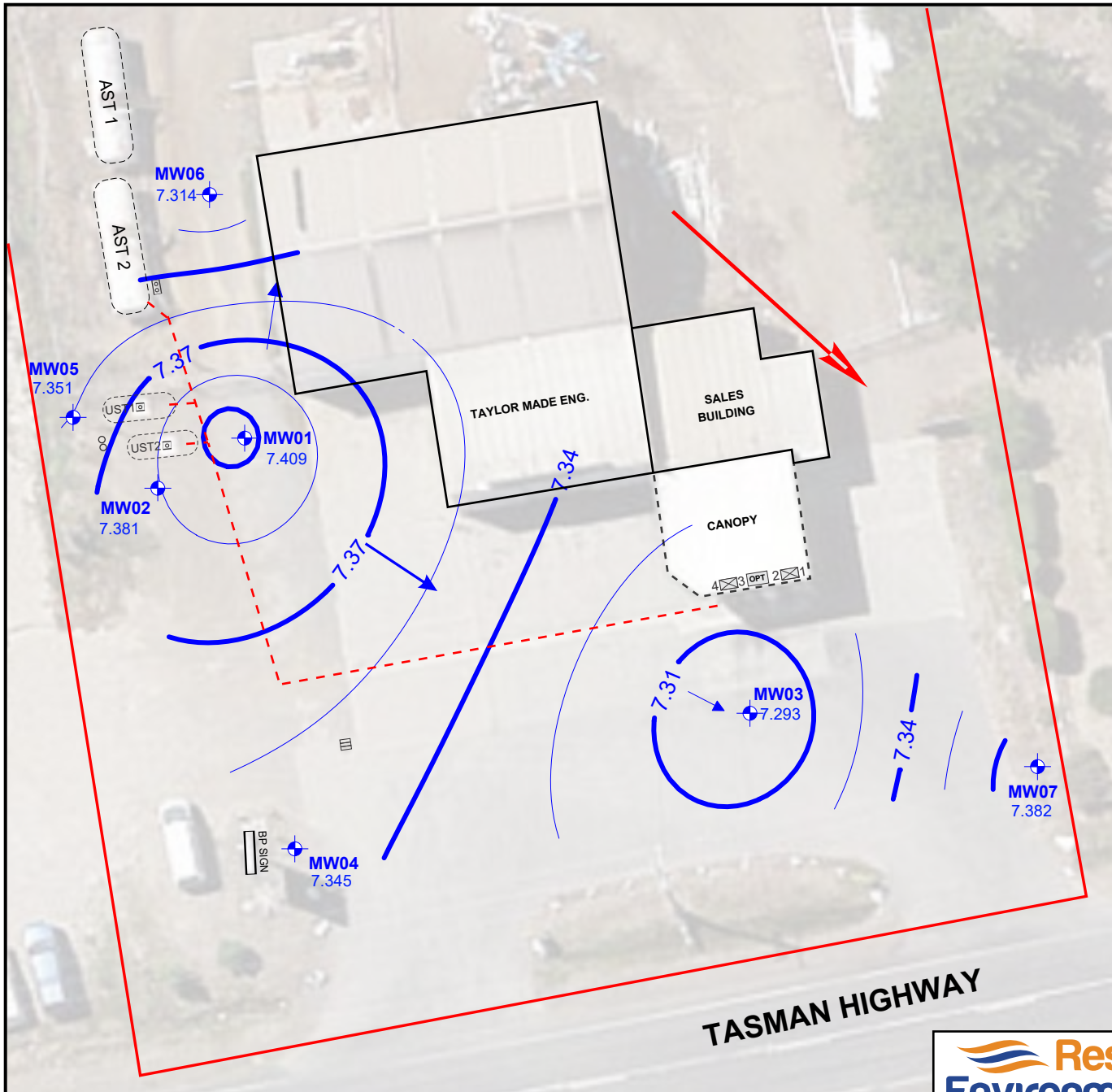
SOURCE: © Nearmap



239G Bay Street, Brighton VIC 3186
 Tel: (03) 9591 0173
 www.resolveenvironmental.com.au

Triabunna OPT
 Detailed Site Investigation
Site Features Plan

CLIENT: Ocwen Energy Pty Ltd		LOCATION: 21 Tasman Hwy, Triabunna TAS 7190		FIGURE No. 2
DESIGNED: CA	DRAWN: AB	DATE: February 2024	PROJECT: P001954-001	



STORAGE TANKS		
AST1	26,000L	DIESEL
AST2	26,000L	DIESEL
UST1	11,500L	ULP
UST2	10,800L	PULP

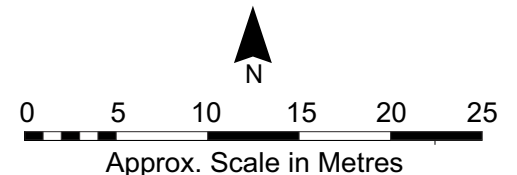
DISPENSERS	
1	PULP
2	ULP
3 + 4	DIESEL

LEGEND:

- SITE BOUNDARY
- + GROUNDWATER MONITORING WELL LOCATION
- ABOVEGROUND / UNDERGROUND STORAGE TANK
- ∞ VAPOUR RECOVERY VENTS
- DISPENSER
- DRAIN
- FILL POINTS
- INFERRED GROUNDWATER FLOW DIRECTION
- UNDERGROUND FUEL LINE
- INFERRED REGIONAL GROUNDWATER FLOW DIRECTION

NOTES:

- Groundwater elevation reported in mAHD (metres above Australian Height Datum)



SOURCE: © Nearmap

Resolve Environmental
 239G Bay Street, Brighton VIC 3186
 Tel: (03) 9591 0173
www.resolveenvironmental.com.au

Triabunna OPT Detailed Site Investigation			
Groundwater Elevation Contours			
CLIENT: Ocwen Energy Pty Ltd	LOCATION: 21 Tasman Hwy, Triabunna TAS 7190	FIGURE No. 3	
DESIGNED: CA	DRAWN: AB		

ENVIRONMENTAL SITE ASSESSMENT

Ocwen Energy Pty Ltd | 21 Tasman Highway, Triabunna, TAS 7190
Project No. P001954-001



Appendix B Tables

Table 1
Groundwater Gauging Data
ESA 2024
Triabunna
21 Tasman Highway, Triabunna TAS 7190

Well ID	Date	Easting	Northing	TOC Elevation mAHD	PID Reading ppm	Total Depth mBTOC	Depth to Groundwater mBTOC	Depth to LNAPL mBTOC	LNAPL Thickness m	Groundwater Elevation mAHD	Comments
MW01	12-Dec-19	575105.8	5294143.6	10.910	4.2	6.71	3.976	ND	-	6.934	-
	11-Oct-22	575105.8	5294143.6	10.910	2.7	6.71	3.714	ND	-	7.196	-
	10-Oct-23	575105.8	5294143.6	10.910	5.6	6.74	3.501	ND	-	7.409	-
	19-Feb-24	575105.8	5294143.6	10.910	4.6	6.70	3.501	ND	-	7.409	Sheen
MW02	12-Dec-19	575101.2	5294140.4	10.990	2.2	6.80	4.048	ND	-	6.942	-
	11-Oct-22	575101.2	5294140.4	10.990	8.9	6.78	3.741	ND	-	7.249	-
	10-Oct-23	575101.2	5294140.4	10.990	1.5	6.78	3.580	ND	-	7.410	-
	19-Feb-24	575101.2	5294140.4	10.990	7.6	6.77	3.609	ND	-	7.381	Sheen
MW03	12-Dec-19	575134.9	5294127.5	10.806	8.1	6.90	4.016	ND	-	6.790	-
	11-Oct-22	575134.9	5294127.5	10.806	8.6	6.67	3.689	ND	-	7.117	-
	10-Oct-23	575134.9	5294127.5	10.806	2.3	5.47	3.630	ND	-	7.176	-
	19-Feb-24	575134.9	5294127.5	10.806	3.5	6.87	3.513	ND	-	7.293	-
MW04	19-Feb-24	575109.0	5294120.0	10.847	0.0	6.96	3.502	ND	-	7.345	-
MW05	19-Feb-24	575096.7	5294144.7	11.003	12.8	6.75	3.652	ND	-	7.351	Sheen
MW06	19-Feb-24	575104.9	5294155.9	11.015	0.0	6.75	3.701	ND	-	7.314	-
MW07	19-Feb-24	575149.7	5294124.6	10.802	0.0	5.86	3.420	ND	-	7.382	-

Notes

LNAPL - Light Non-Aqueous Phase Liquid
m - metre
mAHD - metres Australian Height Datum
mBTOC - metres Below Top of Casing
ND - Not Detected
PID - Photo-Ionisation Detector
ppm - parts per million
TOC - Top of Casing

Table 2
 Water Quality Parameters
 ESA 2024
 Triabunna SS
 21 Tasman Highway, Triabunna TAS 7190

Parameter	Temperature	Dissolved Oxygen	Electrical Conductivity	Total Dissolved Solids	pH	Redox	Comments	
Unit	°C	mg/L	µS/cm	mg/L	pH Units	mV		
Well ID	Sample Date							
MW01	13-Dec-19	14.3	3.69	2,487	2,022	6.72	152.7	Appears colourless / pale yellow, low turbidity.
	11-Oct-22	15.7	2.66	2,184	1,723	6.80	13.8	Appears colourless, no turbidity.
	10-Oct-23	15.0	0.82	1,886	1,515	6.56	-13.9	Appears colourless, no turbidity.
	19-Feb-24	16.3	1.21	1,738	1,328	6.45	13.7	Pale yellow, hydrocarbon odour, sheen visible
MW02	13-Dec-19	14.8	1.79	2,032	1,645	6.65	155.8	Appears colourless / pale yellow, low turbidity.
	10-Oct-22	15.6	2.10	6,684	5,298	6.94	14.7	Clear, no turbidity.
	10-Oct-23	16.2	2.01	2,667	2,080	6.62	-96.2	Pale grey, low turbidity.
	19-Feb-24	16.1	1.01	1,961	1,534	6.47	-129.1	Pale yellow, hydrocarbon odour, sheen visible
MW03	13-Dec-19	15.4	2.87	8,976	7,150	6.65	145.7	Pale greyish brown, high turbidity.
	11-Oct-22	16.5	3.39	5,656	4,388	6.55	13.8	Clear, no turbidity.
	10-Oct-23	16.7	1.91	5,134	3,952	5.99	55.5	Clear, no turbidity.
	19-Feb-24	19.1	2.11	4,803	3,477	6.02	74.0	Pale yellow, no odour, no sheen
MW04	19-Feb-24	17.3	1.37	4,967	3,783	6.20	56.6	Appears colourless, no odour, no sheen
MW05	19-Feb-24	15.5	0.94	5,374	4,264	6.55	47.8	Pale yellow, hydrocarbon odour, sheen visible
MW06	19-Feb-24	17.6	1.77	1,512	1,144	6.40	55.5	Pale yellow, no odour, no sheen
MW07	19-Feb-24	18.9	3.70	6,679	4,907	6.07	149.1	Pale yellow, no odour, no sheen

Notes

°C - Degrees Celsius
 mg/L - Milligrams per litre
 µS/cm - Microsiemens per centimetre
 mV - Millivolts

Table 3
Soil Sample Analytical Results
21 Tasman Highway. TAS 7190

ANALYTE	BTEXN								TOTAL RECOVERABLE HYDROCARBONS (NEPM 2013 FRACTIONS)							TOTAL PETROLEUM HYDROCARBONS									
	Benzene	Toluene	Ethylbenzene	meta- & para-Xylene	ortho-Xylene	Total Xylenes	Naphthalene	Sum of BTEX	TRH >C ₁₀	F1	TRH >C ₁₀ -C ₁₆	F2	TRH >C ₁₀ -C ₁₄	TRH >C ₁₄ -C ₄₀	TRH >C ₁₀ -C ₄₀ (sum)	TPH <C ₉	TPH >C ₁₀ - C ₁₄	TPH >C ₁₅ - C ₂₈	TPH >C ₂₉ - C ₃₆	TPH >C ₁₀ - C ₃₆ (sum)					
LOR	0.2	0.5	0.5	0.5	0.5	0.5	1	0.2	10	10	50	50	100	100	50	10	50	100	100	50					
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg					
NEPM 2013 Table 1A(1) HILs - Commercial/Industrial D Soil ¹	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-					
NEPM 2013 Table 1A(3) (Commercial/Industrial) D Soil HSL for Vapour Intrusion, Sand Silt - 0m to <1m ¹	3 4	NL	NL	-	-	230	NL	-	-	260 250	-	NL	-	-	-	-	-	-	-	-					
NEPM 2013 Table 1A(3) (Commercial/Industrial) D Soil HSL for Vapour Intrusion, Sand Silt - 1m to <2m ¹	3 4	NL	NL	-	-	230	NL	-	-	370 360	-	NL	-	-	-	-	-	-	-	-					
NEPM 2013 Table 1A(3) (Commercial/Industrial) D Soil HSL for Vapour Intrusion, Sand Silt - 2m to <4m ¹	3 6	NL	NL	-	-	230	NL	-	-	630 590	-	NL	-	-	-	-	-	-	-	-					
NEPM 2013 Table 1B(5) Generic EILs - Commercial/Industrial ¹	-	-	-	-	-	-	-	370	-	-	-	-	-	-	-	-	-	-	-	-					
NEPM 2013 Table 1B(6) ESLs - Commercial/Industrial, Coarse Soil, 0-2m ¹	75	135	165	-	-	180	-	-	-	215	-	170	1,700	3,300	-	-	-	-	-	-					
CRC CARE 2011 Table B(4) (Intrusive Maintenance Worker) Soil HSL for Direct Contact ²	430	99,000	27,000	-	-	81,000	11,000	-	-	26,000	-	20,000	-	27,000	38,000	-	-	-	-	-					
Sample Name	Sample Date	Location	Sample Depth (mBGL)	PID (ppm)																					
Well Installation Soil Bores																									
MW04_0.5-0.6	09-Feb-24	Down-gradient	0.5	0.9	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.2	<10	<10	<50	<50	<100	<100	<50	<10	<50	<100	<100	<50
MW04_0.9-1.0	09-Feb-24	Down-gradient	0.9	0.3	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.2	<10	<10	<50	<50	<100	<100	<50	<10	<50	<100	<100	<50
MW04_2.9-3.0	09-Feb-24	Down-gradient	2.9	0.4	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.2	<10	<10	<50	<50	<100	<100	<50	<10	<50	<100	<100	<50	
MW05_0.4-0.5	08-Feb-24	Cross-gradient	0.4	18.9	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.2	<10	<10	<50	<50	<100	<100	<50	<10	<50	<100	<100	<50	
MW05_1.0-1.2	08-Feb-24	Cross-gradient	1.0	68.9	0.3	0.7	0.5	2.1	0.8	2.9	<1	4.4	28	24	<50	<50	<100	<100	<50	22	<50	<100	<100	<50	
MW05_0.4-0.5	09-Feb-24	Up-gradient	0.4	0.1	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.2	<10	<10	<50	<50	<100	<100	<50	<10	<50	<100	<100	<50	
MW05_0.6-1.0	09-Feb-24	Up-gradient	0.6	0.1	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.2	<10	<10	<50	<50	<100	<100	<50	<10	<50	<100	<100	<50	
MW06_1.9-2.0	09-Feb-24	Up-gradient	1.9	0.2	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.2	<10	<10	<50	<50	<100	<100	<50	<10	<50	<100	<100	<50	
MW06_2.8-3.0	09-Feb-24	Up-gradient	2.8	0.2	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.2	<10	<10	<50	<50	<100	<100	<50	<10	<50	<100	<100	<50	
MW07_0.5-0.6	09-Feb-24	Down-gradient	0.5	0.4	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.2	<10	<10	<50	<50	<100	<100	<50	<10	<50	<100	<100	<50	
MW07_1.0-1.6	09-Feb-24	Down-gradient	1.0	0.7	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.2	<10	<10	<50	<50	<100	<100	<50	<10	<50	<100	<100	<50	
MW07_3.1-3.5	09-Feb-24	Down-gradient	3.1	0.2	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.2	<10	<10	<50	<50	<100	<100	<50	<10	<50	<100	<100	<50	
Soil Bores																									
SB01_0.4-0.5	08-Feb-24	South of Fuel Line	0.4	0.9	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.2	<10	<10	<50	<50	<100	<100	<50	<10	<50	<100	<100	<50	
SB01_0.7-1.0	08-Feb-24	South of Fuel Line	0.7	0.1	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.2	<10	<10	<50	<50	<100	<100	<50	<10	<50	<100	<100	<50	
SB01_1.4-1.5	08-Feb-24	South of Fuel Line	1.4	0.2	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.2	<10	<10	<50	<50	<100	<100	<50	<10	<50	<100	<100	<50	
SB02_0.1-0.2	09-Feb-24	West of AST	0.1	0.2	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.2	<10	<10	<50	<50	<100	<100	<50	<10	<50	290*	<100	290*	
SB02_1.0-1.1	09-Feb-24	West of AST	1.0	0.2	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.2	<10	<10	<50	<50	<100	<100	<50	<10	<50	310	<100	310	
SB02_1.4-1.5	09-Feb-24	West of AST	1.4	0.6	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.2	<10	<10	80	80	<100	<100	80	<10	<50	120	<100	120	
SB02_1.6-1.7	09-Feb-24	West of AST	1.6	12.7	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.2	<10	<10	240	240	180	<100	420	<10	130	280	<100	410	

Notes
 "LOR" denotes laboratory limit of reporting
 < - less than laboratory limit of reporting
 mg/kg - miligrams per kilogram
Bold indicates a detection above the laboratory LOR.
 "F1" denotes TRH C₉-C₁₀ fraction minus BTEX as reported by the laboratory
 "F2" denotes TRH >C₁₀-C₁₆ fraction minus Naphthalene as reported by the laboratory
 "mBGL" denotes metres below ground level
 "NL" denotes Not Limiting
 "-" Denotes no assessment criteria or sample not analysed for this analyte.
 Highlighting indicates an exceedance of the corresponding criteria (highlighting corresponds to the guideline with the highest criteria value where analytical result exceeds more than one guideline).
 * denotes duplicate and/or triplicate value adopted due to exceedance of the RPD acceptance criteria.
 Down-gradient, cross-gradient and up-gradient denotes the position of the groundwater well soil bore in relation to relative regional groundwater flow

- Criteria**
- National Environment Protection (Assessment of Site Contamination) Measure 1999, updated 2013 (NEPM 2013).
 - CRC CARE Technical Report 10 "Health screening levels for petroleum hydrocarbons in soil and groundwater - Part 2: Application Document" (CRC CARE 2011).

Table 4
Soil Quality Assurance and Quality Control
ESA 2024
Triabunna
21 Tasman Highway, Triabunna TAS 7190



ANALYTE			BTEXN								TOTAL RECOVERABLE HYDROCARBONS							TOTAL PETROLEUM HYDROCARBONS				
			Benzene	Toluene	Ethylbenzene	meta- & para-Xylene	ortho-Xylene	Total Xylenes	Naphthalene	Sum of BTEX	TRH>C6-C10	F1	TRH>C10-C16	F2	TRH>C16-C24	TRH>C24-C40	TRH>C10-C40 (sum)	TPH>C6 - C9	TPH>C10 - C14	TPH>C15 - C28	TPH>C29 - C36	TPH>C10 - C36 (sum)
LOR			0.2	0.5	0.5	0.5	0.5	0.5	1	0.2	10	10	50	50	100	100	50	10	50	100	100	50
Units			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Sample ID	Sample Date	QC Sample Type																				
SB02_0.1-0.2	09-Feb-24	Primary	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.2	<10	<10	<50	<50	<100	<100	<50	<10	<50	100	<100	100
QC5	09-Feb-24	Duplicate	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.2	<10	<10	50	50	260	<100	310	<10	<50	290	<100	290
Relative Percentage Difference			NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	97%	NC	97%
SB02_0.1-0.2	09-Feb-24	Primary	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.2	<10	<10	<50	<50	<100	<100	<50	<10	<50	100	<100	100
QC5A	09-Feb-24	Triplicate	<0.1	<0.1	<0.1	<0.2	<0.1	<0.3	<0.5	<0.2	<20	<20	<50	<50	<100	<100	<100	<20	<20	56	<50	56
Relative Percentage Difference			NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	56%	NC	56%

Notes
 < - less than laboratory limit of reporting
 mg/kg - micrograms per kilogram
Bold indicates a detection above the laboratory LOR.
 NC denotes Not Calculated
 Shading indicates exceedance of RPD criteria
 ** denotes sample matrix as water. Results are presented in ug/L.
 -- Denotes no assessment criteria or sample not analysed for this analyte.

Analyte	TRH							BTEXN							
	C6-C10 Fraction (F1)	C6-C10 (F1 minus BTEX)	>C10-C16 Fraction (F2)	>C10-C16 Fraction (F2 minus Naphthalene)	<C16-C34 Fraction (F3)	>C34-C40 Fraction (F4)	>C10-C40 Fraction (Sum)	Benzene	Toluene	Ethylbenzene	meta- & para-Xylene	ortho-Xylene	Total Xylenes	Naphthalene	
LOR	20	20	100	100	100	100	100	1	2	2	2	2	2	5	
Unit	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	
ANZECC 2000 - Marine water 95% ecosystem protection ¹	-	-	-	-	-	-	-	700	-	-	-	-	-	70	
NHMRC 2022 - Drinking Water (health) ²	-	-	-	-	-	-	-	1	800	300	-	-	600	-	
ANZECC 2000 - Irrigation ¹	-	-	-	-	-	-	-	1	800	300	-	-	600	-	
ANZECC 2000 - Stock Watering ¹	-	-	-	-	-	-	-	1	800	300	-	-	600	-	
NHMRC 2008 - Primary Contact Recreation (Health) ³	-	-	-	-	-	-	-	1	800	300	-	-	600	-	
NEPM 2013 - HSL-D (Commercial/Industrial) - Sand - 2m to <4m ⁴	-	6,000	-	NL	-	-	-	5,000	NL	NL	-	-	NL	NL	
Well ID	Sample Date	Depth to Groundwater (mBTOC)													
MW01	13-Dec-19	3.976	<20	<20	880	880	1,110	<100	1,990	1	<2	<2	<2	<2	<5
	11-Oct-22	3.714	150	40	940	940	1,220	<100	2,160	93	<2	13	2	3	5
	10-Oct-23	3.501	100	30	1,130	1,130	1,560	<100	2,690	72	<2	2	<2	<2	<5
	19-Feb-24	3.501	180	80	1,050	1,050	980	<100	2,030	100	<2	<2	<2	2	2
MW02	13-Dec-19	4.048	40	30	2,440	2,440	3,280	<100	5,720	9	<2	<2	<2	<2	<5
	11-Oct-22	3.741	30	20	4,400*	4,400*	4,800*	<100	9,200*	7	<2	<2	<2	<2	<5
	10-Oct-23	3.580	40*	<20	17,000	17,000	15,200	190	32,400	10*	<2	<2	<2	<2	<5
	19-Feb-24	3.609	60	50	930	930	1,330	<100	2,260	11	<2	<2	<2	<2	<5
MW03	13-Dec-19	4.016	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<5
	11-Oct-22	3.689	<20	<20	<100	<100	160	<100	160	<1	<2	<2	<2	<2	<5
	10-Oct-23	3.630	<20	<20	<100	<100	150	<100	150	<1	<2	<2	<2	<2	<5
	19-Feb-24	3.513	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<5
MW04	19-Feb-24	3.502	<20	<20	<100	<100	120	<100	120	<1	<2	<2	<2	<2	<5
MW05	19-Feb-24	3.652	<20	<20	260	260	280	<100	540	<1	<2	<2	<2	<2	<5
MW06	19-Feb-24	3.701	20	<20	670	670	1,030	<100	1,700	12	<2	<2	<2	<2	<5
MW07	19-Feb-24	3.420	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<5

Notes

< - less than laboratory limit of reporting
µg/L - micrograms per litre
"LOR" denotes laboratory limit of reporting
"TRH" denotes Total Recoverable Hydrocarbons
"BTEXN" denotes Benzene, Toluene, Ethylbenzene, Xylene, Naphthalene
"F1" denotes TRH C₆-C₁₀ fraction minus BTEX as reported by the laboratory
"F2" denotes TRH >C₁₀-C₁₆ fraction minus Naphthalene as reported by the laboratory
"mBTOC" denotes metres below top of casing
"NL" denotes Not Limiting
"-." denotes no assessment criteria or sample not analysed for this analyte.
Bold indicates a detection above the laboratory LOR.
Highlighting indicates an exceedance of the corresponding criteria (highlighting corresponds to the guideline with the highest criteria value where analytical result exceeds more than one guideline).
* denotes duplicate and/or triplicate value adopted due to exceedance of the RPD acceptance criteria.

Criteria

1. Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZECC 2000, updated September 2021) default guidelines values (DGVs) for toxicants in fresh water (95% Level of Protection), livestock drinking water, irrigation, Available at www.waterquality.gov.au/anz-guidelines
2. National Health and Medical Research Council (NHMRC), Australian Drinking Water Guidelines (2011) - updated September 2022 (NHMRC 2022).
3. National Health and Medical Research Council (NHMRC), Guidelines for Managing Risks in Recreational Water (2008) which refers to the Australian Drinking Water Guidelines (NHMRC, updated 2022).
4. National Environment Protection (Assessment of Site Contamination) Measure 1999, updated 2013 (NEPM 2013). HSLs have not been derived for groundwater when it is less than 2 m BGL Where groundwater is recorded less than 2 m BGL, HSL-D for 2-4 m has been applied for comparative purposes only.

Analyte			TRH				BTEXN						
			TRH C ₆ -C ₁₀	TRH >C ₁₀ -C ₁₆	TRH >C ₁₆ -C ₃₄	TRH >C ₃₄ -C ₄₀	Benzene	Toluene	Ethylbenzene	meta- & para- Xylene	ortho-Xylene	Total Xylenes	Naphthalene
LOR			20	100	100	100	1	2	2	2	2	2	5
Unit			µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Sample ID	Sample Date	QC Sample Type											
MW03	19-Feb-24	Primary	<20	<100	<100	<100	<1	<2	<2	<2	<2	<2	<5
QC8	19-Feb-24	Duplicate	<20	<50	<100	<100	<1	<2	<2	<2	<2	<2	<5
Relative Percentage Difference			NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
MW03	19-Feb-24	Primary	<20	<100	<100	<100	<1	<2	<2	<2	<2	<2	<5
QC8A	19-Feb-24	Triplicate	<20	<50	<100	<100	<1	<1	<2	<2	<1	<3	<10
Relative Percentage Difference			NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC

Notes

< - less than laboratory limit of reporting
 µg/L - micrograms per litre
 "LOR" denotes laboratory limit of reporting
 "TRH" denotes Total Recoverable Hydrocarbons
 "BTEXN" denotes Benzene, Toluene, Ethylbenzene, Xylene, Naphthalene
 NC - Not Calculated
 Where concentrations are reported below laboratory LOR, half the LOR value has been adopted to enable RPD comparison.
Bold indicates a detection above the laboratory LOR.
Bold indicates exceedance of 50% acceptable RPD. The highest concentration has been adopted for interpretive use.

Table 7
 Trip Blank and Rinsate Data
 ESA 2024
 Triabunna



21 Tasman Highway, Triabunna TAS 7190

Analyte	Unit	TRH							BTEXN							
		C6-C10 Fraction (F1)	C5-C10 (F1 minus BTEX)	>C10-C16 Fraction (F2)	>C10-C16 Fraction (F2 minus Naphthalene)	>C16-C24 Fraction (F3)	>C24-C40 Fraction (F4)	>C40-C60 Fraction (Sum)	Benzene	Toluene	Ethylbenzene	meta- & para-Xylene	ortho-Xylene	Total Xylenes	Sum of BTEX	Naphthalene
LOR		20	20	100	100	100	100	100	1	2	2	2	2	2	1	5
Sample ID	Sample Date	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Rinsates																
QC1	04 Dec 2023	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1	<5
QC2	04 Dec 2023	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1	<5
QC7	11 Dec 2023	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1	<5
Trip Blanks																
QC3	05 Dec 2023	<20	<20	-	-	-	-	-	<1	<2	<2	<2	<2	<2	<1	<5
QC6	07 Dec 2023	<20	<20	-	-	-	-	-	<1	<2	<2	<2	<2	<2	<1	<5

Notes
 "LOR" denotes laboratory limit of reporting
 < - less than laboratory limit of reporting
 mg/L - Milligrams per litre
 µg/L - Micrograms per litre
 meq/L - Milliequivalents per litre
 µS/cm - Microsiemens per centimeter
 % - percent
Bold indicates a detection above the laboratory LOR.
 "-" denotes no assessment criteria or sample not analysed for this analyte.

ENVIRONMENTAL SITE ASSESSMENT

Ocwen Energy Pty Ltd | 21 Tasman Highway, Triabunna, TAS 7190
Project No. P001954-001



Appendix C EPA Correspondence



This is the approved form for notifying the Director EPA that LNAPL¹ contamination has been detected as required under regulation 21(3)² of the *Environmental Management and Pollution Control (Underground Petroleum Storage Systems) Regulations 2020*.

All fields denoted by an asterisk (*) must be completed for the form to be accepted.

UPSS Site Information

* Site name	
* Site Street Address	
* Suburb/Town	
* Postcode	
* Telephone Number	
Property ID	
Title reference/s (volume/folio)	
Easting, Northing of underground storage system (GDA94 MGA55)	

Note:

- Location information is available on theLIST using the instructions at the end of this form.
- If there is more than 100m between UPSSs then please include coordinates for each UPSS.

If LNAPL detected on a site without a UPSS

Closest site with UPSS

* Site name	
* Site Street Address	
* Suburb/Town	
* Postcode	
* Telephone Number	
Property ID	
Title reference/s (volume/folio)	

Easting, Northing of underground storage system (GDA94 MGA55)	
--	--

Notification by

* Name	
* Postal Address	
* Street Address	
* Phone Number	
* Email Address	
* Role (e.g., landowner, UPSS infrastructure owner, UPSS system operator, consultant, etc.)	

Date LNAPL detected

* Date LNAPL detected	
------------------------------	--

Please supply the following with this form:

- Any environmental reports relating to the LNAPL.
- If no report is available:
 - A plan showing the location/s of the monitoring well/s where LNAPL was detected.
 - Analytical results and LNAPL thickness summary table (containing well number, sampling date, depth to groundwater and thickness of LNAPL).
- Loss monitoring/SIRA data for the previous twelve months.
- Any equipment integrity test data from the last five years. Note, it is expected that current equipment integrity test results be included in the Environmental Site Assessment as part of determining the source of the LNAPL.

What to do next

If you are an infrastructure owner, system operator or landowner

You must also notify all other infrastructure owners, system operators and landowners that LNAPL contamination has been detected.

If you are an infrastructure owner

You must ensure that:

1. an Environmental Site Assessment (ESA) is commenced within 15 days of you becoming aware of the LNAPL contamination;
2. the ESA is conducted in accordance with Part 5 of the UPSS Regulations;
3. the ESA is managed and the ESA report is prepared by an environmental consultant who holds site contamination specialist certification under the Certified Environmental Practitioner (CEnvP(SC)) Scheme;
4. you receive the ESA report within 4 months of the ESA commencing; and
5. you submit the ESA report to the Director within 7 days of it being received.

Note: Regulation 32(2) of the UPSS Regulations allows the Director to require an infrastructure owner, who provided an Environmental Site Assessment Report, to pay the whole or a part of the reasonable costs and expenses incurred by the Director, or a person nominated by the Director, in reviewing the report.

For further information regarding:

- engaging a contaminated site assessment consultant see: [Engaging a Contaminated Site Assessment Consultant](#)³
- general information relating to site assessments see: [Contaminated Land Assessment](#)⁴

Submitting form

If this form is being submitted on behalf of a company, partnership or trustee then the declaration may be signed by an authorised agent or representative. If you sign in this capacity then you are stating that you are duly authorised to make this declaration. It is an offence to make a statement or provide information in this form knowing it to be false (section 43A of the *Environmental Management and Pollution Control Act 1994*).

I declare that the information I have given is true and correct to the best of my knowledge.

* Name	Luke Cattlin
* Authorised signatory of (person/company if applicable)	Resolve Environmental
* Email Address	lcattlin@resolveenvironmental.com.au
* Signature	
* Date	10 November 2023

Please ensure that all compulsory fields (*) are completed before sending this form to:

contaminatedsites@epa.tas.gov.au

Alternatively, post it to:

Environment Protection Authority
GPO Box 1550, Hobart TAS 7001

For additional information, contact the Contaminated Land and Regulatory Systems Section on (03) 6165 4599 or contaminatedsites@epa.tas.gov.au

Privacy Statement

Personal information is being collected from you for the purpose of enhancing the protection of the environment and will be used for the administration and implementation of the *Environmental Management and Pollution Control (Underground Petroleum Storage Systems) Regulations 2020*. The information may be used for other purposes permitted by the Regulations.

You are required to provide this information under regulation 34 of the Environmental Management and Pollution Control (Underground Petroleum Storage System) Regulations 2020. Failure to provide this information may result in penalties applying.

Your personal information will be used for the primary purpose for which it is collected, and may be disclosed to other agencies and land use planning authorities, law enforcement agencies, courts and other organisations authorised to collect it.

Your basic personal information may be disclosed to other public sector bodies where necessary, for the efficient storage and use of the information.

Personal information will be managed in accordance with the *Personal Information Protection Act 2004* and may be accessed by the individual to whom it relates on request. You may be charged a fee for this service.

Instructions to obtain Property ID, title reference and Easting and Northing information:

1. Go to www.thelist.tas.gov.au
2. Click on LISTmap
3. Click on **Basemaps** (Grey Tab top right of page) Click on “State Aerial Photo”
4. Click on **Layers** (Blue Tab top right of page) and **Add Layer+**
5. Scroll down to **Land Parcel and Property** and click on **Cadastral**, then click on the + next to **Cadastral Parcels**, close **Manage Layer** box
6. In the Search Box next to Maps (centre of toolbar) type in Street Address and run the search
7. If a list appears, click on the name of most relevant choice
8. Zoom using scale on the left hand side
9. For Property ID/Title reference – click on the property that you want (the red pin) and the information will displayed in a box
10. For Eastings and Northings – click on green arrow in bottom left hand corner, select GDA 94 MGA Zone 55, hover the arrow over your estimation of the UPSS location and the Easting and Northing in GDA94 will be shown at the bottom left hand corner next to the green arrow.

Notes

¹ LNAPL – light non-aqueous phase liquid (typically relates to petroleum fuel)

² Regulation 21(3) - If a relevant person, or a suitably qualified person, becomes aware that LNAPL contamination has been detected in a monitoring well, after the commencement of these regulations, the person must notify the Director, in the approved form, within 7 days after becoming so aware.

Penalty: Fine not exceeding 100 penalty units.

³ <https://epa.tas.gov.au/Pages/Engaging-a-Contaminated-Site-Assessment-Consultant.aspx>

⁴ <https://epa.tas.gov.au/Pages/Contaminated-Land-Assessment.aspx>

ENVIRONMENTAL SITE ASSESSMENT

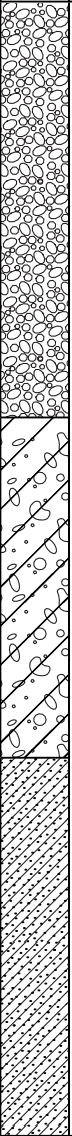
Ocwen Energy Pty Ltd | 21 Tasman Highway, Triabunna, TAS 7190
Project No. P001954-001



Appendix D Bore logs



PROJECT NUMBER 001954-001	DRILLING DATE 08/02/2024	LOGGED BY L Hughes
PROJECT NAME Ocwen Triabunna ESA	DRILLING COMPANY TASDRILLING	CHECKED BY C Andrianopoulos
CLIENT Ocwen Energy Pty Ltd	DRILLER HC & LM	
ADDRESS 21 Tasman Highway, Triabunna, TAS 7190	DRILLING METHOD Hand Auger	
	TOTAL DEPTH 1.5mBGL	

COMMENTS Soil bore targetting fuel line

Drilling Method	PID	Samples	Depth (m)	Graphic Log	Moisture	Material Description	Additional Observations
HA	0.1	SB01_0.0-0.1	0.5 1 1.5		D	FILL- (sandy gravel,) grey brown, dry, sub-angular gravel, coarse grained sand	No odour or evidence of contamination
	0.9	SB01_0.4-0.5				FILL- (gravelly sand), brown, dry, coarse grained sand, sub-angular gravel	
	0.1	SB01_0.7-1.0				FILL- (gravelly clay), pale brown, dry, low plasticity , sub-angular gravel	
	0.2	SB01_1.4-1.5				sandy CLAY, brown, dry, medium plasticity, coarse grained sand, trace gravel, with silt	
						Termination Depth at:1.5 mBGL	


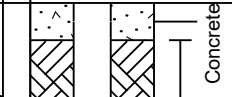
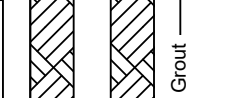


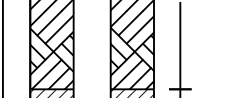
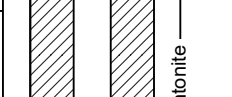



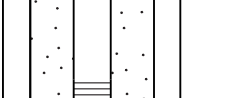
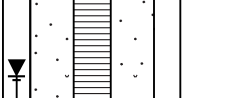



PROJECT NUMBER 001954-001	DRILLING DATE 09/02/2024	LOGGED BY L Hughes
PROJECT NAME Ocwen Triabunna ESA	DRILLING COMPANY TASDRILLING	CHECKED BY C Andrianopoulos
CLIENT Ocwen Energy Pty Ltd	DRILLER HC & LM	
ADDRESS 21 Tasman Highway, Triabunna, TAS 7190	DRILLING METHOD Hand Auger	
	TOTAL DEPTH 1.7mBGL	

COMMENTS Soil bore targetting above ground storage tanks

Drilling Method	PID	Samples	Depth (m)	Graphic Log	Moisture	Material Description	Additional Observations
HA	0.2	SB02_0.1-0.2			I	FILL- (sandy clay), yellow-brown, dry, medium plasticity, coarse grained sand, with gravel	No odour or evidence of contamination
	0.2	SB02_0.4-0.5	0.5		D		
	0.6	SB02_1.0-1.1	1		M	FILL- (sandy clay), grey, dry, low-medium plasticity, coarse grained sand, trace gravel, grey and blue discolouration	mild hydrocarbon odour, evidence of contamination (soil discolouration)
	12.7	SB02_1.4-1.5	1.5		D		
	4.7	SB02_1.6-1.7				silty CLAY, grey, dry, medium-high plasticity, trace sand, stiff	
						Termination Depth at:1.7 mBGL	

PROJECT NUMBER 001954-001	DRILLING DATE 08/02/2024	COORDINATES E. 575109.039 N. 5294120.043
PROJECT NAME Ocwen Triabunna ESA	TOTAL DEPTH 7m BGL	DRILLER HC & LM
CLIENT Ocwen Energy Pty Ltd	DIAMETER 150mm	DRILL RIG GeoPROBE
ADDRESS 21 Tasman Highway, Triabunna, TAS	CASING 0-3 mBGL	DRILLING METHOD Hand Auger and Air Hammer
	SCREEN 3-7 mBGL	ELEVATION TOC 10.847 mAHD

COMMENTS Well installed to target down-gradient contamination **LOGGED BY** L Hughes
CHECKED BY C Andrianopoulos

Drilling Method	PID	Sample ID	Depth (m BGL)	Graphic Log	Moisture	Material Description	Water	Well Diagram
HA	0.1	MW04_0.1-0.2	0		D	FILL- (sandy gravel), pale brown, dry, sub-angular gravel, coarse grained sand		
	0.9	MW04_0.5-0.6	0.5			sandy CLAY, dark brown, dry, high plasticity, fine grained sand, with silt		
AH	0.3	MW04_0.9-1.0	1					
	0.4	MW04_1.9-2.0	2			sandy CLAY, pale brown, dry, medium plasticity, fine grained sand, with silt		
	0.5	MW04_2.9-3.0	3					
	0.2	MW04_4.2-4.5	4.5		M	sandy CLAY, pale brown, moist, low plasticity, fine grained sand, with silt		
	0.2	MW04_4.9-5.0	5					
	0.1	MW04_5.9-6.0	6			CLAY, pale grey, moist, medium plasticity, trace sand, stiff		
			7			Borehole terminated at 7.0mBGL		
			7.5					

GROUNDWATER SOIL BORE MW05


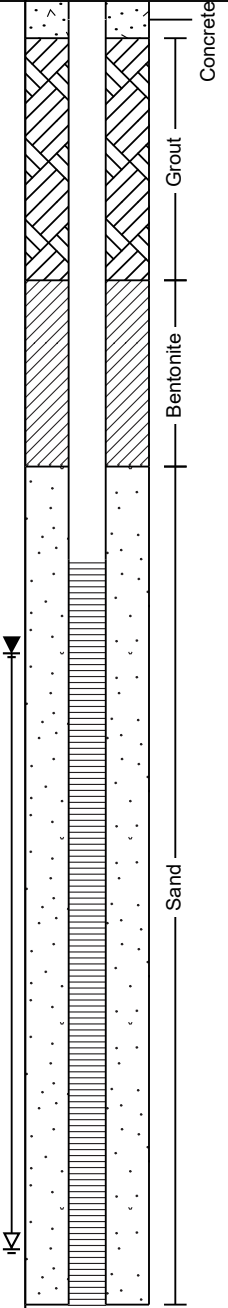








PROJECT NUMBER 001954-001	DRILLING DATE 08/02/2024	COORDINATES E. 575096.683 N. 5294144.659
PROJECT NAME Ocwen Triabunna ESA	TOTAL DEPTH 7m BGL	DRILLER HC & LM
CLIENT Ocwen Energy Pty Ltd	DIAMETER 150mm	DRILL RIG GeoPROBE
ADDRESS 21 Tasman Highway, Triabunna, TAS	CASING 0-3 mBGL	DRILLING METHOD Hand Auger and Air Hammer
	SCREEN 3-7 mBGL	ELEVATION TOC 11.003 mAHD

COMMENTS Well installed to target cross-gradient contamination	LOGGED BY L Hughes
	CHECKED BY C Andrianopoulos

Drilling Method	PID	Sample ID	Depth (m BGL)	Graphic Log	Moisture	Material Description	Water	Well Diagram
HA	0.9	MW05_0.1-0.2			D	FILL- (sandy gravel), brown, dry, sub-angular gravel, coarse grained sand, trace clay		
	18.9	MW05_0.4-0.5	0.5			FILL- (gravelly clay), brown, dry, medium plasticity, sub-angular gravel , trace sand		
AH	68.9	MW05_1.0-1.2	1		M	CLAY, grey brown, moist, medium-high plasticity, with sand, mild hydrocarbon odour, with silt, stiff		
			1.5			SILTSTONE (HW), grey, moist, friable, with gravel, mild hydrocarbon odour		
	7.8	MW05_1.5-2.0	2			gravelly CLAY, grey, moist, low plasticity, sub-rounded gravel, mild hydrocarbon odour, with silt		
			2.5			sandy CLAY, brown, moist, medium plasticity, fine grained sand, with silt ,mild hydrocarbon odour		
	3.7	MW05_2.9-3.0	3			clayey SAND, yellow-brown, moist, fine grained sand, with silt		
			3.5					
	0.9	MW05_3.5-4.0	4					
			4.5					
	0.2	MW05_4.5-5.0	5					
		5.5						
	0.3	MW05_5.8-6.0	6			silty CLAY, pale brown, moist, medium-high plasticity, trace sand, stiff		
		6.5			clayey SAND, brown, moist, fine grained sand			
	0.2	MW05_6.5-7.0	6.5					
			7			Borehole terminated at 7.0mBGL		
			7.5					


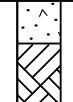
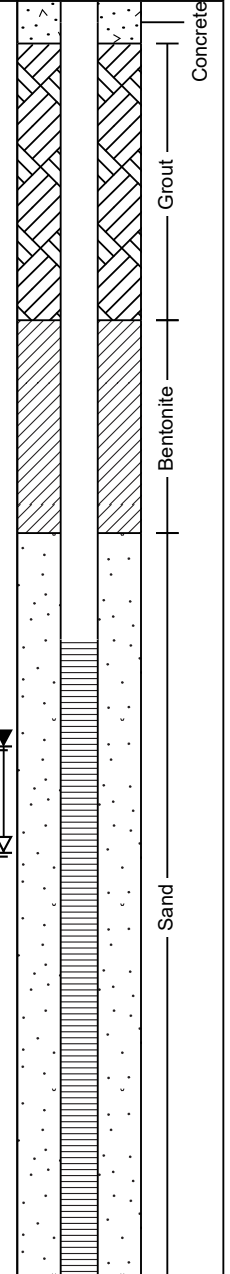

