ORDINARY COUNCIL - 15 DECEMBER 2022 Attachments

TITLE: **DA0612/2022 - Visitor Accommodation - Demolish existing corn mill and construction of an extension to the carpark at 145-151 Paterson Street, Launceston**

FILE NO: DA0612/2022

AUTHOR: Iain More (Town Planner)

GENERAL MANAGER: Dan Ryan (Community and Place Network)

ATTACHMENT ONE:

To consider and determine a development application pursuant to the *Land Use Planning and Approvals Act 1993*.

PLANNING APPLICATION INFORMATION:

Applicant:	Paterson Bridge Pty Ltd
Property:	145-151 Paterson Street, Launceston
Zoning:	Urban Mixed Use
Receipt Date:	7/10/2022
Validity Date:	12/10/2022
Further Information Request:	18/10/2022
Further Information Received:	27/10/2022
Deemed Approval:	1/12/2022
Representations:	6

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3. PLANNING SCHEME REQUIREMENTS

3.1 Zone Purpose

13.0 Urban Mixed Use Zone

The purpose of the Urban Mixed Use Zone is: 13.0.1 To provide for a mix of residential, retail, community services and commercial activities in urban locations. 13.0.2 To provide for a diverse range of use or development that are of a type and scale that support and do not compromise or distort the role of surrounding activity centres in the activity centre hierarchy.
Consistent The proposal meets the zone purpose as the demolition will assist by providing additional car parking for the existing accommodation on site.

C2.0 Parking and Sustainable Transport Code

The purpose of the Parking and Sustainable Transport Code is: C2.1.1 To ensure that an appropriate level of parking facilities is provided to service use and development. C2.1.2 To ensure that cycling, walking and public transport are encouraged as a means of transport in urban areas. C2.1.3 To ensure that access for pedestrians, vehicles and cyclists is safe and adequate. C2.1.4 To ensure that parking does not cause an unreasonable loss of amenity to the surrounding area.

C2.1.5 To ensure that parking spaces and accesses meet appropriate standards. C2.1.6 To provide for parking precincts and pedestrian priority streets.
Consistent Consistency with the purpose of the code has been achieved as the proposal ensures safe and appropriate parking and access.

C2.5.1 Car parking numbers

A1 The number of on-site car parking spaces must be no less than the number specified in Table C2.1, excluding if: (a) the site is subject to a parking plan for the area adopted by council, in which case parking provision (spaces or cash-in-lieu) must be in accordance with that plan; (b) the site is contained within a parking precinct plan and subject to Clause C2.7; (c) the site is subject to Clause C2.5.5; or (d) it relates to an intensification of an existing use or development or a change of use where: (i) the number of on-site car parking spaces for the existing use or development specified in Table C2.1 is greater than the number of car parking spaces specified in Table C2.1 for the proposed use or development, in which case no additional on-site car parking is required; or (ii) the number of on-site car parking spaces for the existing use or development specified in Table C2.1 is less than the number of car parking spaces specified in Table C2.1 for the proposed use or development, in which case on-site car parking must be calculated as follows: N = A + (C- B) N = Number of on-site car parking spaces required A = Number of existing on site car parking spaces B = Number of on-site car parking spaces required for the existing use or development specified in Table C2.1 C= Number of on-site car parking spaces required for the proposed use or development specified in Table C2.1.
Complies The existing use operates 33 accommodation units, requiring 33 spaces under Table C2.1. As the proposal will result in 40 car parking spaces associated with this use, the proposal meets A1.

C2.5.3 Motorcycle parking numbers

A1 The number of on-site motorcycle parking spaces for all uses must: (a) be no less than the number specified in Table C2.4; and (b) if an existing use or development is extended or intensified, the number of on-site motorcycle parking spaces must be based on the proposed extension or intensification, provided the existing number of motorcycle parking spaces is maintained.
Complies Two motorcycle spaces are proposed, exceeding the requirement of one space under Table C2.4, and meeting the acceptable solution.

C2.6.1 Construction of parking areas

That parking areas are constructed to an appropriate standard.
Consistent
A1 All parking, access ways, manoeuvring and circulation spaces must: (a) be constructed with a durable all weather pavement; (b) be drained to the public stormwater system, or contain stormwater on the site; and

(c) excluding all uses in the Rural Zone, Agriculture Zone, Landscape Conservation Zone, Environmental Management Zone, Recreation Zone and Open Space Zone, be surfaced by a spray seal, asphalt, concrete, pavers or equivalent material to restrict abrasion from traffic and minimise entry of water to the pavement.
Complies All parking, access ways, manoeuvring and circulation spaces will be made of asphalt and able to drain to a reticulated stormwater system.

C2.6.2 Design and layout of parking areas

That parking areas are designed and laid out to provide convenient, safe and efficient parking.
Consistent
A1.1 Parking, access ways, manoeuvring and circulation spaces must either: (a) comply with the following: (i) have a gradient in accordance with *Australian Standard AS 2890 - Parking facilities, Parts 1-6*; (ii) provide for vehicles to enter and exit the site in a forward direction where providing for more than 4 parking spaces; (iii) have an access width not less than the requirements in Table C2.2; (iv) have car parking space dimensions which satisfy the requirements in Table C2.3; (v) have a combined access and manoeuvring width adjacent to parking spaces not less than the requirements in Table C2.3 where there are 3 or more car parking spaces; (vi) have a vertical clearance of not less than 2.1m above the parking surface level; and (vii) excluding a single dwelling, be delineated by line marking or other clear physical means; or (b) comply with *Australian Standard AS 2890-Parking facilities, Parts 1-6*.
Complies All parking, access ways, manoeuvring, and circulation spaces meet all relevant Australian Standards and the dimension requirements under Tables C2.2 and C2.3. The areas will have a vertical clearance of more than 2.1m, be appropriately delineated and line marked, and will allow for vehicles to enter and exit the site in a forward direction.

C2.6.5 Pedestrian access

That pedestrian access within parking areas is provided in a safe and convenient manner.
Consistent Consistency with the objective has been achieved as the proposal ensures that pedestrian access within parking areas is provided in a safe and convenient manner.
A1.1 Uses that require 10 or more car parking spaces must: (a) have a 1m wide footpath that is separated from the access ways or parking aisles, excluding where crossing access ways or parking aisles, by: (i) a horizontal distance of 2.5m between the edge of the footpath and the access way or parking aisle; or (ii) protective devices such as bollards, guard rails or planters between the footpath and the access way or parking aisle; and (b) be signed and line marked at points where pedestrians cross access ways or parking aisles.
Complies There is an existing 1m wide footpath for pedestrian access to the parking area on the southern side of the car park. However, as it is not setback more than 2.5m from the car parks, reliance on the performance criteria is required.

P1 Safe and convenient pedestrian access must be provided within parking areas, having regard to: (a) the characteristics of the site; (b) the nature of the use; (c) the number of parking spaces; (d) the frequency of vehicle movements; (e) the needs of persons with a disability; (f) the location and number of footpath crossings; (g) vehicle and pedestrian traffic safety; (h) the location of any access ways or parking aisles; and (i) any protective devices proposed for pedestrian safety.
Complies There is an existing 1m wide footpath located approximately 1m to the south of the proposed car parking area. Spaces 3 through to 10 will be able to access this walkway. It is further considered that as this will be the western end of the parking lot, that parking spaces 1 and 2, as well as the motorcycle spaces will be able to safely access the new pathway at the western end of the parking area. It is considered this pedestrian access situation is appropriate and safe for the use, complying with the performance criteria.

C2.6.8 Siting of parking and turning areas

That the siting of vehicle parking and access facilities in an Inner Residential Zone, Village Zone, Urban Mixed Use Zone, Local Business Zone, General Business Zone or Central Business Zone does not cause an unreasonable visual impact on streetscape character or loss of amenity to adjoining properties.
Consistent Consistency with the objective has been achieved as the proposal ensures parking does not cause an unreasonable visual impact on streetscape character or loss of amenity to adjoining properties.
A1 Within an Inner Residential Zone, Village Zone, Urban Mixed Use Zone, Local Business Zone or General Business Zone, parking spaces and vehicle turning areas, including garages or covered parking areas must be located behind the building line of buildings, excluding if a parking area is already provided in front of the building line.
Relies on Performance Criteria Whilst behind the building line along Paterson Street, as the parking area is not behind the building line when facing West Tamar Highway, reliance on the performance criteria is required.
P1 Within an Inner Residential Zone, Village Zone, Urban Mixed Use Zone, Local Business Zone or General Business Zone, parking spaces and vehicle turning areas, including garages or covered parking areas, may be located in front of the building line where this is the only practical solution and does not cause an unreasonable loss of amenity to adjoining properties, having regard to: (a) topographical or other site constraints; (b) availability of space behind the building line; (c) availability of space for vehicle access to the side or rear of the property; (d) the gradient between the front and the rear of existing or proposed buildings; (e) the length of access or shared access required to service the car parking; (f) the location of the access driveway at least 2.5m from a window of a habitable room of a dwelling; (g) the visual impact of the vehicle parking and access on the site; (h) the streetscape character and amenity; (i) the nature of the zone in which the site is located and its preferred uses; and (j) opportunities for passive surveillance of the road.

Complies The parking area will not cause an unreasonable loss of amenity. The site contains an established accommodation use. The new parking areas will be an extension of the existing areas, also located along and facing West Tamar Road. Existing vegetation within the road reserve assists in protecting the visual amenity from the road. Accordingly, there will be no concern regarding the visual impacts of the proposal, as it is compliant with the performance criteria.

C3.0 Road and Railway Assets Code

The purpose of the Road and Railway Assets Code is: C3.1.1 To protect the safety and efficiency of the road and railway networks; and C3.1.2 To reduce conflicts between sensitive uses and major roads and the rail network.
Consistent Consistency with the objective has been achieved as the proposal ensures safe and efficient access.

C3.5.1 Traffic generation at a vehicle crossing, level crossing or new junction

To minimise any adverse effects on the safety and efficiency of the road or rail network from vehicular traffic generated from the site at an existing or new vehicle crossing or level crossing or new junction.
Consistent
A1.4 Vehicular traffic to and from the site, using an existing vehicle crossing or private level crossing, will not increase by more than: (a) the amounts in Table C3.1; or (b) allowed by a licence issued under Part IVA of the *Roads and Jetties Act 1935* in respect to a limited access road.
Complies It is not expected that the vehicle traffic to and from the use using the existing crossing will increase by more than 40 vehicle movements per day.

C6.0 Local Historic Heritage Code

The purpose of the Local Historic Heritage Code is: C6.1.1 To recognise and protect: (a) the local historic heritage significance of local places, precincts, landscapes and areas of archaeological potential; and (b) significant trees. C6.1.2 This code does not apply to Aboriginal heritage values.
Consistent As the building which is subject to demolition is not recognised as having individual heritage significance and the area of the property subsequently proposed for development and use as car parking is not located so as to have a detrimental impact on the heritage significance of the recognised structures on the larger property, or their setting, the proposal meets the purpose of the code.