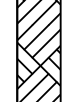

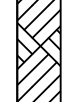

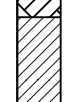

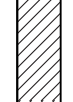
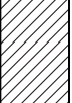
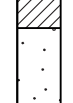
PROJECT NUMBER 001954-001	DRILLING DATE 09/02/2024	COORDINATES E. 575104.927 N. 5294155.890
PROJECT NAME Ocwen Triabunna ESA	TOTAL DEPTH 7m BGL	DRILLER HC & LM
CLIENT Ocwen Energy Pty Ltd	DIAMETER 150mm	DRILL RIG GeoPROBE
ADDRESS 21 Tasman Highway, Triabunna, TAS	CASING 0-3 mBGL	DRILLING METHOD Hand Auger and Air Hammer
	SCREEN 3-7 mBGL	ELEVATION TOC 11.015 mAHD

COMMENTS Well installed to target up-gradient contamination **LOGGED BY** L Hughes
CHECKED BY C Andrianopoulos

Drilling Method	PID	Sample ID	Depth (m BGL)	Graphic Log	Moisture	Material Description	Water	Well Diagram
HA	0.1	MW06_0.1-0.2	0.1		D	FILL- (sandy gravel), brown, dry, sub-angular gravel, coarse grained sand, trace clay		
	0.2	MW06_0.4-0.5	0.5			CLAY, grey-brown, moist, medium-high plasticity, trace sand, stiff, with silt		
	0.1	MW06_0.6-1.0	1.0			SILTSTONE (HW), grey, moist, friable		
AH	0.3	MW06_1.2-1.8	1.5			clayey SAND, pale brown, dry, fine grained sand, with silt		
	0.2	MW06_1.9-2.0	2.0			yellow-brown		
	0.2	MW06_2.8-3.0	3.0			clayey SAND, yellow-brown, moist, coarse grained sand		
	0.1	MW06_3.9-4.0	4.0		M			
	0.2	MW06_4.8-5.2	5.0					
	0.2	MW06_6.8-7.0	7.0		D	sandy CLAY, pale brown, dry, low-medium plasticity, coarse grained sand		
			7.5			Borehole terminated at 7.5mBGL		

PROJECT NUMBER 001954-001	DRILLING DATE 09/02/2024	COORDINATES E. 575149.701 N. 5294124.606
PROJECT NAME Ocwen Triabunna ESA	TOTAL DEPTH 7m BGL	DRILLER HC & LM
CLIENT Ocwen Energy Pty Ltd	DIAMETER 150mm	DRILL RIG GeoPROBE
ADDRESS 21 Tasman Highway, Triabunna, TAS	CASING 0-3 mBGL	DRILLING METHOD Hand Auger and Air Hammer
	SCREEN 3-6 mBGL	ELEVATION TOC 10.802 mAHD

COMMENTS Well installed to target down-gradient contamination
LOGGED BY L Hughes
CHECKED BY C Andrianopoulos

Drilling Method	PID	Sample ID	Depth (m BGL)	Graphic Log	Moisture	Material Description	Water	Well Diagram
HA	0.3	MW07_0.1-0.2	0.3		D	FILL- (sandy gravel), brown, dry, sub-angular gravel, coarse grained sand, rootlets, waste plastic debris present		
	0.4	MW07_0.5-0.6	0.5		M	silty CLAY, grey, moist, medium-high plasticity, trace sand, stiff		
AH	0.7	MW07_1.0-1.6	1.5					
	0.3	MW07_1.7-2.3	2.0		D	clayey SAND, yellow-brown, dry, coarse grained sand, with silt		
			2.5			grey-brown		
	0.2	MW07_3.1-3.5	3.5			trace gravel		
	0.1	MW07_4.0-4.1	4.0		M	sandy CLAY, yellow-brown, dry, medium plasticity, coarse grained sand, trace gravel		
	0.2	MW07_5.1-6.0	5.5			no gravel		
			6.0			Borehole terminated at 6.0mBGL		
			6.5					

ENVIRONMENTAL SITE ASSESSMENT

Ocwen Energy Pty Ltd | 21 Tasman Highway, Triabunna, TAS 7190
Project No. P001954-001



Appendix E Equipment Calibration Certificates

PID Calibration Certificate

Instrument **PhoCheck Tiger**
 Serial No. **T-113964**



Air-Met Scientific Pty Ltd
 1300 137 067

Item	Test	Pass	Comments			
Battery	Charge Condition	✓				
	Fuses	✓				
	Capacity	✓				
	Recharge OK?	✓				
Switch/keypad	Operation	✓				
Display	Intensity	✓				
	Operation (segments)	✓				
Grill Filter	Condition	✓				
	Seal	✓				
Pump	Operation	✓				
	Filter	✓				
	Flow	✓				
	Valves, Diaphragm	✓				
PCB	Condition	✓				
Connectors	Condition	✓				
Sensor	PID	✓	10.6 ev			
Alarms	Beeper	✓	Low	High	TWA	STEL
	Settings	✓	50ppm	100ppm		
Software	Version	✓				
Data logger	Operation	✓				
Download	Operation	✓				
Other tests:						

Certificate of Calibration

This is to certify that the above instrument has been calibrated to the following specifications:

Diffusion mode Aspirated mode

Sensor	Serial no	Calibration gas and concentration	Certified	Gas bottle No	Instrument Reading
PID Lamp		94ppm Isobutylene	NIST	ME846	94ppm Isobutylene

Calibrated by: _____ **Cameron Ensor**

Calibration date: **1/02/2024**

Next calibration due: **30/07/2024**

Gas Calibration Certificate

Instrument **MX6**
Serial No. **15062CZ-007**
Sensors **O2 LEL CO H2S**



Air-Met Scientific Pty Ltd
1300 137 067

Item	Test	Pass	Comments			
Battery	Charge Condition	✓				
	Fuses	✓				
	Capacity	✓				
	Recharge OK?	✓				
Switch/keypad	Operation	✓				
Display	Intensity	✓				
	Operation (segments)	✓				
Grill Filter	Condition	✓				
	Seal	✓				
Pump	Operation	✓				
	Filter	✓				
	Flow	✓				
	Valves, Diaphragm	✓				
PCB	Condition	✓				
Connectors	Condition	✓				
Sensor	Oxygen	✓	Low	High	TWA	STEL
	LEL	✓	19.5%	23.5%	NA	NA
	CO	✓	5%	10%	NA	NA
	H2S	✓	30ppm	60ppm	30ppm	200ppm
		✓	10ppm	15ppm	10 ppm	15 ppm
Alarms	Beeper	✓				
	Settings	✓				
Software	Version					
Datalogger	Operation					
Download	Operation					
Other tests:						

Certificate of Calibration

This is to certify that the above instrument has been calibrated to the following specifications:

Diffusion mode Aspirated mode

Sensor	Serial no	Calibration gas and concentration	Certified	Gas bottle No	Instrument Reading
O2		20.9% O2	NIST	Fresh Air	20.9% O2
LEL		50% LEL Methane	NIST	ME933	50% LEL Methane
CO		100 ppm CO	NIST	ME933	100 ppm CO
H2S		25 ppm H2S	NIST	ME933	25 ppm H2S

Calibrated by: _____ Tom Turvey

Calibration date: 31-Jan-24

Next calibration due: 29-Jul-24

Multi Parameter Water Meter

Instrument **YSI Quatro Pro Plus**
Serial No. **10H100313**



airmet

Air-Met Scientific Pty Ltd
1300 137 067

Item	Test	Pass	Comments
Battery	Charge Condition	✓	
	Fuses	✓	
	Capacity	✓	
Switch/keypad	Operation	✓	
	Display	Intensity	✓
Grill Filter	Operation (segments)	✓	
	Condition	✓	
PCB	Seal	✓	
	Condition	✓	
Connectors	Condition	✓	
Sensor	1. pH	✓	
	2. mV	✓	
	3. EC	✓	
	4. D.O	✓	
	5. Temp	✓	
Alarms	Beeper		
	Settings		
Software	Version		
Data logger	Operation		
Download	Operation		
Other tests:			

Certificate of Calibration

This is to certify that the above instrument has been calibrated to the following specifications:

Sensor	Serial no	Standard Solutions	Certified	Solution Bottle Number	Instrument Reading
1. D.O		0 ppm		407802	0 ppm
2. Conductivity		2760uS		414103	2760uS
3. pH7		pH 7.00		413975	pH 7.00
4. pH4		pH 4.00		414101	pH 4.00
5. ORP mV		229.16		411371 / 398193	229.16
6. Temp °C		22.2		901272	22.2

Calibrated by:

Cameron Ensor

Calibration date:

8-Feb-24

Next calibration due:

6-Aug-24

PID Calibration Certificate

Instrument **PhoCheck Tiger**
Serial No. **T-105899**



Air-Met Scientific Pty Ltd
1300 137 067

Item	Test	Pass	Comments			
Battery	Charge Condition	✓				
	Fuses	✓				
	Capacity	✓				
	Recharge OK?	✓				
Switch/keypad	Operation	✓				
Display	Intensity	✓				
	Operation (segments)	✓				
Grill Filter	Condition	✓				
	Seal	✓				
Pump	Operation	✓				
	Filter	✓				
	Flow	✓				
	Valves, Diaphragm	✓				
PCB	Condition	✓				
Connectors	Condition	✓				
Sensor	PID	✓	10.6 ev			
Alarms	Beeper	✓	Low	High	TWA	STEL
	Settings	✓	50ppm	100ppm		
Software	Version	✓				
Data logger	Operation	✓				
Download	Operation	✓				
Other tests:						

Certificate of Calibration

This is to certify that the above instrument has been calibrated to the following specifications:

Diffusion mode Aspirated mode

Sensor	Serial no	Calibration gas and concentration	Certified	Gas bottle No	Instrument Reading
PID Lamp		94ppm Isobutylene	NIST	ME846	94ppm Isobutylene

Calibrated by: _____ **Cameron Ensor**

Calibration date: **1/02/2024**

Next calibration due: **30/07/2024**

Oil / Water Interface Meter

Instrument **Interface Meter (30M)**
Serial No. **312515**



airmet

Air-Met Scientific Pty Ltd
1300 137 067

Item	Test	Pass	Comments
Battery	Compartment	✓	
	Capacity	✓	
	above 7.9V	✓	
Probe	Cleaned/Decon.	✓	
	Operation	✓	
Connectors	Condition	✓	
		✓	
Tape Check	Cleaned	✓	
Connectors	Checked for cuts	✓	
Instrument Test	At surface level	✓	

Certificate of Calibration

This is to certify that the above instrument has been cleaned and tested.

Tested by: _____ **Rebecca Massoud**

Test date: **14/02/2024**

Next Test due: **12/08/2024**

Gas Calibration Certificate



Instrument **MX6**
 Serial No. **12041QS-001**
 Sensors **OFCH**

Air-Met Scientific Pty Ltd
 1300 137 067

Item	Test	Pass	Comments			
Battery	Charge Condition	✓				
	Fuses	✓				
	Capacity	✓				
	Recharge OK?	✓				
Switch/keypad	Operation	✓				
Display	Intensity	✓				
	Operation (segments)	✓				
Grill Filter	Condition	✓				
	Seal	✓				
Pump	Operation	✓				
	Filter	✓				
	Flow	✓				
	Valves, Diaphragm	✓				
PCB	Condition	✓				
Connectors	Condition	✓				
Sensor	Oxygen	✓	Low	High	TWA	STEL
	CO	✓	19.5%	23.5%	NA	NA
	H2S	✓	30ppm	60ppm	30ppm	200ppm
	LEL Methane	✓	10ppm	15ppm	10ppm	15ppm
Alarms	Beeper	✓				
	Settings	✓				
Software	Version					
Datalogger	Operation					
Download	Operation					
Other tests:						

Certificate of Calibration

This is to certify that the above instrument has been calibrated to the following specifications:

Diffusion mode	Aspirated mode				
Sensor	Serial no	Calibration gas and concentration	Certified	Gas bottle No	Instrument Reading
O2		20.9%		Fresh Air	20.9%
CO		100ppm	NIST	ME933	100ppm
LEL		50% of LEL	NIST	ME933	50% of LEL
H2S		25ppm	NIST	ME933	25ppm

Calibrated by: _____ **Rebecca Massoud**

Calibration date: **14-Feb-24**

Next calibration due: **12-Aug-24**

ENVIRONMENTAL SITE ASSESSMENT

Ocwen Energy Pty Ltd | 21 Tasman Highway, Triabunna, TAS 7190
Project No. P001954-001



Appendix F Survey Data

Hole ID	Easting	Northing	Top of Casing mAHD	Gatic Cover Ground Level mAHD
MW01	575105.768	5294143.575	10.910	11.092
MW02	575101.221	5294140.443	10.990	11.152
MW03	575134.882	5294127.459	10.806	10.896
MW04	575109.039	5294120.043	10.847	10.982
MW05	575096.683	5294144.658	11.003	11.191
MW06	575104.927	5294155.890	11.015	11.150
MW07	575149.701	5294124.606	10.802	10.892

Notes

mAHD - Meters Australian Height Datum

ENVIRONMENTAL SITE ASSESSMENT

Ocwen Energy Pty Ltd | 21 Tasman Highway, Triabunna, TAS 7190
Project No. P001954-001



Appendix G Laboratory Certificates and Chain of Custody Documentations



CERTIFICATE OF ANALYSIS

Work Order	: EM2402011	Page	: 1 of 10
Amendment	: 1		
Client	: RESOLVE ENVIRONMENTAL PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR CHRISTIAN ANDRIANOPOULOS	Contact	: Katie Davis
Address	: 239G Bay Street BRIGHTON VICTORIA 3186	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9600
Project	: Ocwen Triabunna ESA	Date Samples Received	: 12-Feb-2024 11:45
Order number	: P001954-001	Date Analysis Commenced	: 14-Feb-2024
C-O-C number	: ----	Issue Date	: 28-Feb-2024 18:10
Sampler	: LEXUS HUGHES		
Site	: ----		
Quote number	: EN/222		
No. of samples received	: 47		
No. of samples analysed	: 14		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
Aleksandar Vujkovic	Laboratory Technician	Newcastle - Inorganics, Mayfield West, NSW
Nancy Wang	2IC Organic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- Amendment (28/09/2024): This report has been amended and re-released to allow the reporting of additional analytical data, specifically method EA150H/EA152 Sizing – Particle Sizing to 1 µm plus Soil Particle for samples #30, 31, 32.
- EA200 'Am' Amosite (brown asbestos)
- EA200 'Cr' Crocidolite (blue asbestos)
- EA200 'Trace' - Asbestos fibres ("Free Fibres") detected by trace analysis per AS4964. The result can be interpreted that the sample contains detectable 'respirable' asbestos fibres
- EA200: Asbestos Identification Samples were analysed by Polarised Light Microscopy including dispersion staining.
- EA200 Legend
- EA200 'Ch' Chrysotile (white asbestos)
- EA200: 'UMF' Unknown Mineral Fibres. "-" indicates fibres detected may or may not be asbestos fibres. Confirmation by alternative techniques is recommended.
- EA200: For samples larger than 30g, the <2mm fraction may be sub-sampled prior to trace analysis as outlined in ISO23909:2008(E) Sect 6.3.2-2
- EA200: 'Yes' - Asbestos detected by polarised light microscopy including dispersion staining.
- EA200: 'No*' - No asbestos found, at the reporting limit of 0.1g/kg, by polarised light microscopy including dispersion staining. Asbestos material was detected and positively identified at concentrations estimated to be below 0.1g/kg.
- EA200: 'No' - No asbestos found at the reporting limit 0.1g/kg, by polarised light microscopy including dispersion staining.



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SB02_0.1-0.2	SB02_1.0-1.1	SB02_1.4-1.5	SB02_1.6-1.7	QC5
Sampling date / time				09-Feb-2024 00:00	09-Feb-2024 00:00	09-Feb-2024 00:00	09-Feb-2024 00:00	09-Feb-2024 00:00	09-Feb-2024 00:00
Compound	CAS Number	LOR	Unit	EM2402011-001	EM2402011-003	EM2402011-004	EM2402011-005	EM2402011-022	
				Result	Result	Result	Result	Result	
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	0.1	%	20.8	22.6	23.7	23.9	21.6	
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10	
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	130	<50	
C15 - C28 Fraction	----	100	mg/kg	100	310	120	280	290	
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100	
^ C10 - C36 Fraction (sum)	----	50	mg/kg	100	310	120	410	290	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10	
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	80	240	50	
>C16 - C34 Fraction	----	100	mg/kg	<100	270	<100	180	260	
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100	
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	270	80	420	310	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	<50	80	240	50	
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2	
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2	
^ Total Xylenes	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	<1	
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%	76.4	73.8	69.0	60.4	70.7	



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SB02_0.1-0.2	SB02_1.0-1.1	SB02_1.4-1.5	SB02_1.6-1.7	QC5
Sampling date / time				09-Feb-2024 00:00	09-Feb-2024 00:00	09-Feb-2024 00:00	09-Feb-2024 00:00	09-Feb-2024 00:00	09-Feb-2024 00:00
Compound	CAS Number	LOR	Unit	EM2402011-001	EM2402011-003	EM2402011-004	EM2402011-005	EM2402011-022	
				Result	Result	Result	Result	Result	
EP080S: TPH(V)/BTEX Surrogates - Continued									
Toluene-D8	2037-26-5	0.2	%	92.3	86.2	84.7	79.0	93.2	
4-Bromofluorobenzene	460-00-4	0.2	%	102	97.6	96.4	91.6	99.2	



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	MW05_1.5-2.0	MW05_2.9-3.0	MW05_3.5-4.0	SB01_0.4-0.5	SB01_0.7-1.0
Sampling date / time				09-Feb-2024 00:00	09-Feb-2024 00:00	09-Feb-2024 00:00	08-Feb-2024 00:00	08-Feb-2024 00:00	
Compound	CAS Number	LOR	Unit	EM2402011-030	EM2402011-031	EM2402011-032	EM2402011-037	EM2402011-038	
				Result	Result	Result	Result	Result	
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	0.1	%	----	----	----	14.8	11.7	
EA150: Particle Sizing									
+75µm	----	1	%	84	52	56	----	----	
+150µm	----	1	%	83	49	49	----	----	
+300µm	----	1	%	81	45	42	----	----	
+425µm	----	1	%	80	42	37	----	----	
+600µm	----	1	%	77	41	33	----	----	
+1180µm	----	1	%	70	38	24	----	----	
+2.36mm	----	1	%	53	32	13	----	----	
+4.75mm	----	1	%	31	20	4	----	----	
+9.5mm	----	1	%	9	8	<1	----	----	
+19.0mm	----	1	%	<1	<1	<1	----	----	
+37.5mm	----	1	%	<1	<1	<1	----	----	
+75.0mm	----	1	%	<1	<1	<1	----	----	
EA150: Soil Classification based on Particle Size									
Clay (<2 µm)	----	1	%	9	19	20	----	----	
Silt (2-60 µm)	----	1	%	7	25	20	----	----	
Sand (0.06-2.00 mm)	----	1	%	26	22	44	----	----	
Gravel (>2mm)	----	1	%	58	34	16	----	----	
Cobbles (>6cm)	----	1	%	<1	<1	<1	----	----	
EA152: Soil Particle Density									
Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3	2.66	2.68	2.77	----	----	
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg	----	----	----	<10	<10	
C10 - C14 Fraction	----	50	mg/kg	----	----	----	<50	<50	
C15 - C28 Fraction	----	100	mg/kg	----	----	----	<100	<100	
C29 - C36 Fraction	----	100	mg/kg	----	----	----	<100	<100	



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	MW05_1.5-2.0	MW05_2.9-3.0	MW05_3.5-4.0	SB01_0.4-0.5	SB01_0.7-1.0
Sampling date / time				09-Feb-2024 00:00	09-Feb-2024 00:00	09-Feb-2024 00:00	08-Feb-2024 00:00	08-Feb-2024 00:00	
Compound	CAS Number	LOR	Unit	EM2402011-030	EM2402011-031	EM2402011-032	EM2402011-037	EM2402011-038	
				Result	Result	Result	Result	Result	
EP080/071: Total Petroleum Hydrocarbons - Continued									
^ C10 - C36 Fraction (sum)				----	50	mg/kg	----	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction				C6_C10	10	mg/kg	----	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)				C6_C10-BTEX	10	mg/kg	----	<10	<10
>C10 - C16 Fraction				----	50	mg/kg	----	<50	<50
>C16 - C34 Fraction				----	100	mg/kg	----	<100	<100
>C34 - C40 Fraction				----	100	mg/kg	----	<100	<100
^ >C10 - C40 Fraction (sum)				----	50	mg/kg	----	<50	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)				----	50	mg/kg	----	<50	<50
EP080: BTEXN									
Benzene				71-43-2	0.2	mg/kg	----	<0.2	<0.2
Toluene				108-88-3	0.5	mg/kg	----	<0.5	<0.5
Ethylbenzene				100-41-4	0.5	mg/kg	----	<0.5	<0.5
meta- & para-Xylene				108-38-3 106-42-3	0.5	mg/kg	----	<0.5	<0.5
ortho-Xylene				95-47-6	0.5	mg/kg	----	<0.5	<0.5
^ Sum of BTEX				----	0.2	mg/kg	----	<0.2	<0.2
^ Total Xylenes				----	0.5	mg/kg	----	<0.5	<0.5
Naphthalene				91-20-3	1	mg/kg	----	<1	<1
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4				17060-07-0	0.2	%	----	70.2	64.3
Toluene-D8				2037-26-5	0.2	%	----	97.0	73.4
4-Bromofluorobenzene				460-00-4	0.2	%	----	101	95.0



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)		Sample ID			SB01_1.4-1.5	----	----	----	----
		Sampling date / time			08-Feb-2024 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	EM2402011-039	-----	-----	-----	-----	-----
				Result	---	---	---	---	---
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	0.1	%	8.9	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg	<10	----	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg	<50	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	<100	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	<100	----	----	----	----	----
[^] C10 - C36 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	----	----	----	----	----
[^] C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	----	----	----	----	----
>C10 - C16 Fraction	----	50	mg/kg	<50	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	<100	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	<100	----	----	----	----	----
[^] >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----	----
[^] >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	----	----	----	----	----
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg	<0.2	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	<0.5	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	----	----	----	----	----
[^] Sum of BTEX	----	0.2	mg/kg	<0.2	----	----	----	----	----
[^] Total Xylenes	----	0.5	mg/kg	<0.5	----	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	<1	----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%	71.7	----	----	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID				
				SB01_1.4-1.5	----	----	----	----
				Sampling date / time	08-Feb-2024 00:00	----	----	----
Compound	CAS Number	LOR	Unit	EM2402011-039	-----	-----	-----	-----
				Result	---	---	---	---
EP080S: TPH(V)/BTEX Surrogates - Continued								
Toluene-D8	2037-26-5	0.2	%	98.0	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	109	----	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	QC1	QC2	QC3	----	----
Sampling date / time				08-Feb-2024 00:00	09-Feb-2024 00:00	09-Feb-2024 00:00	----	----	
Compound	CAS Number	LOR	Unit	EM2402011-026	EM2402011-027	EM2402011-028	-----	-----	
				Result	Result	Result	----	----	
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	----	----	
C10 - C14 Fraction	----	50	µg/L	<50	<50	----	----	----	
C15 - C28 Fraction	----	100	µg/L	<100	<100	----	----	----	
C29 - C36 Fraction	----	50	µg/L	<50	<50	----	----	----	
[^] C10 - C36 Fraction (sum)	----	50	µg/L	<50	<50	----	----	----	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	----	----	
[^] C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	----	----	
>C10 - C16 Fraction	----	100	µg/L	<100	<100	----	----	----	
>C16 - C34 Fraction	----	100	µg/L	<100	<100	----	----	----	
>C34 - C40 Fraction	----	100	µg/L	<100	<100	----	----	----	
[^] >C10 - C40 Fraction (sum)	----	100	µg/L	<100	<100	----	----	----	
[^] >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	----	----	----	
EP080: BTEXN									
Benzene	71-43-2	1	µg/L	<1	<1	<1	----	----	
Toluene	108-88-3	2	µg/L	<2	<2	<2	----	----	
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	----	----	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	----	----	
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	----	----	
[^] Total Xylenes	----	2	µg/L	<2	<2	<2	----	----	
[^] Sum of BTEX	----	1	µg/L	<1	<1	<1	----	----	
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	----	----	
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%	107	110	106	----	----	
Toluene-D8	2037-26-5	2	%	101	104	102	----	----	
4-Bromofluorobenzene	460-00-4	2	%	110	111	113	----	----	



Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	51	125
Toluene-D8	2037-26-5	55	125
4-Bromofluorobenzene	460-00-4	56	124

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	73	129
Toluene-D8	2037-26-5	70	125
4-Bromofluorobenzene	460-00-4	71	129

Inter-Laboratory Testing

Analysis conducted by ALS Newcastle, NATA accreditation no. 825, site no. 1656 (Chemistry) 9854 (Biology).

(SOIL) EA150: Soil Classification based on Particle Size

(SOIL) EA150: Particle Sizing

(SOIL) EA152: Soil Particle Density



Automated Guideline Comparison Report

Work Order	: EM2402011	Page	: 1 of 8
Amendment	: 1		
Client	: RESOLVE ENVIRONMENTAL PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR CHRISTIAN ANDRIANOPOULOS		
Address	: 239G Bay Street BRIGHTON VICTORIA 3186	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: candrianopoulos@resolveenvironmental.com.au	E-mail	: katie.davis@alsglobal.com
Telephone	: ----	Telephone	: +61-3-8549 9600
Facsimile	: ----	Facsimile	: +61-3-8549 9626
Project	: Ocwen Triabunna ESA	Date Received	: 12-Feb-2024 11:45
Order number	: P001954-001	Date Analysed	: 14-Feb-2024
C-O-C number	: ----	Date Issued	: 28-Feb-2024 18:10
No. of samples received	: 47		
No. of samples analysed	: 14	Quote number	: EN/222

General Comments

Only results in the 'Analytical Results' section have been compared to the guideline.

Additional information pertinent to this report will be found in the following separate attachments: Certificate of Analysis, Quality Control Report, QA/QC Compliance Assessment to Assist with Quality Review and Sample Receipt Notification.



Summary of Thresholds Reached or Exceeded

Results for all samples detailed in this report are below the upper threshold limits for Fill Material.

Results for all samples detailed in this report are below the upper threshold limits for Fill Material.



Analytical Results

Waste disposal total contamination concentrations

Table 2: Waste Disposal contamination concentrations: Category B: Total Concentration: Category B

Sub-Matrix: SOIL

Compound	Method	LOR	Unit	Sample ID		SB02_0.1-0.2	SB02_1.0-1.1	SB02_1.4-1.5	SB02_1.6-1.7	QC5
				Guideline	Guideline					
				Lower Limit	Upper Limit					
						09-Feb-2024 15:00	09-Feb-2024 15:00	09-Feb-2024 15:00	09-Feb-2024 15:00	09-Feb-2024 15:00
						EM2402011-001 MU	EM2402011-003 MU	EM2402011-004 MU	EM2402011-005 MU	EM2402011-022 MU
EP080/071: Total Petroleum Hydrocarbons										
C6 - C9 Fraction	EP080	10	mg/kg	----	2600	<10 ..	<10 ..	<10 ..	<10 ..	<10 ..
C10 - C36 Fraction (sum)	EP071	50	mg/kg	----	40000	100	310	120	410	290
EP080: BTEXN										
Benzene	EP080	0.2	mg/kg	----	16	<0.2 ..	<0.2 ..	<0.2 ..	<0.2 ..	<0.2 ..
Toluene	EP080	0.5	mg/kg	----	12800	<0.5 ..	<0.5 ..	<0.5 ..	<0.5 ..	<0.5 ..
Ethylbenzene	EP080	0.5	mg/kg	----	4800	<0.5 ..	<0.5 ..	<0.5 ..	<0.5 ..	<0.5 ..
Total Xylenes	EP080	0.5	mg/kg	----	9600	<0.5 ..	<0.5 ..	<0.5 ..	<0.5 ..	<0.5 ..

Waste disposal total contamination concentrations

Table 2: Waste Disposal contamination concentrations: Category C: Total Concentration: Category C

Sub-Matrix: SOIL

Compound	Method	LOR	Unit	Sample ID		SB02_0.1-0.2	SB02_1.0-1.1	SB02_1.4-1.5	SB02_1.6-1.7	QC5
				Guideline	Guideline					
				Lower Limit	Upper Limit					
						09-Feb-2024 15:00	09-Feb-2024 15:00	09-Feb-2024 15:00	09-Feb-2024 15:00	09-Feb-2024 15:00
						EM2402011-001 MU	EM2402011-003 MU	EM2402011-004 MU	EM2402011-005 MU	EM2402011-022 MU
EP080/071: Total Petroleum Hydrocarbons										
C6 - C9 Fraction	EP080	10	mg/kg	----	650	<10 ..	<10 ..	<10 ..	<10 ..	<10 ..
C10 - C36 Fraction (sum)	EP071	50	mg/kg	----	10000	100	310	120	410	290
EP080: BTEXN										
Benzene	EP080	0.2	mg/kg	----	4	<0.2 ..	<0.2 ..	<0.2 ..	<0.2 ..	<0.2 ..
Toluene	EP080	0.5	mg/kg	----	3200	<0.5 ..	<0.5 ..	<0.5 ..	<0.5 ..	<0.5 ..
Ethylbenzene	EP080	0.5	mg/kg	----	1200	<0.5 ..	<0.5 ..	<0.5 ..	<0.5 ..	<0.5 ..
Total Xylenes	EP080	0.5	mg/kg	----	2400	<0.5 ..	<0.5 ..	<0.5 ..	<0.5 ..	<0.5 ..



Waste disposal total contamination concentrations

Table 2: Waste Disposal contamination concentrations: Category D/Industrial Waste: Total Concentration: Category D/Industrial Waste

Sub-Matrix: SOIL

Compound	Method	LOR	Unit	Sample ID		SB02_0.1-0.2	SB02_1.0-1.1	SB02_1.4-1.5	SB02_1.6-1.7	QC5
				Sampling date/time						
				Guideline Lower Limit	Guideline Upper Limit					
EP080/071: Total Petroleum Hydrocarbons										
C6 - C9 Fraction	EP080	10	mg/kg	----	325	<10 ..	<10 ..	<10 ..	<10 ..	<10 ..
C10 - C36 Fraction (sum)	EP071	50	mg/kg	----	5000	100	310	120	410	290
EP080: BTEXN										
Benzene	EP080	0.2	mg/kg	----	4	<0.2 ..	<0.2 ..	<0.2 ..	<0.2 ..	<0.2 ..
Toluene	EP080	0.5	mg/kg	----	3200	<0.5 ..	<0.5 ..	<0.5 ..	<0.5 ..	<0.5 ..
Ethylbenzene	EP080	0.5	mg/kg	----	1200	<0.5 ..	<0.5 ..	<0.5 ..	<0.5 ..	<0.5 ..
Total Xylenes	EP080	0.5	mg/kg	----	2400	<0.5 ..	<0.5 ..	<0.5 ..	<0.5 ..	<0.5 ..

Fill material contamination total concentration Upper Limit

Table 3: Fill material contamination total concentration upper limit: Table 3: Fill material contamination total concentration upper limit

Sub-Matrix: SOIL

Compound	Method	LOR	Unit	Sample ID		SB02_0.1-0.2	SB02_1.0-1.1	SB02_1.4-1.5	SB02_1.6-1.7	QC5
				Sampling date/time						
				Guideline Lower Limit	Guideline Upper Limit					
EP080/071: Total Petroleum Hydrocarbons										
C6 - C9 Fraction	EP080	10	mg/kg	----	100	<10 ..	<10 ..	<10 ..	<10 ..	<10 ..
C10 - C36 Fraction (sum)	EP071	50	mg/kg	----	1000	100	310	120	410	290
EP080: BTEXN										
Benzene	EP080	0.2	mg/kg	----	1	<0.2 ..	<0.2 ..	<0.2 ..	<0.2 ..	<0.2 ..



Waste disposal total contamination concentrations

Table 2: Waste Disposal contamination concentrations: Category B: Total Concentration: Category B

Sub-Matrix: SOIL

Compound	Method	LOR	Unit	Sample ID		Lower Limit	Upper Limit	MW05_1.5-2.0	MW05_2.9-3.0	MW05_3.5-4.0	SB01_0.4-0.5	SB01_0.7-1.0	
				Sampling date/time				09-Feb-2024	09-Feb-2024	09-Feb-2024	08-Feb-2024	08-Feb-2024	
								15:00	15:00	15:00	15:00	15:00	
EP080/071: Total Petroleum Hydrocarbons													
C6 - C9 Fraction	EP080	10	mg/kg	----	2600	----	----	----	----	<10	--	<10	--
C10 - C36 Fraction (sum)	EP071	50	mg/kg	----	40000	----	----	----	----	<50	--	<50	--
EP080: BTEXN													
Benzene	EP080	0.2	mg/kg	----	16	----	----	----	----	<0.2	--	<0.2	--
Toluene	EP080	0.5	mg/kg	----	12800	----	----	----	----	<0.5	--	<0.5	--
Ethylbenzene	EP080	0.5	mg/kg	----	4800	----	----	----	----	<0.5	--	<0.5	--
Total Xylenes	EP080	0.5	mg/kg	----	9600	----	----	----	----	<0.5	--	<0.5	--

Waste disposal total contamination concentrations

Table 2: Waste Disposal contamination concentrations: Category C: Total Concentration: Category C

Sub-Matrix: SOIL

Compound	Method	LOR	Unit	Sample ID		Lower Limit	Upper Limit	MW05_1.5-2.0	MW05_2.9-3.0	MW05_3.5-4.0	SB01_0.4-0.5	SB01_0.7-1.0	
				Sampling date/time				09-Feb-2024	09-Feb-2024	09-Feb-2024	08-Feb-2024	08-Feb-2024	
								15:00	15:00	15:00	15:00	15:00	
EP080/071: Total Petroleum Hydrocarbons													
C6 - C9 Fraction	EP080	10	mg/kg	----	650	----	----	----	----	<10	--	<10	--
C10 - C36 Fraction (sum)	EP071	50	mg/kg	----	10000	----	----	----	----	<50	--	<50	--
EP080: BTEXN													
Benzene	EP080	0.2	mg/kg	----	4	----	----	----	----	<0.2	--	<0.2	--
Toluene	EP080	0.5	mg/kg	----	3200	----	----	----	----	<0.5	--	<0.5	--
Ethylbenzene	EP080	0.5	mg/kg	----	1200	----	----	----	----	<0.5	--	<0.5	--
Total Xylenes	EP080	0.5	mg/kg	----	2400	----	----	----	----	<0.5	--	<0.5	--



Waste disposal total contamination concentrations

Table 2: Waste Disposal contamination concentrations: Category D/Industrial Waste: Total Concentration: Category D/Industrial Waste

Sub-Matrix: SOIL

Compound	Method	LOR	Unit	Sample ID		Lower Limit	Upper Limit	MW05_1.5-2.0	MW05_2.9-3.0	MW05_3.5-4.0	SB01_0.4-0.5	SB01_0.7-1.0
				Sampling date/time				09-Feb-2024	09-Feb-2024	09-Feb-2024	08-Feb-2024	08-Feb-2024
								15:00	15:00	15:00	15:00	15:00
							EM2402011-030 MU	EM2402011-031 MU	EM2402011-032 MU	EM2402011-037 MU	EM2402011-038 MU	
EP080/071: Total Petroleum Hydrocarbons												
C6 - C9 Fraction	EP080	10	mg/kg	----	325	----	----	----	----	<10	..	<10
C10 - C36 Fraction (sum)	EP071	50	mg/kg	----	5000	----	----	----	----	<50		<50
EP080: BTEXN												
Benzene	EP080	0.2	mg/kg	----	4	----	----	----	----	<0.2	..	<0.2
Toluene	EP080	0.5	mg/kg	----	3200	----	----	----	----	<0.5	..	<0.5
Ethylbenzene	EP080	0.5	mg/kg	----	1200	----	----	----	----	<0.5	..	<0.5
Total Xylenes	EP080	0.5	mg/kg	----	2400	----	----	----	----	<0.5	..	<0.5

Fill material contamination total concentration Upper Limit

Table 3: Fill material contamination total concentration upper limit: Table 3: Fill material contamination total concentration upper limit

Sub-Matrix: SOIL

Compound	Method	LOR	Unit	Sample ID		Lower Limit	Upper Limit	MW05_1.5-2.0	MW05_2.9-3.0	MW05_3.5-4.0	SB01_0.4-0.5	SB01_0.7-1.0
				Sampling date/time				09-Feb-2024	09-Feb-2024	09-Feb-2024	08-Feb-2024	08-Feb-2024
								15:00	15:00	15:00	15:00	15:00
							EM2402011-030 MU	EM2402011-031 MU	EM2402011-032 MU	EM2402011-037 MU	EM2402011-038 MU	
EP080/071: Total Petroleum Hydrocarbons												
C6 - C9 Fraction	EP080	10	mg/kg	----	100	----	----	----	----	<10	..	<10
C10 - C36 Fraction (sum)	EP071	50	mg/kg	----	1000	----	----	----	----	<50		<50
EP080: BTEXN												
Benzene	EP080	0.2	mg/kg	----	1	----	----	----	----	<0.2	..	<0.2



Waste disposal total contamination concentrations

Table 2: Waste Disposal contamination concentrations: Category B: Total Concentration: Category B

Sub-Matrix: SOIL

Compound	Method	LOR	Unit	Sample ID Sampling date/time	Guideline Lower Limit	Guideline Upper Limit	SB01_1.4-1.5					
							08-Feb-2024 15:00	----	----	----	----	
							EM2402011-039	MU				
EP080/071: Total Petroleum Hydrocarbons												
C6 - C9 Fraction	EP080	10	mg/kg		----	2600	<10	--	----	----	----	----
C10 - C36 Fraction (sum)	EP071	50	mg/kg		----	40000	<50		----	----	----	----
EP080: BTEXN												
Benzene	EP080	0.2	mg/kg		----	16	<0.2	--	----	----	----	----
Toluene	EP080	0.5	mg/kg		----	12800	<0.5	--	----	----	----	----
Ethylbenzene	EP080	0.5	mg/kg		----	4800	<0.5	--	----	----	----	----
Total Xylenes	EP080	0.5	mg/kg		----	9600	<0.5	--	----	----	----	----

Waste disposal total contamination concentrations

Table 2: Waste Disposal contamination concentrations: Category C: Total Concentration: Category C

Sub-Matrix: SOIL

Compound	Method	LOR	Unit	Sample ID Sampling date/time	Guideline Lower Limit	Guideline Upper Limit	SB01_1.4-1.5					
							08-Feb-2024 15:00	----	----	----	----	
							EM2402011-039	MU				
EP080/071: Total Petroleum Hydrocarbons												
C6 - C9 Fraction	EP080	10	mg/kg		----	650	<10	--	----	----	----	----
C10 - C36 Fraction (sum)	EP071	50	mg/kg		----	10000	<50		----	----	----	----
EP080: BTEXN												
Benzene	EP080	0.2	mg/kg		----	4	<0.2	--	----	----	----	----
Toluene	EP080	0.5	mg/kg		----	3200	<0.5	--	----	----	----	----
Ethylbenzene	EP080	0.5	mg/kg		----	1200	<0.5	--	----	----	----	----
Total Xylenes	EP080	0.5	mg/kg		----	2400	<0.5	--	----	----	----	----



Waste disposal total contamination concentrations

Table 2: Waste Disposal contamination concentrations: Category D/Industrial Waste: Total Concentration: Category D/Industrial Waste

Sub-Matrix: SOIL

Compound	Method	LOR	Unit	Sample ID		Lower Limit	Upper Limit	SB01_1.4-1.5			
				Sampling date/time	Guideline			Guideline	08-Feb-2024 15:00	----	----
EP080/071: Total Petroleum Hydrocarbons											
C6 - C9 Fraction	EP080	10	mg/kg	----	325	<10	--	----	----	----	----
C10 - C36 Fraction (sum)	EP071	50	mg/kg	----	5000	<50	--	----	----	----	----
EP080: BTEXN											
Benzene	EP080	0.2	mg/kg	----	4	<0.2	--	----	----	----	----
Toluene	EP080	0.5	mg/kg	----	3200	<0.5	--	----	----	----	----
Ethylbenzene	EP080	0.5	mg/kg	----	1200	<0.5	--	----	----	----	----
Total Xylenes	EP080	0.5	mg/kg	----	2400	<0.5	--	----	----	----	----

Fill material contamination total concentration Upper Limit

Table 3: Fill material contamination total concentration upper limit: Table 3: Fill material contamination total concentration upper limit

Sub-Matrix: SOIL

Compound	Method	LOR	Unit	Sample ID		Lower Limit	Upper Limit	SB01_1.4-1.5			
				Sampling date/time	Guideline			Guideline	08-Feb-2024 15:00	----	----
EP080/071: Total Petroleum Hydrocarbons											
C6 - C9 Fraction	EP080	10	mg/kg	----	100	<10	--	----	----	----	----
C10 - C36 Fraction (sum)	EP071	50	mg/kg	----	1000	<50	--	----	----	----	----
EP080: BTEXN											
Benzene	EP080	0.2	mg/kg	----	1	<0.2	--	----	----	----	----



QUALITY CONTROL REPORT

Work Order : **EM2402011** **Page** : 1 of 6
Amendment : **1**

Client : **RESOLVE ENVIRONMENTAL PTY LTD** **Laboratory** : Environmental Division Melbourne
Contact : MR CHRISTIAN ANDRIANOPOULOS **Contact** : Katie Davis
Address : 239G Bay Street **Address** : 4 Westall Rd Springvale VIC Australia 3171
BRIGHTON VICTORIA 3186

Telephone : ---- **Telephone** : +61-3-8549 9600
Project : Ocwen Triabunna ESA **Date Samples Received** : 12-Feb-2024
Order number : P001954-001 **Date Analysis Commenced** : 14-Feb-2024
C-O-C number : ---- **Issue Date** : 28-Feb-2024

Sampler : LEXUS HUGHES
Site : ----
Quote number : EN/222
No. of samples received : 47
No. of samples analysed : 14



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Aleksandar Vujkovic	Laboratory Technician	Newcastle - Inorganics, Mayfield West, NSW
Nancy Wang	2IC Organic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key :
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC
 * = The final LOR has been raised due to dilution or other sample specific cause; adjusted LOR is shown in brackets. The duplicate ranges for Acceptable RPD% are applied to the final LOR where applicable.