C6.5.1 There are no Use Standards in this code.

C6.6.1 Demolition

That the demolition or removal of buildings do not cause an unacceptable impact on the local historic heritage significance of local heritage places.
Consistent

The demolition of the building will not cause an unacceptable impact on the local historic heritage significance of the local heritage place.
A1 No Acceptable Solution.
Relies on Performance Criteria As there is no Acceptable Solution provided, reliance on the performance criteria is required.
P1 Demolition or removal of buildings on a local heritage place must not cause an unacceptable impact on the local historic heritage significance of the place, having regard to: (a) the physical condition of the local heritage place; (b) the extent and rate of deterioration of the building or structure; (c) the safety of the building or structure; (d) the streetscape or setting in which the building or (e) structure is located; (f) the historic heritage values of the local heritage place as identified in the relevant Local Provisions Schedule, or if there are no historic heritage values identified in the relevant Local Provisions Schedule, the historic heritage values as identified in a report prepared by a suitably qualified person; (g) any options to reduce or mitigate deterioration; (h) whether demolition is a reasonable option to secure the long-term future of a building or structure; and (i) any economic considerations.
Complies The building which is subject to demolition is not recognised as having individual heritage significance. As confirmed as part of the Tasmanian Heritage Council's Notice of No Interest in the determination of this application, *'the affected c1976 replica 'cornmill' museum building, and carpark are located within a part of the place (CT243810/1) that are not entered in the Tasmanian Heritage Register'.* The subject title is still included in Table C6.1 as a Local Heritage Place in Launceston's Local Provisions Schedule for the new planning scheme, however on review it is apparent that the local listing has been retained on this title due to its association with the reconstructed Water Mill located on the same property. It is stated by the applicant: *'The replica 'working' corn mill proposed for demolition has no intrinsic heritage value, is no longer operational or economically viable, is falling into dis-repair, is situated at the rear of the site and does not contribute the streetscape or setting of the Penny Royal complex in any meaningful way.* *The demolition of the building will not detract from the heritage values of the site, and currently obstructs the rear elevations of the state listed stone buildings, its removal would enhance the overall appreciation and townscape associations so many locals have with the Penny Royal Water Mill, allowing it to be viewed and appreciated from all sides.'* It is agreed that the removal of the building will 'not cause an unacceptable impact on the local historic heritage significance of the place'.

It is also noted that the portion of the property subsequently proposed for development and use as car parking is located such that it should not to have a detrimental impact on the heritage significance of the more significant structures on the larger property, or their setting.

C6.6.2 Site coverage

That site coverage is compatible with the local historic heritage significance of local heritage places.
Consistent
P1 The site coverage must be compatible with the local historic heritage significance of a local heritage place, having regard to: (a) the topography of the site; and (b) the historic heritage values of the local heritage place as identified in the relevant Local Provisions Schedule, or if there are no historic heritage values identified in the relevant Local Provisions Schedule, the historic heritage values as identified in a report prepared by a suitably qualified person.
Complies The change to the site coverage proposed will not have a detrimental impact on the historic pattern of development on the site or in the larger area and thus may be considered to be compatible with the local historic heritage significance of the local heritage place.

C6.6.9 Driveways and parking for non-residential purposes

That driveways and parking for non-residential purposes are compatible with the local historic heritage significance of local heritage places.
Consistent The new internal driveway and parking are compatible with the local historic heritage significance of local heritage places.
A1 Driveways and parking areas for non-residential purposes on local heritage places must be located behind the building line of buildings located or proposed on a site.
Relies on Performance Criteria The proposed new parking area is located in front of the building line of buildings, fronting West Tamar Road, therefore reliance on the performance criteria is required.
P1 Driveways and parking areas for non-residential purposes must be compatible with the local historic heritage significance of a local heritage place, having regard to: (a) the historic heritage values of the local heritage place as identified in the relevant Local Provisions Schedule, or if there are no historic heritage values identified in the relevant Local Provisions Schedule, the historic heritage values as identified in a report prepared by a suitably qualified person; (b) the loss of any building fabric; (c) the removal of gardens or vegetated areas; (d) parking availability in the surrounding area; (e) vehicle and pedestrian traffic safety; and (f) the streetscape.
Complies By condition The new parking areas are proposed as an extension of the existing parking spaces also located along West Tamar Road (also known as the West Tamar Highway). This area is located in such a way that development and use as car parking should not be visible from Paterson Street and barely evident in views from the more significant structures on the larger property and from traffic passing on the highway.

Most of the parking will be largely concealed behind planting and other existing buildings on the site when approached from the Paterson Street access ways, and the height differential between the site and the raised West Tamar Highway to the south, along with the existing vegetation within the road reserve, assist in protecting visual amenity from this road frontage.

In this context the extension of the parking area proposed is considered to be compatible with the local historic heritage significance of the local heritage place and its setting.

It is however noted that new landscaping is shown on the proposal plans, however details of this are not specified. Therefore it is recommended that a condition be applied to any Planning permit issued requiring submission of a detailed Landscaping Plan prepared by a suitably qualified person for the approval of the Manager City Development prior to demolition or construction works commencing on the site.

The landscaping should include substantial plantings and permeable ground covers so as to provide a suitable transition between the parking area and the adjacent remaining building (i.e. to soften the appearance of the car parking area) and to ensure an appropriate setting for the significant buildings on the site.

Planting and edging should be located and designed appropriately so as not to cause damage to the adjacent building, and also specified to be shade tolerant and of sufficient scale and robustness to deter patrons from walking over the beds, to ensure longevity.

With this the proposal complies with the performance criteria.

C6.6.10 Removal, destruction or lopping of trees, or removal of vegetation, that is specifically part of a local heritage place

That the removal, destruction or lopping of trees or the removal of vegetation that is specifically part of a local heritage place does not impact on the local historic heritage significance of the place.
Consistent
P1 The removal, destruction or lopping of trees or the removal of vegetation which is specifically part of a local heritage place listed in the relevant Local Provisions Schedule, must not cause an unreasonable impact on the local historic heritage significance of a local heritage place, having regard to: (a) the historic heritage values of the local heritage place as identified in the relevant Local Provisions Schedule, or if there are no historic heritage values identified in the relevant Local Provisions Schedule, the historic heritage values as identified in a report prepared by a suitably qualified person; (b) the age and condition of the tree or vegetation; (c) the size and form of the tree or vegetation; (d) the importance of the tree or vegetation to the local historic heritage significance of a local heritage place; and (e) any advice by a suitably qualified person.
Complies It is acknowledged that the submitted Planning Report states that this clause in not applicable as 'There is only minor trimming or removal of vegetation' and 'Vegetation is not specifically part of this place in the Local Provisions Schedule'. However, it may be prudent to assess the vegetation on its merits in this case.

It is agreed that the plants affected by the removal and trimming proposed/required to allow for the demolition and development of the parking area are not of heritage significance or of a scale such that the visual impact (and any other impacts) should 'not cause an unreasonable impact on the local historic heritage significance' of the local heritage place.

However, as noted in regard to clause C6.6.9, new landscaping is shown on the proposal plans, but details of this are not specified. Therefore, it is recommended that further detailed landscaping be provided through the previously mentioned landscaping condition. As per the previous recommendation, the landscaping should include substantial plantings and permeable ground covers so as to provide a suitable transition between the parking area and the adjacent remaining building (i.e. to soften the appearance of the car parking area) and to ensure an appropriate setting for the significant buildings on the site.

Planting and beds should be located and designed appropriately so as not to cause damage to the adjacent building, and also specified to be shade tolerant and of sufficient scale and robustness to deter patrons from walking over the beds, to ensure longevity.

With this the proposal complies with the performance criteria.

26 October 2022

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Planning Report

Demolition of Replica Corn Mill and Proposed Carpark Expansion
145-151 Paterson Street, Launceston, TAS 7250

This development application is for demolition of the replica Corn Mill and proposed carpark expansion located at the above address.

The following report outlines our submission against the relevant clauses of the Tasmanian Planning Scheme.

Contents

PLANNING EXHIBITED DOCUMENTS
Ref. No: DA 0612/2022
Date advertised: 05/11/2022
Planning Administration

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Tasmanian Planning Scheme

Zones

13.0 Urban Mixed Use Zone

13.2 Use Table

Submission:
Visitor accommodation is permitted.

13.4 Development Standards for Building and Works

13.4.1 Building height

0bjective:
That building height:
(a) is compatible with the streetscape; and
(b) and does not cause an unreasonable loss of amenity to adjoining residential zones.

A1 – Building height must be not more than 10m:

Submission: Not applicable. There is no new building proposed.

A2 – Building height:
(a) within 10m of a General Residential Zone must be not more than 8.5m; or
(b) within 10m of an Inner Residential Zone must not be more than 9.5m.

Submission: Not applicable. There is no new building proposed.

13.4.2 Setback

0bjective:
That building setback:
(a) is compatible with the streetscape; and
(b) and does not cause an unreasonable loss of amenity to adjoining residential zones.

A1 – Building must have a setback from a frontage of:
(a) not less than 3m;
(b) not less than existing buildings on site; or
(c) not more or less than the maximum and minimum setbacks of the buildings on adjoining properties.

Submission: Complies. There is no change to the setback from the frontage.

A2 – Building must have a setback from an adjoining property within a General Residential Zone or Inner Residential Zone or not less than:

(a) 3m;

(b) Half the wall height of the building.

whichever is the greater.

Submission: Not applicable. Existing buildings isn't located or adjoining property within a General Residential Zone or Inner Residential Zone.

A3 – Air extraction, pumping, refrigeration systems or compressors must not be separated a distance of not less than 10m from a General Residential Zone or Inner Residential Zone.

Submission: Not applicable. There is no new building proposed.

13.4.3 Design

0bjective:

That building design and façades promote and maintain high levels of pedestrian interaction, amenity, and safety and are compatible with the streetscape.

A1 – New buildings must be designed to satisfy all of the following:

(a) mechanical plant and other service infrastructure, such as heat pumps, air conditioning units, switchboards, hot water units and the like, must be screened from the street and other public places;

(b) roof-top mechanical plant and service infrastructure, including lift structures, must be contained within the roof;

(c) not include security shutters or grilles over windows or doors on a façade facing a frontage or other public places; and

(d) provide external lighting to illuminate external vehicle parking areas and pathways within 10m of an Inner Residential Zone must not be more than 9.5m.

Submission: Not applicable. There is no new building proposed.