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 5600632)									
EM2402011-001	SB02_0.1-0.2	EA055: Moisture Content	----	0.1	%	20.8	22.0	5.5	0% - 20%
EM2402035-004	Anonymous	EA055: Moisture Content	----	0.1 (1.0)*	%	4.5	4.2	7.6	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 5599313)									
EM2402011-001	SB02_0.1-0.2	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 5599327)									
EM2401934-003	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	110	0.0	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	150	40.7	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
EM2402020-001	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 5599313)									
EM2402011-001	SB02_0.1-0.2	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 5599327)									
EM2401934-003	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	140	210	38.2	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	140	36.0	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
EM2402020-001	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP080: BTEXN (QC Lot: 5599313)									
EM2402011-001	SB02_0.1-0.2	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit
Sub-Matrix: WATER									
Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 5599333)									
EM2402011-026	QC1	EP071: C15 - C28 Fraction	----	100	µg/L	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	µg/L	<50	<50	0.0	No Limit
		EP071: C29 - C36 Fraction	----	50	µg/L	<50	<50	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 5602340)									
EM2401934-080	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 5599333)									
EM2402011-026	QC1	EP071: >C10 - C16 Fraction	----	100	µg/L	<100	<100	0.0	No Limit
		EP071: >C16 - C34 Fraction	----	100	µg/L	<100	<100	0.0	No Limit
		EP071: >C34 - C40 Fraction	----	100	µg/L	<100	<100	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 5602340)									
EM2401934-080	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit
EP080: BTEXN (QC Lot: 5602340)									
EM2401934-080	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	No Limit



Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
					Result	Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)
Method: Compound	CAS Number	LOR	Unit					LCS	Low
EP080/071: Total Petroleum Hydrocarbons (QCLot: 5599313)									
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	36 mg/kg	70.1	58.6	131	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 5599327)									
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	860 mg/kg	82.9	75.0	128	
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	2770 mg/kg	97.0	82.0	123	
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	1520 mg/kg	99.1	82.4	121	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 5599313)									
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	45 mg/kg	70.0	59.3	128	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 5599327)									
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	1130 mg/kg	89.6	77.0	130	
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	3730 mg/kg	98.4	81.5	120	
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	260 mg/kg	96.0	73.3	137	
EP080: BTEXN (QCLot: 5599313)									
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	2 mg/kg	66.7	61.6	117	
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	2 mg/kg	83.9	65.8	125	
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	2 mg/kg	85.1	65.8	124	
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	4 mg/kg	83.5	64.8	134	
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	2 mg/kg	88.4	68.7	132	
EP080: Naphthalene	91-20-3	1	mg/kg	<1	0.5 mg/kg	74.6	61.8	123	

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
					Result	Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)
Method: Compound	CAS Number	LOR	Unit					LCS	Low
EP080/071: Total Petroleum Hydrocarbons (QCLot: 5599333)									
EP071: C10 - C14 Fraction	----	50	µg/L	<50	4840 µg/L	88.3	47.2	122	
EP071: C15 - C28 Fraction	----	100	µg/L	<100	15400 µg/L	94.0	52.9	131	
EP071: C29 - C36 Fraction	----	50	µg/L	<50	8450 µg/L	94.0	50.4	127	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 5602340)									
EP080: C6 - C9 Fraction	----	20	µg/L	<20	360 µg/L	95.4	66.2	134	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 5599333)									
EP071: >C10 - C16 Fraction	----	100	µg/L	<100	6590 µg/L	87.4	49.1	125	
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	20400 µg/L	94.5	51.6	128	



Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)	
						LCS	Low	High	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 5599333) - continued									
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	1500 µg/L	85.8	47.2	130	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 5602340)									
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	450 µg/L	94.9	66.2	132	
EP080: BTEXN (QCLot: 5602340)									
EP080: Benzene	71-43-2	1	µg/L	<1	20 µg/L	88.1	68.8	127	
EP080: Toluene	108-88-3	2	µg/L	<2	20 µg/L	97.0	72.9	129	
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	20 µg/L	99.0	71.7	130	
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	40 µg/L	102	72.3	136	
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	20 µg/L	107	75.9	134	
EP080: Naphthalene	91-20-3	5	µg/L	<5	5 µg/L	104	68.3	131	

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report		
				Spike Concentration	Spike Recovery (%) MS	Acceptable Limits (%) Low High
EP080/071: Total Petroleum Hydrocarbons (QCLot: 5599313)						
EM2402011-003	SB02_1.0-1.1	EP080: C6 - C9 Fraction	----	28 mg/kg	61.3	33.4 124
EP080/071: Total Petroleum Hydrocarbons (QCLot: 5599327)						
EM2401934-010	Anonymous	EP071: C10 - C14 Fraction	----	860 mg/kg	83.3	71.2 125
		EP071: C15 - C28 Fraction	----	2770 mg/kg	94.5	75.6 122
		EP071: C29 - C36 Fraction	----	1520 mg/kg	95.4	78.0 120
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 5599313)						
EM2402011-003	SB02_1.0-1.1	EP080: C6 - C10 Fraction	C6_C10	33 mg/kg	58.0	30.8 120
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 5599327)						
EM2401934-010	Anonymous	EP071: >C10 - C16 Fraction	----	1130 mg/kg	89.1	72.2 128
		EP071: >C16 - C34 Fraction	----	3730 mg/kg	95.4	76.5 119
		EP071: >C34 - C40 Fraction	----	260 mg/kg	90.1	66.8 138
EP080: BTEXN (QCLot: 5599313)						
EM2402011-003	SB02_1.0-1.1	EP080: Benzene	71-43-2	2 mg/kg	75.0	54.4 127
		EP080: Toluene	108-88-3	2 mg/kg	93.3	57.1 131

Sub-Matrix: **WATER**

Matrix Spike (MS) Report		
Spike	Spike Recovery (%)	Acceptable Limits (%)



Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike Concentration	SpikeRecovery(%) MS	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP080/071: Total Petroleum Hydrocarbons (QCLot: 5599333)							
EM2402011-026	QC1	EP071: C10 - C14 Fraction	----	4840 µg/L	88.0	48.0	126
		EP071: C15 - C28 Fraction	----	15400 µg/L	93.5	51.7	132
		EP071: C29 - C36 Fraction	----	8450 µg/L	94.0	50.5	127
EP080/071: Total Petroleum Hydrocarbons (QCLot: 5602340)							
EM2401934-081	Anonymous	EP080: C6 - C9 Fraction	----	280 µg/L	72.5	33.9	126
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 5599333)							
EM2402011-026	QC1	EP071: >C10 - C16 Fraction	----	6590 µg/L	86.9	48.0	128
		EP071: >C16 - C34 Fraction	----	20400 µg/L	94.2	50.4	130
		EP071: >C34 - C40 Fraction	----	1500 µg/L	85.6	47.4	131
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 5602340)							
EM2401934-081	Anonymous	EP080: C6 - C10 Fraction	C6_C10	330 µg/L	71.9	34.0	122
EP080: BTEXN (QCLot: 5602340)							
EM2401934-081	Anonymous	EP080: Benzene	71-43-2	20 µg/L	93.0	56.3	133
		EP080: Toluene	108-88-3	20 µg/L	97.0	60.4	132



QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EM2402011	Page	: 1 of 5
Amendment	: 1		
Client	: RESOLVE ENVIRONMENTAL PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR CHRISTIAN ANDRIANOPOULOS	Telephone	: +61-3-8549 9600
Project	: Ocwen Triabunna ESA	Date Samples Received	: 12-Feb-2024
Site	: ----	Issue Date	: 28-Feb-2024
Sampler	: LEXUS HUGHES	No. of samples received	: 47
Order number	: P001954-001	No. of samples analysed	: 14

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- **NO** Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- **NO** Quality Control Sample Frequency Outliers exist.



Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for **VOC in soils** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EA055: Moisture Content (Dried @ 105-110°C)								
Soil Glass Jar - Unpreserved (EA055) SB01_0.4-0.5, SB01_1.4-1.5	SB01_0.7-1.0,	08-Feb-2024	----	----	----	14-Feb-2024	22-Feb-2024	✓
Soil Glass Jar - Unpreserved (EA055) SB02_0.1-0.2, SB02_1.4-1.5, QC5	SB02_1.0-1.1, SB02_1.6-1.7,	09-Feb-2024	----	----	----	14-Feb-2024	23-Feb-2024	✓
EA150: Particle Sizing								
Soil Glass Jar - Unpreserved (EA150H) MW05_1.5-2.0, MW05_3.5-4.0	MW05_2.9-3.0,	09-Feb-2024	----	----	----	27-Feb-2024	07-Aug-2024	✓
EA150: Soil Classification based on Particle Size								
Soil Glass Jar - Unpreserved (EA150H) MW05_1.5-2.0, MW05_3.5-4.0	MW05_2.9-3.0,	09-Feb-2024	----	----	----	27-Feb-2024	07-Aug-2024	✓
EA152: Soil Particle Density								
Soil Glass Jar - Unpreserved (EA152) MW05_1.5-2.0, MW05_3.5-4.0	MW05_2.9-3.0,	09-Feb-2024	----	----	----	27-Feb-2024	07-Aug-2024	✓
EP080/071: Total Petroleum Hydrocarbons								
Soil Glass Jar - Unpreserved (EP080) SB01_0.4-0.5, SB01_1.4-1.5	SB01_0.7-1.0,	08-Feb-2024	14-Feb-2024	22-Feb-2024	✓	15-Feb-2024	22-Feb-2024	✓
Soil Glass Jar - Unpreserved (EP080) SB02_0.1-0.2, SB02_1.4-1.5, QC5	SB02_1.0-1.1, SB02_1.6-1.7,	09-Feb-2024	14-Feb-2024	23-Feb-2024	✓	15-Feb-2024	23-Feb-2024	✓



Matrix: **SOIL**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Soil Glass Jar - Unpreserved (EP080) SB01_0.4-0.5, SB01_1.4-1.5	SB01_0.7-1.0,	08-Feb-2024	14-Feb-2024	22-Feb-2024	✓	15-Feb-2024	22-Feb-2024	✓
Soil Glass Jar - Unpreserved (EP080) SB02_0.1-0.2, SB02_1.4-1.5, QC5	SB02_1.0-1.1, SB02_1.6-1.7,	09-Feb-2024	14-Feb-2024	23-Feb-2024	✓	15-Feb-2024	23-Feb-2024	✓
EP080: BTEXN								
Soil Glass Jar - Unpreserved (EP080) SB01_0.4-0.5, SB01_1.4-1.5	SB01_0.7-1.0,	08-Feb-2024	14-Feb-2024	22-Feb-2024	✓	15-Feb-2024	22-Feb-2024	✓
Soil Glass Jar - Unpreserved (EP080) SB02_0.1-0.2, SB02_1.4-1.5, QC5	SB02_1.0-1.1, SB02_1.6-1.7,	09-Feb-2024	14-Feb-2024	23-Feb-2024	✓	15-Feb-2024	23-Feb-2024	✓

Matrix: **WATER**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EP080/071: Total Petroleum Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP071) QC1		08-Feb-2024	14-Feb-2024	15-Feb-2024	✓	15-Feb-2024	25-Mar-2024	✓
Amber Glass Bottle - Unpreserved (EP071) QC2		09-Feb-2024	14-Feb-2024	16-Feb-2024	✓	15-Feb-2024	25-Mar-2024	✓
Amber VOC Vial - Sulfuric Acid (EP080) QC1		08-Feb-2024	15-Feb-2024	22-Feb-2024	✓	15-Feb-2024	22-Feb-2024	✓
Amber VOC Vial - Sulfuric Acid (EP080) QC2,	QC3	09-Feb-2024	15-Feb-2024	23-Feb-2024	✓	15-Feb-2024	23-Feb-2024	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Amber Glass Bottle - Unpreserved (EP071) QC1		08-Feb-2024	14-Feb-2024	15-Feb-2024	✓	15-Feb-2024	25-Mar-2024	✓
Amber Glass Bottle - Unpreserved (EP071) QC2		09-Feb-2024	14-Feb-2024	16-Feb-2024	✓	15-Feb-2024	25-Mar-2024	✓
Amber VOC Vial - Sulfuric Acid (EP080) QC1		08-Feb-2024	15-Feb-2024	22-Feb-2024	✓	15-Feb-2024	22-Feb-2024	✓
Amber VOC Vial - Sulfuric Acid (EP080) QC2,	QC3	09-Feb-2024	15-Feb-2024	23-Feb-2024	✓	15-Feb-2024	23-Feb-2024	✓
EP080: BTEXN								
Amber VOC Vial - Sulfuric Acid (EP080) QC1		08-Feb-2024	15-Feb-2024	22-Feb-2024	✓	15-Feb-2024	22-Feb-2024	✓
Amber VOC Vial - Sulfuric Acid (EP080) QC2,	QC3	09-Feb-2024	15-Feb-2024	23-Feb-2024	✓	15-Feb-2024	23-Feb-2024	✓



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
Analytical Methods							
Laboratory Duplicates (DUP)							
Moisture Content	EA055	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	9	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
TRH - Semivolatile Fraction	EP071	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
TRH - Semivolatile Fraction	EP071	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
TRH - Semivolatile Fraction	EP071	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER**

Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
Analytical Methods							
Laboratory Duplicates (DUP)							
TRH - Semivolatile Fraction	EP071	1	3	33.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	9	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
TRH - Semivolatile Fraction	EP071	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
TRH - Semivolatile Fraction	EP071	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
TRH - Semivolatile Fraction	EP071	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM Schedule B(3).
Particle Size Analysis by Hydrometer	EA150H	SOIL	Particle Size Analysis by Hydrometer according to AS1289.3.6.3
Soil Particle Density	EA152	SOIL	Soil Particle Density by AS 1289.3.5.1: Methods of testing soils for engineering purposes - Soil classification tests - Determination of the soil particle density of a soil - Standard method
TRH - Semivolatile Fraction	EP071	SOIL	In house: Referenced to USEPA SW 846 - 8015 Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40. Compliant with NEPM Schedule B(3).
TRH Volatiles/BTEX	EP080	SOIL	In house: Referenced to USEPA SW 846 - 8260. Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. Compliant with NEPM Schedule B(3) amended.
TRH - Semivolatile Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015 The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM Schedule B(3)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260 Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM Schedule B(3)
Preparation Methods	Method	Matrix	Method Descriptions
Methanolic Extraction of Soils for Purge and Trap	ORG16	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids	ORG17	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for purging.

Certificate of Analysis

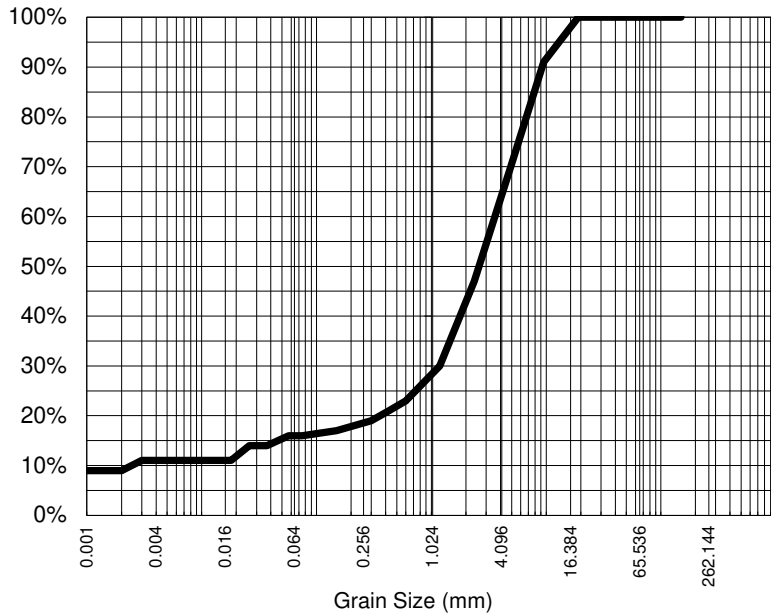
ALS Laboratory Group Pty Ltd
5/585 Maitland Road
Mayfield West, NSW 2304
pH 02 4014 2500
fax 02 4968 0349
samples.newcastle@alsenviro.com

ALS Environmental
Newcastle, NSW



CLIENT: CHRISTIAN ANDRIANOPOULOS **DATE REPORTED:** 27-Feb-2024
COMPANY: RESOLVE ENVIRONMENTAL PTY LTD **DATE RECEIVED:** 12-Feb-2024
ADDRESS: 239G Bay Street Brighton Victoria **REPORT NO:** EM2402011-030 / PSD
PROJECT: Ocwen Triabunna ESA **SAMPLE ID:** MW05_1.5-2.0

Particle Size Distribution



Particle Size (mm)	% Passing
19.0	100%
9.50	91%
4.75	69%
2.36	47%
1.18	30%
0.600	23%
0.425	21%
0.300	19%
0.150	17%
0.075	16%
Particle Size (microns)	
37	14%
26	14%
18	11%
13	11%
9	11%
7	11%
5	11%
3	11%
1	9%

Median Particle Size (mm)*	2.686
----------------------------	-------

Analysis Notes

Samples analysed as received.

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Sample Comments:

Analysed: 23-Feb-24

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description: GRAVEL, SAND, FINES

Dispersion Method Shaker

Test Method: AS1289.3.6.1/AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.66



Aleksandar Vujkovic
Laboratory Supervisor
Authorised Signatory

NATA Accreditation: 825 Site: Newcastle
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Certificate of Analysis

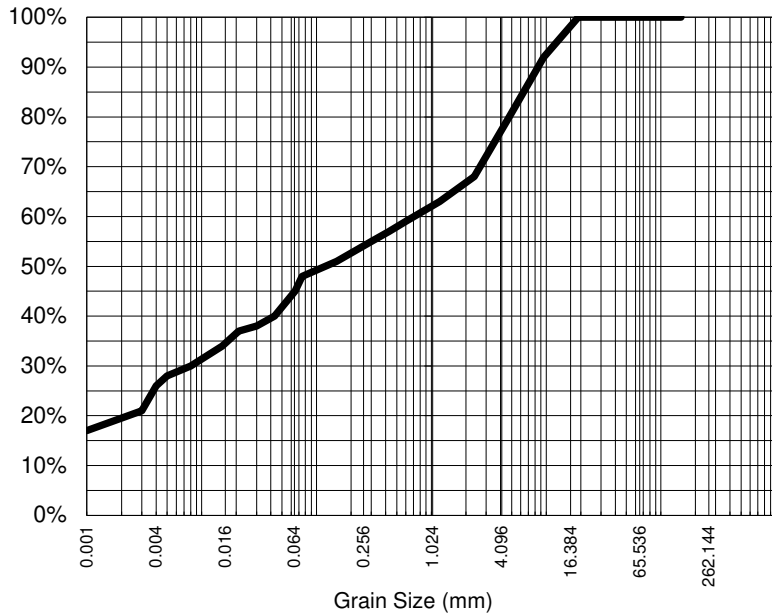
ALS Laboratory Group Pty Ltd
5/585 Maitland Road
Mayfield West, NSW 2304
pH 02 4014 2500
fax 02 4968 0349
samples.newcastle@alsenviro.com

ALS Environmental
Newcastle, NSW



CLIENT: CHRISTIAN ANDRIANOPOULOS **DATE REPORTED:** 27-Feb-2024
COMPANY: RESOLVE ENVIRONMENTAL PTY LTD **DATE RECEIVED:** 12-Feb-2024
ADDRESS: 239G Bay Street Brighton Victoria **REPORT NO:** EM2402011-031 / PSD
PROJECT: Ocwen Triabunna ESA **SAMPLE ID:** MW05_2.9-3.0

Particle Size Distribution



Particle Size (mm)	% Passing
19.0	100%
9.50	92%
4.75	80%
2.36	68%
1.18	63%
0.600	59%
0.425	57%
0.300	55%
0.150	51%
0.075	48%
Particle Size (microns)	
43	40%
30	38%
21	37%
15	34%
11	32%
8	30%
5	28%
4	26%
1	17%

Median Particle Size (mm)*	0.125
----------------------------	-------

Analysis Notes

Samples analysed as received.

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Sample Comments:

Analysed: 23-Feb-24

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description: FINES, GRAVEL, SAND

Dispersion Method Shaker

Test Method: AS1289.3.6.1/AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.68



Aleksandar Vujkovic
Laboratory Supervisor
Authorised Signatory

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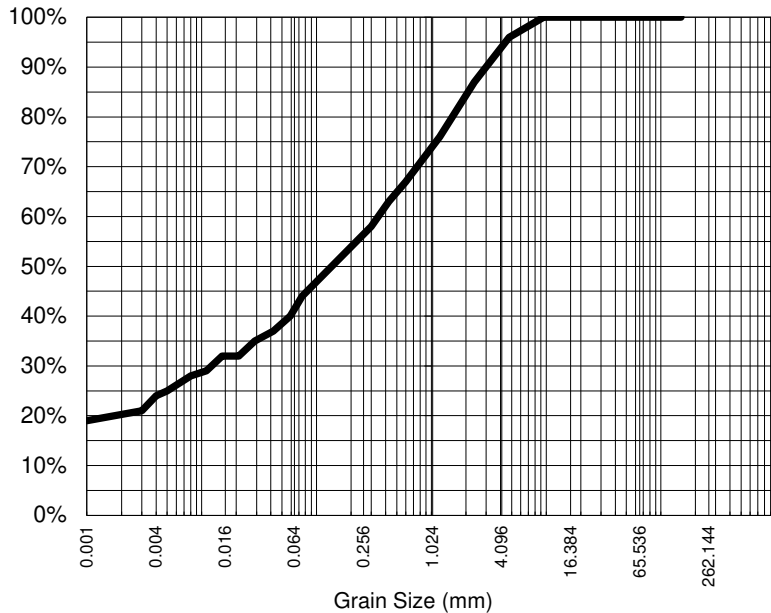
ALS Laboratory Group Pty Ltd
5/585 Maitland Road
Mayfield West, NSW 2304
pH 02 4014 2500
fax 02 4968 0349
samples.newcastle@alsenviro.com

ALS Environmental
Newcastle, NSW



CLIENT: CHRISTIAN ANDRIANOPOULOS **DATE REPORTED:** 27-Feb-2024
COMPANY: RESOLVE ENVIRONMENTAL PTY LTD **DATE RECEIVED:** 12-Feb-2024
ADDRESS: 239G Bay Street Brighton Victoria **REPORT NO:** EM2402011-032 / PSD
PROJECT: Ocwen Triabunna ESA **SAMPLE ID:** MW05_3.5-4.0

Particle Size Distribution



Particle Size (mm)	% Passing
9.50	100%
4.75	96%
2.36	87%
1.18	76%
0.600	67%
0.425	63%
0.300	58%
0.150	51%
0.075	44%
Particle Size (microns)	
42	37%
29	35%
21	32%
15	32%
11	29%
8	28%
5	25%
4	24%
1	19%

Median Particle Size (mm)*	0.139
----------------------------	-------

Analysis Notes

Samples analysed as received.

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Sample Comments:

Analysed: 23-Feb-24

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description: SAND, FINES, GRAVEL

Dispersion Method Shaker

Test Method: AS1289.3.6.1/AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.77



Aleksandar Vujkovic
Laboratory Supervisor
Authorised Signatory

NATA Accreditation: 825 Site: Newcastle
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CERTIFICATE OF ANALYSIS

Work Order	: EM2402471	Page	: 1 of 5
Client	: RESOLVE ENVIRONMENTAL PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR CHRISTIAN ANDRIANOPOULOS	Contact	: Katie Davis
Address	: 239G Bay Street BRIGHTON VICTORIA 3186	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9600
Project	: P001954-001	Date Samples Received	: 20-Feb-2024 11:35
Order number	: P001954-001	Date Analysis Commenced	: 20-Feb-2024
C-O-C number	: ----	Issue Date	: 23-Feb-2024 15:06
Sampler	: LEXUS HUGHES		
Site	: Tasmania		
Quote number	: EM24RESOENV0002		
No. of samples received	: 10		
No. of samples analysed	: 10		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Nancy Wang	2IC Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	QC6	QC7	QC8	MW01	MW02
Sampling date / time				19-Feb-2024 00:00	19-Feb-2024 00:00	19-Feb-2024 00:00	19-Feb-2024 00:00	19-Feb-2024 00:00	
Compound	CAS Number	LOR	Unit	EM2402471-001	EM2402471-002	EM2402471-003	EM2402471-004	EM2402471-005	
				Result	Result	Result	Result	Result	
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	170	60	
C10 - C14 Fraction	----	50	µg/L	----	<50	<50	670	500	
C15 - C28 Fraction	----	100	µg/L	----	<100	<100	1300	1700	
C29 - C36 Fraction	----	50	µg/L	----	<50	<50	90	70	
[^] C10 - C36 Fraction (sum)	----	50	µg/L	----	<50	<50	2060	2270	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	180	60	
[^] C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	80	50	
>C10 - C16 Fraction	----	100	µg/L	----	<100	<100	1050	930	
>C16 - C34 Fraction	----	100	µg/L	----	<100	<100	980	1330	
>C34 - C40 Fraction	----	100	µg/L	----	<100	<100	<100	<100	
[^] >C10 - C40 Fraction (sum)	----	100	µg/L	----	<100	<100	2030	2260	
[^] >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	----	<100	<100	1050	930	
EP080: BTEXN									
Benzene	71-43-2	1	µg/L	<1	<1	<1	100	11	
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	<2	
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	<2	
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	2	<2	
[^] Total Xylenes	----	2	µg/L	<2	<2	<2	2	<2	
[^] Sum of BTEX	----	1	µg/L	<1	<1	<1	102	11	
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5	
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%	117	105	123	122	127	
Toluene-D8	2037-26-5	2	%	108	104	117	113	115	
4-Bromofluorobenzene	460-00-4	2	%	122	116	109	124	109	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	MW03	MW04	MW05	MW06	MW07
Sampling date / time				19-Feb-2024 00:00	19-Feb-2024 00:00	19-Feb-2024 00:00	19-Feb-2024 00:00	19-Feb-2024 00:00	
Compound	CAS Number	LOR	Unit	EM2402471-006	EM2402471-007	EM2402471-008	EM2402471-009	EM2402471-010	
				Result	Result	Result	Result	Result	
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	20	<20	
C10 - C14 Fraction	----	50	µg/L	<50	<50	160	350	<50	
C15 - C28 Fraction	----	100	µg/L	<100	<100	320	1220	<100	
C29 - C36 Fraction	----	50	µg/L	<50	60	70	110	<50	
[^] C10 - C36 Fraction (sum)	----	50	µg/L	<50	60	550	1680	<50	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	20	<20	
[^] C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	<20	<20	
>C10 - C16 Fraction	----	100	µg/L	<100	<100	260	670	<100	
>C16 - C34 Fraction	----	100	µg/L	<100	120	280	1030	<100	
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	
[^] >C10 - C40 Fraction (sum)	----	100	µg/L	<100	120	540	1700	<100	
[^] >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	260	670	<100	
EP080: BTEXN									
Benzene	71-43-2	1	µg/L	<1	<1	<1	12	<1	
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	<2	
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	<2	
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	<2	
[^] Total Xylenes	----	2	µg/L	<2	<2	<2	<2	<2	
[^] Sum of BTEX	----	1	µg/L	<1	<1	<1	12	<1	
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5	
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%	94.7	107	120	110	104	
Toluene-D8	2037-26-5	2	%	112	93.9	91.3	102	103	
4-Bromofluorobenzene	460-00-4	2	%	122	106	121	113	120	



Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	73	129
Toluene-D8	2037-26-5	70	125
4-Bromofluorobenzene	460-00-4	71	129



QUALITY CONTROL REPORT

Work Order	: EM2402471	Page	: 1 of 5
Client	: RESOLVE ENVIRONMENTAL PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR CHRISTIAN ANDRIANOPOULOS	Contact	: Katie Davis
Address	: 239G Bay Street BRIGHTON VICTORIA 3186	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9600
Project	: P001954-001	Date Samples Received	: 20-Feb-2024
Order number	: P001954-001	Date Analysis Commenced	: 20-Feb-2024
C-O-C number	: ----	Issue Date	: 23-Feb-2024
Sampler	: LEXUS HUGHES		
Site	: Tasmania		
Quote number	: EM24RESOENV0002		
No. of samples received	: 10		
No. of samples analysed	: 10		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Nancy Wang	2IC Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key :
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 5613552)									
EM2402471-001	QC6	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
EM2402513-001	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 5613641)									
EM2402480-004	Anonymous	EP071: C15 - C28 Fraction	----	100	µg/L	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	µg/L	<50	<50	0.0	No Limit
		EP071: C29 - C36 Fraction	----	50	µg/L	<50	<50	0.0	No Limit
EM2402425-001	Anonymous	EP071: C15 - C28 Fraction	----	100	µg/L	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	µg/L	<50	<50	0.0	No Limit
		EP071: C29 - C36 Fraction	----	50	µg/L	<50	<50	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 5613552)									
EM2402471-001	QC6	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit
EM2402513-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 5613641)									
EM2402480-004	Anonymous	EP071: >C10 - C16 Fraction	----	100	µg/L	<100	<100	0.0	No Limit
		EP071: >C16 - C34 Fraction	----	100	µg/L	<100	<100	0.0	No Limit
		EP071: >C34 - C40 Fraction	----	100	µg/L	<100	<100	0.0	No Limit
EM2402425-001	Anonymous	EP071: >C10 - C16 Fraction	----	100	µg/L	<100	<100	0.0	No Limit
		EP071: >C16 - C34 Fraction	----	100	µg/L	<100	<100	0.0	No Limit
		EP071: >C34 - C40 Fraction	----	100	µg/L	<100	<100	0.0	No Limit
EP080: BTEXN (QC Lot: 5613552)									
EM2402471-001	QC6	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP080: BTEXN (QC Lot: 5613552) - continued									
EM2402471-001	QC6	EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	No Limit
EM2402513-001	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	No Limit



Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit			LCS	Low	High
EP080/071: Total Petroleum Hydrocarbons (QCLot: 5612701)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	4840 µg/L	66.6	47.2	122
EP071: C15 - C28 Fraction	----	100	µg/L	<100	15400 µg/L	77.2	52.9	131
EP071: C29 - C36 Fraction	----	50	µg/L	<50	8450 µg/L	77.9	50.4	127
EP080/071: Total Petroleum Hydrocarbons (QCLot: 5613552)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	360 µg/L	93.1	66.2	134
EP080/071: Total Petroleum Hydrocarbons (QCLot: 5613641)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	4840 µg/L	52.8	47.2	122
EP071: C15 - C28 Fraction	----	100	µg/L	<100	15400 µg/L	77.7	52.9	131
EP071: C29 - C36 Fraction	----	50	µg/L	<50	8450 µg/L	79.8	50.4	127
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 5612701)								
EP071: >C10 - C16 Fraction	----	100	µg/L	<100	6590 µg/L	68.8	49.1	125
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	20400 µg/L	80.1	51.6	128
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	1500 µg/L	76.7	47.2	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 5613552)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	450 µg/L	88.2	66.2	132
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 5613641)								
EP071: >C10 - C16 Fraction	----	100	µg/L	<100	6590 µg/L	61.0	49.1	125
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	20400 µg/L	81.0	51.6	128
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	1500 µg/L	77.9	47.2	130
EP080: BTEXN (QCLot: 5613552)								
EP080: Benzene	71-43-2	1	µg/L	<1	20 µg/L	102	68.8	127
EP080: Toluene	108-88-3	2	µg/L	<2	20 µg/L	85.7	72.9	129
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	20 µg/L	100	71.7	130
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	40 µg/L	98.7	72.3	136
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	20 µg/L	93.6	75.9	134
EP080: Naphthalene	91-20-3	5	µg/L	<5	5 µg/L	97.5	68.3	131

Matrix Spike (MS) Report



The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery(%) MS	Acceptable Limits (%)	
				Low	High		
EP080/071: Total Petroleum Hydrocarbons (QCLot: 5613552)							
EM2402513-002	Anonymous	EP080: C6 - C9 Fraction	----	280 µg/L	93.3	33.9	126
EP080/071: Total Petroleum Hydrocarbons (QCLot: 5613641)							
EM2402471-009	MW06	EP071: C10 - C14 Fraction	----	4840 µg/L	79.2	48.0	126
		EP071: C15 - C28 Fraction	----	15400 µg/L	90.2	51.7	132
		EP071: C29 - C36 Fraction	----	8450 µg/L	92.9	50.5	127
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 5613552)							
EM2402513-002	Anonymous	EP080: C6 - C10 Fraction	C6_C10	330 µg/L	85.8	34.0	122
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 5613641)							
EM2402471-009	MW06	EP071: >C10 - C16 Fraction	----	6590 µg/L	80.9	48.0	128
		EP071: >C16 - C34 Fraction	----	20400 µg/L	93.8	50.4	130
		EP071: >C34 - C40 Fraction	----	1500 µg/L	90.9	47.4	131
EP080: BTEXN (QCLot: 5613552)							
EM2402513-002	Anonymous	EP080: Benzene	71-43-2	20 µg/L	114	56.3	133
		EP080: Toluene	108-88-3	20 µg/L	112	60.4	132



QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EM2402471	Page	: 1 of 5
Client	: RESOLVE ENVIRONMENTAL PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR CHRISTIAN ANDRIANOPOULOS	Telephone	: +61-3-8549 9600
Project	: P001954-001	Date Samples Received	: 20-Feb-2024
Site	: Tasmania	Issue Date	: 23-Feb-2024
Sampler	: LEXUS HUGHES	No. of samples received	: 10
Order number	: P001954-001	No. of samples analysed	: 10

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- **NO** Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers exist - please see following pages for full details.



Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type	Method	Count		Rate (%)		Quality Control Specification
		QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)						
TRH - Semivolatile Fraction	EP071	2	37	5.41	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)						
TRH - Semivolatile Fraction	EP071	1	37	2.70	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results. This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein. Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters. Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER** Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EP080/071: Total Petroleum Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP071)								
QC7, MW01, MW03, MW05	QC8, MW02, MW04,	19-Feb-2024	20-Feb-2024	26-Feb-2024	✓	21-Feb-2024	31-Mar-2024	✓
Amber Glass Bottle - Unpreserved (EP071)								
MW06,	MW07	19-Feb-2024	21-Feb-2024	26-Feb-2024	✓	22-Feb-2024	01-Apr-2024	✓
Amber VOC Vial - Sulfuric Acid (EP080)								
QC6, QC8, MW02, MW04, MW06,	QC7, MW01, MW03, MW05, MW07	19-Feb-2024	21-Feb-2024	04-Mar-2024	✓	22-Feb-2024	04-Mar-2024	✓



Matrix: **WATER** Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Amber Glass Bottle - Unpreserved (EP071) QC7, MW01, MW03, MW05	QC8, MW02, MW04,	19-Feb-2024	20-Feb-2024	26-Feb-2024	✓	21-Feb-2024	31-Mar-2024	✓
Amber Glass Bottle - Unpreserved (EP071) MW06,	MW07	19-Feb-2024	21-Feb-2024	26-Feb-2024	✓	22-Feb-2024	01-Apr-2024	✓
Amber VOC Vial - Sulfuric Acid (EP080) QC6, QC8, MW02, MW04, MW06,	QC7, MW01, MW03, MW05, MW07	19-Feb-2024	21-Feb-2024	04-Mar-2024	✓	22-Feb-2024	04-Mar-2024	✓
EP080: BTEXN								
Amber VOC Vial - Sulfuric Acid (EP080) QC6, QC8, MW02, MW04, MW06,	QC7, MW01, MW03, MW05, MW07	19-Feb-2024	21-Feb-2024	04-Mar-2024	✓	22-Feb-2024	04-Mar-2024	✓



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER** Evaluation: ✘ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
TRH - Semivolatile Fraction	EP071	2	37	5.41	10.00	✘	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
TRH - Semivolatile Fraction	EP071	2	37	5.41	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
TRH - Semivolatile Fraction	EP071	2	37	5.41	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
TRH - Semivolatile Fraction	EP071	1	37	2.70	5.00	✘	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
TRH - Semivolatile Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015 The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM Schedule B(3)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260 Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM Schedule B(3)
<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for purging.



CHAIN OF CUSTODY

ALS Laboratory
Version 10.4

FREIGHT

CLIENT: Resolve Environmental Pty Ltd		TURNAROUND REQUIREMENTS: Standard TAT		FOR LABORATORY USE ONLY (Circle)	
OFFICE: Melbourne		Standard TAT may be longer for some tests e.g., Ultra Trace Organics		Custody Seal Intact? Yes No N/A	
PROJECT: Ocewa Triabunna ESA		ALS QUOTE NO.: EM24RESCENV0002		Free ice / frozen ice packs present upon receipt? Yes No N/A	
ORDER NUMBER: POS1954-001		COC SEQUENCE NUMBER (Circle)		Random Sample Temperature on Receipt: °C	
PROJECT MANAGER: Christian Andrianopoulos		CONTACT PH: 0432 786 781		Other comment:	
SAMPLER: Lexus Hughes		SAMPLER MOBILE: 0435 441 533		RECEIVED BY: [Signature]	
COC emailed to ALS?		RELINQUISHED BY: Lexus Hughes		DATE/TIME: 20/2, 16:30	
Email Reports to: lhughes@resolveenvironmental.com.au, candrianopoulos@resolveenvironmental.com.au		DATE/TIME: 19/2 16:30		DATE/TIME: 20/2, 16:30	
Email Invoice to: lhughes@resolveenvironmental.com.au		DATE/TIME:		DATE/TIME:	

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SURTES <small>(plus, Suite Codes must be filled in all test cells unless marked as required, specify 'No' for not required or 'Trace' for trace required)</small>					Additional Information		
	LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE <small>(add to code if used)</small>	TOTAL CONTAINERS	TRUSTEAM (S-04)	EA150H EA15Z	TRUSTEAM (W-04)	TRHCG-04 BTern			
	1	QCB	19/2	W		3				X	forward	Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.	
	2	QCF				3			X				
	3	QCB				3			X				
	→ 4	QCB8A				3							X forward to eurofins
	4	MW01				3			X				
	5	MW02				3			X				
	6	MW03				3			X				
	7	MW04				3			X				
	8	MW05				3			X				
	9	MW06				5			X				
	10	MW07				5			X		lab QC	lab QC	
						TOTAL	0		9	1			

Environmental Division
Melbourne
Work Order Reference
EM2402471



Telephone: +61-3-8545 9800

Water Container Codes: P = Unpreserved Plastic, B = BOD Preserved Plastic, DIC = DIC Preserved Plastic, SP = Sulfide Preserved Plastic, AS = Amber Glass Unpreserved, AP = Amber Glass Preserved, V = VOA Vial HD Preserved, VB = VOA Vial Sodium Bisulfate Preserved, VS = VOA Vial Sulfuric Preserved, AV = Airfreight Unpreserved Vial, SG = Sulfuric Preserved Amber Glass, H = HD preserved Plastic, HS = HD preserved Specimen bottle, SP = Sulfuric Preserved Plastic, F = Formaldehyde Preserved Glass, Z = Zinc Acetate Preserved Bottle, E = EDTA Preserved Bottle, ST = Sterile Bottle, ASS = Plastic Bag for Acid Sulphate Soils, U = Unpreserved Bag



CERTIFICATE OF ANALYSIS

Work Order	: EM2402967	Page	: 1 of 9
Client	: RESOLVE ENVIRONMENTAL PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR CHRISTIAN ANDRIANOPOULOS	Contact	: Katie Davis
Address	: 239G Bay Street BRIGHTON VICTORIA 3186	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9600
Project	: Ocwen Triabunna ESA	Date Samples Received	: 12-Feb-2024 11:45
Order number	: P001954-001	Date Analysis Commenced	: 28-Feb-2024
C-O-C number	: ----	Issue Date	: 29-Feb-2024 14:52
Sampler	: LEXUS HUGHES		
Site	: ----		
Quote number	: EN/222		
No. of samples received	: 12		
No. of samples analysed	: 12		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Jarwis Nheu	Non-Metals Team Leader	Melbourne Inorganics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- This is a rebatch of EM2402011.



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	MW07_0.5-0.6	MW07_1.0-1.6	MW07_3.1-3.5	MW06_0.4-0.5	MW06_0.6-1.0
Sampling date / time				09-Feb-2024 00:00	09-Feb-2024 00:00	09-Feb-2024 00:00	09-Feb-2024 00:00	09-Feb-2024 00:00	09-Feb-2024 00:00
Compound	CAS Number	LOR	Unit	EM2402967-001	EM2402967-002	EM2402967-003	EM2402967-004	EM2402967-005	
				Result	Result	Result	Result	Result	
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	0.1	%	24.5	25.7	20.8	20.0	24.5	
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10	
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50	
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100	
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100	
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10	
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50	
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100	
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100	
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	<50	<50	<50	<50	
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2	
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2	
^ Total Xylenes	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	<1	
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%	82.8	68.9	66.5	66.8	77.5	



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	MW07_0.5-0.6	MW07_1.0-1.6	MW07_3.1-3.5	MW06_0.4-0.5	MW06_0.6-1.0
Sampling date / time				09-Feb-2024 00:00	09-Feb-2024 00:00	09-Feb-2024 00:00	09-Feb-2024 00:00	09-Feb-2024 00:00	09-Feb-2024 00:00
Compound	CAS Number	LOR	Unit	EM2402967-001	EM2402967-002	EM2402967-003	EM2402967-004	EM2402967-005	
				Result	Result	Result	Result	Result	
EP080S: TPH(V)/BTEX Surrogates - Continued									
Toluene-D8	2037-26-5	0.2	%	83.7	67.2	66.2	69.0	79.3	
4-Bromofluorobenzene	460-00-4	0.2	%	120	105	105	103	117	



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	MW06_1.9-2.0	MW06_2.8-3.0	MW05_0.4-0.5	MW05_1.0-1.2	MW04_0.5-0.6
Sampling date / time				09-Feb-2024 00:00	09-Feb-2024 00:00	08-Feb-2024 00:00	08-Feb-2024 00:00	09-Feb-2024 00:00	
Compound	CAS Number	LOR	Unit	EM2402967-006	EM2402967-007	EM2402967-008	EM2402967-009	EM2402967-010	
				Result	Result	Result	Result	Result	
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	0.1	%	30.4	27.5	15.8	20.0	23.7	
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	22	<10	
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50	
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100	
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100	
[^] C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	28	<10	
[^] C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	24	<10	
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50	
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100	
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100	
[^] >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50	
[^] >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	<50	<50	<50	<50	
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	0.3	<0.2	
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	0.7	<0.5	
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	0.5	<0.5	
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	2.1	<0.5	
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	0.8	<0.5	
[^] Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	<0.2	4.4	<0.2	
[^] Total Xylenes	----	0.5	mg/kg	<0.5	<0.5	<0.5	2.9	<0.5	
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	<1	
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%	69.5	71.0	73.4	74.2	72.0	



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	MW06_1.9-2.0	MW06_2.8-3.0	MW05_0.4-0.5	MW05_1.0-1.2	MW04_0.5-0.6
Sampling date / time				09-Feb-2024 00:00	09-Feb-2024 00:00	08-Feb-2024 00:00	08-Feb-2024 00:00	09-Feb-2024 00:00	
Compound	CAS Number	LOR	Unit	EM2402967-006	EM2402967-007	EM2402967-008	EM2402967-009	EM2402967-010	
				Result	Result	Result	Result	Result	
EP080S: TPH(V)/BTEX Surrogates - Continued									
Toluene-D8	2037-26-5	0.2	%	72.6	72.1	72.6	72.6	75.5	
4-Bromofluorobenzene	460-00-4	0.2	%	113	114	112	107	115	



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)		Sample ID		MW04_0.9-1.0	MW04_2.9-3.0	----	----	----
		Sampling date / time		09-Feb-2024 00:00	09-Feb-2024 00:00	----	----	----
Compound	CAS Number	LOR	Unit	EM2402967-011	EM2402967-012	-----	-----	-----
				Result	Result	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	0.1	%	25.0	20.1	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	----	----	----
C10 - C14 Fraction	----	50	mg/kg	<50	<50	----	----	----
C15 - C28 Fraction	----	100	mg/kg	<100	<100	----	----	----
C29 - C36 Fraction	----	100	mg/kg	<100	<100	----	----	----
[^] C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	----	----	----
[^] C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	----	----	----
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	----	----	----
[^] >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	----	----	----
[^] >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	<50	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	----	----	----
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	----	----	----
[^] Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	----	----	----
[^] Total Xylenes	----	0.5	mg/kg	<0.5	<0.5	----	----	----
Naphthalene	91-20-3	1	mg/kg	<1	<1	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	0.2	%	78.9	74.8	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	MW04_0.9-1.0	MW04_2.9-3.0	----	----	----
				Sampling date / time	09-Feb-2024 00:00	09-Feb-2024 00:00	----	----	----
Compound	CAS Number	LOR	Unit	EM2402967-011	EM2402967-012	-----	-----	-----	
				Result	Result	----	----	----	
EP080S: TPH(V)/BTEX Surrogates - Continued									
Toluene-D8	2037-26-5	0.2	%	80.7	76.9	----	----	----	
4-Bromofluorobenzene	460-00-4	0.2	%	114	120	----	----	----	



Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	51	125
Toluene-D8	2037-26-5	55	125
4-Bromofluorobenzene	460-00-4	56	124



QUALITY CONTROL REPORT

Work Order	: EM2402967	Page	: 1 of 5
Client	: RESOLVE ENVIRONMENTAL PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR CHRISTIAN ANDRIANOPOULOS	Contact	: Katie Davis
Address	: 239G Bay Street BRIGHTON VICTORIA 3186	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9600
Project	: Ocwen Triabunna ESA	Date Samples Received	: 12-Feb-2024
Order number	: P001954-001	Date Analysis Commenced	: 28-Feb-2024
C-O-C number	: ----	Issue Date	: 29-Feb-2024
Sampler	: LEXUS HUGHES		
Site	: ----		
Quote number	: EN/222		
No. of samples received	: 12		
No. of samples analysed	: 12		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
Jarwis Nheu	Non-Metals Team Leader	Melbourne Inorganics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key :
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 5630557)									
EM2402967-001	MW07_0.5-0.6	EA055: Moisture Content	----	0.1	%	24.5	22.4	9.0	0% - 20%
EM2402967-011	MW04_0.9-1.0	EA055: Moisture Content	----	0.1	%	25.0	24.4	2.7	0% - 20%
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 5630487)									
EM2402967-001	MW07_0.5-0.6	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
EM2402967-011	MW04_0.9-1.0	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 5630497)									
EM2402967-001	MW07_0.5-0.6	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
EM2402967-011	MW04_0.9-1.0	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 5630487)									
EM2402967-001	MW07_0.5-0.6	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
EM2402967-011	MW04_0.9-1.0	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 5630497)									
EM2402967-001	MW07_0.5-0.6	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
EM2402967-011	MW04_0.9-1.0	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP080: BTEXN (QC Lot: 5630487)									
EM2402967-001	MW07_0.5-0.6	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit
EM2402967-011	MW04_0.9-1.0	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit



Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low High	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 5630487)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	36 mg/kg	104	58.6	131
EP080/071: Total Petroleum Hydrocarbons (QCLot: 5630497)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	820 mg/kg	101	75.0	128
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	2910 mg/kg	98.1	82.0	123
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	1550 mg/kg	98.3	82.4	121
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 5630487)								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	45 mg/kg	98.4	59.3	128
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 5630497)								
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	1180 mg/kg	96.4	77.0	130
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	3840 mg/kg	100	81.5	120
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	280 mg/kg	91.7	73.3	137
EP080: BTEXN (QCLot: 5630487)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	2 mg/kg	86.8	61.6	117
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	2 mg/kg	78.1	65.8	125
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	2 mg/kg	77.1	65.8	124
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	4 mg/kg	76.7	64.8	134
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	2 mg/kg	80.4	68.7	132
EP080: Naphthalene	91-20-3	1	mg/kg	<1	0.5 mg/kg	93.3	61.8	123

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery (%) MS	Acceptable Limits (%) Low High	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 5630487)							
EM2402967-002	MW07_1.0-1.6	EP080: C6 - C9 Fraction	----	28 mg/kg	82.5	33.4	124
EP080/071: Total Petroleum Hydrocarbons (QCLot: 5630497)							
EM2402967-002	MW07_1.0-1.6	EP071: C10 - C14 Fraction	----	820 mg/kg	97.3	71.2	125
		EP071: C15 - C28 Fraction	----	2910 mg/kg	93.9	75.6	122



Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP080/071: Total Petroleum Hydrocarbons (QCLot: 5630497) - continued							
EM2402967-002	MW07_1.0-1.6	EP071: C29 - C36 Fraction	----	1550 mg/kg	93.7	78.0	120
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 5630487)							
EM2402967-002	MW07_1.0-1.6	EP080: C6 - C10 Fraction	C6_C10	33 mg/kg	72.1	30.8	120
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 5630497)							
EM2402967-002	MW07_1.0-1.6	EP071: >C10 - C16 Fraction	----	1180 mg/kg	92.6	72.2	128
		EP071: >C16 - C34 Fraction	----	3840 mg/kg	95.7	76.5	119
		EP071: >C34 - C40 Fraction	----	280 mg/kg	87.7	66.8	138
EP080: BTEXN (QCLot: 5630487)							
EM2402967-002	MW07_1.0-1.6	EP080: Benzene	71-43-2	2 mg/kg	81.9	54.4	127
		EP080: Toluene	108-88-3	2 mg/kg	74.7	57.1	131



QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EM2402967	Page	: 1 of 9
Client	: RESOLVE ENVIRONMENTAL PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR CHRISTIAN ANDRIANOPOULOS	Telephone	: +61-3-8549 9600
Project	: Ocwen Triabunna ESA	Date Samples Received	: 12-Feb-2024
Site	: ----	Issue Date	: 29-Feb-2024
Sampler	: LEXUS HUGHES	No. of samples received	: 12
Order number	: P001954-001	No. of samples analysed	: 12

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- **NO** Quality Control Sample Frequency Outliers exist.



Outliers : Analysis Holding Time Compliance

Matrix: SOIL

Method Container / Client Sample ID(s)	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA055: Moisture Content (Dried @ 105-110°C)						
Soil Glass Jar - Unpreserved MW05_0.4-0.5, MW05_1.0-1.2	----	----	----	28-Feb-2024	22-Feb-2024	6
Soil Glass Jar - Unpreserved MW07_0.5-0.6, MW07_3.1-3.5, MW06_0.6-1.0, MW06_2.8-3.0, MW04_0.9-1.0, MW07_1.0-1.6, MW06_0.4-0.5, MW06_1.9-2.0, MW04_0.5-0.6, MW04_2.9-3.0	----	----	----	28-Feb-2024	23-Feb-2024	5
EP080/071: Total Petroleum Hydrocarbons						
Soil Glass Jar - Unpreserved MW05_0.4-0.5, MW05_1.0-1.2	28-Feb-2024	22-Feb-2024	6	28-Feb-2024	22-Feb-2024	6
Soil Glass Jar - Unpreserved MW05_0.4-0.5, MW05_1.0-1.2	28-Feb-2024	22-Feb-2024	6	----	----	----
Soil Glass Jar - Unpreserved MW07_0.5-0.6, MW07_3.1-3.5, MW06_0.6-1.0, MW06_2.8-3.0, MW04_0.9-1.0, MW07_1.0-1.6, MW06_0.4-0.5, MW06_1.9-2.0, MW04_0.5-0.6, MW04_2.9-3.0	28-Feb-2024	23-Feb-2024	5	28-Feb-2024	23-Feb-2024	5
Soil Glass Jar - Unpreserved MW07_0.5-0.6, MW07_3.1-3.5, MW06_0.6-1.0, MW06_2.8-3.0, MW04_0.9-1.0, MW07_1.0-1.6, MW06_0.4-0.5, MW06_1.9-2.0, MW04_0.5-0.6, MW04_2.9-3.0	28-Feb-2024	23-Feb-2024	5	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions						
Soil Glass Jar - Unpreserved MW05_0.4-0.5, MW05_1.0-1.2	28-Feb-2024	22-Feb-2024	6	28-Feb-2024	22-Feb-2024	6
Soil Glass Jar - Unpreserved MW05_0.4-0.5, MW05_1.0-1.2	28-Feb-2024	22-Feb-2024	6	----	----	----
Soil Glass Jar - Unpreserved MW07_0.5-0.6, MW07_3.1-3.5, MW06_0.6-1.0, MW06_2.8-3.0, MW04_0.9-1.0, MW07_1.0-1.6, MW06_0.4-0.5, MW06_1.9-2.0, MW04_0.5-0.6, MW04_2.9-3.0	28-Feb-2024	23-Feb-2024	5	28-Feb-2024	23-Feb-2024	5



Matrix: **SOIL**

Method Container / Client Sample ID(s)	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Analysis Holding Time						
Soil Glass Jar - Unpreserved MW07_0.5-0.6, MW07_3.1-3.5, MW06_0.6-1.0, MW06_2.8-3.0, MW04_0.9-1.0	MW07_1.0-1.6, MW06_0.4-0.5, MW06_1.9-2.0, MW04_0.5-0.6, MW04_2.9-3.0	28-Feb-2024	23-Feb-2024	5	----	----
EP080: BTEXN						
Soil Glass Jar - Unpreserved MW05_0.4-0.5,	MW05_1.0-1.2	28-Feb-2024	22-Feb-2024	6	28-Feb-2024	22-Feb-2024
Soil Glass Jar - Unpreserved MW07_0.5-0.6, MW07_3.1-3.5, MW06_0.6-1.0, MW06_2.8-3.0, MW04_0.9-1.0	MW07_1.0-1.6, MW06_0.4-0.5, MW06_1.9-2.0, MW04_0.5-0.6, MW04_2.9-3.0	28-Feb-2024	23-Feb-2024	5	28-Feb-2024	23-Feb-2024

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EA055: Moisture Content (Dried @ 105-110°C)								
Soil Glass Jar - Unpreserved (EA055) MW05_0.4-0.5,	MW05_1.0-1.2	08-Feb-2024	----	----	----	28-Feb-2024	22-Feb-2024	✖
Soil Glass Jar - Unpreserved (EA055) MW07_0.5-0.6, MW07_3.1-3.5, MW06_0.6-1.0, MW06_2.8-3.0, MW04_0.9-1.0	MW07_1.0-1.6, MW06_0.4-0.5, MW06_1.9-2.0, MW04_0.5-0.6, MW04_2.9-3.0	09-Feb-2024	----	----	----	28-Feb-2024	23-Feb-2024	✖



Matrix: SOIL

Evaluation: ✘ = Holding time breach ; ✔ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved (EP071) MW05_0.4-0.5	08-Feb-2024	28-Feb-2024	22-Feb-2024	✘	29-Feb-2024	08-Apr-2024	✔
Soil Glass Jar - Unpreserved (EP080) MW05_0.4-0.5	08-Feb-2024	28-Feb-2024	22-Feb-2024	✘	28-Feb-2024	22-Feb-2024	✘
Soil Glass Jar - Unpreserved (EP071) MW05_1.0-1.2	08-Feb-2024	28-Feb-2024	22-Feb-2024	✘	29-Feb-2024	08-Apr-2024	✔
Soil Glass Jar - Unpreserved (EP080) MW05_1.0-1.2	08-Feb-2024	28-Feb-2024	22-Feb-2024	✘	28-Feb-2024	22-Feb-2024	✘
Soil Glass Jar - Unpreserved (EP071) MW07_0.5-0.6	09-Feb-2024	28-Feb-2024	23-Feb-2024	✘	29-Feb-2024	08-Apr-2024	✔
Soil Glass Jar - Unpreserved (EP080) MW07_0.5-0.6	09-Feb-2024	28-Feb-2024	23-Feb-2024	✘	28-Feb-2024	23-Feb-2024	✘
Soil Glass Jar - Unpreserved (EP071) MW07_1.0-1.6	09-Feb-2024	28-Feb-2024	23-Feb-2024	✘	29-Feb-2024	08-Apr-2024	✔
Soil Glass Jar - Unpreserved (EP080) MW07_1.0-1.6	09-Feb-2024	28-Feb-2024	23-Feb-2024	✘	28-Feb-2024	23-Feb-2024	✘
Soil Glass Jar - Unpreserved (EP071) MW07_3.1-3.5	09-Feb-2024	28-Feb-2024	23-Feb-2024	✘	29-Feb-2024	08-Apr-2024	✔
Soil Glass Jar - Unpreserved (EP080) MW07_3.1-3.5	09-Feb-2024	28-Feb-2024	23-Feb-2024	✘	28-Feb-2024	23-Feb-2024	✘
Soil Glass Jar - Unpreserved (EP071) MW06_0.4-0.5	09-Feb-2024	28-Feb-2024	23-Feb-2024	✘	29-Feb-2024	08-Apr-2024	✔
Soil Glass Jar - Unpreserved (EP080) MW06_0.4-0.5	09-Feb-2024	28-Feb-2024	23-Feb-2024	✘	28-Feb-2024	23-Feb-2024	✘
Soil Glass Jar - Unpreserved (EP071) MW06_0.6-1.0	09-Feb-2024	28-Feb-2024	23-Feb-2024	✘	29-Feb-2024	08-Apr-2024	✔
Soil Glass Jar - Unpreserved (EP080) MW06_0.6-1.0	09-Feb-2024	28-Feb-2024	23-Feb-2024	✘	28-Feb-2024	23-Feb-2024	✘
Soil Glass Jar - Unpreserved (EP071) MW06_1.9-2.0	09-Feb-2024	28-Feb-2024	23-Feb-2024	✘	29-Feb-2024	08-Apr-2024	✔
Soil Glass Jar - Unpreserved (EP080) MW06_1.9-2.0	09-Feb-2024	28-Feb-2024	23-Feb-2024	✘	28-Feb-2024	23-Feb-2024	✘
Soil Glass Jar - Unpreserved (EP071) MW06_2.8-3.0	09-Feb-2024	28-Feb-2024	23-Feb-2024	✘	29-Feb-2024	08-Apr-2024	✔
Soil Glass Jar - Unpreserved (EP080) MW06_2.8-3.0	09-Feb-2024	28-Feb-2024	23-Feb-2024	✘	28-Feb-2024	23-Feb-2024	✘
Soil Glass Jar - Unpreserved (EP071) MW04_0.5-0.6	09-Feb-2024	28-Feb-2024	23-Feb-2024	✘	29-Feb-2024	08-Apr-2024	✔
Soil Glass Jar - Unpreserved (EP080) MW04_0.5-0.6	09-Feb-2024	28-Feb-2024	23-Feb-2024	✘	28-Feb-2024	23-Feb-2024	✘
Soil Glass Jar - Unpreserved (EP071) MW04_0.9-1.0	09-Feb-2024	28-Feb-2024	23-Feb-2024	✘	29-Feb-2024	08-Apr-2024	✔
Soil Glass Jar - Unpreserved (EP080) MW04_0.9-1.0	09-Feb-2024	28-Feb-2024	23-Feb-2024	✘	28-Feb-2024	23-Feb-2024	✘
Soil Glass Jar - Unpreserved (EP071)							



Matrix: **SOIL**

Evaluation: ✘ = Holding time breach ; ✔ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Petroleum Hydrocarbons - Continued							
MW04_2.9-3.0	09-Feb-2024	28-Feb-2024	23-Feb-2024	✘	29-Feb-2024	08-Apr-2024	✔
Soil Glass Jar - Unpreserved (EP080) MW04_2.9-3.0	09-Feb-2024	28-Feb-2024	23-Feb-2024	✘	28-Feb-2024	23-Feb-2024	✘



Matrix: SOIL

Evaluation: ✘ = Holding time breach ; ✔ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Soil Glass Jar - Unpreserved (EP071) MW05_0.4-0.5	08-Feb-2024	28-Feb-2024	22-Feb-2024	✘	29-Feb-2024	08-Apr-2024	✔
Soil Glass Jar - Unpreserved (EP080) MW05_0.4-0.5	08-Feb-2024	28-Feb-2024	22-Feb-2024	✘	28-Feb-2024	22-Feb-2024	✘
Soil Glass Jar - Unpreserved (EP071) MW05_1.0-1.2	08-Feb-2024	28-Feb-2024	22-Feb-2024	✘	29-Feb-2024	08-Apr-2024	✔
Soil Glass Jar - Unpreserved (EP080) MW05_1.0-1.2	08-Feb-2024	28-Feb-2024	22-Feb-2024	✘	28-Feb-2024	22-Feb-2024	✘
Soil Glass Jar - Unpreserved (EP071) MW07_0.5-0.6	09-Feb-2024	28-Feb-2024	23-Feb-2024	✘	29-Feb-2024	08-Apr-2024	✔
Soil Glass Jar - Unpreserved (EP080) MW07_0.5-0.6	09-Feb-2024	28-Feb-2024	23-Feb-2024	✘	28-Feb-2024	23-Feb-2024	✘
Soil Glass Jar - Unpreserved (EP071) MW07_1.0-1.6	09-Feb-2024	28-Feb-2024	23-Feb-2024	✘	29-Feb-2024	08-Apr-2024	✔
Soil Glass Jar - Unpreserved (EP080) MW07_1.0-1.6	09-Feb-2024	28-Feb-2024	23-Feb-2024	✘	28-Feb-2024	23-Feb-2024	✘
Soil Glass Jar - Unpreserved (EP071) MW07_3.1-3.5	09-Feb-2024	28-Feb-2024	23-Feb-2024	✘	29-Feb-2024	08-Apr-2024	✔
Soil Glass Jar - Unpreserved (EP080) MW07_3.1-3.5	09-Feb-2024	28-Feb-2024	23-Feb-2024	✘	28-Feb-2024	23-Feb-2024	✘
Soil Glass Jar - Unpreserved (EP071) MW06_0.4-0.5	09-Feb-2024	28-Feb-2024	23-Feb-2024	✘	29-Feb-2024	08-Apr-2024	✔
Soil Glass Jar - Unpreserved (EP080) MW06_0.4-0.5	09-Feb-2024	28-Feb-2024	23-Feb-2024	✘	28-Feb-2024	23-Feb-2024	✘
Soil Glass Jar - Unpreserved (EP071) MW06_0.6-1.0	09-Feb-2024	28-Feb-2024	23-Feb-2024	✘	29-Feb-2024	08-Apr-2024	✔
Soil Glass Jar - Unpreserved (EP080) MW06_0.6-1.0	09-Feb-2024	28-Feb-2024	23-Feb-2024	✘	28-Feb-2024	23-Feb-2024	✘
Soil Glass Jar - Unpreserved (EP071) MW06_1.9-2.0	09-Feb-2024	28-Feb-2024	23-Feb-2024	✘	29-Feb-2024	08-Apr-2024	✔
Soil Glass Jar - Unpreserved (EP080) MW06_1.9-2.0	09-Feb-2024	28-Feb-2024	23-Feb-2024	✘	28-Feb-2024	23-Feb-2024	✘
Soil Glass Jar - Unpreserved (EP071) MW06_2.8-3.0	09-Feb-2024	28-Feb-2024	23-Feb-2024	✘	29-Feb-2024	08-Apr-2024	✔
Soil Glass Jar - Unpreserved (EP080) MW06_2.8-3.0	09-Feb-2024	28-Feb-2024	23-Feb-2024	✘	28-Feb-2024	23-Feb-2024	✘
Soil Glass Jar - Unpreserved (EP071) MW04_0.5-0.6	09-Feb-2024	28-Feb-2024	23-Feb-2024	✘	29-Feb-2024	08-Apr-2024	✔
Soil Glass Jar - Unpreserved (EP080) MW04_0.5-0.6	09-Feb-2024	28-Feb-2024	23-Feb-2024	✘	28-Feb-2024	23-Feb-2024	✘
Soil Glass Jar - Unpreserved (EP071) MW04_0.9-1.0	09-Feb-2024	28-Feb-2024	23-Feb-2024	✘	29-Feb-2024	08-Apr-2024	✔
Soil Glass Jar - Unpreserved (EP080) MW04_0.9-1.0	09-Feb-2024	28-Feb-2024	23-Feb-2024	✘	28-Feb-2024	23-Feb-2024	✘
Soil Glass Jar - Unpreserved (EP071)							



Matrix: SOIL

Evaluation: ✘ = Holding time breach ; ✔ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued								
MW04_2.9-3.0	09-Feb-2024	28-Feb-2024	23-Feb-2024	✘	29-Feb-2024	08-Apr-2024	✔	
Soil Glass Jar - Unpreserved (EP080) MW04_2.9-3.0	09-Feb-2024	28-Feb-2024	23-Feb-2024	✘	28-Feb-2024	23-Feb-2024	✘	
EP080: BTEXN								
Soil Glass Jar - Unpreserved (EP080) MW05_0.4-0.5,	MW05_1.0-1.2	08-Feb-2024	28-Feb-2024	22-Feb-2024	✘	28-Feb-2024	22-Feb-2024	✘
Soil Glass Jar - Unpreserved (EP080) MW07_0.5-0.6, MW07_3.1-3.5, MW06_0.6-1.0, MW06_2.8-3.0, MW04_0.9-1.0,	MW07_1.0-1.6, MW06_0.4-0.5, MW06_1.9-2.0, MW04_0.5-0.6, MW04_2.9-3.0	09-Feb-2024	28-Feb-2024	23-Feb-2024	✘	28-Feb-2024	23-Feb-2024	✘



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
Analytical Methods							
Laboratory Duplicates (DUP)							
Moisture Content	EA055	2	12	16.67	10.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	12	16.67	10.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	12	16.67	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
TRH - Semivolatile Fraction	EP071	1	12	8.33	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	12	8.33	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
TRH - Semivolatile Fraction	EP071	1	12	8.33	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	12	8.33	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
TRH - Semivolatile Fraction	EP071	1	12	8.33	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	12	8.33	5.00	✔	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM Schedule B(3).
TRH - Semivolatile Fraction	EP071	SOIL	In house: Referenced to USEPA SW 846 - 8015 Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40. Compliant with NEPM Schedule B(3).
TRH Volatiles/BTEX	EP080	SOIL	In house: Referenced to USEPA SW 846 - 8260. Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. Compliant with NEPM Schedule B(3) amended.
<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Methanolic Extraction of Soils for Purge and Trap	ORG16	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids	ORG17	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.

Resolve Environmental Pty Ltd
239 G Bay Street
Brighton
VIC 3186



NATA Accredited
Accreditation Number 1261
Site Number 1254

Accredited for compliance with ISO/IEC 17025 – Testing
NATA is a signatory to the ILAC Mutual Recognition
Arrangement for the mutual recognition of the
equivalence of testing, medical testing, calibration,
inspection, proficiency testing scheme providers and
reference materials producers reports and certificates.

Attention: Christian Andrianopoulos

Report 1070559-W
Project name OCWEN TRIABUNNA ESA
Project ID 001954-001
Received Date Feb 20, 2024

Client Sample ID			QC8A
Sample Matrix			Water
Eurofins Sample No.			M24-Fe0049795
Date Sampled			Feb 19, 2024
Test/Reference	LOR	Unit	
Total Recoverable Hydrocarbons			
TRH C6-C9	0.02	mg/L	< 0.02
TRH C10-C14	0.05	mg/L	< 0.05
TRH C15-C28	0.1	mg/L	< 0.1
TRH C29-C36	0.1	mg/L	< 0.1
TRH C10-C36 (Total)	0.1	mg/L	< 0.1
TRH C6-C10	0.02	mg/L	< 0.02
TRH C6-C10 less BTEX (F1) ^{N04}	0.02	mg/L	< 0.02
TRH >C10-C16	0.05	mg/L	< 0.05
TRH >C10-C16 less Naphthalene (F2) ^{N01}	0.05	mg/L	< 0.05
TRH >C16-C34	0.1	mg/L	< 0.1
TRH >C34-C40	0.1	mg/L	< 0.1
TRH >C10-C40 (total)*	0.1	mg/L	< 0.1
BTEX			
Benzene	0.001	mg/L	< 0.001
Toluene	0.001	mg/L	< 0.001
Ethylbenzene	0.001	mg/L	< 0.001
m&p-Xylenes	0.002	mg/L	< 0.002
o-Xylene	0.001	mg/L	< 0.001
Xylenes - Total*	0.003	mg/L	< 0.003
4-Bromofluorobenzene (surr.)	1	%	103
Total Recoverable Hydrocarbons - 2013 NEPM Fractions			
Naphthalene ^{N02}	0.01	mg/L	< 0.01

Sample History

Where samples are submitted/analysed over several days, the last date of extraction is reported.

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Eurofins Suite B1			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions - Method: LTM-ORG-2010 TRH C6-C40	Melbourne	Feb 21, 2024	7 Days
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: LTM-ORG-2010 TRH C6-C40	Melbourne	Feb 21, 2024	7 Days
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: LTM-ORG-2010 TRH C6-C40	Melbourne	Feb 21, 2024	7 Days
BTEX - Method: LTM-ORG-2010 BTEX and Volatile TRH	Melbourne	Feb 21, 2024	14 Days

Melbourne 6 Monterey Road Dandenong South VIC 3175 +61 3 8564 5000 NATA# 1261 Site# 1254	Geelong 19/8 Lewalan Street Grovedale VIC 3216 +61 3 8564 5000 NATA# 1261 Site# 25403	Sydney 179 Magowar Road Girraween NSW 2145 +61 2 9900 8400 NATA# 1261 Site# 18217	Canberra Unit 1,2 Dacre Street Mitchell ACT 2911 +61 2 6113 8091 NATA# 1261 Site# 25466	Brisbane 1/21 Smallwood Place Murarie QLD 4172 T: +61 7 3902 4600 NATA# 1261 Site# 20794	Newcastle 1/2 Frost Drive Mayfield West NSW 2304 +61 2 4968 8448 NATA# 1261 Site# 25079 & 25289	Perth 46-48 Banksia Road Welshpool WA 6106 +61 8 6253 4444 NATA# 2377 Site# 2370	Auckland 35 O'Rorke Road Penrose, Auckland 1061 +64 9 526 4551 IANZ# 1327	Auckland (Asb) Unit C1/4 Pacific Rise, Mount Wellington, Auckland 1061 +64 9 525 0568 IANZ# 1308	Christchurch 43 Detroit Drive Rolleston, Christchurch 7675 +64 3 343 5201 IANZ# 1290	Tauranga 1277 Cameron Road, Gate Pa, Tauranga 3112 +64 9 525 0568 IANZ# 1402
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Company Name:	Resolve Environmental Pty Ltd	Order No.:	P001954-001	Received:	Feb 20, 2024 4:50 PM
Address:	239 G Bay Street Brighton VIC 3186	Report #:	1070559	Due:	Feb 23, 2024
Project Name:	OCWEN TRIABUNNA ESA	Phone:	03 9591 0173	Priority:	5 Day
Project ID:	001954-001	Fax:		Contact Name:	Christian Andrianopoulos
Eurofins Analytical Services Manager : Michael Morrison					

Sample Detail						Eurofins Suite B1
Melbourne Laboratory - NATA # 1261 Site # 1254						X
External Laboratory						
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID	
1	QC8A	Feb 19, 2024		Water	M24-Fe0049795	X
Test Counts						1

Internal Quality Control Review and Glossary

General

- Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follow guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended May 2013. They are included in this QC report where applicable. Additional QC data may be available on request.
- All soil/sediment/solid results are reported on a dry weight basis unless otherwise stated.
- All biota/food results are reported on a wet weight basis on the edible portion unless otherwise stated.
- For CEC results where the sample's origin is unknown or environmentally contaminated, the results should be used advisedly.
- Actual LORs are matrix dependent. Quoted LORs may be raised where sample extracts are diluted due to interferences.
- Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
- SVOC analysis on waters is performed on homogenised, unfiltered samples unless noted otherwise.
- Samples were analysed on an 'as received' basis.
- Information identified in this report with blue colour indicates data provided by customers that may have an impact on the results.
- This report replaces any interim results previously issued.

Holding Times

Please refer to the 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours before sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and despite any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling; therefore, compliance with these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether, the holding time is 7 days; however, for all other VOCs, such as BTEX or C6-10 TRH, the holding time is 14 days.

Units

mg/kg: milligrams per kilogram	mg/L: milligrams per litre	ppm: parts per million
µg/L: micrograms per litre	ppb: parts per billion	%: Percentage
org/100 mL: Organisms per 100 millilitres	NTU: Nephelometric Turbidity Units	MPN/100 mL: Most Probable Number of organisms per 100 millilitres
CFU: Colony forming unit	Colour: Pt-Co Units	

Terms

APHA	American Public Health Association
CEC	Cation Exchange Capacity
COC	Chain of Custody
CP	Client Parent - QC was performed on samples pertaining to this report
CRM	Certified Reference Material (ISO17034) - reported as percent recovery.
Dry	Where moisture has been determined on a solid sample, the result is expressed on a dry weight basis.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
LOR	Limit of Reporting.
LCS	Laboratory Control Sample - reported as percent recovery.
Method Blank	In the case of solid samples, these are performed on laboratory-certified clean sands and in the case of water samples, these are performed on de-ionised water.
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC represents the sequence or batch that client samples were analysed within.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
SRA	Sample Receipt Advice
Surr - Surrogate	The addition of a similar compound to the analyte target is reported as percentage recovery. See below for acceptance criteria.
TBTO	Tributyltin oxide (<i>bis</i> -tributyltin oxide) - individual tributyltin compounds cannot be identified separately in the environment; however, free tributyltin was measured, and its values were converted stoichiometrically into tributyltin oxide for comparison with regulatory limits.
TCLP	Toxicity Characteristic Leaching Procedure
TEQ	Toxic Equivalency Quotient or Total Equivalence
QSM	US Department of Defense Quality Systems Manual Version 5.4
US EPA	United States Environmental Protection Agency
WA DWER	Sum of PFBA, PFPa, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC - Acceptance Criteria

The acceptance criteria should only be used as a guide and may be different when site-specific Sampling Analysis and Quality Plan (SAQP) have been implemented.

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is ≤30%; however, the following acceptance guidelines are equally applicable:

Results <10 times the LOR:	No Limit
Results between 10-20 times the LOR:	RPD must lie between 0-50%
Results >20 times the LOR:	RPD must lie between 0-30%

NOTE: pH duplicates are reported as a range, not as RPD

Surrogate Recoveries: Recoveries must lie between 20-130% for Speciated Phenols & 50-150% for PFAS. SVOCs recoveries 20 – 150%, VOC recoveries 70 – 130%

PFAS field samples containing surrogate recoveries above the QC limit designated in QSM 5.4, where no positive PFAS results have been reported or reviewed, and no data was affected.

QC Data General Comments

- Where a result is reported as less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
- Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown are not data from your samples.
- pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore, laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
- Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of recovery, the term "INT" appears against that analyte.
- For Matrix Spikes and LCS results, a dash "-" in the report means that the specific analyte was not added to the QC sample.
- Duplicate RPDs are calculated from raw analytical data; thus, it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons							
TRH C6-C9	mg/L	< 0.02			0.02	Pass	
TRH C10-C14	mg/L	< 0.05			0.05	Pass	
TRH C15-C28	mg/L	< 0.1			0.1	Pass	
TRH C29-C36	mg/L	< 0.1			0.1	Pass	
TRH C6-C10	mg/L	< 0.02			0.02	Pass	
TRH >C10-C16	mg/L	< 0.05			0.05	Pass	
TRH >C16-C34	mg/L	< 0.1			0.1	Pass	
TRH >C34-C40	mg/L	< 0.1			0.1	Pass	
Method Blank							
BTEX							
Benzene	mg/L	< 0.001			0.001	Pass	
Toluene	mg/L	< 0.001			0.001	Pass	
Ethylbenzene	mg/L	< 0.001			0.001	Pass	
m&p-Xylenes	mg/L	< 0.002			0.002	Pass	
o-Xylene	mg/L	< 0.001			0.001	Pass	
Xylenes - Total*	mg/L	< 0.003			0.003	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/L	< 0.01			0.01	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons							
TRH C6-C9	%	94			70-130	Pass	
TRH C10-C14	%	104			70-130	Pass	
TRH C6-C10	%	94			70-130	Pass	
TRH >C10-C16	%	96			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	77			70-130	Pass	
Toluene	%	81			70-130	Pass	
Ethylbenzene	%	81			70-130	Pass	
m&p-Xylenes	%	80			70-130	Pass	
Xylenes - Total*	%	81			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	89			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1	Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery							
Total Recoverable Hydrocarbons							
TRH C6-C9	M24-Fe0048352	NCP	%	79	70-130	Pass	
TRH C10-C14	M24-Fe0049792	NCP	%	103	70-130	Pass	
TRH C6-C10	M24-Fe0048352	NCP	%	80	70-130	Pass	
TRH >C10-C16	M24-Fe0049792	NCP	%	95	70-130	Pass	
Spike - % Recovery							
BTEX							
Benzene	M24-Fe0048352	NCP	%	90	70-130	Pass	
Toluene	M24-Fe0048352	NCP	%	78	70-130	Pass	
Ethylbenzene	M24-Fe0048352	NCP	%	81	70-130	Pass	
m&p-Xylenes	M24-Fe0048352	NCP	%	82	70-130	Pass	
o-Xylene	M24-Fe0048352	NCP	%	82	70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Xylenes - Total*	M24-Fe0048352	NCP	%	82			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
Naphthalene	M24-Fe0048352	NCP	%	71			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Total Recoverable Hydrocarbons				Result 1	Result 2	RPD			
TRH C6-C9	M24-Fe0049795	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
TRH C10-C14	M24-Fe0049795	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
TRH C15-C28	M24-Fe0049795	CP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH C29-C36	M24-Fe0049795	CP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH C6-C10	M24-Fe0049783	NCP	mg/L	0.04	0.04	10	30%	Pass	
TRH >C10-C16	M24-Fe0049795	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
TRH >C16-C34	M24-Fe0049795	CP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH >C34-C40	M24-Fe0049795	CP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	M24-Fe0049795	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Toluene	M24-Fe0049795	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Ethylbenzene	M24-Fe0049795	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
m&p-Xylenes	M24-Fe0049795	CP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
o-Xylene	M24-Fe0049795	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Xylenes - Total*	M24-Fe0049795	CP	mg/L	< 0.003	< 0.003	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	M24-Fe0049783	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass	

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.

Authorised by:

Michael Morrison	Analytical Services Manager
Joseph Edouard	Senior Analyst-Organic
Joseph Edouard	Senior Analyst-Volatile



Glenn Jackson
Managing Director

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

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CHAIN OF CUSTODY

ALS Laboratory:
please see →

CLIENT: Resolve Environmental Pty Ltd		TURNAROUND REQUIREMENTS : 5 DAY STANDARD TAT <small>(Standard TAT may be longer for some tests e.g. Ultra Trace Organics)</small>		FOR LABORATORY USE ONLY (Circle)	
OFFICE: Melbourne		Eurofins QUOTE NO.: 200629RES		Custody Seal Intact? Yes No N/A Free ice / frozen ice bricks present upon receipt? Yes No N/A Random Sample Temperature on Receipt: °C	
PROJECT: Ocwen Trilabunna ESA		ORDER NUMBER: P001954-001		COC SEQUENCE NUMBER (Circle) COC: 1 OF: 1	
PROJECT MANAGER: Christian Andrianopoulos		CONTACT PH: 0432 786 781		RECEIVED BY: MK DATE/TIME: 12/2/24 14:59	
SAMPLER: Lexus Hughes		SAMPLER MOBILE: 0435 441 533		RELINQUISHED BY: I Hughes DATE/TIME: 09.02.24 6:00PM TASFASST Devonport	
COC emailed to Eurofins? Yes		EDD FORMAT (or default):		RELINQUISHED BY: RECEIVED BY:	
Email Reports to (will default to PM if no other addresses are listed): candrianopoulos@resolveenvironmental.com.au, shill@res		Email Invoice to (will default to PM if no other addresses are listed): accounts@resolveenvironmental.com.au		DATE/TIME:	

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

Eurofins USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION			ANALYSIS REQUIRED including SUITES (NB Suite Codes must be listed to attract a price) <small>When Vials are required, specify Tols (unfiltered bottle required) or Unsealed (Self Filtered bottle required)</small>				Additional Information	
	LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE <small>(refer to codes)</small>	TOTAL CONTAINERS	B1 (TRH/TEXN)					
	QC4A		9/02/2024	S	1 Jar	1						Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
	QC5A		9/02/2024	S	1 Jar	1	X					
TOTAL						2	1				1	

13/2/24
17:06
HOLD

Water Container Codes: P = Unpreserved Plastic; N/A = Inc Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airfreight Unpreserved Plastic
 V = VOA Vial (HCl) Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
 Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag

DATE: 13/2
 TIME: 5:15pm
 COURIER:
 TEMPERATURE 7.5°C
 AT TEMP TO CHILL! YES NO
 JS

Eurofins Environment Testing Australia Pty Ltd

ABN: 50 005 085 521

Melbourne	Geelong	Sydney	Canberra	Brisbane	Newcastle
6 Monterey Road Dandenong South VIC 3175 +61 3 8564 5000 NATA# 1261 Site# 1254	19/8 Lewalan Street Grovedale VIC 3216 +61 3 8564 5000 NATA# 1261 Site# 25403	179 Magowar Road Girraween NSW 2145 +61 2 9900 8400 NATA# 1261 Site# 18217	Unit 1,2 Dacre Street Mitchell ACT 2911 +61 2 6113 8091 NATA# 1261 Site# 25466	1/21 Smallwood Place Murarrie QLD 4172 T: +61 7 3902 4600 NATA# 1261 Site# 20794	1/2 Frost Drive Mayfield West NSW 2304 +61 2 4968 8448 NATA# 1261 Site# 25079 & 25289

Eurofins ARL Pty Ltd

ABN: 91 05 0159 898

Perth
46-48 Banksia Road Welshpool WA 6106 +61 8 6253 4444 NATA# 2377 Site# 2370

Eurofins Environment Testing NZ Ltd

NZBN: 9429046024954

Auckland	Auckland (Asb)	Christchurch	Tauranga
35 O'Rorke Road Penrose, Auckland 1061 +64 9 526 4551 IANZ# 1327	Unit C1/4 Pacific Rise, Mount Wellington, Auckland 1061 +64 9 525 0568 IANZ# 1308	43 Detroit Drive Rolleston, Christchurch 7675 +64 3 343 5201 IANZ# 1290	1277 Cameron Road, Gate Pa, Tauranga 3112 +64 9 525 0568 IANZ# 1402

Sample Receipt Advice

Company name:	Resolve Environmental Pty Ltd
Contact name:	Christian Andrianopoulos
Project name:	OCWEN TRIABUNNA ESA
Project ID:	P001954-001
Turnaround time:	5 Day
Date/Time received	Feb 13, 2024 5:15 PM
Eurofins reference	1068251

Sample Information

- ✓ A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- ✓ All samples have been received as described on the above COC.
- ✓ COC has been completed correctly.
- ✓ Attempt to chill was evident.
- ✓ Appropriately preserved sample containers have been used.
- ✓ All samples were received in good condition.
- ✓ Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- ✓ Appropriate sample containers have been used.
- ✓ Sample containers for volatile analysis received with zero headspace.
- ✗ Split sample sent to requested external lab.
- ✗ Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Notes

Contact

If you have any questions with respect to these samples, please contact your Analytical Services Manager:

Michael Morrison on phone : +61 3 8564 5933 or by email: MichaelMorrison@eurofins.com

Results will be delivered electronically via email to Christian Andrianopoulos - candrianopoulos@resolveenvironmental.com.au.

Note: A copy of these results will also be delivered to the general Resolve Environmental Pty Ltd email address.



Melbourne 6 Monterey Road Dandenong South VIC 3175 +61 3 8564 5000 NATA# 1261 Site# 1254	Geelong 19/8 Lewalan Street Grovedale VIC 3216 +61 3 8564 5000 NATA# 1261 Site# 25403	Sydney 179 Magowar Road Girraween NSW 2145 +61 2 9900 8400 NATA# 1261 Site# 18217	Canberra Unit 1,2 Dacre Street Mitchell ACT 2911 +61 2 6113 8091 NATA# 1261 Site# 25466	Brisbane 1/21 Smallwood Place Murarie QLD 4172 T: +61 7 3902 4600 NATA# 1261 Site# 20794	Newcastle 1/2 Frost Drive Mayfield West NSW 2304 +61 2 4968 8448 NATA# 1261 Site# 25079 & 25289	Perth 46-48 Banksia Road Welshpool WA 6106 +61 8 6253 4444 NATA# 2377 Site# 2370	Auckland 35 O'Rorke Road Penrose, Auckland 1061 +64 9 526 4551 IANZ# 1327	Auckland (Asb) Unit C1/4 Pacific Rise, Mount Wellington, Auckland 1061 +64 9 525 0568 IANZ# 1308	Christchurch 43 Detroit Drive Rolleston, Christchurch 7675 +64 3 343 5201 IANZ# 1290	Tauranga 1277 Cameron Road, Gate Pa, Tauranga 3112 +64 9 525 0568 IANZ# 1402
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web: www.eurofins.com.au
email: EnviroSales@eurofins.com

Company Name:	Resolve Environmental Pty Ltd	Order No.:		Received:	Feb 13, 2024 5:15 PM
Address:	239 G Bay Street Brighton VIC 3186	Report #:	1068251	Due:	Feb 16, 2024
Project Name:	OCWEN TRIABUNNA ESA	Phone:	03 9591 0173	Priority:	5 Day
Project ID:	P001954-001	Fax:		Contact Name:	Christian Andrianopoulos
Eurofins Analytical Services Manager : Michael Morrison					

Sample Detail						HOLD	Moisture Set	Eurofins Suite B1
Melbourne Laboratory - NATA # 1261 Site # 1254						X	X	X
External Laboratory								
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID			
1	QC5A	Feb 09, 2024		Soil	M24-Fe0032399		X	X
2	QC4A	Feb 09, 2024		Soil	M24-Fe0032400	X		
Test Counts						1	1	1

Resolve Environmental Pty Ltd
 239 G Bay Street
 Brighton
 VIC 3186



NATA Accredited
Accreditation Number 1261
Site Number 1254

Accredited for compliance with ISO/IEC 17025 – Testing
 NATA is a signatory to the ILAC Mutual Recognition
 Arrangement for the mutual recognition of the
 equivalence of testing, medical testing, calibration,
 inspection, proficiency testing scheme providers and
 reference materials producers reports and certificates.

Attention: Christian Andrianopoulos

Report 1068251-S
 Project name OCWEN TRIABUNNA ESA
 Project ID P001954-001
 Received Date Feb 13, 2024

Client Sample ID			QC5A
Sample Matrix			Soil
Eurofins Sample No.			M24-Fe0032399
Date Sampled			Feb 09, 2024
Test/Reference	LOR	Unit	
Total Recoverable Hydrocarbons			
TRH C6-C9	20	mg/kg	< 20
TRH C10-C14	20	mg/kg	< 20
TRH C15-C28	50	mg/kg	56
TRH C29-C36	50	mg/kg	< 50
TRH C10-C36 (Total)	50	mg/kg	56
TRH C6-C10	20	mg/kg	< 20
TRH C6-C10 less BTEX (F1) ^{N04}	20	mg/kg	< 20
TRH >C10-C16	50	mg/kg	< 50
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50	mg/kg	< 50
TRH >C16-C34	100	mg/kg	< 100
TRH >C34-C40	100	mg/kg	< 100
TRH >C10-C40 (total)*	100	mg/kg	< 100
BTEX			
Benzene	0.1	mg/kg	< 0.1
Toluene	0.1	mg/kg	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2
o-Xylene	0.1	mg/kg	< 0.1
Xylenes - Total*	0.3	mg/kg	< 0.3
4-Bromofluorobenzene (surr.)	1	%	95
Total Recoverable Hydrocarbons - 2013 NEPM Fractions			
Naphthalene ^{N02}	0.5	mg/kg	< 0.5
Sample Properties			
% Moisture	1	%	15

Sample History

Where samples are submitted/analysed over several days, the last date of extraction is reported.

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Eurofins Suite B1			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions - Method: LTM-ORG-2010 TRH C6-C40	Melbourne	Feb 14, 2024	14 Days
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: LTM-ORG-2010 TRH C6-C40	Melbourne	Feb 14, 2024	14 Days
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: LTM-ORG-2010 TRH C6-C40	Melbourne	Feb 14, 2024	14 Days
BTEX - Method: LTM-ORG-2010 BTEX and Volatile TRH	Melbourne	Feb 14, 2024	14 Days
% Moisture - Method: LTM-GEN-7080 Moisture	Melbourne	Feb 13, 2024	14 Days

web: www.eurofins.com.au
 email: EnviroSales@eurofins.com

Melbourne 6 Monterey Road Dandenong South VIC 3175 +61 3 8564 5000 NATA# 1261 Site# 1254	Geelong 19/8 Lewalan Street Grovedale VIC 3216 +61 3 8564 5000 NATA# 1261 Site# 25403	Sydney 179 Magowar Road Girraween NSW 2145 +61 2 9900 8400 NATA# 1261 Site# 18217	Canberra Unit 1,2 Dacre Street Mitchell ACT 2911 +61 2 6113 8091 NATA# 1261 Site# 25466	Brisbane 1/21 Smallwood Place Murarie QLD 4172 T: +61 7 3902 4600 NATA# 1261 Site# 20794	Newcastle 1/2 Frost Drive Mayfield West NSW 2304 +61 2 4968 8448 NATA# 1261 Site# 25079 & 25289	Perth 46-48 Banksia Road Welshpool WA 6106 +61 8 6253 4444 NATA# 2377 Site# 2370	Auckland 35 O'Rorke Road Penrose, Auckland 1061 +64 9 526 4551 IANZ# 1327	Auckland (Asb) Unit C1/4 Pacific Rise, Mount Wellington, Auckland 1061 +64 9 525 0568 IANZ# 1308	Christchurch 43 Detroit Drive Rolleston, Christchurch 7675 +64 3 343 5201 IANZ# 1290	Tauranga 1277 Cameron Road, Gate Pa, Tauranga 3112 +64 9 525 0568 IANZ# 1402
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Company Name:	Resolve Environmental Pty Ltd	Order No.:		Received:	Feb 13, 2024 5:15 PM
Address:	239 G Bay Street Brighton VIC 3186	Report #:	1068251	Due:	Feb 16, 2024
Project Name:	OCWEN TRIABUNNA ESA	Phone:	03 9591 0173	Priority:	5 Day
Project ID:	P001954-001	Fax:		Contact Name:	Christian Andrianopoulos
Eurofins Analytical Services Manager : Michael Morrison					

Sample Detail						HOLD	Moisture Set	Eurofins Suite B1
Melbourne Laboratory - NATA # 1261 Site # 1254						X	X	X
External Laboratory								
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID			
1	QC5A	Feb 09, 2024		Soil	M24-Fe0032399		X	X
2	QC4A	Feb 09, 2024		Soil	M24-Fe0032400	X		
Test Counts						1	1	1

Internal Quality Control Review and Glossary

General

- Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follow guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended May 2013. They are included in this QC report where applicable. Additional QC data may be available on request.
- All soil/sediment/solid results are reported on a dry weight basis unless otherwise stated.
- All biota/food results are reported on a wet weight basis on the edible portion unless otherwise stated.
- For CEC results where the sample's origin is unknown or environmentally contaminated, the results should be used advisedly.
- Actual LORs are matrix dependent. Quoted LORs may be raised where sample extracts are diluted due to interferences.
- Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
- SVOC analysis on waters is performed on homogenised, unfiltered samples unless noted otherwise.
- Samples were analysed on an 'as received' basis.
- Information identified in this report with blue colour indicates data provided by customers that may have an impact on the results.
- This report replaces any interim results previously issued.

Holding Times

Please refer to the 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours before sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and despite any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling; therefore, compliance with these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether, the holding time is 7 days; however, for all other VOCs, such as BTEX or C6-10 TRH, the holding time is 14 days.