A2 – New buildings or alterations to an existing façade must be designed to satisfy all of the following:

(a) provide a pedestrian entrance to the building that is visible from the road or publicly accessible areas of the site;

(b) excluding for Residential, if for a ground floor level façade facing a frontage:

(i) have not less than 40% of the total surface area consisting of windows or doorways; or

(ii) not reduce the surface area of windows or doorways of an existing building, if

the surface area is already less than 40%;

(c) excluding for Residential, if for a ground floor level façade facing a frontage, must:
- *(i) not include a single length of blank wall greater than 30% of the length of façade on that frontage; or*
- *(ii) not increase the length of an existing blank wall, if already greater than 30% of the length of the façade on that frontage; and*

(d) excluding for Residential, provide awnings over a public footpath if existing on the site or on adjoining properties.

Submission: Not applicable. There is no new building or alteration to existing façade proposed.

13.4.4 Fencing

0bjective:
That fencing:
(a) is compatible with the streetscape; and
(b) does not cause an unreasonable loss of residential amenity to adjoining residential zones.

A1 – No acceptable solution.

P1 – A fence (including a free-standing wall) within 4.5m of a frontage must be compatible with the streetscape, having regard to:
- *(a) the height, design, location and extent of the fence;*
- *(b) the degree of transparency; and*
- *(c) the proposed materials and construction.*

Submission: Not applicable. There is no fence proposed.

A2 – Common boundary fences with a property in a General Residential Zone or Inner Residential Zone, if not within 4.5m of a frontage, must:
- *(a) have a height above existing ground level of not more than 2.1m; and*
- *(b) not contain barbed wire.*

Submission: Not applicable. There is no fence proposed.

13.4.5 Outdoor Storage Areas

0bjective:
That outdoor storage areas for non-residential use do not detract from the appearance of the site or surrounding area.

A1 – Outdoor storage areas, excluding for Residential use or for the display of goods for sale, must not be visible from any road or public open space adjoining the site.

Submission: Not applicable. There is no new building proposed.

13.4.6 Dwellings

0bjective:
To provide adequate and useable private open space and storage for the needs of residents.

A1 – A dwelling must have private open space that is not less than:
- *(a) 24m² with a minimum horizontal dimension of not less than 4m; or*
- *(b) 8m² with a minimum horizontal dimension not less than 1.5m, if the dwelling is located wholly above ground floor level.*

Submission: Not applicable. There is no new building proposed.

A2 – Each dwelling must be provided with a dedicated and secure storage space of no less than 6m³.

Submission: Not applicable. There is no new building proposed.

Codes

C2.0 Parking and Sustainable Parking Code

C2.5 Use Standards

C2.5.1 Car parking numbers

0bjective:
That an appropriate level of car parking spaces are provided to meet the needs of the use.

A1 – The number of on-site car parking spaces must be no less than the number specified in Table C2.1, excluding if:
- *(a) the site is subject to a parking plan for the area adopted by council, in which case parking provision (spaces or cash-in-lieu) must be in accordance with that plan;*
- *(b) the site is contained within a parking precinct plan and subject to Clause C2.7;*
- *(c) the site is subject to Clause C2.5.5; or*
- *(d) it relates to an intensification of an existing use or development or a change of use where:*
  - *(i) the number of on-site car parking spaces for the existing use or development specified in Table C2.1 is greater than the number of car parking spaces specified in Table C2.1 for the proposed use or development, in which case no additional on-site car parking is required; or*
  - *(ii) the number of on-site car parking spaces for the existing use or development*

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specified in Table C2.1 is less than the number of car parking spaces specified in Table C2.1 for the proposed use or development, in which case on-site car parking must be calculated as follows:
N = A + (C- B)
N = Number of on-site car parking spaces required
A = Number of existing on site car parking spaces
B = Number of on-site car parking spaces required for the existing use or development specified in Table C2.1
C= Number of on-site car parking spaces required for the proposed use or development specified in Table C2.1.

Table C2.1

	Parking Requirement	
	Car	**Bicycle**
Visitor Accommodation	1 space per self-contained accommodation unit, allocated tent or caravan space, or 1 space per 4 beds, whichever is the greater	No requirement.

Submission: Complies. There are a total of 33 units, hence, requires a minimum of 33 car spaces according to Table C2.1. There are 30 existing car parking spaces on site. There are an additional 10 proposed car spaces. A total of 40 parking spaces.

C2.5.2 Bicycle parking numbers

0bjective:
That an appropriate level of bicycle parking spaces are provided to meet the needs of the use.

A1 – Bicycle parking spaces must:
(a) be provided on the site or within 50m of the site; and
(b) be no less than the number specified in Table C2.1.

Submission: Not applicable. There is no requirement for bicycle parking in Table C2.1

C2.5.3 Motorcycle parking numbers

0bjective:
That the appropriate level of motorcycle parking is provided to meet the needs of the use.

A1 – The number of on-site motorcycle parking spaces for all uses must:
(a) be no less than the number specified in Table C2.4; and
(b) if an existing use or development is extended or intensified, the number of on-site motorcycle parking spaces must be based on the proposed extension or intensification, provided the existing number of motorcycle parking spaces is

maintained.

Submission: Complies. There are two proposed motorcycle parking spaces, only 1 space is required according to Table 2.4. Refer to drawing A03.

C2.5.4 Loading bays

Objective:
That adequate access for goods delivery and collection is provided, and to avoid unreasonable loss of amenity and adverse impacts on traffic flows.

A1 – A loading bay must be provided for uses with a gross floor area greater than 1000m² in a single occupancy.