Units

mg/kg: milligrams per kilogram	mg/L: milligrams per litre	ppm: parts per million
µg/L: micrograms per litre	ppb: parts per billion	%: Percentage
org/100 mL: Organisms per 100 millilitres	NTU: Nephelometric Turbidity Units	MPN/100 mL: Most Probable Number of organisms per 100 millilitres
CFU: Colony forming unit	Colour: Pt-Co Units	

Terms

APHA	American Public Health Association
CEC	Cation Exchange Capacity
COC	Chain of Custody
CP	Client Parent - QC was performed on samples pertaining to this report
CRM	Certified Reference Material (ISO17034) - reported as percent recovery.
Dry	Where moisture has been determined on a solid sample, the result is expressed on a dry weight basis.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
LOR	Limit of Reporting.
LCS	Laboratory Control Sample - reported as percent recovery.
Method Blank	In the case of solid samples, these are performed on laboratory-certified clean sands and in the case of water samples, these are performed on de-ionised water.
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC represents the sequence or batch that client samples were analysed within.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
SRA	Sample Receipt Advice
Surr - Surrogate	The addition of a similar compound to the analyte target is reported as percentage recovery. See below for acceptance criteria.
TBTO	Tributyltin oxide (<i>bis</i> -tributyltin oxide) - individual tributyltin compounds cannot be identified separately in the environment; however, free tributyltin was measured, and its values were converted stoichiometrically into tributyltin oxide for comparison with regulatory limits.
TCLP	Toxicity Characteristic Leaching Procedure
TEQ	Toxic Equivalency Quotient or Total Equivalence
QSM	US Department of Defense Quality Systems Manual Version 5.4
US EPA	United States Environmental Protection Agency
WA DWER	Sum of PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC - Acceptance Criteria

The acceptance criteria should only be used as a guide and may be different when site-specific Sampling Analysis and Quality Plan (SAQP) have been implemented.

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is ≤30%; however, the following acceptance guidelines are equally applicable:

Results <10 times the LOR:	No Limit
Results between 10-20 times the LOR:	RPD must lie between 0-50%
Results >20 times the LOR:	RPD must lie between 0-30%

NOTE: pH duplicates are reported as a range, not as RPD

Surrogate Recoveries: Recoveries must lie between 20-130% for Speciated Phenols & 50-150% for PFAS. SVOCs recoveries 20 – 150%, VOC recoveries 70 – 130%

PFAS field samples containing surrogate recoveries above the QC limit designated in QSM 5.4, where no positive PFAS results have been reported or reviewed, and no data was affected.

QC Data General Comments

- Where a result is reported as less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
- Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown are not data from your samples.
- pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore, laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
- Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of recovery, the term "INT" appears against that analyte.
- For Matrix Spikes and LCS results, a dash "-" in the report means that the specific analyte was not added to the QC sample.
- Duplicate RPDs are calculated from raw analytical data; thus, it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons							
TRH C6-C9	mg/kg	< 20			20	Pass	
TRH C10-C14	mg/kg	< 20			20	Pass	
TRH C15-C28	mg/kg	< 50			50	Pass	
TRH C29-C36	mg/kg	< 50			50	Pass	
TRH C6-C10	mg/kg	< 20			20	Pass	
TRH >C10-C16	mg/kg	< 50			50	Pass	
TRH >C16-C34	mg/kg	< 100			100	Pass	
TRH >C34-C40	mg/kg	< 100			100	Pass	
Method Blank							
BTEX							
Benzene	mg/kg	< 0.1			0.1	Pass	
Toluene	mg/kg	< 0.1			0.1	Pass	
Ethylbenzene	mg/kg	< 0.1			0.1	Pass	
m&p-Xylenes	mg/kg	< 0.2			0.2	Pass	
o-Xylene	mg/kg	< 0.1			0.1	Pass	
Xylenes - Total*	mg/kg	< 0.3			0.3	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/kg	< 0.5			0.5	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons							
TRH C6-C9	%	96			70-130	Pass	
TRH C10-C14	%	108			70-130	Pass	
TRH C6-C10	%	90			70-130	Pass	
TRH >C10-C16	%	129			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	82			70-130	Pass	
Toluene	%	85			70-130	Pass	
Ethylbenzene	%	87			70-130	Pass	
m&p-Xylenes	%	101			70-130	Pass	
Xylenes - Total*	%	101			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	95			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1	Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery							
Total Recoverable Hydrocarbons							
TRH C6-C9	M24-Fe0031511	NCP	%	123	70-130	Pass	
TRH C10-C14	M24-Fe0030671	NCP	%	103	70-130	Pass	
TRH C6-C10	M24-Fe0031511	NCP	%	115	70-130	Pass	
TRH >C10-C16	M24-Fe0030671	NCP	%	121	70-130	Pass	
Spike - % Recovery							
BTEX							
Benzene	M24-Fe0031511	NCP	%	75	70-130	Pass	
Toluene	M24-Fe0031511	NCP	%	77	70-130	Pass	
Ethylbenzene	M24-Fe0031511	NCP	%	77	70-130	Pass	
m&p-Xylenes	M24-Fe0031511	NCP	%	94	70-130	Pass	
o-Xylene	M24-Fe0031511	NCP	%	89	70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Xylenes - Total*	M24-Fe0031511	NCP	%	92			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
Naphthalene	M24-Fe0031511	NCP	%	98			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Total Recoverable Hydrocarbons				Result 1	Result 2	RPD			
TRH C6-C9	M24-Fe0034932	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C10-C14	M24-Fe0032399	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C15-C28	M24-Fe0032399	CP	mg/kg	56	< 50	51	30%	Fail	Q15
TRH C29-C36	M24-Fe0032399	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C6-C10	M24-Fe0034932	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH >C10-C16	M24-Fe0032399	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH >C16-C34	M24-Fe0032399	CP	mg/kg	< 100	< 100	<1	30%	Pass	
TRH >C34-C40	M24-Fe0032399	CP	mg/kg	< 100	< 100	<1	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	M24-Fe0034932	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Toluene	M24-Fe0034932	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Ethylbenzene	M24-Fe0034932	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
m&p-Xylenes	M24-Fe0034932	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
o-Xylene	M24-Fe0034932	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Xylenes - Total*	M24-Fe0034932	NCP	mg/kg	< 0.3	< 0.3	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	M24-Fe0034932	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Sample Properties				Result 1	Result 2	RPD			
% Moisture	M24-Fe0032399	CP	%	15	15	1.3	30%	Pass	

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
Q15	The RPD reported passes Eurofins Environment Testing's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.

Authorised by:

Michael Morrison	Analytical Services Manager
Edward Lee	Senior Analyst-Organic
Joseph Edouard	Senior Analyst-Volatile
Mary Makarios	Senior Analyst-Sample Properties



Glenn Jackson
Managing Director

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

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FJ1070559 20/02/24

Resolve Environmental CHAIN OF CUSTODY

ALS Laboratory
2004/0007

FREIGHT

CLIENT: Resolve Environmental Pty Ltd	TURNAROUND REQUIREMENTS : Standard TAT	FOR LABORATORY USE ONLY (Circle)	
OFFICE: Melbourne	(Standard TAT may be longer for some tests e.g. Ultra Trace Organics)	Custody Seal Intact? Yes No N/A	Free ice / frozen ice blocks present upon receipt? Yes No N/A
PROJECT: Ocwen Triabunna ESA	ALS QUOTE NO.: EM24RESOENV0002	Random Sample Temperature on Receipt:	Other comment:
ORDER NUMBER: P001954-001		COC SEQUENCE NUMBER (Circle)	
PROJECT MANAGER: Christian Andrianopoulos	CONTACT PH: 0432 786 781	COC: 1	
SAMPLER: Lexus Hughes	SAMPLER MOBILE: 0435 441 533	OF: 1	
COC emailed to ALS?	EDD FORMAT (or default):	RECEIVED BY:	RECEIVED BY:
Email Reports to lhughes@resolveenvironmental.com.au, candrianopoulos@resolveenvironmental.com.au		DATE/TIME:	DATE/TIME:
Email Invoice to lhughes@resolveenvironmental.com.au		RELINQUISHED BY: Lexus Hughes	RECEIVED BY: <i>MAN MC (m)</i>
		DATE/TIME: 19/2 16:30	DATE/TIME: 20/2 11:30

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)		CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R, S, T, U, V, W, X, Y, Z)				Additional Information	
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE	TOTAL CONTAINERS	TRIBITEXN (S-04)	EA150H/EA152	TRIBITEXN (W-04)	TPH/C6-cy BTexA	
1	QCB	19/2	W		3				X	
2	QCF				3			X		
3	QCB				3			X		
4	QCBA				3			X		X forward to analysis
5	MW01				3			X		
6	MW02				3			X		
7	MW03				3			X		
8	MW04				3			X		
9	MW05				3			X		
10	MW06				65			X		lab QC
	MW07				65			X		lab QC

Environmental Division
Melbourne
Work Order Reference
EM2402471



Telephone : + 61-3-8549 9600

DATE: 20/2 8P
TIME: 16:50
COURIER: 9

Matrix Container Codes: P = Unpreserved Plastic, N = Nitric Preserved Plastic, CAC = Nitric Preserved CAC, SH = Sodium Hydroxide Preserved, A = Hydrochloric Acid Preserved, AG = Acetic Acid Preserved, AM = Ammonia Preserved, V = VOA Vial HCl Preserved, VB = VOA Via Sodium Disulphate Preserved, VS = VOA Vial Sulfuric Preserved, AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass, H = HCl preserved Plastic, H = HCl preserved Plastic, F = Formaldehyde Preserved Glass, Z = Zinc Acetate Preserved Bottle, E = EDTA Preserved Bottles, S7 = Sterile Bottle, ASS = Plastic Bag for Acid Sulphate SCIS: B = Unpreserved Ba

TEMPERATURE 11.4
AT TEMP TO CHILL YES NO

191



CHAIN OF CUSTODY

ALS Laboratory:
please tick →

CLIENT: Resolve Environmental Pty Ltd		TURNAROUND REQUIREMENTS : 5 DAY STANDARD TAT <small>(Standard TAT may be longer for some tests e.g.. Ultra Trace Organics)</small>		FOR LABORATORY USE ONLY (Circle)			
OFFICE: Melbourne		Eurofins QUOTE NO.: 200629RES		COC SEQUENCE NUMBER (Circle)		Custody Seal Intact? Yes No N/A	
PROJECT: Ocwen Triabunna ESA				COC: 1		Free ice / frozen ice bricks present upon receipt? Yes No N/A	
ORDER NUMBER: P001954-001				OF: 1		Random Sample Temperature on Receipt: °C	
PROJECT MANAGER: Christian Andrianopoulos		CONTACT PH: 0432 786 781				Other comment:	
SAMPLER: Lexus Hughes		SAMPLER MOBILE: 0435 441 533		RELINQUISHED BY: I Hughes		RECEIVED BY:	
COC emailed to Eurofins? Yes		EDD FORMAT (or default):		DATE/TIME:		DATE/TIME:	
Email Reports to (will default to PM if no other addresses are listed): candrianopoulos@resolveenvironmental.com.au, shill@res				19.02.24 6:00PM TASFAST Devonport			
Email Invoice to (will default to PM if no other addresses are listed): accounts@resolveenvironmental.com.au							

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

Eurofins USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) <small>Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).</small>							Additional Information		
	LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE <small>(refer to codes below)</small>	TOTAL CONTAINERS	TR/IB/TEXN								
	QC8A		19/02/2024	W	3 Vials	3	X							X	contamination likely, not expected to be high
TOTAL						3	1							1	

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airfreight Unpreserved Plastic
 V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
 Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

Eurofins Environment Testing Australia Pty Ltd

ABN: 50 005 085 521

Melbourne	Geelong	Sydney	Canberra	Brisbane	Newcastle
6 Monterey Road Dandenong South VIC 3175 +61 3 8564 5000 NATA# 1261 Site# 1254	19/8 Lewalan Street Grovedale VIC 3216 +61 3 8564 5000 NATA# 1261 Site# 25403	179 Magowar Road Girraween NSW 2145 +61 2 9900 8400 NATA# 1261 Site# 18217	Unit 1,2 Dacre Street Mitchell ACT 2911 +61 2 6113 8091 NATA# 1261 Site# 25466	1/21 Smallwood Place Murarrie QLD 4172 T: +61 7 3902 4600 NATA# 1261 Site# 20794	1/2 Frost Drive Mayfield West NSW 2304 +61 2 4968 8448 NATA# 1261 Site# 25079 & 25289

Eurofins ARL Pty Ltd

ABN: 91 05 0159 898

Perth
46-48 Banksia Road Welshpool WA 6106 +61 8 6253 4444 NATA# 2377 Site# 2370

Eurofins Environment Testing NZ Ltd

NZBN: 9429046024954

Auckland	Auckland (Asb)	Christchurch	Tauranga
35 O'Rorke Road Penrose, Auckland 1061 +64 9 526 4551 IANZ# 1327	Unit C1/4 Pacific Rise, Mount Wellington, Auckland 1061 +64 9 525 0568 IANZ# 1308	43 Detroit Drive Rolleston, Christchurch 7675 +64 3 343 5201 IANZ# 1290	1277 Cameron Road, Gate Pa, Tauranga 3112 +64 9 525 0568 IANZ# 1402

Sample Receipt Advice

Company name:	Resolve Environmental Pty Ltd
Contact name:	Christian Andrianopoulos
Project name:	OCWEN TRIABUNNA ESA
Project ID:	Not provided
Turnaround time:	5 Day
Date/Time received	Feb 20, 2024 4:50 PM
Eurofins reference	1070559

Sample Information

- ✓ A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- ✓ All samples have been received as described on the above COC.
- ✓ COC has been completed correctly.
- ✓ Attempt to chill was evident.
- ✓ Appropriately preserved sample containers have been used.
- ✓ All samples were received in good condition.
- ✓ Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- ✓ Appropriate sample containers have been used.
- ✓ Sample containers for volatile analysis received with zero headspace.
- ✗ Split sample sent to requested external lab.
- ✗ Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Notes

Contact

If you have any questions with respect to these samples, please contact your Analytical Services Manager:

Michael Morrison on phone : +61 3 8564 5933 or by email: MichaelMorrison@eurofins.com

Results will be delivered electronically via email to Christian Andrianopoulos - candrianopoulos@resolveenvironmental.com.au.

Note: A copy of these results will also be delivered to the general Resolve Environmental Pty Ltd email address.



Melbourne 6 Monterey Road Dandenong South VIC 3175 +61 3 8564 5000 NATA# 1261 Site# 1254	Geelong 19/8 Lewalan Street Grovedale VIC 3216 +61 3 8564 5000 NATA# 1261 Site# 25403	Sydney 179 Magowar Road Girraween NSW 2145 +61 2 9900 8400 NATA# 1261 Site# 18217	Canberra Unit 1,2 Dacre Street Mitchell ACT 2911 +61 2 6113 8091 NATA# 1261 Site# 25466	Brisbane 1/21 Smallwood Place Murarie QLD 4172 T: +61 7 3902 4600 NATA# 1261 Site# 20794	Newcastle 1/2 Frost Drive Mayfield West NSW 2304 +61 2 4968 8448 NATA# 1261 Site# 25079 & 25289	Perth 46-48 Banksia Road Welshpool WA 6106 +61 8 6253 4444 NATA# 2377 Site# 2370	Auckland 35 O'Rorke Road Penrose, Auckland 1061 +64 9 526 4551 IANZ# 1327	Auckland (Asb) Unit C1/4 Pacific Rise, Mount Wellington, Auckland 1061 +64 9 525 0568 IANZ# 1308	Christchurch 43 Detroit Drive Rolleston, Christchurch 7675 +64 3 343 5201 IANZ# 1290	Tauranga 1277 Cameron Road, Gate Pa, Tauranga 3112 +64 9 525 0568 IANZ# 1402
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web: www.eurofins.com.au
email: EnviroSales@eurofins.com

Company Name:	Resolve Environmental Pty Ltd	Order No.:	P001954-001	Received:	Feb 20, 2024 4:50 PM
Address:	239 G Bay Street Brighton VIC 3186	Report #:	1070559	Due:	Feb 23, 2024
		Phone:	03 9591 0173	Priority:	5 Day
		Fax:		Contact Name:	Christian Andrianopoulos
Project Name:	OCWEN TRIABUNNA ESA	Eurofins Analytical Services Manager : Michael Morrison			

Sample Detail						Eurofins Suite B1
Melbourne Laboratory - NATA # 1261 Site # 1254						X
External Laboratory						
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID	
1	QC8A	Feb 19, 2024		Water	M24-Fe0049795	X
Test Counts						1

ENVIRONMENTAL SITE ASSESSMENT

Ocwen Energy Pty Ltd | 21 Tasman Highway, Triabunna, TAS 7190
Project No. P001954-001



Appendix H Data Validation Report

Data Representativeness

Expresses the accuracy and precision with which sample data represents an environmental condition. Data representativeness is achieved by the collection of samples at an appropriate pattern and density as well as consistent and repeatable sampling techniques and procedures.

Completeness

Refers to the percentage of data that can be considered valid data. Sufficient data is required to enable an assessment of the Decision Rules.

Comparability

A qualitative comparison of the confidence with which one data set can be compared to another. This is achieved through consistent sampling and analytical testing and reporting techniques.

Precision

A measure of the reproducibility of measurements under a given set of conditions. The relative percent difference ('RPD') has been adopted to assess the precision of data between duplicate sample pairs according to the following equation:

where: C_o = concentration of the original sample
 C_s = concentration of the duplicate sample

An acceptance criterion of $\pm 50\%$ has been adopted for organic field duplicates and triplicates. However, it should be noted that exceedances of these criteria are common for heterogeneous soil or fill material or for low analyte concentrations.

Accuracy

A measure of the bias in the analytical results and can often be attributed to: field contamination; insufficient preservation or sample preparation; or inappropriate analytical techniques. Accuracy of the analytical data is assessed by consideration of laboratory control samples, laboratory spikes and analytical techniques in accordance with appropriate standards.

Optimise the Design for Obtaining Data

The following sections detail the optimised assessment design to meet project acceptance criteria.

Groundwater Sampling Procedure

All field works were undertaken by an experienced environmental scientist. The following was conducted at each groundwater monitoring well location:

- One borehole was advanced to intercept groundwater using solid flight auger;
- Soil geological profile was logged as drilling progressed. Soil classifications and descriptions were based on Australian Standard AS1726-2017;

- A Class 18, 50 mm PVC pipe (with a slotted screen installed across the intercepted water bearing zone) with a flush mounted traffic rated cover installed at each monitoring well location;
- The new well was surveyed for easting/northing coordinates and height (m AHD) to allow for the preparation of groundwater flow direction contours;
- Wells were developed (i.e. purged to remove fines generated during the drilling process) to remove up to five borehole holding volumes or until dry following installation;
- All groundwater wells were gauged with an interface probe prior to sampling to determine the standing water level and the potential presence of LNAPL;
- Groundwater samples were collected from all groundwater wells utilising insitu hydrasleeve sampling methodology; and
- Reusable equipment including the interface probe and water quality meter were decontaminated between each monitoring well.

Quality Assurance / Quality Control (QA/QC)

The DQIs and criteria for the assessment are presented below. The DQIs are adopted in accordance with relevant guidance documents and industry standards and form an essential part of determining the precision, accuracy, representativeness, comparability, and completeness of data for the sampling program.

Table 8.1: Data Quality Indicators

Data Quality Indicator	Frequency	Criteria
Precision		
Blind Duplicates (intra laboratory)	1 / 20 Samples	<50% RPD ¹
Blind Triplicates (inter laboratory)	1 / 20 Samples	<50% RPD
Laboratory Duplicates	1 / 20 Samples	<50% RPD
Accuracy		
Laboratory Surrogate Spike	Organic samples	% Recovery (Laboratory Specified)
Laboratory Control Samples	1 per laboratory batch	
Field Equipment Calibrated/Bump Tested	Each Use	Meets Manufacturer Specification
Representativeness		
Sampling appropriate media and analytes	All Samples	As per procedure
Samples extracted and analysed within holding times	All Samples	As per laboratory specification
Re-useable equipment decontaminated according to procedure	All Samples	As per procedure
Trip Blank	1 per sampling event	<LOR
Rinsate Blank	1 per sampling event	<LOR
Comparability		
Standard procedures for sample collection and handling	All Samples	All Samples
Standard (NATA approved) analytical methods used for all analyses	All Samples	All Samples
Limits of reporting appropriate and consistent	All Samples	All Samples
Completeness		

Data Quality Indicator	Frequency	Criteria
Sample Description and COC completed and appropriate	All Samples	All Samples
Satisfactory frequency and results of QC samples	All Samples	All Samples

Notes:

1. RPD (Relative Percent Difference); where greater than the criteria the highest value will be conservatively adopted.

Analytical Data Validation

Laboratory QA/QC Program

A review of the internal laboratory QA/QC program presented as part of their final NATA Reports indicates that some QA/QC recovery outliers or breaches exist with the data and should be considered in interpreting the data.

Table 8.2: EM2402011

Outlier	Description
Method Blank Value outlier	No outliers exist.
Duplicate outlier	No outliers exist.
Laboratory Control Outlier	No outliers exist.
Matrix Spike Outlier	No outliers exist.
Surrogate Recovery Outlier	No outliers exist.
Analysis Holding Time Outlier	No outliers exist.
Quality Control Sample Frequency	No outliers exist.

Table 8.3: EM2402967

Outlier	Description
Method Blank Value outlier	No outliers exist.
Duplicate outlier	No outliers exist.
Laboratory Control Outlier	No outliers exist.
Matrix Spike Outlier	No outliers exist.
Surrogate Recovery Outlier	No outliers exist.
Analysis Holding Time Outlier	Analysis holding time exists – samples were delivered to laboratory within holding times
Quality Control Sample Frequency	No outliers exist.

Table 8.4: 1068251

Outlier	Description
Method Blank Value outlier	No outliers exist.
Duplicate outlier	No outliers exist.
Laboratory Control Outlier	No outliers exist.
Matrix Spike Outlier	No outliers exist.

Outlier	Description
Surrogate Recovery Outlier	No outliers exist.
Analysis Holding Time Outlier	No outliers exist.
Quality Control Sample Frequency	No outliers exist.

Table 8.5: EM2402471

Outlier	Description
Method Blank Value outlier	No outliers exist.
Duplicate outlier	No outliers exist.
Laboratory Control Outlier	No outliers exist.
Matrix Spike Outlier	No outliers exist.
Surrogate Recovery Outlier	No outliers exist.
Analysis Holding Time Outlier	No outliers exist.
Quality Control Sample Frequency	Outliers exist for Laboratory Duplicate frequencies for TRH Outliers exist for Matrix spike frequencies for TRH

Table 8.6: 1070559

Outlier	Description
Method Blank Value outlier	No outliers exist.
Duplicate outlier	No outliers exist.
Laboratory Control Outlier	No outliers exist.
Matrix Spike Outlier	No outliers exist.
Surrogate Recovery Outlier	No outliers exist.
Analysis Holding Time Outlier	No outliers exist.
Quality Control Sample Frequency	No outliers exist.

Where the laboratory control spike recovery is greater than the upper control limit or the matrix spike is less than the lower control limit, this indicates that the sample selected initially contained a background level of the spike and as such, the spike was unable to be measured in comparison to the background concentrations. Given that historical results indicated that concentrations of contaminants were consistent with historical observations, it is unlikely that the laboratory QA results have had an impact on primary sample results.

ALS requires that 80% of recoveries to fall within control limits for a particular method. As such, given that greater than 80% of recoveries fall within the acceptable limits, ALS does not consider this a breach of the criteria.

The frequency of quality control sample outliers indicates that the laboratory did not have sufficient volume to perform their internal QA/QC controls. However, given the aforementioned laboratory quality control sample results were considered acceptable in addition to the field laboratory QA/QC results, this is not considered to impact on the representativeness of the data.

A laboratory internal duplicate RPD exceeded the laboratory’s internal limit of 20% in 2 laboratory internal QC samples, and 30% in 6 laboratory internal QC samples, however all but one were noted to meet Resolve’s adopted RPD exceedance limit of 50%. One secondary laboratory internal QC sample had RPDs >50%, however these met the laboratory’s QC acceptance criteria for concentrations which are <10 times the LOR.

Upon review of the laboratory QA/QC report, it is not considered that the above outliers affect the overall integrity of the analytical data as the reported monitoring results were typically in line with historical monitoring results.

Laboratory Limits of Reporting

Laboratory limit of reporting (LORs) reported for groundwater and surface water samples were generally sufficiently low to enable comparison of contaminant concentrations with adopted assessment criteria.

Table 8.7 below summarises the RPD exceedances report during this assessment. The RPD calculations are provided in Table 4 and Table 6, Appendix B.

Table 8.7: Relative Percentage Difference Exceedances

Primary Sample	Analyte	Concentration in Primary Sample	Concentration in QA/QC Sample	RPD %	QA/QC Results Adopted
SB02_0.1-02	TPH>C15 - C28	100 mg/kg	290 mg/kg (QC5)	97	Yes
	TPH >C10 - C36 (sum)	100 mg/kg	290 mg/kg (QC5)	97	Yes
	TPH>C15 - C28	100 mg/kg	56 mg/kg (QC5A)	56	No
	TPH >C10 - C36 (sum)	100 mg/kg	56 mg/kg (QC5A)	56	No

Elevated RPDs between the primary and duplicate (intra-laboratory) and triplicate (inter-laboratory) samples are generally the result of one value being reported below the laboratory limit of reporting (LOR) or one/both samples being reported at low concentrations (i.e. less than 10 times the LOR). Other RPD exceedances may be attributed to different laboratory techniques and equipment used by Eurofins laboratory on all the triplicate samples. No RPD exceedances were detected in groundwater analysis.

Where RPDs exceed the adopted acceptance criterion (50%), conservatively the highest value has been adopted for interpretive use.

Blanks

Trip blank results can be found in Table 7, Appendix B. Trip blanks were analysed to assess the potential for cross contamination of samples during transport and storage. The trip blank samples reported concentrations of all analytes below the laboratory LOR, and it is therefore considered that no cross contamination has occurred during sample transport and storage.

Rinsate blank results can be found in Table 7, Appendix B. Rinsates were collected from field equipment to assess the potential of sample cross contamination via field equipment during sampling. Rinsate blanks were analysed for a similar analytical suite to the primary samples. The rinsate blank samples reported concentrations of all analytes below the laboratory LOR, and it is therefore considered that no cross contamination has occurred during sample transport and storage.

Summary

Based on a review of the results for the Resolve and laboratory QA/QC program adopted, the overall data quality is considered to be acceptable.

Copies of the final NATA endorsed laboratory reports, including internal QA/QC results and chain-of-custody documentation is provided in Appendix G.



Resolve Environmental

239G Bay Street
Brighton VIC 3189
(03) 9591 0173

info@resolveenvironmental.com.au



Attachment D CEMP



Construction Environmental Management Plan - BP Triabunna Retail Facility 2026 Asset Removal Works

21 Tasman Hwy, Triabunna, TAS

Lenons Engineering Pty Ltd



Resolve Environmental Pty Ltd
239G Bay Street
Brighton VIC 3189



Resolve
Environmental

The logo for Resolve Environmental, featuring a stylized wave icon in blue and orange above the company name. 'Resolve' is in orange and 'Environmental' is in blue.

**CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN - BP TRIABUNNA RETAIL FACILITY 2026 ASSET
REMOVAL WORKS**

Lennons Engineering Pty Ltd | 21 Tasman Hwy, Triabunna, TAS
Project No. 0022492-001



Prepared for

Lennons Engineering Pty Ltd
21 Tasman Hwy, Triabunna, TAS

Prepared by

Resolve Environmental Pty Ltd
239G Bay Street
Brighton VIC 3186
ABN: 42 609 904 056

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Authored by

Name: Ben Thomas **Email:** bethoma@resolveenvironmental.com.au
Position: Environmental Engineer

Authorisation

Reviewed by

Name: Sumi Dorairaj, CEnvP-SC (No. 40986) **Email:** sdorairaj@resolvenvironmental.com.au
Position: Senior Principal Environmental Engineer

Approved by

Name: Sumi Dorairaj, CEnvP-SC (No. 40986) **Email:** sdorairaj@resolvenvironmental.com.au
Position: Senior Principal Environmental Engineer

Statement of Limitations

Resolve Environmental Pty Ltd (Resolve) has prepared this Construction Environmental Management Plan - BP Triabunna Retail Facility 2026 Asset Removal Works (Report) in accordance with generally accepted industry practices and standards prevailing at the time this Report was prepared. In preparing this Report, Resolve has applied the level of care and degree of skill ordinarily exercised by reputable members of the Environmental Consulting Profession in the preparation of environmental assessment and remediation reports.

This Report has been prepared for the exclusive use by Lennons Engineering Pty Ltd.

The Report is made without any warranty by Resolve either express or implied.

Findings, statements, and conclusions provided in this Report are based on the limited assessment of geological and chemical conditions encountered at the site at the time of investigation.

Subsurface conditions including contaminant concentrations can vary significantly across a site and over time and as such, results, findings, and proposed works expressed in this Report may not represent the extremes of conditions at the site. Site conditions (including subsurface) may change over time and the conclusions in this Report, while accurate at the time of writing, may or may not be affected by such changes. Resolve confirms that Resolve takes no responsibility or liability for the accuracy or validity of third-party information, reports, correspondence and/or data referred to in this Report. This Report does not purport to provide legal advice.

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1 Introduction

Resolve Environmental Pty Ltd (Resolve) was engaged by Lennox Engineering Pty Ltd (Lennox) (the client) to prepare a Construction Environmental Management Plan (CEMP) for the proposed decommissioning, removal and validation works of the Underground Petroleum Storage System (UPSS) within the leased portion of the site located at 21 Tasman Highway, Triabunna TAS 7190 (the site).

This CEMP has been completed to guide construction works and ensure that environmental impacts are minimised and eliminate health risks and nuisance to residents near the works on site during asset removal.

The CEMP is required to:

- Provide a method of informing all workers at the site on the condition of the site and potential risks, and management of these risks for the proposed works.
- Manage potential soil contamination issues including the potential presence of petroleum hydrocarbons contamination during construction works.
- Manage vapour issues (if present).
- Outline the management measures to be implemented during construction works.

1.1 Objective

This CEMP has been prepared to assist in the reduction of the potential for adverse impacts to the environment, surrounding community and contractors during construction works at the site.

Such impacts may potentially include:

- Generation of dust during construction.
- Inadvertent exposure to contaminated soil and soil vapour/ groundwater vapour by contractors, site visitors and the surrounding community i.e. during on-site excavation works.
- Transport of contaminated soil to uncontaminated areas of the site, or off-site, during excavation works.
- Surface water impact via storm water / sediment runoff from the site across areas of contaminated soil.

This CEMP is applicable for the construction and asset removal phase of works at the site.

Traffic management (if required) will be documented in a separate traffic management plan, depending on site visit / permitting requirements.

1.2 Guidance Documents

This CEMP has been produced in accordance with the following regulatory documents:

- Australian Standard 1289.5.1.1 – 2017: Methods of testing soils for engineering purposes.
- Australian Standard 2601 – 2025: Demolition of Structures.
- Australian Standard 3798 – 2007: Guidelines on Earthworks for Commercial and Residential Developments.
- Australian Standard 4976 – 2008: Removal and Disposal of Underground Petroleum Storage Tanks.
- EPA Tasmania: Information Bulletin 105 Classification and Management of Contaminated Soil for Disposal (2018)
- EPA Tasmania: Underground Petroleum Storage Systems: Decommissioning Assessment Sampling and Risk Assessment Requirements (July 2015)

- Safe Work Australia - How to manage and control asbestos in the workplace (2018)

2 Roles and Responsibilities

Key roles and responsibilities for the development of the site comprise:

- The Person conducting a Business or undertaking (PCBU) and site operator (Lowe's) is responsible for providing access to the property and ensuring that controls are put in place to ensure that the works can be completed in a safe manner
- **Acting Superintendent (Lennons Engineering)** has been engaged to complete the works and is responsible to oversee work conducted by the Principal Contractor on behalf of PCBU and site operator.
- **The Principal Contractor (Resolve Environmental)** has been engaged by the superintendent and is responsible for: performing the decommissioning works in accordance with the contractual requirements of the PCBU, site operator and acting superintendent and with the requirements of this CEMP; complying with all applicable legislation and regulations including but not limited to Tasmanian Environment Protection Authority (EPA); and preparing and implementing specific development as related management and health and safety plans. It is also their responsibility to conduct site inductions, provisions of information to employees regarding risks associated with site work and provide appropriate training of all personnel (including sub-contractors) and documentation of training.
- **The environmental consultant (Resolve Environmental) is responsible for:** development of this CEMP in accordance with environmental and work safe regulations, and update the CEMP as required. The environmental consultant will also be responsible for collecting validation samples from the tank pit excavation, testing excavated soils for on-site reuse or off-site disposal and providing a UPSS decommissioning and validation report. The environmental consultant is also responsible for identifying areas of concern that may require further excavation at the time of the validation sampling.

3 Site Summary

3.1 Site Location and Details

The site is located at 21 Tasman Highway, Triabunna, Tasmania. The site layout and infrastructure within the works area are depicted in **Figure 1, Appendix A**. The following **Table 3.1** outlines the details of the site.

Table 3.1: Site Details

Item	Description
Site Name	BP Triabunna Retail Facility
Site Address	21 Tasman Hwy, Triabunna TAS 7190
Leased Site Area	Approximately 3,261m ²
Municipality	Glamorgan Spring Bay Council
Lot/Plan No.	Lot 5/27, Plan 165614
Latitude/Longitude	-42.501458, 147.914336
Site Owner	Lowe's Pty Ltd
Current Site Use	The site is an unmanned service station featuring an Outdoor Payment Terminal (OPT)
Site Zoning	Light Industrial

3.2 Surrounding Land Use

The land use surrounding the site and respective planning zones are summarised in **Table 3.2** as follows

Table 3.2: Surrounding Land Use

Direction	Adjacent to Site
North	Vacant Land (Light Industrial)
East	Residential Property (Light Industrial),
South	Tasman Hwy (Utilities), Residential area (General Residential)
West	Auto Shop (Light Industrial)

3.3 Site Features

The features to be removed from site, as part of the works program covered by this CEMP, are presented on **Figure 1, Appendix A**.

The area of works will be limited to the south-western portion of the site, and will include works around the existing site features listed below:

- Two Above Ground Storage Tanks (ASTs) and earthen bund
- Two Underground Storage Tanks (USTs) south of the ASTs
- A warehouse used by an engineering company in the centre of the site
- A sales building adjacent to the east of the warehouse
- Canopy
- Four fuel dispensers
- Electrical Infrastructure including:
 - Power cabling
 - OPT
 - Lighting and Fittings
- Underground infrastructure including:
 - Underground fuel lines
 - Vents
 - Remote Fill Points
 - Connections from tanks to OPT
- BP branded sign and pole in the southeast of the site.

Additionally a small component of work will be conducted in the north-east corner of the site to decommission the drum storage area present in this area.

The petroleum storage infrastructure is detailed in **Table 3.3** below.

Table 3.3: Summary of On-site Petroleum Storage Infrastructure

Tank / Dispenser Identifier	Type	Capacity (L)	Product	Use	To be Removed?
Storage Tanks					
UST T1	UST	11,500	ULP	Active	Yes
UST T2	UST	10,800	PULP	Active	Yes
AST T3	AST	26,000	ADF	Active	Yes
AST T4	AST	26,000	ADF	Active	Yes
Infrastructure					
Dispenser 1 + 2	Dispensers	-	ULP/ PULP	Active	Yes
Dispenser 3 + 4	Dispensers	-	ADF	Active	Yes

Note: ADF – Automotive Diesel Fuel
PULP – Premium Unleaded Petroleum
ULP – Unleaded Petroleum

In addition to the infrastructure outlined in **Table 3.3** the electrical infrastructure, site signage, drum storage area and the underground infrastructure associated with both USTs and ASTs are scheduled to be removed.

3.4 Topography, Elevation and Drainage

The site is generally flat with an approximate elevation of 12m Australian Height Datum (AHD). The closest surface water body is Bresnahan’s Creek located approximately 200 m to the north east of the site.

As most of the site is unsealed, it is expected that stormwater will flow to the unsealed areas of site where it will infiltrate into the ground.

3.5 Potential Groundwater Contamination

The Groundwater Contaminants of Potential Concern (CoPC) associated with the storage and handling of fuels are:

- Total Recoverable Hydrocarbons (TRH),
- Benzene, Toluene, Ethylbenzene, Xylenes and Naphthalene (Collectively referred to as BTEXN), and
- Lead.

Groundwater may be impacted by the above CoPC due to the presence of the current UPSS, however the extent of contamination is unknown.

3.6 Potential Soil Contamination

Only limited assessment of soil condition has been completed at the site previously which identified only low levels of BTEXN impact near the existing fuel lines on the site. As such the CEMP recommendations are protective of exposure to soils within the work areas that may be impacted by TRH, BTEXN and lead.

4 Specific Hazard Analysis

An analysis of hazards that have the potential to occur during construction works has been undertaken by Resolve. Details of the potential hazard, the mode of occurrence and the proposed actions to mitigate the potential hazard in the first instance and reduce and/or control the potential hazard if the potential hazard is unavoidable have been summarised in Table 4.1.

Table 4.1: Site Specific Hazard Analysis Summary

Potential Hazard	Mode of Occurrence	Proposed Action(s)
General Hazards		
Potentially Dangerous Areas of Work	Workers or public entering potentially dangerous areas such as excavations can incur injury or cause spill etc.	Dangerous works areas (i.e. open excavations) are to be sign posted and fenced where appropriate to prevent access and accidents. Any excavations to be left open will have the potential to become waterlogged, due to groundwater ingress into the excavation or infiltration by stormwater.
Presence of Asbestos in Soils	Asbestos Containing Materials (ACM) was not observed during the site visit on 1 October 2025. However, there is potential for Potential ACM to be encountered in fill soils at the site.	Contractor to ensure personnel have completed an Asbestos Awareness course. Licensed asbestos removalist to be available to undertake removals if observed as required. Asbestos containing soils must be classified prior to off-site disposal. Dispose of soils in accordance with EPA Tasmania ' <i>Classification and Management of Contaminated Soil for Disposal</i> '. All soils for off-site disposal to be tracked via waste transport certificates.
Entry to work areas	Unsecure site may result in public access, accidents from trespassers and illegal dumping of wastes.	Secure work areas with gates and safety fencing. Excavations that are to be left open should be partially backfilled to above groundwater level to reduce groundwater ingress and pooling in the excavation. Excavations will be secured with additional fencing at placed at least 1 m from the edge of the excavation. Do not leave work area unattended throughout the workday.
Stockpile Management	Stockpiled soils may result in spread of sediment or water runoff.	Stockpiles will be placed on HDPE plastic sheeting (if viable), or otherwise placed within the works area, covered with geofabric or plastic sheeting ensuring they are appropriately secured (with weights if required) to prevent dust emissions or covers blowing off to neighbouring properties or adjacent roads. Changes to the stockpiles will be implemented to address odour emissions and /or surface water management including placement of hay bales (or similar materials) around the perimeter of the stockpiles to prevent overland flow from entering or passing through the base of the piles. These controls will assist in the reduction of wastewater generation and minimising potential for offsite migration of odorous or contaminated runoff.
Impact to Surrounding Occupiers	Works outside normal working hours.	Conduct site works during normal work hours (7.00am to 6.00pm Monday to Friday, and 9.00am to 1.00pm on Saturday) to reduce impact to surrounding site occupiers.

CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN - BP TRIABUNNA RETAIL FACILITY 2026 ASSET
REMOVAL WORKS

Lennons Engineering Pty Ltd | 21 Tasman Hwy, Triabunna, TAS
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Potential Hazard	Mode of Occurrence	Proposed Action(s)
Movement of mechanical equipment to lift / carry heavy items	Foot traffic may enter work areas while materials are transported to work areas with the use of mechanical equipment.	Ensure that work areas are properly delineated and signed. Use spotters as necessary while machinery is moving.
Low Environmental Awareness	<p>Low staff awareness leads to materials misuse and incorrect handling and disposal.</p> <p>Indiscriminate conduct of hazardous activities around site leads to potential for spills, wastes and contamination.</p> <p>Excessive litter causes aesthetic impact to local residents and users of area.</p> <p>Promotes vermin numbers and may be a health issue.</p> <p>Low environmental awareness of staff can result in unreported environmental impacts and poor environmental management at the site.</p>	<p>All on-site contractors/staff will be subject to environmental awareness training as part of the site induction process.</p> <p>Staff awareness training will be conducted as part of the site induction, which includes as a minimum, training on the following topics: spill management, bunding, wash areas, storage of chemicals/fuels, waste management/recycling, stormwater management.</p> <p>Surplus materials to be appropriately stored on-site and subsequently recycled where possible.</p> <p>Collect litter.</p> <p>Clean up spills immediately and maintain an appropriate number of spill kits in working order.</p> <p>Install litter/sediment traps on stormwater inlets.</p> <p>Appropriate materials storage and handling.</p> <p>Stockpile management procedures addressed further above will limit runoff and contamination migration.</p>
Air and Dust		
Dust Generation	<p>Movement on unpaved surfaces promotes dust and erosion.</p> <p>Large areas of open land provides source of wind-blown dust and erosion.</p> <p>Build-up of dust on sealed roads can promote wind-blown dust.</p>	<p>Use preventative measures to control generation of dust.</p> <p>Avoid driving on unsealed surfaces where possible.</p> <p>Maintain site sheds and foot traffic to sealed surfaces where possible.</p> <p>Ensure vehicles leaving are clear of spoil.</p> <p>Watering of the following areas may be required:</p> <ul style="list-style-type: none"> Waste soils as they are excavated. Exposed soils in the excavation. Roadways. <p>Stockpile management procedures addressed further above will limit dust generation and migration.</p>
Air Emissions	Air emissions from site vehicles add to air contaminant levels.	Ensure site vehicles are fitted and maintained with appropriate emission control equipment.
Disturbance of potential ACM	Excavations/trenches that may contain ACM.	<p>Engage a qualified hygienist, where potential asbestos is observed.</p> <p>A site hygienist must be contracted to assess the area and determine the Class of asbestos removal required.</p>

CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN - BP TRIABUNNA RETAIL FACILITY 2026 ASSET
REMOVAL WORKS

Lennons Engineering Pty Ltd | 21 Tasman Hwy, Triabunna, TAS
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Potential Hazard	Mode of Occurrence	Proposed Action(s)
		<p>An Asbestos Removal Management Plan should be prepared by a hygienist or licenced asbestos assessor.</p> <p>Asbestos Fibre Air monitoring shall be conducted as required by a qualified Occupation Hygienist and results analysed and reported by a NATA certified laboratory</p>
Water		
Stormwater	Impacted stormwater discharges to nearby surface water receptor and / or stormwater system.	Where stormwater is contained, appropriate storage, testing and disposal methods will be undertaken, and wastewater disposed of by a licensed waste transport contractor in accordance with <i>Environmental Management and Pollution Control (Waste Management) Regulations, 2020</i> . If there is excessive stormwater in excavations, it may need to be tested, then pumped out and disposed at an appropriate facility.
Saturated soils removed from excavation.	Groundwater at the site could potentially result in stockpiled soils being saturated with potentially contaminated groundwater.	Where runoff from stockpiles is contained appropriate storage, testing and disposal methods will be undertaken, and wastewater disposed of by a licensed waste transport contractor in accordance with <i>Environmental Management and Pollution Control (Waste Management) Regulations, 2020</i> . Excavated soils will be stockpiled as per above stockpile management actions.
Chemicals	Chemical spills mixing with stormwater. Chemical spills causing soil and/or groundwater pollution.	<p>Provide adequate bunded chemical storage and containment facilities for limited chemicals to be stored on-site.</p> <p>No storage of fuel on-site – refuelling to be undertaken by mobile fuel providers.</p> <p>Provide designated area for refuelling and repairs of machinery on-site and adequate provisions for potential spills such as bunding and a spill containment kit.</p>
Sediment	Erosion of site causes sediment to enter stormwater. Unstable stockpiles promote erosion. Sediment on roads enters drains.	<p>Avoid driving on unsealed site roads where possible.</p> <p>Maintain site sheds and foot traffic to bitumen sealed surfaces where possible.</p> <p>Position stockpiles away from stormwater run-off areas where soil is required to be stored at site.</p> <p>Stockpiles will be placed on HDPE plastic sheeting (if viable), covered with geofabric or plastic sheeting and ensure they are appropriately secured (with weights if required) to prevent sediment erosion.</p> <p>Control stormwater from active areas using silt traps, screening structures and contoured drainage lines where appropriate.</p> <p>Assess propensity for debris loss, recover lost material where practical to control sediment movement.</p> <p>Sediment deposited onto access roads and the surrounding area will be addressed using a 'street sweeper' where impacts are noted as part of monitoring activities or where site personnel receive a complaint by an external party.</p>
Waste		

CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN - BP TRIABUNNA RETAIL FACILITY 2026 ASSET
REMOVAL WORKS

Lennons Engineering Pty Ltd | 21 Tasman Hwy, Triabunna, TAS
Project No. 0022492-001



Potential Hazard	Mode of Occurrence	Proposed Action(s)
Wastewater	Uncontrolled disposal of wastewater to sewer or stormwater drains.	Ensure wastewater disposed as per regulations to be collected and disposed of by a licensed waste transport contractor in accordance with <i>Environmental Management and Pollution Control (Waste Management) Regulations, 2020</i> .
Concrete mixing run off	Runoff/wastewater from mixing areas. Runoff/wastewater from form work. Runoff/wastewater from equipment washing.	Designate bunded mixing and equipment washing areas where possible. The designated washing area must be within the site and not on adjacent footpaths or roads. No washing down of equipment within 5 metres of stormwater drains
Hazardous Waste & Prescribed Industrial Waste	Low staff awareness leads to materials misuse and incorrect disposal.	Staff awareness training will be conducted as part of the site induction, which includes as a minimum, training on the following topics: stockpile management, off-site disposal of soil, potential ACM, dust suppression, odour control. Provide facilities for segregation, temporary storage and disposal of hazardous wastes.
Chemicals	Excessive chemical inventories on-site may lead to overuse or misuse.	Minimise chemicals inventory on-site. No storage of chemicals within 5 metres of stormwater drains.
Asbestos and Chemical Contaminants in Soil	Asbestos may be present in site fill soils. Spoil generated from excavation works will potentially comprise contaminated soil. Spills during the transport of contaminated soil can result in the contamination of uncontaminated areas of the site.	Engage licensed Asbestos Removalist for Asbestos contaminated soils if observed. Segregate soils with visual or odorous signs of contamination. All soils need to be classified prior to off-site disposal. Dispose of soils in accordance with EPA Tasmania ' <i>Classification and Management of Contaminated Soil for Disposal</i> '. All soils for off-site disposal to be tracked via waste transport certificates. No stockpiling of soils within 5 metres of stormwater drains, stockpiles will be appropriately bunded with management in place to collect potential runoff.
Noise		
Noise	Noisy or poorly maintained equipment may generate excessive noise in locality. Work conducted outside normal work hours may generate unacceptable noise for residents.	Give preference to use of equipment with lower noise emissions levels. Use methods including silencers, barriers or other appropriate measures to reduce noise outside normal hours. The acoustic performance of all mechanical plant and equipment to be assessed by an appropriately qualified acoustic consultant prior to on-site works. Maintain and service equipment regularly. Ensure vehicles do not park, and or idle in residential areas outside normal work hours. Conduct site works during normal work hours (7.00am to 6.00pm Monday to Friday, and 9.00am to 1.00pm on Saturday) to reduce impact to local residents.

CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN - BP TRIABUNNA RETAIL FACILITY 2026 ASSET
REMOVAL WORKS

Lennons Engineering Pty Ltd | 21 Tasman Hwy, Triabunna, TAS
Project No. 0022492-001



Potential Hazard	Mode of Occurrence	Proposed Action(s)
		Schedule deliveries during normal work hours.
Chemicals		
Spills	Poor storage and handling may lead to chemical spills. Any spills have a high likelihood of entering stormwater system.	Reduce the amount of chemicals stored to a minimum. Provide adequate chemical storage and containment facilities. Provide adequate spill containment kits on-site. Prepare emergency response plan – to be agreed upon by Environmental Management Representative. Provide Material Safety Data Sheets (MSDS) for all chemicals being used on-site to be maintained by principal contractor.
Incorrect Disposal	Incorrect disposal may lead to soil, water or groundwater contamination.	Ensure appropriate methods used to collect, handle, store and dispose of hazardous goods and prescribed wastes no longer required. Leave work area cleaner than it was.
Corrosion, Explosion, Flammability	Incorrect storage of chemicals may lead to corrosion, mixing and generation of hazardous chemical mixtures and fires or explosion. Smoking in the presence of flammable chemicals may cause fire or explosions.	Minimise the amount of chemicals, paint, etc. stored on-site. Provide lock up storage area to be confirmed as locked when no supervision at the storage area, i.e. within the work compound and locked overnight. Separate storage of solvents, flammable / non-flammable gases and corrosive chemicals. No smoking during handling of hazardous chemicals. Designate specific areas for smoking a safe distance from areas where hazardous chemicals are to be used / stored.
Vibration		
Vibrations from plant	Earthwork, rock/ concrete breaking, or vehicular activities cause land vibration and potential dilapidation of nearby structures.	A dilapidation report of the land and on-site infrastructure to be retained will be completed by the client. This will be completed at a later date, closer to the commencement of construction. Conduct site works during normal work hours (7.00am to 6.00pm Monday to Friday, and 9.00am to 1.00pm on Saturday) to reduce impact to local residents. Ensure vehicles do not park, and or idle in residential areas outside normal work hours. Maintain and service equipment regularly.

5 Required Management Measures

The specific measures detailed for the site must be implemented during construction. A daily toolbox meeting shall be conducted to ensure all following management measure are accounted for and implemented in accordance with the CEMP.

5.1 General

The Principal Contractor is responsible for the safety of all persons within the site including but not limited to persons engaged in carrying out the Contractor's Activities and the Civil Works and must do all things necessary to ensure their safety, including:

- Complying with any relevant Statutory Requirements relating to work health and safety.
- Implementing a site-specific Site Health and Safety Plan to address the physical and contamination hazards associated with the works
- Display of the appropriate work signage.

The Site Health and Safety Plan must consider and respond to, at a minimum:

- The specific occupational health and safety hazards and issues relevant to the site and the Contractor's activities;
- Specifically address areas of soil and groundwater contamination (if identified) and also the potential occurrence of as yet undetected areas of contamination; and
- Document the systems and methods to be implemented.

5.2 Emergency Procedure Management

In the event of an emergency, all workers will be alerted to the situation by:

- An emergency call will be sent over the designated radio frequency stating the emergency situation.
- A horn, which will be kept in the site office, will be sounded.
- All plant, tools and equipment will be powered down/ turned off and made safe, if time permits, and left in place.
- All personal belongings will be left behind.
- All workers will proceed to the emergency evacuation point, which will be determined prior to the works beginning, and attendance will be recorded.
- All workers will remain at the emergency evacuation point until dismissed by the Principal Contractor.

The first point of contact would be the Primary Contractor and other affected workers. Once all relevant site personnel and the respective authorities have been contacted then the project manager and project director will be contacted. The project manager or project supervisor will then immediately contact the OH/S Manager. An incident report must be filled in for any emergency in relation to the site detailing the actions taken. For all environmental incidents the project manager and operations manager must be contacted. The names and contact numbers for these people, and any relevant authorities will be given to all staff at their induction to the site. They will also be displayed in the site office.

5.3 Environmental Pollution Emergency

In the event of a spill or release of a substance that has the potential to cause harm to the surrounding environment the following actions will be taken:

- The spilled/ released substance will be attempted to be controlled with the use of a spill kit which is to be kept on site, and stocked up, during the works.
- If the spill is contained with the use of a spill kit, an incident report detailing the events that led up to the incident, those involved in the incident, the response and outcome of the incident will be filled out within 24 hours of the incident occurring and sent to the project manager/ project director for review.

If the spill is unable to be contained with the use of the spill kit, and there is a threat to public safety, property or to the environment then the following actions will be taken:

- Contact emergency services if necessary.
- Contact the project manager / project director.
- Contact EPA Tasmania on the 24/ 7 hotline at: **1800 005 171** and follow advice.
- Complete an incident report as above.

5.4 Dust Management

During excavation works, generation of dust must be avoided as far as reasonably practical. In order to control dust generation, depending upon weather conditions, watering of the following areas may be required:

- Waste soils as they are excavated.
- Exposed soils in the excavation.
- Roadways.

During windy conditions, where dust cannot be contained within the site boundaries, excavation and/stockpiling works should cease until favourable conditions return.

Dust control will also include the erection of green or black shade cloth mesh or similar products 1.8m high around the perimeter of the tank-pit excavation.

5.5 Erosion and Sediment Control

The site will implement controls so that all soils/ sediments are maintained within the site works boundaries. Preventative measures to control dust, such as soil wetting, will be implemented to control dust generation. With the exception of mobile plant, all other vehicles will be restricted on-site to areas of sealed surfaces (where possible). Site materials and foot traffic will also be restricted to sealed areas of the site where possible. Prior to leaving site, vehicles will be inspected to ensure they are clear of spoil. Where spoil is detected, a vehicle wash area will be utilised. The site contractor will maintain and sweep internal and adjacent sealed roads using either manual sweeping, a 'street sweeper' or other appropriate methods where impacts are noted as part of monitoring activities or where site personnel receive a complaint by an external party.

Controls to prevent sediment run-off will be placed along perimeter fences (i.e. silt fencing or hay bales) and surrounding the designated stockpile area. Litter and sediment traps will be installed on stormwater inlets within the vicinity of the works area. As per **Section 6.1** where stockpiles are present on-site overnight, or during adverse meteorological conditions (wind, rain), stockpiles will be covered with HDPE to minimize erosion. If necessary, soil stockpiles may need to have a suitable drainage system to collect stockpile surface water run-off to enable appropriate disposal of the (potentially) contaminated water. Soil stockpiles will be no greater than 1.8m high to prevent unstable stockpiles. Soil stockpiles will be surrounded by hay bales to control sediment.

5.6 Stormwater Runoff & Surface Water Controls

All stormwater is to be retained within the site boundary. Control stormwater from active areas using silt traps, screening structures and contoured drainage lines where appropriate. Stockpiles will be positioned away from stormwater run-off areas. Designate bunded areas for equipment washing to prevent wash water entering stormwater system. Where stormwater is contained, appropriate storage, testing and disposal methods will be undertaken, and disposed of by a licensed waste transport contractor in accordance with the *Environmental Management and Pollution Control Act 1994* (EMPCA)

Where stormwater accumulates in the tank-pit excavation, appropriate storage, testing and disposal methods will be undertaken and wastewater collected and disposed of by a licensed waste transport contractor in accordance with the *Environmental Management and Pollution Control Act 1994* (EMPCA)

Removal and Disposal of UPSS Infrastructure

The UPSS to be removed from the site during the works, will be drained of all product/ residual liquid, degassed and certified to be gas free prior to removal. The USTs will be removed from the excavation and placed directly on a truck, washed down to remove any residual soils, and taken directly to a facility licenced to accept it. A tank disposal certificate will be provided to be included in the UPSS validation report. UPSS removal, transport and destruction must be carried out in accordance with the following:

- AS4976-2008 The removal and disposal of underground petroleum storage tanks, and
- AS1940-2004 The storage and handling of flammable and combustible liquids.
- EPA Tasmania: Underground Petroleum Storage Systems: Decommissioning Assessment Sampling and Risk Assessment Requirements (July 2015)

During the removal, the PC must document the condition of UPSS infrastructure with attention to any evidence of corrosion, damage or holes in the structures.

5.7 Waste Minimisation

All waste containers associated with the proposed UPSS decommissioning are to be located on-site. All generated wastes should be segregated to maximise reuse, recycling and/or repurposing of materials where possible. Any demolition/waste materials that are not suitable for recycling/ repurposing are to be disposed of at an approved facility.

5.8 Noise and Vibration Minimisation

Noise and vibration associated with construction activities will be managed to minimise impacts on nearby properties. Measures to be implemented may include:

- Using lower-noise work practices and equipment where practicable.
- Considering the suitability of the land for the use of an electric crane.
- Silencing all mechanical plant by the best practical means using current technology.
- Fitting pneumatic tools with an effective silencer.
- Implementing other relevant noise and vibration control measures as appropriate.
- Addressing any site-specific requirements.

5.9 Odour Control

Identified odours (if present) will be managed by the following controls to ensure that no offensive odours occur at the or beyond the boundary of the works.

- Backfilling excavations as soon as practicable and contact the environmental consultant.
- Covering of stockpiled soils to suppress the release of the odours.
- Spraying of stockpiles with an odour suppressant (Anotech or similar) solution.

Air monitoring is not considered necessary but may be required should significant odours be identified during works at the site. Should excessive odours be observed at or beyond the site boundary, contingency plans will be implemented for odour suppression, which may include the deployment of odour suppressants.

5.10 Infrastructure Protection

All works are required to be completed in a manner which protects surrounding roads and other infrastructure. Where damage to surrounding site access roads and other infrastructure has occurred due to impacts from construction activities at the site, all damaged infrastructure must be repaired as soon as practicable.

It is noted that there are subsurface power/ communication lines and drainage water lines within the vicinity of the work area which will need to be retained. An Underground Service Locator (USL) will be engaged to trace and mark out where these utilities exist prior to excavation works.

5.11 Decontamination/ Wash Down Areas

A dedicated area shall be established for the decontamination or wash-down of equipment and vehicles that may come into contact with potentially contaminated soils or sediments. The area should be appropriately sized to contain all generated wash water, surrounded by suitable sediment and erosion controls, and clearly signposted to inform personnel and subcontractors of their obligations.

All vehicles transporting contaminated material and any equipment used within potentially impacted areas must be inspected prior to leaving the site. Depending on the level of exposure, suitable decontamination measures may include:

- Sweeping or brushing to remove excess soil and debris;
- Laying temporary road base or matting in high-traffic zones; and
- Where required, using pressurised water sprayers to remove residual dust or dirt.

Wash-down, cutting, and stockpile areas must be located away from stormwater drains. All drains are to be clearly marked and protected using appropriate controls such as:

- Drop inlet sediment traps;
- Sediment fence inlet traps; or
- Excavated sediment traps.

5.12 Location of Construction Equipment and Related Items

The PC must designate the location of loading zones, site sheds, materials, cranes and crane/hoisting zones, gantries and any other construction related items or equipment, prior to the commencement of construction.

5.13 Site Security

Work areas must be secured with gates and temporary fencing. There should be no access into the works area by the general public or non-inducted site workers. Where work area is left unattended during the workday, when no works are scheduled while awaiting validation results and at the end of each workday, the work area must be locked and secured.

5.14 The Asset Removal Program

An asset removal program will be prepared by the principal contractor to outline the proposed works and associated timeframe.

5.15 Parking Facilities

The PC must ensure all construction workers working on the site must have access to adequate parking facilities that don't impact surrounding roads and properties or other site activities.

5.16 Council/ Public Authority Notifications

No Council /Public authority notifications are presently required, as all work and related construction activities will be conducted on-site.

However, any future requests to Council /Public authorities to occupy public footpaths or roads, or anticipated disruptions to local services must be submitted and approved prior to doing so.

5.17 Emergency Contact

An emergency contact will be made available for residents in the event of relevant queries or problems experienced. Emergency contact details will be displayed via onsite signage.

5.18 Traffic Management Plan

If required, a traffic management plan (TMP) (to be organised by the PC once they are engaged) will be established prior to the commencement of construction works with provisions of AS 1742.3-2002 Manual of uniform traffic control devices – Part 3: Traffic control devices for works on roads.

6 Required Management Measures

6.1 Soil Excavation and Stockpile Management

Excavations on site will be limited to the tank-pit excavation and shallow trenches to removed underground fuel transfer lines, fuel dispensers and power lines to the OPT. It is therefore expected that excavations will be up to approximately 3.5 - 4.0 m deep.

Excavated soils will be placed within the designated soil stockpiling area on-site and segregated based on on-site screening using a handheld Photo Ionisation Detector (PID). Soil stockpiled will be classified per **Section 6.3** prior to disposal.

Where possible, temporary stockpiles should be located away from site access roads. Stockpiles will be positioned away from stormwater run-off areas. All stockpiles will be placed on HDPE sheeting or concrete hardstand with silt fencing or hay bales to control sediment. Stockpiled soil has the potential to be waterlogged and will be stabilised or banded where practicable and measures put in place to capture any runoff.

Additional stockpile management requirements include:

- Stockpiles are to be located away from existing drainage lines and where they can be protected from wind.
- Minimise the amount and duration of soil stockpiled on-site at any one time.
- Where stockpiles are to remain on-site overnight, stockpiled material is to be covered with HDPE plastic to minimise erosion, fugitive emission release and dust generation. In addition, watering (using manual watering or temporary sprinklers) of the stockpiles and/or surrounding areas may be required.
- Where stockpile watering is performed, any surface water run-off should be minimised and/or appropriately controlled on-site. If necessary, soil stockpiles may need to have a suitable drainage system to collect stockpile surface water run-off to enable appropriate disposal of the (potentially) contaminated water.
- Records shall be completed and kept of movements of stockpiled material at the site during construction works in a clear, concise and readily traceable format.

6.2 Unexpected Finds

6.2.1 Vapour

In the event that excavated soils are considered to be excessively odours are identified, additional measures may be required.

During excavations works, there is to be no entry into the excavation. Vapours should be monitored by a PID.

Mandatory monitoring requirements for excavation works at the site are detailed in **Table 6.1**.

Table 6.1: Mandatory Monitoring Requirements for Excavation Works

Equipment	Hazard	Monitoring Requirements	Responsible Person(s)
PID Unit	Volatile Organic Compounds (VOCs)	Continuous monitoring throughout field work.	Environmental Consultant

Action levels and responses that must be adopted throughout air monitoring are detailed in **Table 6.2**.

Table 6.2: Action Levels and Responses

PID (10.6v lamp)	
PID Reading & Duration (Workers Breathing Zone)	ACTION
<5 ppm	Continue works and continue air monitoring.
>5 ppm for >1 min	Stop all works immediately and leave work zone. When vapours dissipate and safe to do so, investigate the source. Eliminate vapour source if possible or reconsider work method. When vapours have dissipated, gas free the work zone and recommence works with continuous monitoring. If elevated vapours remain contact Resolve project manager/ project director.

6.2.2 Asbestos in Soils

During the Resolve Stage 1 site inspection in late 2025, asbestos containing material (ACM) was not observed however, given the likely presence of fill across the site there is potential that ACM may be encountered during decommissioning and soil validation works.

This may pose a risk to health during excavation work if fibres become airborne. The risk may be increased depending on the type and amount of asbestos material in the soil and if there is a potential for it to become disturbed or airborne.

All workers inducted to the site should be well informed about the likelihood of asbestos contamination present below the soil surface and the required procedures if suspect location is discovered

6.2.3 What to do if Asbestos in Soils is Encountered

As the site may contain asbestos below the site surface, the following measures should apply throughout the duration of the construction works. If suspect material is identified, workers must stop work immediately and follow the procedures as per the SafeWork Australia - How to manage and control asbestos in the workplace guidelines.

The following procedures must be adhered to if asbestos is suspected / identified:

- Construction work needs to be immediately suspended and an evaluation of the risk undertaken.
- The area needs to be cordoned off and a competent person (trained and qualified as per OH&S Regulations) is required to inspect the soil to determine the likely amount of contamination and later to confirm that all visible asbestos containing material (ACM) has been removed, in accordance with SafeWork guidelines.
- Asbestos removal can only be undertaken on a commercial basis by a licensed asbestos removalist.
- Asbestos contaminated soil that is to be disposed off-site, must be damp before being loaded into transport and all loads are to be covered.
- The competent person is to write a statement about their inspection and outcomes.
- All inspection statement copies are to be retained by the primary contractor.
- All activities required to remove asbestos from the soil must be undertaken by a licensed asbestos removalist. This includes the operators of any machinery and equipment (e.g. excavator) to move contaminated soil to disposal vehicles.
- Asbestos Fibre Air monitoring shall be conducted as required by a qualified Occupation Hygienist and results analysed and reported by a NATA certified laboratory.

6.3 Classification of Excavated Soils

Stockpiled soils will be placed in the designated paved or lined area of the site. Controls to prevent sediment run-off will be placed around this area. Soils will be classified in accordance with the *EPA Tasmania Information Bulletin 105 'Classification And Management of Contaminated Soil for Disposal (2018)'*.

Where soils have been classified as suitable to remain on-site, soils can be reinstated in excavations.

6.4 Off-site Disposal

Excessive material not suitable for site re-use will be classified in accordance with the *EPA Tasmania 'Classification And Management of Contaminated Soil for Disposal (2018)'* prior to off-site disposal to a facility that can accept the contaminated soils. All soils for offsite disposal to be tracked via waste transport certificates.

6.5 Importation of Clean Fill

Sampling of imported Excavated Natural Material (ENM) or Virgin Excavated Natural Material (VENM) will be undertaken where additional material is imported for filling activities at the site, the imposed analytical suite will consider the source site history, and additional analytes may be required prior to accepting material to the site. The imported soil should also comply

with assessment criteria for human health and the environment (National Environment Protection (Assessment of Site Contamination) Measure (NEPM)) for the proposed site use (commercial/industrial), to ensure suitability for on-site use.

All material brought onto the site for backfilling must meet the requirements for Clean Fill type 1 and comply with EPA Tasmania's approved Management Method for the disposal of Clean Fill Type 1 and 2 and Clean fill type 1 and type 2 Declaration of pollutant levels.

7 Potential Risks to Human Health from Known Contamination

Adverse health effects in humans arising from exposure to hazardous substances are dependent on a large variety of factors. These factors include the intrinsic toxicity of the substance, the intensity and duration of the exposure, the age and health status of the exposed individual and concurrent exposure to other hazardous substances with similar toxic effects. Exposure to contaminants in soil can cause harm quickly (acute effects) or cause illness long after exposure (chronic effects). Exposure to petroleum hydrocarbons includes both short-term and long-term impacts.

Short-term impacts of exposure to high levels of petroleum hydrocarbons include:

- Headaches.
- Dizziness.
- Drowsiness and fatigue.
- Eye, nose and throat irritation.

Long-term exposure to high petroleum hydrocarbons levels is a risk to:

- The central nervous and immune systems.
- The male reproductive system.
- Kidneys.
- Liver.

Petroleum hydrocarbons present in groundwater or soil may become vapours. It's possible for humans to breathe in these vapours.

7.1 Minimisation of Risk to Site Workers

It is unknown whether the CoPC associated with the storage and handling of fuels will be present. However, the following potential hazards for site workers associated with the presence of contaminants during any future soil excavation works have been included:

- Exposure to contaminated soil through ingestion, dermal contact.
- Inhalation of dust.
- Inhalation of vapours

Exposure control measures that should be implemented to minimise exposure of site construction workers to soil contamination include the following:

- Entry into any excavation is prohibited.
- Avoid unnecessary handling of potentially contaminated soil.
- Wash hands before eating, drinking or smoking.
- Store and consume food and drink in a designated, dust free, clean area away from the main area of works.

- Use personal protective equipment as required and as outlined in reviewed and approved site specific Safe Work Method Statement (SWMS).
- Manage works to occur in optimum weather conditions, i.e. excavation works should be avoided on extremely hot or windy days.

Specific personal protective equipment should include, but not necessarily be limited to:

- Impermeable gloves (i.e. nitrile gloves), if handling potentially contaminated soil.
- Long sleeved shirt and long trousers.
- Dust masks, if dust cannot be controlled.
- Respiratory protection suitable for vapour exposure, if vapours are present

7.2 Excavations Within Contaminated Areas

Excavation works for the proposed UPSS decommissioning are expected to be approximately 3.5 - 4m deep, and the depth to groundwater on site has been observed most recently (October 2025) at between 3.246 mBGS (MW04) and 3.704 mBGS (MW05). Therefore there is potential for groundwater to be intercepted while excavating the tank-pit, and as noted in **Sections 3.5 and 3.6**, it is possible that the soil and groundwater encountered may be impacted by TRH, BTEXN and/or PAHs.

A Material Safety Data Sheet (MSDS) for petroleum hydrocarbons will be kept on site in an accessible location. The MSDS is included in **Appendix B**, and the health and safety plan to be prepared for these asset removal works should include provisions to mitigate exposure to petroleum hydrocarbons.

8 Updates to the CEMP

The CEMP is a live document and may be updated as necessary to reflect changes in site conditions, regulatory requirements, or construction methodology. Updates may be triggered by, but are not limited to:

- Changes to the scope, timing, or nature of construction activities.
- Identification of new environmental risks or hazards during construction.
- Modifications to mitigation measures to improve effectiveness or compliance.
- Changes in legislative or statutory requirements.

All updates to the CEMP will be documented, with the revision date and summary of changes clearly recorded. Updated versions of the CEMP will be communicated to relevant personnel, contractors, and stakeholders to ensure ongoing compliance and awareness of environmental management responsibilities.

8.1 Compliance with the Latest CEMP

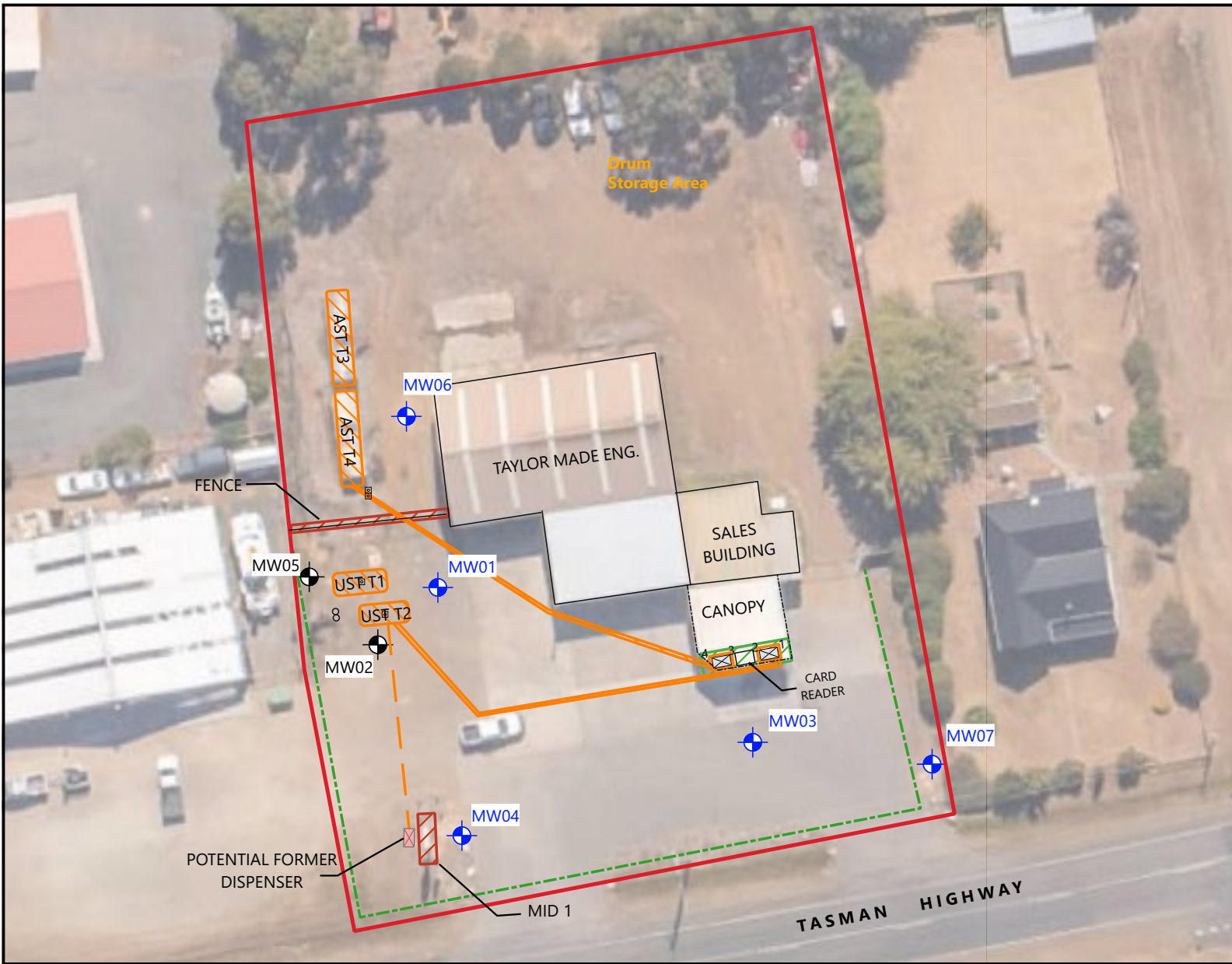
All personnel, subcontractors, and visitors are required to comply with the most recent version of the CEMP. Site inductions, toolbox talks, and signage will reflect current requirements to ensure that environmental management measures are consistently applied throughout the construction period

9 References

- Environmental Management and Pollution Control (Waste Management) Regulations, 2020 (amended march 2022)

- EPA Tasmania (2018) “*Environmental Management and Pollution Control (Waste Management) Regulations 2010, Information Bulletin No. 105, Classification and Management of Contaminated Soil for Disposal, Version 3 2018*”
- EPA Tasmania (2018), “UPSS 1: Underground Petroleum Storage Systems: Decommissioning Assessment Report Requirements”
- EPA Tasmania (2018), “UPSS 2: Underground Petroleum Storage Systems: Decommissioning Assessment Sampling and Risk Assessment Requirements”
- National Environment Protection Council, Nation Environment Protection (Assessment of Site Contamination) Amendment Measure (NEPM), August 2013.
- Standards Australia. Guide to the investigation and sampling of sites with potentially contaminated soil. Part 1: Non-volatile and semi-volatile compounds, AS4482.1 (2005) and Part 2: Volatile substances, AS4482.2 (1999); and
- Standards Australia, AS4482.2-1999, Guide to the Sampling and Investigation of Potentially Contaminated Soil, Part 2: Volatile Substances, Standards Australia.
- Tasmanian Government (2020), “*Environmental Management and Pollution Control (Underground Petroleum Storage Systems) Regulations 2020.*”

Appendix A Figure



- LEGEND:**
- SITE BOUNDARY
 - ⊕ GROUNDWATER MONITORING WELL
 - ⊕ GROUNDWATER MONITORING WELL POTENTIALLY DESTROYED
 - ▣ FILL POINT
 - VENT
 - ⊞ DISPENSER
 - ⊞ POTENTIAL FORMER DISPENSER LOCATION
 - ▭ ABOVEGROUND / UNDERGROUND STORAGE TANK
 - ▨ INFRASTRUCTURE LOWES WILL REMOVE
 - ▨ INFRASTRUCTURE TO BE DEMOLISHED
 - ▨ UPSS INFRASTRUCTURE TO BE REMOVED
 - - - PROPOSED TEMPORARY FENCING
 - - - POTENTIAL FUEL LINE

DISPENSER	PRODUCT
1	PULP
2	ULP
3 + 4	DIESEL

TANK	PRODUCT	VOLUME (L)
AST T3	DIESEL	26,000
AST T4	DIESEL	26,000
UST T1	ULP	11,500
UST T2	PULP	10,800

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 239(G) Bay Street, Brighton VIC 3186
 Tel: (03) 9591 0173
www.resolveenvironmental.com.au

Triabunna OPT
Asset Removal Plan

Client: Lennons Engineering Pty Ltd		Address: 21 Tasman Highway, Triabunna TAS		FIGURE No: 1
DESIGNED: MK	DRAWN: AW	DATE: NOV 2025	PROJECT: 002249-001	

Appendix B Material Safety Data Sheets

SAFETY DATA SHEET

Automotive Diesel Fuel



Section 1. Identification

GHS product identifier	Automotive Diesel Fuel
Other means of identification	☑10, BP 10 ppm diesel fuel, Ultra Low Sulphur diesel fuel, Automotive Diesel fuel, AD20, AD40, Alpine Diesel and Biodiesel up to B5.
Product code	0000002718
SDS no.	0000002718
Historic SDS no.	AD0K1
Relevant identified uses of the substance or mixture and uses advised against	
Use of the substance/mixture	Fuel for compression ignition diesel engines.
Manufacturer	
Supplier	BP Australia Pty Ltd Level 17, 717 Bourke Street Docklands, Victoria 3008 ABN 53 004 085 616 www.bp.com.au Technical Helpline Number: 1300 139 700
EMERGENCY TELEPHONE NUMBER	1800 638 556

Section 2. Hazard(s) identification

Classification of the substance or mixture	☑FLAMMABLE LIQUIDS - Category 4 ACUTE TOXICITY (inhalation) - Category 4 SKIN CORROSION/IRRITATION - Category 2 CARCINOGENICITY - Category 2 SPECIFIC TARGET ORGAN TOXICITY - REPEATED EXPOSURE (bone marrow, liver, thymus) - Category 2 ASPIRATION HAZARD - Category 1
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GHS label elements

Hazard pictograms



Signal word

DANGER

Hazard statements

H227 - Combustible liquid.
H332 - Harmful if inhaled.
H315 - Causes skin irritation.
H351 - Suspected of causing cancer.
H304 - May be fatal if swallowed and enters airways.
H373 - May cause damage to organs through prolonged or repeated exposure. (bone marrow, liver, thymus)

Precautionary statements

General

P103 - Read label before use.
P102 - Keep out of reach of children.
P101 - If medical advice is needed, have product container or label at hand.

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Section 2. Hazard(s) identification

Prevention	P201 - Obtain special instructions before use. P260 - Do not breathe vapour. P280 - Wear protective gloves. Wear eye or face protection. Wear protective clothing. P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. P240 - Ground/bond container and receiving equipment. P273 - Avoid release to the environment.
Response	P314 - Get medical attention if you feel unwell. P308 + P313 - IF exposed or concerned: Get medical attention. P304 + P340 + P312 - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or physician if you feel unwell. P301 + P310 + P331 - IF SWALLOWED: Immediately call a POISON CENTER or physician. Do NOT induce vomiting. P302 + P352 + P362 + P363 - IF ON SKIN: Wash with plenty of soap and water. Take off contaminated clothing. Wash contaminated clothing before reuse. P332 + P313 - If skin irritation occurs: Get medical attention.
Storage	P405 - Store locked up. P403 - Store in a well-ventilated place. P235 - Keep cool.
Disposal	P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations.
Supplemental label elements	Not applicable.
Other hazards which do not result in classification	This material may contain significant quantities of polycyclic aromatic hydrocarbons, some of which have been shown by experimental studies to induce skin cancer. Note: High Pressure Applications Injections through the skin resulting from contact with the product at high pressure constitute a major medical emergency. See 'Notes to physician' under First-Aid Measures, Section 4 of this Safety Data Sheet.

Section 3. Composition and ingredient information

Substance/mixture Mixture

May contain Fatty Acid Methyl Esters (FAME). May also contain small quantities of proprietary performance additives. Contains small quantities of polycyclic aromatic hydrocarbons (PAHs).

Ingredient name	% (w/w)	CAS number
Fuels, diesel	> 95	68334-30-5
Alkanes, C10-20-branched and linear	0 - 20	928771-01-1

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

Eye contact	In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Eyelids should be held away from the eyeball to ensure thorough rinsing. Check for and remove any contact lenses. Get medical attention.
Inhalation	If inhaled, remove to fresh air. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Get medical attention.

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Section 4. First aid measures

Skin contact

In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Drench contaminated clothing with water before removing. This is necessary to avoid the risk of sparks from static electricity that could ignite contaminated clothing. Contaminated clothing is a fire hazard. Contaminated leather, particularly footwear, must be discarded. Clean shoes thoroughly before reuse. Get medical attention.

Ingestion

Do not induce vomiting. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Aspiration hazard if swallowed. Can enter lungs and cause damage. Get medical attention immediately.

Most important symptoms/effects, acute and delayed

See Section 11 for more detailed information on health effects and symptoms.

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician

Treatment should in general be symptomatic and directed to relieving any effects. Product can be aspirated on swallowing or following regurgitation of stomach contents, and can cause severe and potentially fatal chemical pneumonitis, which will require urgent treatment. Because of the risk of aspiration, induction of vomiting and gastric lavage should be avoided. Gastric lavage should be undertaken only after endotracheal intubation. Monitor for cardiac dysrhythmias.

Note: High Pressure Applications

Injections through the skin resulting from contact with the product at high pressure constitute a major medical emergency. Injuries may not appear serious at first but within a few hours tissue becomes swollen, discoloured and extremely painful with extensive subcutaneous necrosis.

Surgical exploration should be undertaken without delay. Thorough and extensive debridement of the wound and underlying tissue is necessary to minimise tissue loss and prevent or limit permanent damage. Note that high pressure may force the product considerable distances along tissue planes.

Specific treatments

No specific treatment.

Protection of first-aiders

No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

Section 5. Firefighting measures

Extinguishing media

Suitable extinguishing media

In case of fire, use water fog, foam, dry chemical or carbon dioxide extinguisher or spray.

Unsuitable extinguishing media

Do not use water jet.

Specific hazards arising from the chemical

Combustible liquid. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. Runoff to sewer may create fire or explosion hazard.

Hazardous thermal decomposition products

Combustion products may include the following:
carbon oxides (CO, CO₂) (carbon monoxide, carbon dioxide)
other hazardous substances.

Special protective actions for fire-fighters

No action shall be taken involving any personal risk or without suitable training. Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.

Section 5. Firefighting measures

Special protective equipment for fire-fighters	Fire-fighters should wear positive pressure self-contained breathing apparatus (SCBA) and full turnout gear.
Hazchem code	3z

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel Immediately contact emergency personnel. No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. No flares, smoking or flames in hazard area. Avoid breathing vapour or mist. Provide adequate ventilation. Put on appropriate personal protective equipment. Floors may be slippery; use care to avoid falling. Eliminate all ignition sources.

For emergency responders Entry into a confined space or poorly ventilated area contaminated with vapour, mist or fume is extremely hazardous without the correct respiratory protective equipment and a safe system of work. Wear self-contained breathing apparatus. Wear a suitable chemical protective suit. Chemical resistant boots. See also the information in "For non-emergency personnel".

Environmental precautions Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities.

Methods and material for containment and cleaning up

Small spill Eliminate all ignition sources. Stop leak if without risk. Move containers from spill area. Absorb with an inert material and place in an appropriate waste disposal container. Use spark-proof tools and explosion-proof equipment. Dispose of via a licensed waste disposal contractor. The method and equipment used must be in conformance with appropriate regulations and industry practice on explosive atmospheres.

Large spill Eliminate all ignition sources. Stop leak if without risk. Move containers from spill area. Approach the release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Dike spill area and do not allow product to reach sewage system and surface or ground water. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations. Use spark-proof tools and explosion-proof equipment. Contaminated absorbent material may pose the same hazard as the spilled product. The method and equipment used must be in conformance with appropriate regulations and industry practice on explosive atmospheres. Dispose of via a licensed waste disposal contractor.

Section 7. Handling and storage

Precautions for safe handling

Protective measures Put on appropriate personal protective equipment (see Section 8). Avoid exposure - obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not get in eyes or on skin or clothing. Do not breathe vapour or mist. Do not swallow. Aspiration hazard if swallowed. Can enter lungs and cause damage. Never siphon by mouth. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use only non-sparking tools. Empty containers retain product residue and can be hazardous. Do not reuse container. Avoid contact of spilled material and runoff with soil and surface waterways.

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Section 7. Handling and storage

Advice on general occupational hygiene

Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Wash thoroughly after handling. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities

Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Eliminate all ignition sources. Separate from oxidising materials. Keep container tightly closed and sealed until ready for use. Store and use only in equipment/containers designed for use with this product. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination.

Take precautions to avoid static electrical discharge and all ignition sources during filling, ullaging and sampling from storage tanks. Do not enter storage tanks. If entry to vessels is necessary, follow permit to work procedures. When the product is pumped (e.g. during filling, discharge or ullaging) and when sampling, there is a risk of static discharge. Ensure equipment used is properly earthed or bonded to the tank structure. Use of explosion-protected electrical, ventilating, lighting and all material-handling equipment should be considered. Explosive air/vapour mixtures may form at ambient temperatures on contact with hot surfaces. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources.

Product contaminated rags, paper or material used to absorb spillages, represent a fire hazard, and should not be allowed to accumulate. Dispose of safely immediately after use. Entry into a confined space or poorly ventilated area contaminated with vapour, mist or fume is extremely hazardous without the correct respiratory protective equipment and a safe system of work.

Classified as a C1 (COMBUSTIBLE LIQUID) for the purpose of storage and handling, in accordance with the requirements of AS 1940. Refer to State Regulations for storage and transport requirements.

Section 8. Exposure controls and personal protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
Fuels, diesel	ACGIH TLV (United States). Absorbed through skin. TWA: 100 mg/m ³ , (measured as total hydrocarbons) 8 hours. Issued/Revised: 1/2007 Form: Inhalable fraction and vapor

Appropriate engineering controls

All activities involving chemicals should be assessed for their risks to health, to ensure exposures are adequately controlled. Personal protective equipment should only be considered after other forms of control measures (e.g. engineering controls) have been suitably evaluated. Personal protective equipment should conform to appropriate standards, be suitable for use, be kept in good condition and properly maintained.

Your supplier of personal protective equipment should be consulted for advice on selection and appropriate standards. For further information contact your national organisation for standards.

Provide exhaust ventilation or other engineering controls to keep the relevant airborne concentrations below their respective occupational exposure limits.

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Section 8. Exposure controls and personal protection

Environmental exposure controls	<p>The final choice of protective equipment will depend upon a risk assessment. It is important to ensure that all items of personal protective equipment are compatible.</p> <p>Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.</p>
Individual protection measures	
Hygiene measures	<p>Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.</p>
Eye/face protection	<p>Chemical splash goggles.</p>
Skin protection	
Hand protection	<p>Wear chemical resistant gloves.</p> <p>Protective gloves must give suitable protection against mechanical risks (i.e. abrasion, blade cut and puncture). Protective gloves will deteriorate over time due to physical and chemical damage. Inspect and replace gloves on a regular basis. The frequency of replacement will depend upon the circumstances of use.</p> <p>Recommended: Nitrile gloves.</p>
Skin protection	<p>Recommended: overall</p> <p>Use of protective clothing is good industrial practice. Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.</p> <p>Cotton or polyester/cotton overalls will only provide protection against light superficial contamination that will not soak through to the skin. Overalls should be laundered on a regular basis. When the risk of skin exposure is high (e.g. when cleaning up spillages or if there is a risk of splashing) then chemical resistant aprons and/or impervious chemical suits and boots will be required.</p> <p>Wear suitable protective clothing.</p> <p>Footwear highly resistant to chemicals.</p> <p>When there is a risk of ignition wear inherently fire resistant protective clothes and gloves.</p> <p>When there is a risk of ignition from static electricity, wear anti-static protective clothing. For greatest effectiveness against static electricity, overalls, boots and gloves should all be anti-static.</p> <p>When the risk of skin exposure is high (from experience this could apply to the following tasks: cleaning work, maintenance and service, filling and transfer, taking samples and cleaning up spillages) then a chemical protective suit and boots will be required.</p> <p>Work clothing / overalls should be laundered on a regular basis. Laundering of contaminated work clothing should only be done by professional cleaners who have been told about the hazards of the contamination. Always keep contaminated work clothing away from uncontaminated work clothing and uncontaminated personal clothes.</p>
Other skin protection	<p>Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.</p>
Respiratory protection	<p>Use with adequate ventilation.</p> <p>If there is a requirement for the use of a respiratory protective device, but the use of breathing apparatus (independent of ambient atmosphere) is not required, then a suitable filtering device must be worn.</p> <p>The filter class must be suitable for the maximum contaminant concentration (gas/vapour/aerosol/particulates) that may arise when handling the product.</p> <p>Recommended: If ventilation is inadequate, use respirator that will protect against organic vapour and dust/mist.</p>

Section 8. Exposure controls and personal protection

Refer to standards:

Respiratory protection:AS/NZS 1715 and AS/NZS 1716
Gloves:AS/NZS 2161.1
Eye protection:AS/NZS 1336 and AS/NZS 1337

Section 9. Physical and chemical properties

Appearance

Physical state	Liquid.
Colour	Water white to straw including fluorescent green, blue or yellow.
Odour	Mild
Odour threshold	0.7 ppm (Based on Fuels, diesel)
pH	Not applicable. Based on Solubility in Water (Very slightly soluble in water)
Melting point	-29 to -18°C (-20.2 to -0.4°F) (Based on Fuels, diesel)
Boiling point	180 to 380°C (356 to 716°F)
Flash point	Closed cup: >61.5°C (>142.7°F) [Pensky-Martens.]
Evaporation rate	Not relevant/applicable due to nature of the product. Based on low volatility
Flammability (solid, gas)	Not applicable. Based on - Physical state
Lower and upper explosive (flammable) limits	Lower: 0.5% Upper: 7.5%
Vapour pressure	0.1 kPa (0.755 mm Hg) (Based on Concawe Category: Vacuum Gas Oils, Hydrocracked Gas Oils & Distillate Fuels (VHGO))
Vapour density	Not available.
Relative density	0.83
Density	820 to 850 kg/m ³ (0.82 to 0.85 g/cm ³) at 15°C
Solubility	Very slightly soluble in water
Partition coefficient: n-octanol/water	Not applicable. Based on Fuels, diesel - Substance is a hydrocarbon UVCB. Standard tests for this endpoint are intended for single substances and are not appropriate for this complex substance.
Auto-ignition temperature	240°C (464°F) (Based on Fuels, diesel)
Decomposition temperature	Not observed to decompose by final boiling point: 380°C (716°F)
Viscosity	Kinematic: 2 to 4.5 mm ² /s (2 to 4.5 cSt) at 40°C

Section 10. Stability and reactivity

Reactivity	No specific test data available for this product. Refer to Conditions to avoid and Incompatible materials for additional information.
Chemical stability	The product is stable.
Possibility of hazardous reactions	Under normal conditions of storage and use, hazardous reactions will not occur. Under normal conditions of storage and use, hazardous polymerisation will not occur.
Conditions to avoid	Avoid all possible sources of ignition (spark or flame). Avoid excessive heat.
Incompatible materials	Reactive or incompatible with the following materials: oxidising materials.
Hazardous decomposition products	Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
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Section 11. Toxicological information

Fuels, diesel	LC50 Inhalation Dusts and mists	Rat	4.1 mg/l	4 hours
	LD50 Dermal	Rabbit	>4300 mg/kg	-
	LD50 Dermal	Rabbit	>4300 mg/kg	-
	LD50 Oral	Rat	17900 mg/kg	-
	LD50 Oral	Rat	7600 mg/kg	-

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
Fuels, diesel	Skin - Irritation	Rabbit	-	-	-
	Skin - Irritation	Rabbit	-	-	-
	Eyes - Non-irritating to the eyes.	Rabbit	-	-	-
	Eyes - Non-irritating to the eyes.	Rabbit	-	-	-

Skin

Causes skin irritation.