Submission: Complies. There is an existing 5-minute drop off, loading zone provided for deliveries and drop offs. Refer to drawing A01.

C2.5.5 Number of car parking spaces within the General Residential Zone and Inner Residential Zone

Objective:
To:
(a) facilitate the reuse of existing non-residential buildings within the General Residential Zone and Inner Residential Zone; and
(b) to not cause an unreasonable impact on residential amenity by the car parking generated by that reuse.

A1 – Within existing non-residential buildings in the General Residential Zone and Inner Residential Zone, on-site car parking is not required for:
(a) Food Services uses up to 100m2 floor area or 30 seats, whichever is the greater; and
(b) General Retail and Hire uses up to 100m2 floor area,
provided the use complies with the hours of operation specified in the relevant Acceptable Solution for the relevant zone.

Submission: Not applicable. It is not located within the General Residential Zone and Inner Residential Zone.

C2.6 Development Standards for Buildings and Works

C2.6.1 Construction parking areas

Objective:
That parking areas are constructed to an appropriate standard.

A1 – All parking, access ways, manoeuvring and circulation spaces must:

(a) be constructed with a durable weather pavement;
(b) be drained to the public stormwater system, or contain stormwater on the site; and
(c) excluding all uses in the Rural Zone, Agriculture Zone, Landscape Conservation Zone, Environmental Management Zone, Recreation Zone and Open Space Zone, be surfaced by a spray seal, asphalt, concrete, pavers or equivalent material to restrict abrasion from traffic and minimise entry of water to the pavement.

Submission: Complies. The surface of the parking areas is asphalt to match the existing parking. Stormwater will be drained to existing.

C2.6.2 Design and layout of parking areas

0bjective:
That parking areas are designed and laid out to provide convenient, safe and efficient parking.

A1.1 – Parking, access ways, manoeuvring and circulation spaces must either:
(a) comply with the following:
(i) have a gradient in accordance with Australian Standard AS 2890 - Parking facilities, Parts 1-6;
(ii) provide for vehicles to enter and exit the site in a forward direction where providing for more than 4 parking spaces;
(iii) have an access width not less than the requirements in Table C2.2;
(iv) have car parking space dimensions which satisfy the requirements in Table C2.3;
(v) have a combined access and manoeuvring width adjacent to parking spaces not less than the requirements in Table C2.3 where there are 3 or more car parking spaces;
(vi) have a vertical clearance of not less than 2.1m above the parking surface level; and
(vii)excluding a single dwelling, be delineated by line marking or other clear physical means; or
(b) comply with Australian Standard AS 2890- Parking facilities, Parts 1-6.

Submission: Complies. The proposed parking expansion aisle width is 6m. The width of the car park is 2.6m and the length is 5.4m. The carpark is located within an open space.

A1.2 – Parking spaces provided for use by persons with a disability must satisfy the following:
(a) be located as close as practicable to the main entry point to the building;
(b) be incorporated into the overall car park design; and
(c) be designed and constructed in accordance with Australian/New Zealand Standard AS/NZS 2890.6:2009 Parking facilities, Off-street parking for people with disabilities.

Submission: Two accessible car parking spaces are required in accordance with Part D3 of the National Construction Code 2014. Penny Royal is located over two sites and has apartments with accessible access with two accessible parking spaces provided.

C2.6.3 Number of accesses for vehicles

0bjective:
That:
(a) access to land is provided which is safe and efficient for users of the land and all road network users, including but not limited to drivers, passengers, pedestrians and cyclists by minimising the number of vehicle accesses;
(b) accesses do not cause an unreasonable loss of amenity of adjoining uses; and
(c) the number of accesses minimise impacts on the streetscape.

A1 – The number of accesses provided for each frontage must:
(a) be no more than 1; or
(b) no more than the existing number of accesses, whichever is the greater.

Submission: Not applicable. There is no change to access from the frontage.

A2 – Within the Central Business Zone or in a pedestrian priority street no new access is provided unless an existing access is removed.

Submission: Not applicable. It is not located within the Central Business Zone or in a pedestrian priority street.

C2.6.4 Lighting of parking areas within the General Business Zone and Central Business Zone

0bjective:
That parking and vehicle circulation roads and pedestrian paths within the General Business Zone and Central Business Zone, which are used outside daylight hours, are provided with lighting to a standard which:
(a) enables easy and efficient use;
(b) promotes the safety of users;
(c) minimises opportunities for crime or anti-social behaviour; and
(d) prevents unreasonable light overspill impacts.

A1 – In car parks within the General Business Zone and Central Business Zone, parking and vehicle circulation roads and pedestrian paths serving 5 or more car parking spaces, which are used outside daylight hours, must be provided with lighting in accordance with Clause 3.1 "Basis of Design" and Clause 3.6 "Car Parks" in Australian Standard/New Zealand Standard AS/NZS 1158.3.1:2005 Lighting for roads and public spaces Part 3.1: Pedestrian area (Category P) lighting – Performance and design requirements.

Submission: Not applicable. It is not located within the General Business Zone and Central

Business Zone.

C2.6.5 Pedestrian access

0bjective:
That pedestrian access within parking areas is provided in a safe and convenient manner.