Sensitisation

Product/ingredient name	Route of exposure	Species	Result
Fuels, diesel	skin	Guinea pig	Not sensitising
	skin	Guinea pig	Not sensitising

Mutagenicity

Product/ingredient name	Test	Experiment	Result
Fuels, diesel	OECD 471	Experiment: In vitro Subject: Non-mammalian species	Positive
	Equivalent to OECD 476	Experiment: In vitro Subject: Mammalian-Animal Cell: Germ	Negative
	not guideline	Experiment: In vivo Subject: Unspecified Cell: Somatic	Negative

Conclusion/Summary

Not classified. Based on available data, the classification criteria are not met.

Carcinogenicity

Product/ingredient name	Result	Species	Dose	Exposure
Fuels, diesel	Positive - Dermal - Unspecified	Mouse	-	2 years

Conclusion/Summary

Suspected of causing cancer.

Reproductive toxicity

Product/ingredient name	Maternal toxicity	Fertility	Developmental toxin	Species	Dose	Exposure
Fuels, diesel	-	-	Negative	Rat	Dermal	20 days
	-	-	Negative	Rat	Dermal	10 days
	-	-	Negative	Rat	Dermal	10 days

Conclusion/Summary

Development: Not classified. Based on available data, the classification criteria are not met.

Fertility: Not classified. Based on available data, the classification criteria are not met.

Effects on or via lactation: Not classified. Based on available data, the classification criteria are not met.

Specific target organ toxicity (repeated exposure)

Name	Category	Route of exposure	Target organs
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Section 11. Toxicological information

Fuels, diesel

Category 2

Not determined

bone marrow, liver
and thymus

Aspiration hazard

Name

Fuels, diesel
Alkanes, C10-20-branched and linear

Result

ASPIRATION HAZARD - Category 1
ASPIRATION HAZARD - Category 1

Information on likely routes of exposure

Routes of entry anticipated: Oral, Dermal, Inhalation.

Potential acute health effects

Eye contact

No known significant effects or critical hazards.

Inhalation

Harmful if inhaled.

Skin contact

Causes skin irritation.

Ingestion

Irritating to mouth, throat and stomach. Aspiration hazard if swallowed -- harmful or fatal if liquid is aspirated into lungs.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact

Adverse symptoms may include the following:
pain or irritation
watering
redness

Inhalation

Adverse symptoms may include the following:
nausea or vomiting
headache
drowsiness/fatigue
dizziness/vertigo
unconsciousness

Skin contact

Adverse symptoms may include the following:
irritation
redness

Ingestion

Adverse symptoms may include the following:
nausea or vomiting

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Eye contact

Vapour, mist or fume may cause eye irritation. Exposure to vapour, mist or fume may cause stinging, redness and watering of the eyes.

Inhalation

Vapour, mists or fumes may contain polycyclic aromatic hydrocarbons some of which are known to produce skin cancer. Vapour, mists or fumes may contain polycyclic aromatic hydrocarbons some of which are known to produce skin cancer. Vapour, mist or fume may irritate the nose, mouth and respiratory tract.

Skin contact

As with all such products containing potentially harmful levels of polycyclic aromatic hydrocarbons, prolonged or repeated skin contact may eventually result in dermatitis or more serious irreversible skin disorders including cancer.

Ingestion

If swallowed, may irritate the mouth, throat and digestive system. If swallowed, may cause abdominal pain, stomach cramps, nausea, vomiting, diarrhoea, dizziness and drowsiness.

General

May cause damage to organs through prolonged or repeated exposure. Vapour, mists or fumes may contain polycyclic aromatic hydrocarbons some of which are known to produce skin cancer. Vapour, mists or fumes may contain polycyclic aromatic hydrocarbons some of which are known to produce skin cancer.

Carcinogenicity

Suspected of causing cancer. Risk of cancer depends on duration and level of exposure.

Mutagenicity

No known significant effects or critical hazards.

Teratogenicity

No known significant effects or critical hazards.

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Section 11. Toxicological information

Developmental effects	No known significant effects or critical hazards.
Fertility effects	No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Route	ATE value
Inhalation (dusts and mists)	1.89 mg/l

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
Fuels, diesel	EL50 >1000 mg/l Nominal Fresh water	Micro-organism	40 hours
	NOELR 3.217 mg/l Nominal Fresh water	Micro-organism	40 hours
	Acute EL50 22 mg/l Nominal Fresh water	Algae	72 hours
	Acute EL50 210 mg/l Nominal Fresh water	Daphnia	48 hours
	Acute EL50 68 mg/l Nominal Fresh water	Daphnia	48 hours
	Acute ErL50 78 mg/l Nominal Fresh water	Algae	72 hours
	Acute LL50 65 mg/l Nominal Fresh water	Fish	96 hours
	Acute LL50 21 mg/l Nominal Fresh water	Fish	96 hours
	Acute NOELR 10 mg/l Nominal Fresh water	Algae	72 hours
	Acute NOELR 1 mg/l Nominal Fresh water	Algae	72 hours
	Acute NOELR 46 mg/l Nominal Fresh water	Daphnia	48 hours
	Chronic NOEL 0.083 mg/l Nominal Fresh water	Fish	14 days
	Chronic NOELR 0.2 mg/l Nominal Fresh water	Daphnia	21 days

Conclusion/Summary Toxic to aquatic life with long lasting effects.

Persistence and degradability

Expected to be biodegradable.

Product/ingredient name	Test	Result	Dose	Inoculum
Fuels, diesel	OECD 301 F	60 % - Readily - 28 days	30 mg/l	-
	OECD 301 F	57.5 % - Not readily - 28 days	25 mg/l	-
	Equivalent to EPA OTS 796.3100	35 % - Not readily - 28 days	5 mg/l	-

Conclusion/Summary Non-persistent per IMO criteria

Bioaccumulative potential

This product is not expected to bioaccumulate through food chains in the environment.

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Section 12. Ecological information

Mobility in soil

Soil/water partition coefficient (K_{oc}) Not available.

Mobility Spillages may penetrate the soil causing ground water contamination. This material may accumulate in sediments.

Other ecological information Spills may form a film on water surfaces causing physical damage to organisms. Oxygen transfer could also be impaired.

Section 13. Disposal considerations

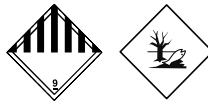
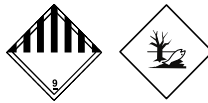
Disposal methods

The generation of waste should be avoided or minimised wherever possible. Significant quantities of waste product residues should not be disposed of via the foul sewer but processed in a suitable effluent treatment plant. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Vapour from product residues may create a highly flammable or explosive atmosphere inside the container. Do not cut, weld or grind used containers unless they have been cleaned thoroughly internally. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.

Special Precautions for Landfill or Incineration

Empty packages may contain some remaining product. Hazard warning labels are a guide to the safe handling of empty packaging and should not be removed.

Section 14. Transport information

	ADG	IMDG	IATA
UN number	Not regulated.	UN3082	UN3082
UN proper shipping name	-	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Fuels, diesel). Marine pollutant	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Fuels, diesel)
Transport hazard class(es)	-	9 	9 
Packing group	-	III	III
Environmental hazards	No.	Yes.	Yes.
Additional information	<p>Remarks Combustible liquid Class C1 (AS 1940).</p> <p>Hazchem code 3Z</p> <p>Initial emergency response guide 47</p>	<p>This product is not regulated as a dangerous good when transported in sizes of ≤5 L or ≤5 kg, provided the packagings meet the general provisions of 4.1.1.1, 4.1.1.2 and 4.1.1.4 to 4.1.1.8.</p> <p>Emergency schedules F-A, S-F</p>	<p>This product is not regulated as a dangerous good when transported in sizes of ≤5 L or ≤5 kg, provided the packagings meet the general provisions of 5.0.2.4.1, 5.0.2.6.1.1 and 5.0.2.8.</p>

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Section 14. Transport information

Special precautions for user Not available.

Transport in bulk according to Annex II of Marpol and the IBC Code **Proper shipping name**

MARPOL Annex 1 rules apply for bulk shipments by sea.
Category: gas oils, including ship's bunkers

Section 15. Regulatory information

Standard Uniform Schedule of Medicine and Poisons

Not scheduled

Consumer products - This product is exempt per Appendix A of the SUSMP.

Industrial Products - Labelling requirements for SUSMP do not apply to a poison that is packed and sold solely for industrial, laboratory or manufacturing use. However, this product is labelled in accordance with NOSHC National Code of Practice for labelling of workplace substances.

Model Work Health and Safety Regulations - Scheduled Substances

No listed substance

Montreal Protocol (Annexes A, B, C, E)

Ingredient name	List name	Status
Not listed.		

Stockholm Convention on Persistent Organic Pollutants

Ingredient name	List name	Status
Not listed.		

Rotterdam Convention on Prior Informed Consent (PIC)

Ingredient name	List name	Status
Not listed.		

International lists

National inventory

REACH Status

For the REACH status of this product please consult your company contact, as identified in Section 1.

Australia inventory (AICS)

All components are listed or exempted.

Canada inventory

All components are listed or exempted.

China inventory (IECSC)

Not determined.

Japan inventory (ENCS)

Not determined.

Korea inventory (KECI)

Not determined.

Philippines inventory (PICCS)

Not determined.

Taiwan Chemical Substances Inventory (TCSI)

All components are listed or exempted.

United States inventory (TSCA 8b)

All components are active or exempted.

Product name Automotive Diesel Fuel

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Section 16. Any other relevant information

History

Date of printing 8/6/2019

Date of issue/Date of revision 8/6/2019

Date of previous issue 5/25/2016

Version 3

Prepared by Product Stewardship

Key to abbreviations

ADG = Australian Dangerous Goods
 ATE = Acute Toxicity Estimate
 BCF = Bioconcentration Factor
 GHS = Globally Harmonized System of Classification and Labelling of Chemicals
 IATA = International Air Transport Association
 IBC = Intermediate Bulk Container
 IMDG = International Maritime Dangerous Goods
 LogPow = logarithm of the octanol/water partition coefficient
 MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
 NOHSC = National Occupational Health and Safety Commission
 REACH = Registration, Evaluation, Authorisation and Restriction of Chemicals Regulation [Regulation (EC) No. 1907/2006]
 STEL = Short term exposure limit
 SUSMP = Standard Uniform Schedule of Medicine and Poisons
 UN = United Nations
 TWA = Time weighted average
 VOC = Volatile Organic Compound
 SADT = Self-Accelerating Decomposition Temperature
 Varies = may contain one or more of the following 64741-88-4, 64741-89-5, 64741-95-3, 64741-96-4, 64742-01-4, 64742-44-5, 64742-45-6, 64742-52-5, 64742-53-6, 64742-54-7, 64742-55-8, 64742-56-9, 64742-57-0, 64742-58-1, 64742-62-7, 64742-63-8, 64742-65-0, 64742-70-7, 72623-85-9, 72623-86-0, 72623-87-1

Procedure used to derive the classification

Classification	Justification
Flam. Liq. 4, H227 Acute Tox. 4, H332 Skin Irrit. 2, H315 Carc. 2, H351 STOT RE 2, H373 (bone marrow, liver, thymus) Asp. Tox. 1, H304	On basis of test data Calculation method Calculation method Calculation method Calculation method Calculation method

 Indicates information that has changed from previously issued version.

Notice to reader

All reasonably practicable steps have been taken to ensure this data sheet and the health, safety and environmental information contained in it is accurate as of the date specified below. No warranty or representation, express or implied is made as to the accuracy or completeness of the data and information in this data sheet.

The data and advice given apply when the product is sold for the stated application or applications. You should not use the product other than for the stated application or applications without seeking advice from BP Group.

It is the user's obligation to evaluate and use this product safely and to comply with all applicable laws and regulations. The BP Group shall not be responsible for any damage or injury resulting from use, other than the stated product use of the material, from any failure to adhere to recommendations, or from any hazards inherent in the nature of the material. Purchasers of the product for supply to a third party for use at work, have a duty to take all necessary steps to ensure that any person handling or using the product is provided with the information in this sheet. Employers have a duty to tell employees and others who may be affected of any hazards described in this sheet and of any precautions that should be taken. You can contact the BP Group to ensure that this document is the most current available. Alteration of this document is strictly prohibited.

Product name Automotive Diesel Fuel

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SAFETY DATA SHEET



Premium Unleaded 95

Section 1. Identification


GHS product identifier Premium Unleaded 95

Product code 0000002734

SDS no. 0000002734

Historic SDS no. 876

Relevant identified uses of the substance or mixture and uses advised against

**Use of the substance/
mixture**  Use only as a motor fuel for spark ignition engines. NOT for aviation use. Should NOT be used as a solvent nor cleaning agent. For specific application advice see appropriate Technical Data Sheet or consult our company representative.

Manufacturer


Supplier BP Australia Pty Ltd
Level 17, 717 Bourke Street
Docklands, Victoria 3008
ABN 53 004 085 616

www.bp.com.au

Technical Helpline Number: 1300 139 700

**EMERGENCY TELEPHONE
NUMBER** 1800 638 556

Section 2. Hazard(s) identification

**Classification of the
substance or mixture**  **FLAMMABLE LIQUIDS - Category 1**
SKIN CORROSION/IRRITATION - Category 2
GERM CELL MUTAGENICITY - Category 1B
CARCINOGENICITY - Category 1B
REPRODUCTIVE TOXICITY - Category 2
**SPECIFIC TARGET ORGAN TOXICITY - SINGLE EXPOSURE (Narcotic effects) -
Category 3**
ASPIRATION HAZARD - Category 1

GHS label elements


Hazard pictograms



Signal word


DANGER

Hazard statements

 **H224 - Extremely flammable liquid and vapour.**
H304 - May be fatal if swallowed and enters airways.
H315 - Causes skin irritation.
H336 - May cause drowsiness or dizziness.
H340 - May cause genetic defects.
H350 - May cause cancer.
H361 - Suspected of damaging fertility or the unborn child.

Precautionary statements

General

 **P102 - Keep out of reach of children.**
P101 - If medical advice is needed, have product container or label at hand.

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Section 2. Hazard(s) identification

Prevention

P201 - Obtain special instructions before use.
 P202 - Do not handle until all safety precautions have been read and understood.
 P281 - Use personal protective equipment as required.
 P280 - Wear protective gloves, protective clothing and eye or face protection.
 P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
 P241 - Use explosion-proof electrical, ventilating or lighting equipment.
 P242 - Use non-sparking tools.
 P243 - Take action to prevent static discharges.
 P271 - Use only outdoors or in a well-ventilated area.
 P261 - Avoid breathing vapour.
 P264 - Wash hands thoroughly after handling.

Response

P308 + P313 - IF exposed or concerned: Get medical attention.
 P304 + P340, P312 - IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER or doctor if you feel unwell.
 P301 + P310, P331 - IF SWALLOWED: Immediately call a POISON CENTER or physician. Do NOT induce vomiting.
 P303 + P361 + P353 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water.
 P362 - Take off contaminated clothing and wash before reuse.
 P302 + P352 - IF ON SKIN: Wash with plenty of soap and water.
 P332 + P313 - If skin irritation occurs: Get medical attention.

Storage

P405 - Store locked up.
 P403 + P233 - Store in a well-ventilated place. Keep container tightly closed.
 P403 + P235 - Keep cool.

Disposal

P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations.

Supplemental label elements

Not applicable.

Other hazards which do not result in classification

Static accumulating flammable liquid can become electrostatically charged even in bonded and grounded equipment. Sparks may ignite liquid and vapour may cause flash fire or explosion.

Section 3. Composition and ingredient information

Substance/mixture

Mixture

Ingredient name	% (w/w)	CAS number
Gasoline	≥99	86290-81-5
Contains:		
Toluene	<20	108-88-3
n-hexane	<5	110-54-3
Polycyclic aromatic hydrocarbons (PAHs)	<1	mixture
Benzene	<1	71-43-2
tert-butyl methyl ether	<1	1634-04-4
2-methylpropan-2-ol	<1	75-65-0
diisopropyl ether	<1	108-20-3

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

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Section 4. First aid measures

Description of necessary first aid measures

Eye contact	In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Eyelids should be held away from the eyeball to ensure thorough rinsing. Check for and remove any contact lenses. Get medical attention.
Inhalation	<input checked="" type="checkbox"/> Inhaled, remove to fresh air. Get medical attention. If exposure to vapour, mists or fumes causes drowsiness, headache, blurred vision or irritation of the eyes, nose or throat, remove immediately to fresh air. Keep patient warm and at rest. If any symptoms persist obtain medical advice.
Skin contact	<input checked="" type="checkbox"/> In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Drench contaminated clothing with water before removing. This is necessary to avoid the risk of sparks from static electricity that could ignite contaminated clothing. Contaminated clothing is a fire hazard. Contaminated leather, particularly footwear, must be discarded. Clean shoes thoroughly before reuse. Get medical attention.
Ingestion	Do not induce vomiting. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Aspiration hazard if swallowed. Can enter lungs and cause damage. Get medical attention immediately.

Most important symptoms/effects, acute and delayed

See Section 11 for more detailed information on health effects and symptoms.

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician	Treatment should in general be symptomatic and directed to relieving any effects. Product can be aspirated on swallowing or following regurgitation of stomach contents, and can cause severe and potentially fatal chemical pneumonitis, which will require urgent treatment. Because of the risk of aspiration, induction of vomiting and gastric lavage should be avoided. Gastric lavage should be undertaken only after endotracheal intubation. Monitor for cardiac dysrhythmias.
Specific treatments	No specific treatment.
Protection of first-aiders	No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

Section 5. Firefighting measures

Extinguishing media

Suitable extinguishing media	In case of fire, use water fog, foam, dry chemical or carbon dioxide extinguisher or spray.
Unsuitable extinguishing media	Do not use water jet.

Specific hazards arising from the chemical

Extremely flammable liquid and vapour. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. Runoff to sewer may create fire or explosion hazard. Vapours can form explosive mixtures with air. Vapours are heavier than air and can spread along the ground or float on water surfaces to remote ignition sources. Vapours may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flash back. This product is a poor conductor of electricity and can become electrostatically charged. If sufficient charge is accumulated, ignition of flammable mixtures can occur. To reduce potential for static discharge, use proper bonding and grounding procedures. This liquid may accumulate static electricity when filling properly-grounded containers. Static accumulation may be significantly increased by the presence of small quantities of water or other contaminants. Liquid will float and may reignite on surface of water.

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Section 5. Firefighting measures

Hazardous thermal decomposition products

☑ Combustion products may include the following:
carbon oxides (CO, CO₂) (carbon monoxide, carbon dioxide)

Special protective actions for fire-fighters

☑ No action shall be taken involving any personal risk or without suitable training. Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.

Special protective equipment for fire-fighters

Fire-fighters should wear positive pressure self-contained breathing apparatus (SCBA) and full turnout gear.

Hazchem code

3YE

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel

Immediately contact emergency personnel. No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. No flares, smoking or flames in hazard area. Avoid breathing vapour or mist. Provide adequate ventilation. Put on appropriate personal protective equipment. Floors may be slippery; use care to avoid falling. Eliminate all ignition sources.

For emergency responders

Entry into a confined space or poorly ventilated area contaminated with vapour, mist or fume is extremely hazardous without the correct respiratory protective equipment and a safe system of work. Wear self-contained breathing apparatus. Wear a suitable chemical protective suit. Chemical resistant boots. See also the information in "For non-emergency personnel".

Environmental precautions

Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). In case of small spillages in closed waters (i.e. ports), contain product with floating barriers or other equipment. Collect spilled product by absorbing with specific floating absorbents. If possible, large spillages in open waters should be contained with floating barriers or other mechanical means. If this is not possible, control the spreading of the spillage, and collect the product by skimming or other suitable mechanical means. The use of dispersants should be advised by an expert, and, if required, approved by local authorities. Collect recovered product and other contaminated materials in suitable tanks or containers for recycle, recovery or safe disposal.

Methods and material for containment and cleaning up

Small spill

Eliminate all ignition sources. Stop leak if without risk. Move containers from spill area. Absorb with an inert material and place in an appropriate waste disposal container. Use spark-proof tools and explosion-proof equipment. Dispose of via a licensed waste disposal contractor. The method and equipment used must be in conformance with appropriate regulations and industry practice on explosive atmospheres.

Large spill

Eliminate all ignition sources. Stop leak if without risk. Move containers from spill area. Approach the release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Dike spill area and do not allow product to reach sewage system and surface or ground water. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations. Use spark-proof tools and explosion-proof equipment. Contaminated absorbent material may pose the same hazard as the spilled product. The method and equipment used must be in conformance with appropriate regulations and industry practice on explosive atmospheres. Dispose of via a licensed waste disposal contractor.

Section 7. Handling and storage

Precautions for safe handling

Protective measures

Do not fill container while it is in or on a vehicle. Static electricity may ignite vapour and cause fire. Place container on ground when filling and keep nozzle in contact with container.

Put on appropriate personal protective equipment (see Section 8). Avoid exposure - obtain special instructions before use. Avoid exposure during pregnancy. Do not handle until all safety precautions have been read and understood. Do not get in eyes or on skin or clothing. Do not swallow. Aspiration hazard if swallowed. Can enter lungs and cause damage. Never siphon by mouth. Avoid breathing vapour or mist. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use only non-sparking tools. Take precautionary measures against electrostatic discharges. Empty containers retain product residue and can be hazardous. Do not reuse container. Handling operations that can promote accumulation of static charges include but are not limited to: mixing, filtering, pumping at high flow rates, splash filling, creating mists or sprays, tank and container filling, tank cleaning, sampling, gauging, switch loading, vacuum truck operations. Restrict flow velocity according to API 2003 (2008), NFPA 77 (2007), and Laurence Britton, "Avoiding Static Ignition Hazards in Chemical Operations". To reduce potential for static discharge, ensure that all equipment is properly grounded and bonded and meets appropriate electrical classification requirements.

Advice on general occupational hygiene

Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Wash thoroughly after handling. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities

Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Eliminate all ignition sources. Separate from oxidising materials. Keep container tightly closed and sealed until ready for use. Store and use only in equipment/containers designed for use with this product. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination.

Light hydrocarbon vapours can build up in the headspace of tanks. These can cause flammability/explosion hazards even at temperatures below the normal flash point (note: flash point must not be regarded as a reliable indicator of the potential flammability of vapour in tank headspaces). Tank headspaces should always be regarded as potentially flammable and care should be taken to avoid static electrical discharge and all ignition sources during filling, ullaging and sampling from storage tanks. Do not enter storage tanks. If entry to vessels is necessary, follow permit to work procedures. Entry into a confined space or poorly ventilated area contaminated with vapour, mist or fume is extremely hazardous without the correct respiratory protective equipment and a safe system of work. When the product is pumped (e.g. during filling, discharge or ullaging) and when sampling, there is a risk of static discharge. Ensure equipment used is properly earthed or bonded to the tank structure. Electrical equipment should not be used unless it is intrinsically safe (i.e. will not produce sparks). Explosive air/vapour mixtures may form at ambient temperature. If product comes into contact with hot surfaces, or leaks occur from pressurised fuel pipes, the vapour or mists generated will create a flammability or explosion hazard. Product contaminated rags, paper or material used to absorb spillages, represent a fire hazard, and should not be allowed to accumulate.

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Section 7. Handling and storage

Dispose of safely immediately after use.

Section 8. Exposure controls and personal protection

[Control parameters](#)

[Occupational exposure limits](#)

Ingredient name	Exposure limits
Gasoline	<p>ACGIH TLV (United States). TWA: 300 ppm 8 hours. Issued/Revised: 5/1996 TWA: 890 mg/m³ 8 hours. Issued/Revised: 5/1996 STEL: 500 ppm 15 minutes. Issued/Revised: 5/1996 STEL: 1480 mg/m³ 15 minutes. Issued/Revised: 5/1996</p>
Toluene	<p>Safe Work Australia (Australia). Absorbed through skin. STEL: 574 mg/m³ 15 minutes. Issued/Revised: 8/2005 STEL: 150 ppm 15 minutes. Issued/Revised: 8/2005 TWA: 191 mg/m³ 8 hours. Issued/Revised: 8/2005 TWA: 50 ppm 8 hours. Issued/Revised: 8/2005</p>
n-hexane	<p>Safe Work Australia (Australia). TWA: 72 mg/m³ 8 hours. Issued/Revised: 11/2001 TWA: 20 ppm 8 hours. Issued/Revised: 11/2001</p>
Polycyclic aromatic hydrocarbons (PAHs)	<p>Safe Work Australia (Australia). TWA: 0.2 mg/m³ 8 hours.</p>
Benzene	<p>Safe Work Australia (Australia). TWA: 3.2 mg/m³ 8 hours. Issued/Revised: 4/2003 TWA: 1 ppm 8 hours. Issued/Revised: 4/2003</p>
tert-butyl methyl ether	<p>Safe Work Australia (Australia). STEL: 275 mg/m³ 15 minutes. Issued/Revised: 4/2002 STEL: 75 ppm 15 minutes. Issued/Revised: 4/2002 TWA: 92 mg/m³ 8 hours. Issued/Revised: 4/2002 TWA: 25 ppm 8 hours. Issued/Revised: 4/2002</p>
2-methylpropan-2-ol	<p>Safe Work Australia (Australia). STEL: 455 mg/m³ 15 minutes. Issued/Revised: 5/1995 STEL: 150 ppm 15 minutes. Issued/Revised: 5/1995 TWA: 303 mg/m³ 8 hours. Issued/Revised: 5/1995 TWA: 100 ppm 8 hours. Issued/Revised: 5/1995</p>
diisopropyl ether	<p>Safe Work Australia (Australia).</p>

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Section 8. Exposure controls and personal protection

STEL: 1300 mg/m³ 15 minutes. Issued/
Revised: 5/1995
STEL: 310 ppm 15 minutes. Issued/
Revised: 5/1995
TWA: 1040 mg/m³ 8 hours. Issued/Revised:
5/1995
TWA: 250 ppm 8 hours. Issued/Revised:
5/1995

Appropriate engineering controls

All activities involving chemicals should be assessed for their risks to health, to ensure exposures are adequately controlled. Personal protective equipment should only be considered after other forms of control measures (e.g. engineering controls) have been suitably evaluated. Personal protective equipment should conform to appropriate standards, be suitable for use, be kept in good condition and properly maintained.

Your supplier of personal protective equipment should be consulted for advice on selection and appropriate standards. For further information contact your national organisation for standards.

Provide exhaust ventilation or other engineering controls to keep the relevant airborne concentrations below their respective occupational exposure limits.

The final choice of protective equipment will depend upon a risk assessment. It is important to ensure that all items of personal protective equipment are compatible.

Environmental exposure controls

Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

Hygiene measures

Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection

Chemical splash goggles.

Skin protection

Hand protection

Wear chemical resistant gloves.

Do not re-use gloves. Protective gloves must give suitable protection against mechanical risks (i.e. abrasion, blade cut and puncture). Protective gloves will deteriorate over time due to physical and chemical damage. Inspect and replace gloves on a regular basis. The frequency of replacement will depend upon the circumstances of use.

Recommended: Gloves made from fluoroelastomer resistant to hydrocarbons and a wide range of chemicals.
Wear a chemically resistant multi-layer laminate inner glove inside an outer nitrile glove. The purpose of the outer glove is to protect the inner glove from cuts and mechanical damage. The presence of aromatic hydrocarbons in the product will significantly shorten the length of time that nitrile gloves will provide protection. Do not re-use nitrile gloves if exposed to aromatic hydrocarbons.

Skin protection

Use of protective clothing is good industrial practice.

Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Cotton or polyester/cotton overalls will only provide protection against light superficial contamination that will not soak through to the skin. Overalls should be laundered on a regular basis. When the risk of skin exposure is high (e.g. when

Section 8. Exposure controls and personal protection

cleaning up spillages or if there is a risk of splashing) then chemical resistant aprons and/or impervious chemical suits and boots will be required.

Wear suitable protective clothing.

Footwear highly resistant to chemicals.

When there is a risk of ignition wear inherently fire resistant protective clothes and gloves.

When there is a risk of ignition from static electricity, wear anti-static protective clothing. For greatest effectiveness against static electricity, overalls, boots and gloves should all be anti-static.

When the risk of skin exposure is high (from experience this could apply to the following tasks: cleaning work, maintenance and service, filling and transfer, taking samples and cleaning up spillages) then a chemical protective suit and boots will be required.

Work clothing / overalls should be laundered on a regular basis. Laundering of contaminated work clothing should only be done by professional cleaners who have been told about the hazards of the contamination. Always keep contaminated work clothing away from uncontaminated work clothing and uncontaminated personal clothes.

Other skin protection

Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory protection

Use with adequate ventilation.

If there is a requirement for the use of a respiratory protective device, but the use of breathing apparatus (independent of ambient atmosphere) is not required, then a suitable filtering device must be worn.

The filter class must be suitable for the maximum contaminant concentration (gas/vapour/aerosol/particulates) that may arise when handling the product.

Recommended: Avoid breathing of vapours, mists or spray. Select and use respirators in accordance with AS/NZS 1715/1716. When mists or vapours exceed the exposure standards then the use of the following is recommended: Approved respirator with organic vapour and dust/mist (Type P1) filters. Filter capacity and respirator type depends on exposure level.

Refer to standards:

Respiratory protection:AS/NZS 1715 and AS/NZS 1716

Gloves:AS/NZS 2161.1

Eye protection:AS/NZS 1336 and AS/NZS 1337

Section 9. Physical and chemical properties

Appearance

Physical state	Liquid. Clear and Bright
Colour	Pale Yellow.
Odour	Hydrocarbon.
Odour threshold	Not available.
pH	Not available.
Melting point	Not available.
Boiling point	30 to 210°C (86 to 410°F)
Flash point	Closed cup: <-40°C (<-40°F)
Evaporation rate	Not available.
Flammability (solid, gas)	Not applicable. Based on - Physical state
Lower and upper explosive (flammable) limits	Lower: 1.4% Upper: 7.6%
Vapour pressure	30 to 100 kPa (225 to 750 mm Hg)
Vapour density	1 [Air = 1]
Relative density	Not available.
Density	750 kg/m ³ (0.75 g/cm ³)

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Section 9. Physical and chemical properties

Solubility	insoluble in water.
Partition coefficient: n-octanol/water	Not available.
Auto-ignition temperature	>350°C (>662°F)
Decomposition temperature	Not available.
Viscosity	Kinematic: 0.4 to 0.55 mm ² /s (0.4 to 0.55 cSt) at 40°C
Remarks	Reid vapor pressure (RVP): 55 to 100 kPa (40°C)

Section 10. Stability and reactivity

Reactivity	No specific test data available for this product. Refer to Conditions to avoid and Incompatible materials for additional information.
Chemical stability	The product is stable.
Possibility of hazardous reactions	Under normal conditions of storage and use, hazardous reactions will not occur. Under normal conditions of storage and use, hazardous polymerisation will not occur.
Conditions to avoid	Avoid all possible sources of ignition (spark or flame). Avoid excessive heat.
Incompatible materials	Reactive or incompatible with the following materials: oxidising materials.
Hazardous decomposition products	Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Gasoline	LC50 Inhalation Vapour	Rat	>7630 mg/m ³ Nominal	4 hours
	LC50 Inhalation Vapour	Rat	>5610 mg/m ³ analytical	4 hours
tert-butyl methyl ether	LD50 Dermal	Rabbit	>2000 mg/kg	-
	LD50 Oral	Rat	>5000 mg/kg	-
	LC50 Inhalation Vapour	Rat	85 mg/l	4 hours
2-methylpropan-2-ol	LD50 Dermal	Rat	>2000 mg/kg	-
	LD50 Oral	Rat	>2000 mg/kg	-
	LC50 Inhalation Vapour	Rat	>10000 ppm	4 hours
diisopropyl ether	LD50 Oral	Rabbit	3559 mg/kg	-
	LD50 Oral	Rat	2743 mg/kg	-
	LC50 Inhalation Vapour	Rat	40.5 mg/m ³	1 hours
	LD50 Dermal	Rabbit	2000 mg/kg	-
	LD50 Oral	Rat	8470 mg/kg	-

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
Gasoline	Skin - Irritant	Rabbit	-	-	-
	Eyes - Non-irritating to the eyes.	Rabbit	-	-	-
tert-butyl methyl ether	Skin - Irritation	Rabbit	-	-	-
	Eyes - Non-irritating to the eyes.	Rabbit	-	-	-

Skin Causes skin irritation.

Mutagenicity

Product/ingredient name	Test	Experiment	Result
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Section 11. Toxicological information

Gasoline	Equivalent to OECD 476	Experiment: In vitro	Negative
		Subject: Mammal - species unspecified	
	Equivalent to OECD 471	Experiment: In vitro	Negative
		Subject: Non-mammalian species	
tert-butyl methyl ether	EPA OPPTS 870.5395	Experiment: In vivo	Negative
		Subject: Unspecified	
	Equivalent to OECD 475	Experiment: In vivo	Negative
		Subject: Unspecified	
	EU B 13/14	Experiment: In vitro	Negative
		Subject: Non-mammalian species	
	OECD 471	Experiment: In vitro	Negative
		Subject: Non-mammalian species	
tert-butyl methyl ether	OECD 476	Experiment: In vitro	Negative
		Subject: Non-mammalian species	
	Equivalent to OECD 473	Experiment: In vitro	Negative
		Subject: Non-mammalian species	
	Equivalent to OECD 486	Experiment: In vivo	Negative
		Subject: Non-mammalian species	
	Equivalent to EPA OPPTS 870.5385	Experiment: In vivo	Negative
		Subject: Unspecified	
tert-butyl methyl ether	Equivalent to EPA OPPTS 798.5385	Experiment: In vivo	Negative
		Subject: Unspecified	
		Cell: Somatic	

Conclusion/Summary May cause genetic defects.

Carcinogenicity

Product/ingredient name	Result	Species	Dose	Exposure
Gasoline	Negative - Inhalation - Unspecified	Rat	-	113 weeks
	Negative - Dermal - Unspecified	Mouse	-	102 weeks
tert-butyl methyl ether	Positive - Inhalation - Unspecified	Rat	-	2 years

Conclusion/Summary May cause cancer

Reproductive toxicity

Product/ingredient name	Maternal toxicity	Fertility	Developmental toxin	Species	Dose	Exposure
Gasoline	-	Negative	-	Rat	Inhalation	2 generation
	-	-	Negative	Rat	Inhalation	14 days
tert-butyl methyl ether	-	Negative	-	Rat	Inhalation	2 generation
	-	-	Negative	Rat	Inhalation	9 days

Specific target organ toxicity (single exposure)

Name	Category	Route of exposure	Target organs
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Section 11. Toxicological information

Gasoline	Category 3	-	Narcotic effects
Toluene	Category 3	-	Narcotic effects
n-hexane	Category 3	-	Narcotic effects
Benzene	Category 3	-	Respiratory tract irritation
diisopropyl ether	Category 3	-	Narcotic effects
	Category 3	-	Narcotic effects

Specific target organ toxicity (repeated exposure)

Name	Category	Route of exposure	Target organs
Toluene	Category 2	-	hearing organs
n-hexane	Category 2	inhalation	peripheral nervous system
Benzene	Category 1	-	blood system

Aspiration hazard

Name	Result
Gasoline	ASPIRATION HAZARD - Category 1
Toluene	ASPIRATION HAZARD - Category 1
n-hexane	ASPIRATION HAZARD - Category 1

Information on likely routes of exposure

Routes of entry anticipated: Dermal, Inhalation.

Potential acute health effects

Eye contact	No known significant effects or critical hazards.
Inhalation	Can cause central nervous system (CNS) depression. May cause drowsiness or dizziness.
Skin contact	Causes skin irritation.
Ingestion	Irritating to mouth, throat and stomach. Aspiration hazard if swallowed -- harmful or fatal if liquid is aspirated into lungs.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact	Adverse symptoms may include the following: pain or irritation watering redness
Inhalation	Adverse symptoms may include the following: nausea or vomiting headache drowsiness/fatigue dizziness/vertigo unconsciousness
Skin contact	Adverse symptoms may include the following: irritation redness reduced foetal weight increase in foetal deaths skeletal malformations
Ingestion	Adverse symptoms may include the following: nausea or vomiting reduced foetal weight increase in foetal deaths skeletal malformations

Delayed and immediate effects as well as chronic effects from short and long-term exposure

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Eye contact	Vapour, mist or fume may cause eye irritation. Exposure to vapour, mist or fume may cause stinging, redness and watering of the eyes.
Inhalation	Vapour, mist or fume may irritate the nose, mouth and respiratory tract.
Skin contact	Prolonged or repeated contact can defat the skin and lead to irritation, cracking and/or dermatitis.
Ingestion	If swallowed, may irritate the mouth, throat and digestive system. If swallowed, may cause abdominal pain, stomach cramps, nausea, vomiting, diarrhoea, dizziness and drowsiness.
General	This product contains n-hexane. Overexposure to n-hexane may cause progressive and potentially irreversible damage to the peripheral nervous system, particularly in the arms and legs. Animal studies have also shown that n-hexane overexposure may cause testicular injury. However, animal studies conducted with commercial hexane, containing 53% n-hexane, showed neither peripheral nervous system damage nor testicular injury at inhalation exposures up to 9000 ppm. Solvent "sniffing" (abuse) or intentional overexposure to vapours can produce serious central nervous system effects, including unconsciousness, and possibly death.
Carcinogenicity	May cause cancer. Risk of cancer depends on duration and level of exposure.
Mutagenicity	May cause genetic defects.
Teratogenicity	Suspected of damaging the unborn child.
Developmental effects	No known significant effects or critical hazards.
Fertility effects	Suspected of damaging fertility.

Numerical measures of toxicity

Acute toxicity estimates

Route

ATE value

Inhalation (vapours)

1100 mg/l

Other information

Gasoline - Excess exposure to vapors may produce headaches, dizziness, nausea, drowsiness, irritation of eyes, nose and throat and central nervous system depression. Aspiration of this material into the lungs can cause chemical pneumonia and can be fatal. Aspiration into the lungs can occur while vomiting after ingestion of this product. Inhalation of unleaded gasoline vapors did not produce birth defects in laboratory animals. Ingestion of this material can cause gastrointestinal irritation and diarrhea.

In a long-term inhalation study of whole unleaded gasoline vapors, exposure-related kidney damage and kidney tumors were observed in male rats. Similar kidney effects were not seen in female rats or in mice. At the highest exposure level (2056 ppm), female mice had an increased incidence of liver tumors. Results from subsequent scientific studies have shown that a broad variety of chemicals cause these kidney effects only in the male rat. Further studies have discovered the means by which the physiology of the male rat uniquely predispose it to these effects. Consequently, the Risk Assessment Forum of the Environmental Protection Agency has recognized that these responses are not predictive of a human health hazard. The liver tumors that were increased in the high-dose female mice are likewise of questionable significance because of their high spontaneous occurrence even without chemical exposure and because the rate of their occurrence is accelerated by a broad spectrum of chemicals not commonly considered to be carcinogens (e.g., phenobarbital). Thus, the significance of the mouse liver tumor response in terms of human health is questionable.

Gasoline is a complex mixture of hydrocarbons and contains benzene (typically no

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Section 11. Toxicological information

more than 2 volume%), toluene, and xylene. Chronic exposure to high levels of benzene has been shown to cause cancer (leukemia) in humans and other adverse blood effects (anemia). Benzene is considered a human carcinogen by IARC, NTP and OSHA. Over exposure to xylene and toluene can cause irritation to the upper respiratory tract, headache and narcosis. Some liver damage and lung inflammation were seen in chronic studies on xylene in guinea pigs but not in rats.

Solvent "sniffing" (abuse) or intentional overexposure to vapors can produce serious central nervous system effects, including unconsciousness, and possibly death.

Gasoline: Additional toxicity information on components.

Overexposure to n-hexane may cause progressive and potentially irreversible damage to the peripheral nervous system, particularly in the arms and legs. Studies in occupationally exposed individuals indicate that toluene exposure has been associated with impaired color vision and decreased performance in some neurobehavioral tests.

Prolonged high level exposure to toluene or xylene has caused some degree of hearing loss in experimental animals.

Inhalation of very high concentrations of gasoline vapors and some of its components can result in cardiac sensitization and irregular heartbeats, leading to potentially fatal changes in heart rhythms. Injection of adrenaline-like agents may enhance this effect.

Benzene: Acute toxicity of benzene results primarily from depression of the central nervous system (CNS). Inhalation of concentrations over 50 ppm can produce headache, lassitude, weariness, dizziness, drowsiness, or excitation. Exposure to very high levels can result in unconsciousness and death.

Benzene: Long-term overexposure to benzene has been associated with certain types of leukemia in humans. In addition, the International Agency for Research on Cancer (IARC), the National Toxicology Program, and OSHA consider benzene to be a human carcinogen. Chronic exposures to high levels of benzene have been reported to cause adverse blood effects including anemia. Benzene exposure can occur by inhalation and absorption through the skin. Inhalation and forced feeding studies of benzene in laboratory animals have produced a carcinogenic response in a variety of organs, including possibly leukemia, other adverse effects on the blood, chromosomal changes and some effects on the immune system. Exposure to benzene at levels up to 300 ppm did not produce birth defects in animal studies; however, exposure to higher dosage levels resulted in a reduction of body weight of the rat pups (fetotoxicity). Changes in the testes have been observed in mice exposed to benzene at 300 ppm, but reproductive performance was not altered in rats exposed to benzene at the same level. Aspiration of this material into the lungs can cause chemical pneumonia and can be fatal. Aspiration into the lungs can occur while vomiting after ingestion of this material.

Toluene: Aspiration of this material into the lungs can cause chemical pneumonia and can be fatal. Aspiration into the lungs can occur while vomiting after ingestion of this material. Deliberate inhalation of high concentrations of toluene has been linked to damage of the brain, liver and kidney. Inhalation of very high concentrations of toluene, such as in cases of solvent abuse, has resulted in sudden death which may be a result of cardiac arrhythmia or central nervous system depression. Mental and/or growth retardation has been reported in children of women who deliberately inhale toluene during pregnancy (usually at thousands of ppm). Foetal developmental toxicity was observed when pregnant rats were exposed to toluene at levels of 1500 ppm. Maternal toxicity was also observed at this concentration. Prolonged, high level exposure to toluene in laboratory animals has resulted in hearing loss. Exposure studies in rats have resulted in adverse effects on the kidney, liver and central nervous system. Studies in occupationally

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Section 11. Toxicological information

exposed individuals indicate that toluene exposure has been associated with impaired colour vision and decreased performance in some neurobehavioural tests. There are occupational studies which report an association between inhalation exposure to toluene and adverse effects on reproduction including spontaneous abortion. The methodology of these studies and the reliability of the results have been questioned. In a two-generation study in rats, inhalation of toluene at levels up to 2000 ppm did not produce adverse effects on fertility or reproductive performance.