A1.1 – Uses that require 10 or more car parking spaces must:
- *(a) have a 1m wide footpath that is separated from the access ways or parking aisles, excluding where crossing access ways or parking aisles, by:*
  (i) a horizontal distance of 2.5m between the edge of the footpath and the access way or parking aisle; or
  (ii) protective devices such as bollards, guard rails or planters between the footpath and the access way or parking aisle; and
- *(b) be signed and line marked at points where pedestrians cross access ways or parking aisles.*

Submission: Complies. The old tram line has been filled with asphalt to create a footpath for the existing parking area, it is elevated from the parking area. The proposed carpark expansion follows the curve of the tram line. Refer to drawing A03.

A1.2 – In parking areas containing accessible car parking spaces for use by persons with a disability, a footpath having a width not less than 1.5m and a gradient not steeper than 1 in 14 is required from those spaces to the main entry point to the building.

Submission: Not applicable. Penny Royal is located over two sites and has apartments with accessible access with two accessible parking spaces provided.

C2.6.6 Loading bays

0bjective:
That the area and dimensions of loading bays are adequate to provide safe and efficient delivery and collection of goods.

A1 – The area and dimensions of loading bays and access way areas must be designed in accordance with Australian Standard AS 2890.2–2002, Parking facilities, Part 2: Off-street commercial vehicle facilities, for the type of vehicles likely to use the site.

Submission: Complies. There is no alteration to the existing loading bay which is accessible from the frontage. Refer to A01.

A2 – The type of commercial vehicles likely to use the site must be able to enter, park and exit the site in a forward direction in accordance with Australian Standard AS 2890.2 – 2002, Parking Facilities, Part 2: Parking facilities Off-street commercial vehicle facilities.

Submission: There is no alteration to the existing loading bay which is accessible from the frontage. Refer to A01.

C2.6.7 Bicycle parking and storage facilities within the General Business Zone and Central Business Zone

0bjective:
That parking for bicycles are safe, secure and convenient, within the General Business Zone and Central Business Zone.

A1 – Bicycle parking for uses that require 5 or more bicycle spaces in Table C2.1 must:
- *(a) be accessible from a road, cycle path, bicycle lane, shared path or access way;*
- *(b) be located within 50m from an entrance;*
- *(c) be visible from the main entrance or otherwise signed; and*
- *(d) be available and adequately lit during the times they will be used, in accordance with Table 2.3 of Australian/New Zealand Standard AS/NZS 1158.3.1: 2005 Lighting for roads and public spaces Pedestrian area (Category P) lighting Performance and design requirements.*

Submission: Not applicable. The site is not located in a General Business Zone and Central Business Zone.

A2 – Bicycle parking spaces must:
- *(a) have dimensions not less than:*
  - *(i) 1.7m in length;*
  - *(ii) 1.2m in height; and*
  - *(iii) 0.7m in width at the handlebars;*
- *(b) have unobstructed access with a width of not less than 2m and a gradient not steeper than 5% from a road, cycle path, bicycle lane, shared path or access way; and*
- *(c) include a rail or hoop to lock a bicycle that satisfies Australian Standard AS 2890.3-2015 Parking facilities Part 3: Bicycle parking.*

Submission: Not applicable. The site is not located in a General Business Zone and Central Business Zone.

C2.6.8 Siting of parking and turning areas

0bjective:
That the siting of vehicle parking and access facilities in an Inner Residential Zone, Village Zone, Urban Mixed Use Zone, Local Business Zone, General Business Zone or Central Business Zone does not cause an unreasonable visual impact on streetscape character or loss of amenity to adjoining properties.

A1 – Within an Inner Residential Zone, Village Zone, Urban Mixed Use Zone, Local

Business Zone or General Business Zone, parking spaces and vehicle turning areas, including garages or covered parking areas must be located behind the building line of buildings, excluding if a parking area is already provided in front of the building line.

P1 – Within an Inner Residential Zone, Village Zone, Urban Mixed Use Zone, Local Business Zone or General Business Zone, parking spaces and vehicle turning areas, including garages or covered parking areas, may be located in front of the building line where this is the only practical solution and does not cause an unreasonable loss of amenity to adjoining properties, having regard to:

- *(a) topographical or other site constraints;*
- *(b) availability of space behind the building line;*
- *(c) availability of space for vehicle access to the side or rear of the property;*
- *(d) the gradient between the front and the rear of existing building or proposed buildings;*
- *(e) the length of access or shared access required to service the car parking;*
- *(f) the location of the access driveway at least 2.5m from a window of a habitable room of a dwelling;*
- *(g) the visual impact of the vehicle parking and access on the site;*
- *(h) the streetscape character and amenity;*
- *(i) the nature of the zone in which the site is located and its preferred uses; and*
- *(j) opportunities for passive surveillance of the road.*

Submission: The existing carpark and proposed carpark expansion is located behind the building line of existing buildings on Paterson Street and is accessed through the existing access driveway and the existing carpark. At the rear of the site, the carpark expansion is set down below West Tamar Highway from which the view is further obstructed by well-established trees and a man-made grassed mound mitigating the visual impact of the carpark. There is no parking or stopping on this roadway, and cars are moving at a constant speed with the dominant view being over the carparking area to the Penny Royal Heritage Listed Water Mill and the Windmill beyond. The street character is of an arterial road and there is an existing cyclone fence that runs along the boundary line. There is further screen planting on the opposite side of the West Tamar Highway which provides further screening of the carpark expansion from the residences on the opposite side of West Tamar Highway.

Figure a: Well established trees obstructing the view from the Tamar Highway and residences into Penny Royal's carpark.

Figure b: Grass mound and tree shows carpark expansion is set down below the road obstructing the view of the proposed carpark expansion.