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure	
Gasoline	Acute EC50 15.41 mg/l Nominal Fresh water	Micro-organism	40 hours	
	Acute EL50 3.1 mg/l Nominal Fresh water	Algae	72 hours	
	Acute EL50 3.7 mg/l Nominal Fresh water	Algae	96 hours	
	Acute EL50 4.5 mg/l Nominal Fresh water	Daphnia	48 hours	
	Acute LL50 10 mg/l Nominal Fresh water	Fish	96 hours	
	Acute LL50 8.2 mg/l Nominal Fresh water	Fish	96 hours	
	Acute NOELR 0.5 mg/l Nominal Fresh water	Algae	72 hours	
	Acute NOELR 0.5 mg/l Nominal Fresh water	Daphnia	48 hours	
	Chronic EL50 10 mg/l Nominal Fresh water	Daphnia	21 days	
	Chronic EL50 >40 mg/l Nominal Fresh water	Daphnia	21 days	
	Chronic EL50 10 mg/l Nominal Fresh water	Fish	21 days	
	Chronic LL50 5.2 mg/l Nominal Fresh water	Fish	14 days	
	Chronic NOELR 2.6 mg/l Nominal Fresh water	Daphnia	21 days	
	Chronic NOELR 16 mg/l Nominal Fresh water	Daphnia	21 days	
	Chronic NOELR 2.6 mg/l Nominal Fresh water	Fish	14 days	
	Chronic NOELR 2.6 mg/l Nominal Fresh water	Fish	21 days	
	Chronic PNEC >0.4 mg/kg	soil, plants	-	
	tert-butyl methyl ether	Acute EC50 472 mg/l Fresh water	Daphnia	48 hours
		Acute LC50 200 mg/l Marine water	Crustaceans	96 hours
		Acute LC50 672 mg/l Fresh water	Fish	96 hours
	Acute LC50 574 mg/l Marine water	Fish	96 hours	
	Chronic NOEC 26 mg/l Marine water	Crustaceans	28 days	
	Chronic NOEC 51 mg/l Fresh water	Daphnia	21 days	

Conclusion/Summary

Toxic to aquatic life with long lasting effects.

Persistence and degradability

Expected to be biodegradable. Non-persistent per IMO criteria

Product/ingredient name	Test	Result	Dose	Inoculum
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Section 12. Ecological information

tert-butyl methyl ether	not guideline	100 % - 1.25 days	-	-
	Modelled data	61 to 69 % - 151 days	-	-
	OECD 301 D	9.24 % - Not readily - 28 days	-	-
	OECD 301 D	1.8 % - Not readily - 28 days	-	-
	OECD 301 D	0 % - Not readily - 28 days	-	-
	Modelled data	0 % - 250 days	-	-

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
Gasoline	-	-	Inherent

Bioaccumulative potential

This product is not expected to bioaccumulate through food chains in the environment.

Product/ingredient name	LogP_{ow}	BCF	Potential
Gasoline	2 to 7	-	high
Toluene	2.73	90	low
n-hexane	4	501	high
Benzene	2.13	11	low
tert-butyl methyl ether	1.04	1.5	low
2-methylpropan-2-ol	0.317	-	low
diisopropyl ether	2.4	-	low

Mobility in soil

Soil/water partition coefficient (K_{oc})	Not available.
Mobility	Spillages may penetrate the soil causing ground water contamination.

Other ecological information Spills may form a film on water surfaces causing physical damage to organisms. Oxygen transfer could also be impaired.





Section 13. Disposal considerations

Disposal methods	The generation of waste should be avoided or minimised wherever possible. Significant quantities of waste product residues should not be disposed of via the foul sewer but processed in a suitable effluent treatment plant. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Vapour from product residues may create a highly flammable or explosive atmosphere inside the container. Do not cut, weld or grind used containers unless they have been cleaned thoroughly internally. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.
Special Precautions for Landfill or Incineration	No additional special precautions identified.

Section 14. Transport information

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Section 14. Transport information

	ADG	IMDG	IATA
UN number	UN1203	UN1203	UN1203
UN proper shipping name	MOTOR SPIRIT or GASOLINE or PETROL	MOTOR SPIRIT or GASOLINE or PETROL. Marine pollutant	MOTOR SPIRIT or GASOLINE or PETROL
Transport hazard class(es)	3 	3  	3 
Packing group	II	II	II
Environmental hazards	No.	Yes.	<input checked="" type="checkbox"/> Yes. The environmentally hazardous substance mark is not required.
Additional information	<u>Hazchem code</u> 3YE <u>Initial emergency response guide</u> 14	<input checked="" type="checkbox"/> The marine pollutant mark is not required when transported in sizes of ≤5 L or ≤5 kg. <u>Emergency schedules</u> F-E, S-E	The environmentally hazardous substance mark may appear if required by other transportation regulations.

Special precautions for user Not available.

Transport in bulk according to IMO instruments

Proper shipping name

MARPOL Annex 1 rules apply for bulk shipments by sea.
Category: gasoline and spirits

Section 15. Regulatory information

Standard for the Uniform Scheduling of Medicines and Poisons

Not scheduled When packed in containers having capacity of greater than 20 litres.

S5 When packed in containers having capacity of less than 20 litres.

Model Work Health and Safety Regulations - Scheduled Substances

Ingredient name	Schedule
<input checked="" type="checkbox"/> Benzene	Restricted carcinogen [All uses involving benzene as a feedstock containing more than 50% of benzene by volume; Restricted use - Genuine research or analysis; For spray painting if the substance contains more than 1% by volume]

Montreal Protocol

Ingredient name	List name	Status
Not listed.		

Stockholm Convention on Persistent Organic Pollutants

Ingredient name	List name	Status
Not listed.		

Rotterdam Convention on Prior Informed Consent (PIC)

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Section 15. Regulatory information

Ingredient name	List name	Status
Not listed.		

International lists

National inventory

REACH Status	For the REACH status of this product please consult your company contact, as identified in Section 1.
Australia inventory (AICS)	Contact local supplier or distributor.
Canada inventory	<input checked="" type="checkbox"/> Not determined.
China inventory (IECSC)	<input checked="" type="checkbox"/> Not determined.
Japan inventory (ENCS)	<input checked="" type="checkbox"/> Not determined.
Korea inventory (KECI)	At least one component is not listed.
Philippines inventory (PICCS)	<input checked="" type="checkbox"/> Not determined.
Taiwan Chemical Substances Inventory (TCSI)	Not determined.
United States inventory (TSCA 8b)	Not determined.

Section 16. Any other relevant information

History

Date of printing	5/26/2021
Date of issue/Date of revision	5/26/2021
Date of previous issue	9/16/2016
Version	2
Prepared by	Product Stewardship
Key to abbreviations	ADG = Australian Dangerous Goods ATE = Acute Toxicity Estimate BCF = Bioconcentration Factor GHS = Globally Harmonized System of Classification and Labelling of Chemicals IATA = International Air Transport Association IBC = Intermediate Bulk Container IMDG = International Maritime Dangerous Goods LogPow = logarithm of the octanol/water partition coefficient MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution) NOHSC = National Occupational Health and Safety Commission REACH = Registration, Evaluation, Authorisation and Restriction of Chemicals Regulation [Regulation (EC) No. 1907/2006] STEL = Short term exposure limit SUSMP = Standard Uniform Schedule of Medicine and Poisons UN = United Nations TWA = Time weighted average VOC = Volatile Organic Compound SADT = Self-Accelerating Decomposition Temperature Varies = may contain one or more of the following 64741-88-4, 64741-89-5, 64741-95-3, 64741-96-4, 64742-01-4, 64742-44-5, 64742-45-6, 64742-52-5, 64742-53-6, 64742-54-7, 64742-55-8, 64742-56-9, 64742-57-0, 64742-58-1, 64742-62-7, 64742-63-8, 64742-65-0, 64742-70-7, 72623-85-9, 72623-86-0, 72623-87-1

Procedure used to derive the classification

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Section 16. Any other relevant information

Classification	Justification
<input checked="" type="checkbox"/> FLAMMABLE LIQUIDS - Category 1 SKIN CORROSION/IRRITATION - Category 2 GERM CELL MUTAGENICITY - Category 1B CARCINOGENICITY - Category 1B REPRODUCTIVE TOXICITY - Category 2 SPECIFIC TARGET ORGAN TOXICITY - SINGLE EXPOSURE (Narcotic effects) - Category 3 ASPIRATION HAZARD - Category 1	On basis of test data Calculation method Expert judgment Expert judgment Calculation method Calculation method Calculation method

Indicates information that has changed from previously issued version.

Notice to reader

All reasonably practicable steps have been taken to ensure this data sheet and the health, safety and environmental information contained in it is accurate as of the date specified below. No warranty or representation, express or implied is made as to the accuracy or completeness of the data and information in this data sheet.

The data and advice given apply when the product is sold for the stated application or applications. You should not use the product other than for the stated application or applications without seeking advice from BP Group.

It is the user's obligation to evaluate and use this product safely and to comply with all applicable laws and regulations. The BP Group shall not be responsible for any damage or injury resulting from use, other than the stated product use of the material, from any failure to adhere to recommendations, or from any hazards inherent in the nature of the material. Purchasers of the product for supply to a third party for use at work, have a duty to take all necessary steps to ensure that any person handling or using the product is provided with the information in this sheet. Employers have a duty to tell employees and others who may be affected of any hazards described in this sheet and of any precautions that should be taken. You can contact the BP Group to ensure that this document is the most current available. Alteration of this document is strictly prohibited.

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SAFETY DATA SHEET



Unleaded 91

Section 1. Identification

GHS product identifier	Unleaded 91
Other means of identification	regular unleaded petrol
Product code	0000002733
SDS no.	0000002733
Historic SDS no.	875; 0000002889
Relevant identified uses of the substance or mixture and uses advised against	
Use of the substance/mixture	Use only as a motor fuel for spark ignition engines. NOT for aviation use. Should NOT be used as a solvent nor cleaning agent. For specific application advice see appropriate Technical Data Sheet or consult our company representative.
Manufacturer Supplier	BP Australia Pty Ltd Level 17, 717 Bourke Street Docklands, Victoria 3008 ABN 53 004 085 616 www.bp.com.au Technical Helpline Number: 1300 139 700
EMERGENCY TELEPHONE NUMBER	1800 638 556

Section 2. Hazard(s) identification

Classification of the substance or mixture	<input checked="" type="checkbox"/> FLAMMABLE LIQUIDS - Category 1 SKIN CORROSION/IRRITATION - Category 2 GERM CELL MUTAGENICITY - Category 1B CARCINOGENICITY - Category 1B SPECIFIC TARGET ORGAN TOXICITY - SINGLE EXPOSURE (Narcotic effects) - Category 3 ASPIRATION HAZARD - Category 1
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GHS label elements

Hazard pictograms



Signal word

DANGER

Hazard statements

H224 - Extremely flammable liquid and vapour.
H304 - May be fatal if swallowed and enters airways.
H315 - Causes skin irritation.
H336 - May cause drowsiness or dizziness.
H340 - May cause genetic defects.
H350 - May cause cancer.

Precautionary statements

General

P102 - Keep out of reach of children.
P101 - If medical advice is needed, have product container or label at hand.

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Section 2. Hazard(s) identification

Prevention

P201 - Obtain special instructions before use.
P202 - Do not handle until all safety precautions have been read and understood.
P281 - Use personal protective equipment as required.
P280 - Wear protective gloves, protective clothing and eye or face protection.
P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P241 - Use explosion-proof electrical, ventilating or lighting equipment.
P242 - Use non-sparking tools.
P243 - Take action to prevent static discharges.
P271 - Use only outdoors or in a well-ventilated area.
P261 - Avoid breathing vapour.
P264 - Wash hands thoroughly after handling.

Response

P308 + P313 - IF exposed or concerned: Get medical attention.
P304 + P340, P312 - IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER or doctor if you feel unwell.
P301 + P310, P331 - IF SWALLOWED: Immediately call a POISON CENTER or physician. Do NOT induce vomiting.
P303 + P361 + P353 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water.
P362 - Take off contaminated clothing and wash before reuse.
P302 + P352 - IF ON SKIN: Wash with plenty of soap and water.
P332 + P313 - If skin irritation occurs: Get medical attention.

Storage

P405 - Store locked up.
P403 + P233 - Store in a well-ventilated place. Keep container tightly closed.
P403 + P235 - Keep cool.

Disposal

P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations.

Supplemental label elements

Not applicable.

Other hazards which do not result in classification

Static accumulating flammable liquid can become electrostatically charged even in bonded and grounded equipment. Sparks may ignite liquid and vapour may cause flash fire or explosion.

Section 3. Composition and ingredient information

Substance/mixture

Mixture

A complex mixture of volatile hydrocarbons containing paraffins, naphthenes, olefins and aromatics with carbon numbers predominantly between C4 and C12. May contain oxygenates. May also contain small quantities of proprietary performance additives.

Ingredient name	% (w/w)	CAS number
Gasoline	≥90	86290-81-5
Contains:		
Benzene	<1	71-43-2
Polycyclic aromatic hydrocarbons (PAHs)	<1	mixture
diisopropyl ether	<1	108-20-3
2-methylpropan-2-ol	<1	75-65-0
tert-butyl methyl ether	<1	1634-04-4

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

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Section 4. First aid measures

Description of necessary first aid measures

Eye contact	In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Eyelids should be held away from the eyeball to ensure thorough rinsing. Check for and remove any contact lenses. Get medical attention.
Inhalation	If inhaled, remove to fresh air. Get medical attention. If exposure to vapour, mists or fumes causes drowsiness, headache, blurred vision or irritation of the eyes, nose or throat, remove immediately to fresh air. Keep patient warm and at rest. If any symptoms persist obtain medical advice.
Skin contact	In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Drench contaminated clothing with water before removing. This is necessary to avoid the risk of sparks from static electricity that could ignite contaminated clothing. Contaminated clothing is a fire hazard. Contaminated leather, particularly footwear, must be discarded. Clean shoes thoroughly before reuse. Get medical attention.
Ingestion	Do not induce vomiting. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Aspiration hazard if swallowed. Can enter lungs and cause damage. Get medical attention immediately.

Most important symptoms/effects, acute and delayed

See Section 11 for more detailed information on health effects and symptoms.

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician	Treatment should in general be symptomatic and directed to relieving any effects. Product can be aspirated on swallowing or following regurgitation of stomach contents, and can cause severe and potentially fatal chemical pneumonitis, which will require urgent treatment. Because of the risk of aspiration, induction of vomiting and gastric lavage should be avoided. Gastric lavage should be undertaken only after endotracheal intubation. Monitor for cardiac dysrhythmias.
Specific treatments	No specific treatment.
Protection of first-aiders	No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

Section 5. Firefighting measures

Extinguishing media

Suitable extinguishing media	In case of fire, use water fog, foam, dry chemical or carbon dioxide extinguisher or spray.
Unsuitable extinguishing media	Do not use water jet.

Specific hazards arising from the chemical

Extremely flammable liquid and vapour. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. Runoff to sewer may create fire or explosion hazard. Vapours can form explosive mixtures with air. Vapours are heavier than air and can spread along the ground or float on water surfaces to remote ignition sources. Vapours may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flash back. This product is a poor conductor of electricity and can become electrostatically charged. If sufficient charge is accumulated, ignition of flammable mixtures can occur. To reduce potential for static discharge, use proper bonding and grounding procedures. This liquid may accumulate static electricity when filling properly-grounded containers. Static accumulation may be significantly increased by the presence of small

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Section 5. Firefighting measures

Hazardous thermal decomposition products	quantities of water or other contaminants. Liquid will float and may reignite on surface of water. Combustion products may include the following: carbon oxides (CO, CO ₂) (carbon monoxide, carbon dioxide)
Special protective actions for fire-fighters	No action shall be taken involving any personal risk or without suitable training. Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.
Special protective equipment for fire-fighters	Fire-fighters should wear positive pressure self-contained breathing apparatus (SCBA) and full turnout gear.
Hazchem code	3YE

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel	Immediately contact emergency personnel. No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. No flares, smoking or flames in hazard area. Avoid breathing vapour or mist. Provide adequate ventilation. Put on appropriate personal protective equipment. Floors may be slippery; use care to avoid falling. Eliminate all ignition sources.
For emergency responders	Entry into a confined space or poorly ventilated area contaminated with vapour, mist or fume is extremely hazardous without the correct respiratory protective equipment and a safe system of work. Wear self-contained breathing apparatus. Wear a suitable chemical protective suit. Chemical resistant boots. See also the information in "For non-emergency personnel".
Environmental precautions	Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities. In case of small spillages in closed waters (i.e. ports), contain product with floating barriers or other equipment. Collect spilled product by absorbing with specific floating absorbents. If possible, large spillages in open waters should be contained with floating barriers or other mechanical means. If this is not possible, control the spreading of the spillage, and collect the product by skimming or other suitable mechanical means. The use of dispersants should be advised by an expert, and, if required, approved by local authorities. Collect recovered product and other contaminated materials in suitable tanks or containers for recycle, recovery or safe disposal.

Methods and material for containment and cleaning up

Small spill	Eliminate all ignition sources. Stop leak if without risk. Move containers from spill area. Absorb with an inert material and place in an appropriate waste disposal container. Use spark-proof tools and explosion-proof equipment. Dispose of via a licensed waste disposal contractor. The method and equipment used must be in conformance with appropriate regulations and industry practice on explosive atmospheres.
Large spill	Eliminate all ignition sources. Stop leak if without risk. Move containers from spill area. Approach the release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Dike spill area and do not allow product to reach sewage system and surface or ground water. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations. Use spark-proof tools and explosion-proof equipment. Contaminated absorbent material may pose the same hazard as the spill product. The method and equipment used must be in conformance with appropriate regulations and industry practice on explosive atmospheres. Dispose of via a licensed waste disposal contractor.

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Section 6. Accidental release measures

Section 7. Handling and storage

Precautions for safe handling

Protective measures

Do not fill container while it is in or on a vehicle. Static electricity may ignite vapour and cause fire. Place container on ground when filling and keep nozzle in contact with container.

Put on appropriate personal protective equipment (see Section 8). Avoid exposure - obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not get in eyes or on skin or clothing. Do not swallow. Aspiration hazard if swallowed. Can enter lungs and cause damage. Never siphon by mouth. Avoid breathing vapour or mist. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use only non-sparking tools. Take precautionary measures against electrostatic discharges. Empty containers retain product residue and can be hazardous. Do not reuse container. Avoid contact of spilt material and runoff with soil and surface waterways. Handling operations that can promote accumulation of static charges include but are not limited to: mixing, filtering, pumping at high flow rates, splash filling, creating mists or sprays, tank and container filling, tank cleaning, sampling, gauging, switch loading, vacuum truck operations. Restrict flow velocity according to API 2003 (2008), NFPA 77 (2007), and Laurence Britton, "Avoiding Static Ignition Hazards in Chemical Operations". To reduce potential for static discharge, ensure that all equipment is properly grounded and bonded and meets appropriate electrical classification requirements.

Advice on general occupational hygiene

Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Wash thoroughly after handling. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities

Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Eliminate all ignition sources. Separate from oxidising materials. Keep container tightly closed and sealed until ready for use. Store and use only in equipment/containers designed for use with this product. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination.

Light hydrocarbon vapours can build up in the headspace of tanks. These can cause flammability/explosion hazards even at temperatures below the normal flash point (note: flash point must not be regarded as a reliable indicator of the potential flammability of vapour in tank headspaces). Tank headspaces should always be regarded as potentially flammable and care should be taken to avoid static electrical discharge and all ignition sources during filling, ullaging and sampling from storage tanks. Do not enter storage tanks. If entry to vessels is necessary, follow permit to work procedures. Entry into a confined space or poorly ventilated area contaminated with vapour, mist or fume is extremely hazardous without the correct respiratory protective equipment and a safe system of work. When the product is pumped (e.g. during filling, discharge or ullaging) and when sampling, there is a risk of static discharge. Ensure equipment used is properly earthed or bonded to the tank structure. Electrical equipment should not be used unless it is intrinsically safe (i.e. will not produce sparks). Explosive air/vapour mixtures may form at ambient temperature. If product comes into contact with hot surfaces, or leaks occur from pressurised fuel pipes, the vapour or mists generated will create a flammability or

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Section 7. Handling and storage

explosion hazard. Product contaminated rags, paper or material used to absorb spillages, represent a fire hazard, and should not be allowed to accumulate. Dispose of safely immediately after use.

Section 8. Exposure controls and personal protection

[Control parameters](#)

[Occupational exposure limits](#)

Ingredient name	Exposure limits
Gasoline	ACGIH TLV (United States). TWA: 300 ppm 8 hours. Issued/Revised: 5/1996 TWA: 890 mg/m ³ 8 hours. Issued/Revised: 5/1996 STEL: 500 ppm 15 minutes. Issued/Revised: 5/1996 STEL: 1480 mg/m ³ 15 minutes. Issued/Revised: 5/1996
Benzene	Safe Work Australia (Australia). TWA: 3.2 mg/m ³ 8 hours. Issued/Revised: 4/2003 TWA: 1 ppm 8 hours. Issued/Revised: 4/2003
Polycyclic aromatic hydrocarbons (PAHs)	Safe Work Australia (Australia). TWA: 0.2 mg/m ³ 8 hours.
diisopropyl ether	Safe Work Australia (Australia). STEL: 1300 mg/m ³ 15 minutes. Issued/Revised: 5/1995 STEL: 310 ppm 15 minutes. Issued/Revised: 5/1995 TWA: 1040 mg/m ³ 8 hours. Issued/Revised: 5/1995 TWA: 250 ppm 8 hours. Issued/Revised: 5/1995
2-methylpropan-2-ol	Safe Work Australia (Australia). STEL: 455 mg/m ³ 15 minutes. Issued/Revised: 5/1995 STEL: 150 ppm 15 minutes. Issued/Revised: 5/1995 TWA: 303 mg/m ³ 8 hours. Issued/Revised: 5/1995 TWA: 100 ppm 8 hours. Issued/Revised: 5/1995
tert-butyl methyl ether	Safe Work Australia (Australia). STEL: 275 mg/m ³ 15 minutes. Issued/Revised: 4/2002 STEL: 75 ppm 15 minutes. Issued/Revised: 4/2002 TWA: 92 mg/m ³ 8 hours. Issued/Revised: 4/2002 TWA: 25 ppm 8 hours. Issued/Revised: 4/2002

Section 8. Exposure controls and personal protection

Appropriate engineering controls

All activities involving chemicals should be assessed for their risks to health, to ensure exposures are adequately controlled. Personal protective equipment should only be considered after other forms of control measures (e.g. engineering controls) have been suitably evaluated. Personal protective equipment should conform to appropriate standards, be suitable for use, be kept in good condition and properly maintained.

Your supplier of personal protective equipment should be consulted for advice on selection and appropriate standards. For further information contact your national organisation for standards.

Provide exhaust ventilation or other engineering controls to keep the relevant airborne concentrations below their respective occupational exposure limits.

The final choice of protective equipment will depend upon a risk assessment. It is important to ensure that all items of personal protective equipment are compatible.

Environmental exposure controls

Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation.

Individual protection measures

Hygiene measures

Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection

Chemical splash goggles.

Skin protection

Hand protection

Wear chemical resistant gloves.

Do not re-use gloves. Protective gloves must give suitable protection against mechanical risks (i.e. abrasion, blade cut and puncture). Protective gloves will deteriorate over time due to physical and chemical damage. Inspect and replace gloves on a regular basis. The frequency of replacement will depend upon the circumstances of use.

Recommended: Gloves made from fluoroelastomer resistant to hydrocarbons and a wide range of chemicals.

Wear a chemically resistant multi-layer laminate inner glove inside an outer nitrile glove. The purpose of the outer glove is to protect the inner glove from cuts and mechanical damage. The presence of aromatic hydrocarbons in the product will significantly shorten the length of time that nitrile gloves will provide protection. Do not re-use nitrile gloves if exposed to aromatic hydrocarbons.

Skin protection

Use of protective clothing is good industrial practice.

Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Cotton or polyester/cotton overalls will only provide protection against light superficial contamination that will not soak through to the skin. Overalls should be laundered on a regular basis. When the risk of skin exposure is high (e.g. when cleaning up spillages or if there is a risk of splashing) then chemical resistant aprons and/or impervious chemical suits and boots will be required.

Wear suitable protective clothing.

Footwear highly resistant to chemicals.

When there is a risk of ignition wear inherently fire resistant protective clothes and gloves.

When there is a risk of ignition from static electricity, wear anti-static protective clothing. For greatest effectiveness against static electricity, overalls, boots and gloves should all be anti-static.

When the risk of skin exposure is high (from experience this could apply to the following tasks: cleaning work, maintenance and service, filling and transfer, taking samples and cleaning up spillages) then a chemical protective suit and boots will be

Section 8. Exposure controls and personal protection

required.

Work clothing / overalls should be laundered on a regular basis. Laundering of contaminated work clothing should only be done by professional cleaners who have been told about the hazards of the contamination. Always keep contaminated work clothing away from uncontaminated work clothing and uncontaminated personal clothes.

Other skin protection

Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory protection

Use with adequate ventilation.

If there is a requirement for the use of a respiratory protective device, but the use of breathing apparatus (independent of ambient atmosphere) is not required, then a suitable filtering device must be worn.

The filter class must be suitable for the maximum contaminant concentration (gas/vapour/aerosol/particulates) that may arise when handling the product.

Recommended: Avoid breathing of vapours, mists or spray. Select and use respirators in accordance with AS/NZS 1715/1716. When mists or vapours exceed the exposure standards then the use of the following is recommended: Approved respirator with organic vapour and dust/mist (Type P1) filters. Filter capacity and respirator type depends on exposure level.

Refer to standards:

Respiratory protection:AS/NZS 1715 and AS/NZS 1716

Gloves:AS/NZS 2161.1

Eye protection:AS/NZS 1336 and AS/NZS 1337

Section 9. Physical and chemical properties

Appearance

Physical state	Liquid. Clear and Bright
Colour	Pale colour. Yellow. to Red.
Odour	Hydrocarbon.
Odour threshold	Not available.
pH	Not available.
Melting point	Not available.
Boiling point	30 to 210°C (86 to 410°F)
Flash point	Closed cup: <-40°C (<-40°F)
Evaporation rate	Not available.
Flammability (solid, gas)	Not applicable. Based on - Physical state
Lower and upper explosive (flammable) limits	Lower: 1.4% Upper: 7.6%
Vapour pressure	30.1 to 100.3 kPa (225.6 to 752 mm Hg)
Vapour density	>1 [Air = 1]
Relative density	Not available.
Density	710 to 750 kg/m ³ (0.71 to 0.75 g/cm ³)
Solubility	insoluble in water.
Partition coefficient: n-octanol/water	Not available.
Auto-ignition temperature	>350°C (>662°F)
Decomposition temperature	Not available.
Viscosity	Kinematic: 0.4 to 0.55 mm ² /s (0.4 to 0.55 cSt) at 40°C
Remarks	Reid vapor pressure (RVP): 55 to 100 kPa (40 °C)

Section 10. Stability and reactivity

Reactivity	No specific test data available for this product. Refer to Conditions to avoid and Incompatible materials for additional information.
Chemical stability	The product is stable.
Possibility of hazardous reactions	Under normal conditions of storage and use, hazardous reactions will not occur. Under normal conditions of storage and use, hazardous polymerisation will not occur.
Conditions to avoid	Avoid all possible sources of ignition (spark or flame). Avoid excessive heat.
Incompatible materials	Reactive or incompatible with the following materials: oxidising materials.
Hazardous decomposition products	Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Gasoline	LC50 Inhalation Vapour	Rat	>7630 mg/m ³ Nominal	4 hours
	LC50 Inhalation Vapour	Rat	>5610 mg/m ³ analytical	4 hours
	LD50 Dermal	Rabbit	>2000 mg/kg	-
diisopropyl ether	LD50 Oral	Rat	>5000 mg/kg	-
	LC50 Inhalation Vapour	Rat	40.5 mg/m ³	1 hours
	LD50 Dermal	Rabbit	2000 mg/kg	-
2-methylpropan-2-ol	LD50 Oral	Rat	8470 mg/kg	-
	LC50 Inhalation Vapour	Rat	>10000 ppm	4 hours
	LD50 Oral	Rabbit	3559 mg/kg	-
tert-butyl methyl ether	LD50 Oral	Rat	2743 mg/kg	-
	LC50 Inhalation Vapour	Rat	85 mg/l	4 hours
	LD50 Dermal	Rat	>2000 mg/kg	-
	LD50 Oral	Rat	>2000 mg/kg	-

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
Gasoline	Skin - Irritant	Rabbit	-	-	-
	Eyes - Non-irritating to the eyes.	Rabbit	-	-	-
tert-butyl methyl ether	Skin - Irritation	Rabbit	-	-	-
	Eyes - Non-irritating to the eyes.	Rabbit	-	-	-

Skin Causes skin irritation.

Skin Not classified. Based on available data, the classification criteria are not met.

Mutagenicity

Product/ingredient name	Test	Experiment	Result
Gasoline	Equivalent to OECD 476	Experiment: In vitro Subject: Mammal - species unspecified	Negative
	Equivalent to OECD 471	Experiment: In vitro Subject: Non-mammalian species	Negative
	EPA OPPTS 870.5395	Experiment: In vivo Subject: Unspecified Cell: Germ	Negative
	Equivalent to OECD 475	Experiment: In vivo	Negative

Section 11. Toxicological information

tert-butyl methyl ether	EU B 13/14	Subject: Unspecified Cell: Germ Experiment: In vitro	Negative
	OECD 471	Subject: Non-mammalian species Experiment: In vitro	Negative
	OECD 476	Subject: Non-mammalian species Experiment: In vitro	Negative
	Equivalent to OECD 473	Subject: Non-mammalian species Experiment: In vitro	Negative
	Equivalent to OECD 486	Subject: Non-mammalian species Experiment: In vivo	Negative
	Equivalent to EPA OPPTS 870.5385	Subject: Unspecified Cell: Somatic Experiment: In vivo	Negative
	Equivalent to EPA OPPTS 798.5385	Subject: Unspecified Cell: Somatic Experiment: In vivo	Negative

Conclusion/Summary May cause genetic defects.

Carcinogenicity

Product/ingredient name	Result	Species	Dose	Exposure
Gasoline	Negative - Inhalation - Unspecified	Rat	-	113 weeks
	Negative - Dermal - Unspecified	Mouse	-	102 weeks
tert-butyl methyl ether	Positive - Inhalation - Unspecified	Rat	-	2 years

Conclusion/Summary May cause cancer

Reproductive toxicity

Product/ingredient name	Maternal toxicity	Fertility	Developmental toxin	Species	Dose	Exposure
Gasoline	-	Negative	-	Rat	Inhalation	2 generation
tert-butyl methyl ether	-	-	Negative	Rat	Inhalation	14 days
	-	Negative	-	Rat	Inhalation	2 generation
	-	-	Negative	Rat	Inhalation	9 days

Specific target organ toxicity (single exposure)

Name	Category	Route of exposure	Target organs
Gasoline	Category 3	-	Narcotic effects
	Category 3	-	Respiratory tract irritation
diisopropyl ether	Category 3	-	Narcotic effects
	Category 3	-	Narcotic effects

Specific target organ toxicity (repeated exposure)

Name	Category	Route of exposure	Target organs
Benzene	Category 1	-	blood system

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Section 11. Toxicological information

Aspiration hazard

Name

Gasoline

Result

ASPIRATION HAZARD - Category 1

Information on likely routes of exposure

Routes of entry anticipated: Dermal, Inhalation.

Potential acute health effects

Eye contact

No known significant effects or critical hazards.

Inhalation

Can cause central nervous system (CNS) depression. May cause drowsiness or dizziness.

Skin contact

Causes skin irritation.

Ingestion

Irritating to mouth, throat and stomach. Aspiration hazard if swallowed -- harmful or fatal if liquid is aspirated into lungs.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact

Adverse symptoms may include the following:
pain or irritation
watering
redness

Inhalation

Adverse symptoms may include the following:
nausea or vomiting
headache
drowsiness/fatigue
dizziness/vertigo
unconsciousness

Skin contact

Adverse symptoms may include the following:
irritation
redness

Ingestion

Adverse symptoms may include the following:
nausea or vomiting

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Eye contact

Vapour, mist or fume may cause eye irritation. Exposure to vapour, mist or fume may cause stinging, redness and watering of the eyes.

Inhalation

Vapour, mist or fume may irritate the nose, mouth and respiratory tract.

Skin contact

Prolonged or repeated contact can defat the skin and lead to irritation, cracking and/or dermatitis.

Ingestion

If swallowed, may irritate the mouth, throat and digestive system. If swallowed, may cause abdominal pain, stomach cramps, nausea, vomiting, diarrhoea, dizziness and drowsiness.

General

Solvent "sniffing" (abuse) or intentional overexposure to vapours can produce serious central nervous system effects, including unconsciousness, and possibly death.

Carcinogenicity

May cause cancer. Risk of cancer depends on duration and level of exposure.

Mutagenicity

May cause genetic defects.

Teratogenicity

No known significant effects or critical hazards.

Developmental effects

No known significant effects or critical hazards.

Fertility effects

No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Route

ATE value

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Section 11. Toxicological information

Inhalation (vapours)

1156.79 mg/l

Other information

Gasoline - Excess exposure to vapors may produce headaches, dizziness, nausea, drowsiness, irritation of eyes, nose and throat and central nervous system depression. Aspiration of this material into the lungs can cause chemical pneumonia and can be fatal. Aspiration into the lungs can occur while vomiting after ingestion of this product. Inhalation of unleaded gasoline vapors did not produce birth defects in laboratory animals. Ingestion of this material can cause gastrointestinal irritation and diarrhea.

In a long-term inhalation study of whole unleaded gasoline vapors, exposure-related kidney damage and kidney tumors were observed in male rats. Similar kidney effects were not seen in female rats or in mice. At the highest exposure level (2056 ppm), female mice had an increased incidence of liver tumors. Results from subsequent scientific studies have shown that a broad variety of chemicals cause these kidney effects only in the male rat. Further studies have discovered the means by which the physiology of the male rat uniquely predispose it to these effects. Consequently, the Risk Assessment Forum of the Environmental Protection Agency has recognized that these responses are not predictive of a human health hazard. The liver tumors that were increased in the high-dose female mice are likewise of questionable significance because of their high spontaneous occurrence even without chemical exposure and because the rate of their occurrence is accelerated by a broad spectrum of chemicals not commonly considered to be carcinogens (e.g., phenobarbital). Thus, the significance of the mouse liver tumor response in terms of human health is questionable.

Gasoline is a complex mixture of hydrocarbons and contains benzene (typically no more than 2 volume%), toluene, and xylene. Chronic exposure to high levels of benzene has been shown to cause cancer (leukemia) in humans and other adverse blood effects (anemia). Benzene is considered a human carcinogen by IARC, NTP and OSHA. Over exposure to xylene and toluene can cause irritation to the upper respiratory tract, headache and narcosis. Some liver damage and lung inflammation were seen in chronic studies on xylene in guinea pigs but not in rats.

Solvent "sniffing" (abuse) or intentional overexposure to vapors can produce serious central nervous system effects, including unconsciousness, and possibly death.

Gasoline: Additional toxicity information on components.

Overexposure to n-hexane may cause progressive and potentially irreversible damage to the peripheral nervous system, particularly in the arms and legs. Studies in occupationally exposed individuals indicate that toluene exposure has been associated with impaired color vision and decreased performance in some neurobehavioral tests.

Prolonged high level exposure to toluene or xylene has caused some degree of hearing loss in experimental animals.

Inhalation of very high concentrations of gasoline vapors and some of its components can result in cardiac sensitization and irregular heartbeats, leading to potentially fatal changes in heart rhythms. Injection of adrenaline-like agents may enhance this effect.

Benzene: Acute toxicity of benzene results primarily from depression of the central nervous system (CNS). Inhalation of concentrations over 50 ppm can produce headache, lassitude, weariness, dizziness, drowsiness, or excitation. Exposure to very high levels can result in unconsciousness and death.

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Section 11. Toxicological information

Benzene: Long-term overexposure to benzene has been associated with certain types of leukemia in humans. In addition, the International Agency for Research on Cancer (IARC), the National Toxicology Program, and OSHA consider benzene to be a human carcinogen. Chronic exposures to high levels of benzene have been reported to cause adverse blood effects including anemia. Benzene exposure can occur by inhalation and absorption through the skin.

Inhalation and forced feeding studies of benzene in laboratory animals have produced a carcinogenic response in a variety of organs, including possibly leukemia, other adverse effects on the blood, chromosomal changes and some effects on the immune system. Exposure to benzene at levels up to 300 ppm did not produce birth defects in animal studies; however, exposure to higher dosage levels resulted in a reduction of body weight of the rat pups (fetotoxicity). Changes in the testes have been observed in mice exposed to benzene at 300 ppm, but reproductive performance was not altered in rats exposed to benzene at the same level. Aspiration of this material into the lungs can cause chemical pneumonia and can be fatal. Aspiration into the lungs can occur while vomiting after ingestion of this material.

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure	
Gasoline	Acute EC50 15.41 mg/l Nominal Fresh water	Micro-organism	40 hours	
	Acute EL50 3.1 mg/l Nominal Fresh water	Algae	72 hours	
	Acute EL50 3.7 mg/l Nominal Fresh water	Algae	96 hours	
	Acute EL50 4.5 mg/l Nominal Fresh water	Daphnia	48 hours	
	Acute LL50 10 mg/l Nominal Fresh water	Fish	96 hours	
	Acute LL50 8.2 mg/l Nominal Fresh water	Fish	96 hours	
	Acute NOELR 0.5 mg/l Nominal Fresh water	Algae	72 hours	
	Acute NOELR 0.5 mg/l Nominal Fresh water	Daphnia	48 hours	
	Chronic EL50 10 mg/l Nominal Fresh water	Daphnia	21 days	
	Chronic EL50 >40 mg/l Nominal Fresh water	Daphnia	21 days	
	Chronic EL50 10 mg/l Nominal Fresh water	Fish	21 days	
	Chronic LL50 5.2 mg/l Nominal Fresh water	Fish	14 days	
	Chronic NOELR 2.6 mg/l Nominal Fresh water	Daphnia	21 days	
	Chronic NOELR 16 mg/l Nominal Fresh water	Daphnia	21 days	
	Chronic NOELR 2.6 mg/l Nominal Fresh water	Fish	14 days	
	Chronic NOELR 2.6 mg/l Nominal Fresh water	Fish	21 days	
	Chronic PNEC >0.4 mg/kg	soil, plants	-	
	tert-butyl methyl ether	Acute EC50 472 mg/l Fresh water	Daphnia	48 hours
		Acute LC50 200 mg/l Marine water	Crustaceans	96 hours
		Acute LC50 672 mg/l Fresh water	Fish	96 hours
Acute LC50 574 mg/l Marine water		Fish	96 hours	
Chronic NOEC 26 mg/l Marine water		Crustaceans	28 days	
Chronic NOEC 51 mg/l Fresh water		Daphnia	21 days	

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Section 12. Ecological information

Conclusion/Summary Toxic to aquatic life with long lasting effects.

Persistence and degradability

Expected to be biodegradable. Non-persistent per IMO criteria

Product/ingredient name	Test	Result	Dose	Inoculum
tert-butyl methyl ether	not guideline	100 % - 1.25 days	-	-
	Modelled data	61 to 69 % - 151 days	-	-
	OECD 301 D	9.24 % - Not readily - 28 days	-	-
	OECD 301 D	1.8 % - Not readily - 28 days	-	-
	OECD 301 D	0 % - Not readily - 28 days	-	-
	Modelled data	0 % - 250 days	-	-

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
Gasoline	-	-	Inherent

Bioaccumulative potential

This product is not expected to bioaccumulate through food chains in the environment.

Product/ingredient name	LogP _{ow}	BCF	Potential
Gasoline	2 to 7	-	high
Benzene	2.13	11	low
diisopropyl ether	2.4	-	low
2-methylpropan-2-ol	0.317	-	low
tert-butyl methyl ether	1.04	1.5	low

Mobility in soil

Soil/water partition coefficient (K_{oc}) Not available.

Mobility Spillages may penetrate the soil causing ground water contamination.

Other ecological information Spills may form a film on water surfaces causing physical damage to organisms. Oxygen transfer could also be impaired.

Section 13. Disposal considerations

Disposal methods

The generation of waste should be avoided or minimised wherever possible. Significant quantities of waste product residues should not be disposed of via the foul sewer but processed in a suitable effluent treatment plant. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Vapour from product residues may create a highly flammable or explosive atmosphere inside the container. Do not cut, weld or grind used containers unless they have been cleaned thoroughly internally. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.

Special Precautions for Landfill or Incineration No additional special precautions identified.

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Section 14. Transport information

	ADG	IMDG	IATA
UN number	UN1203	UN1203	UN1203
UN proper shipping name	MOTOR SPIRIT or GASOLINE or PETROL	MOTOR SPIRIT or GASOLINE or PETROL. Marine pollutant	MOTOR SPIRIT or GASOLINE or PETROL
Transport hazard class(es)	3 	3  	3 
Packing group	II	II	II
Environmental hazards	No.	Yes.	Yes. The environmentally hazardous substance mark is not required.
Additional information	Hazchem code 3YE Initial emergency response guide 14	The marine pollutant mark is not required when transported in sizes of ≤5 L or ≤5 kg. Emergency schedules F-E, S-E	The environmentally hazardous substance mark may appear if required by other transportation regulations.

Special precautions for user Not available.

Transport in bulk according to IMO instruments **Proper shipping name** MARPOL Annex 1 rules apply for bulk shipments by sea.
Category: gasoline and spirits

Section 15. Regulatory information

Standard for the Uniform Scheduling of Medicines and Poisons

Not scheduled. When packed in containers having capacity of greater than 20 litres.

S5. When packed in containers having capacity of less than 20 litres.

Model Work Health and Safety Regulations - Scheduled Substances

<u>Ingredient name</u>	<u>Schedule</u>
Benzene	Restricted carcinogen [All uses involving benzene as a feedstock containing more than 50% of benzene by volume; Restricted use - Genuine research or analysis; For spray painting if the substance contains more than 1% by volume]

Montreal Protocol

<u>Ingredient name</u>	<u>List name</u>	<u>Status</u>
Not listed.		

Stockholm Convention on Persistent Organic Pollutants

<u>Ingredient name</u>	<u>List name</u>	<u>Status</u>
Not listed.		

Rotterdam Convention on Prior Informed Consent (PIC)

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Section 15. Regulatory information

Ingredient name	List name	Status
Not listed.		

International lists

National inventory

REACH Status	For the REACH status of this product please consult your company contact, as identified in Section 1.
Australia inventory (AICS)	Contact local supplier or distributor.
Canada inventory	Not determined.
China inventory (IECSC)	Not determined.
Japan inventory (ENCS)	Not determined.
Korea inventory (KECI)	At least one component is not listed.
Philippines inventory (PICCS)	Not determined.
Taiwan Chemical Substances Inventory (TCSI)	Not determined.
United States inventory (TSCA 8b)	Not determined.

Section 16. Any other relevant information

History

Date of printing	5/26/2021
Date of issue/Date of revision	5/26/2021
Date of previous issue	5/25/2021
Version	4.01
Prepared by	Product Stewardship
Key to abbreviations	ADG = Australian Dangerous Goods ATE = Acute Toxicity Estimate BCF = Bioconcentration Factor GHS = Globally Harmonized System of Classification and Labelling of Chemicals IATA = International Air Transport Association IBC = Intermediate Bulk Container IMDG = International Maritime Dangerous Goods LogPow = logarithm of the octanol/water partition coefficient MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution) NOHSC = National Occupational Health and Safety Commission REACH = Registration, Evaluation, Authorisation and Restriction of Chemicals Regulation [Regulation (EC) No. 1907/2006] STEL = Short term exposure limit SUSMP = Standard Uniform Schedule of Medicine and Poisons UN = United Nations TWA = Time weighted average VOC = Volatile Organic Compound SADT = Self-Accelerating Decomposition Temperature Varies = may contain one or more of the following 64741-88-4, 64741-89-5, 64741-95-3, 64741-96-4, 64742-01-4, 64742-44-5, 64742-45-6, 64742-52-5, 64742-53-6, 64742-54-7, 64742-55-8, 64742-56-9, 64742-57-0, 64742-58-1, 64742-62-7, 64742-63-8, 64742-65-0, 64742-70-7, 72623-85-9, 72623-86-0, 72623-87-1

Procedure used to derive the classification

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Section 16. Any other relevant information

Classification	Justification
FLAMMABLE LIQUIDS - Category 1 SKIN CORROSION/IRRITATION - Category 2 GERM CELL MUTAGENICITY - Category 1B CARCINOGENICITY - Category 1B SPECIFIC TARGET ORGAN TOXICITY - SINGLE EXPOSURE (Narcotic effects) - Category 3 ASPIRATION HAZARD - Category 1	On basis of test data Calculation method Expert judgment Expert judgment Calculation method Calculation method

Indicates information that has changed from previously issued version.

Notice to reader

All reasonably practicable steps have been taken to ensure this data sheet and the health, safety and environmental information contained in it is accurate as of the date specified below. No warranty or representation, express or implied is made as to the accuracy or completeness of the data and information in this data sheet.

The data and advice given apply when the product is sold for the stated application or applications. You should not use the product other than for the stated application or applications without seeking advice from BP Group.

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Resolve Environmental

239G Bay Street
Brighton VIC 3189
(03) 9591 0173

info@resolveenvironmental.com.au