A2 – Within the Central Business Zone, on-site parking at ground level adjacent to a frontage must:

> *(a) have no new vehicle accesses, unless an existing access is removed;*
> *(b) retain an active street frontage; and*
> *(c) not result in parked cars being visible from public places in the adjacent roads.*

Submission: Not applicable. The site is not located in a General Business Zone and Central Business Zone.

C6.0 Local Historic Heritage Code

C6.6 Development Standards for Local Heritage Places

C6.6.1 Demolition

0bjective:
That the demolition or removal of buildings do not cause an unacceptable impact on the local historic heritage significance of local heritage places.
A1 – No acceptable solution.
P1 – Demolition or removal of buildings on a local heritage place must not cause an unacceptable impact on the local historic heritage significance of the place, having regard to:

- *(a) the physical condition of the local heritage place;*
- *(b) the extent and rate of deterioration of the building or structure;*
- *(c) the safety of the building or structure;*
- *(d) the streetscape or setting in which the building or structure is located;*
- *(e) the historic heritage values of the local heritage place as identified in the relevant Local Provisions Schedule, or if there are no historic heritage values identified in the relevant Local Provisions Schedule, the historic heritage values as identified in a report prepared by a suitably qualified person;*
- *(f) any options to reduce or mitigate deterioration;*
- *(g) whether demolition is a reasonable option to secure the long-term future of a building or structure; and*
- *(h) any economic considerations.*

Submission: The application is to demolish a late 1970’s building. It was designed and constructed to replicate a working corn mill as part of a tourism venture. The building is in dis-repair and no longer operates as a ‘working’ corn mill for tourists and is not used as part of the tourism operations at the site.

The land title of the replica corn mill building is adjacent to the state listed Penny Royal Water Mill title and both titles form part of the Penny Royal complex, local protections have been applied to this title as development on this site has the potential to impact on the state listed Penny Royal Water Mill buildings and its setting.

There are no historic heritage values identified in the Local Provisions Schedule for this site.

The fabric of the replica corn mill building is a recent 1970’s building which has no inherent heritage value, the relevant heritage value and fabric is contained within the adjacent stone buildings, the original 1840’s Barton Mill relocated and reconstructed stone by stone from the old Barton Mill site.

The purpose for local heritage protections of this site is to ensure any development does not negatively impact on the adjacent Penny Royal Water Mill stone buildings.

Located at the rear of the Penny Royal complex, the demolition of the replica 'working' corn mill building will have no negative impact on the heritage values of the site.

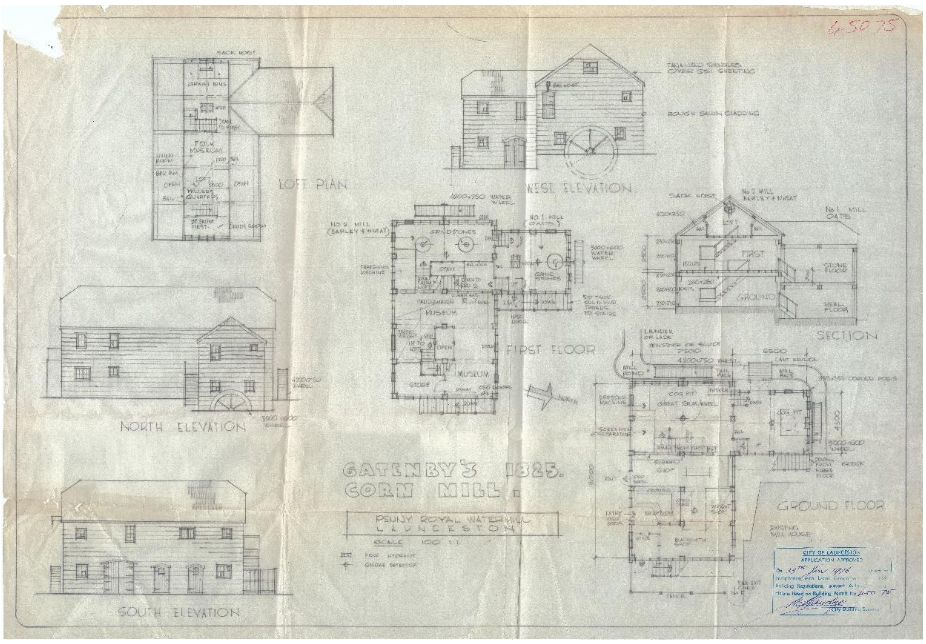

Figure 1: building plans of a replica 'working' corn mill date stamped 1975.

Figure 2: Photo of replica 'working' corn mill building at the rear of the Penny Royal Water Mill, and proposed for demolition.

The purpose of the subject building was to provide an on-site tourism experience of a 'working' corn mill adjacent to the original reconstructed Penny Royal Water Mill, its name 'Gatenby's 1825 Corn Mill' was recognition of the provenance of the adjacent heritage buildings, but it is not the original 1825 mill, and this name was bestowed as part of the tourism venture.

The excerpt below notes that the exact location of the original 1825 building that the replica 'working' corn mill is named after, 'has not been determined' with only some early written descriptions. It is unclear how the design and layout of subject building was arrived at and it could not have been based on its 1825 namesake.

11.4 Barton Mills

When Andrew Gatenby immigrated in 1823 he brought with him the workings of a water mill which he soon erected on the Isis river on his property Barton. According to the Land Commissioners it was in full work by August 1826. This mill finally broke down in 1840 and in 1842 the building was cleaned up so that it could be used for accommodation for some of the farm hands. Its site has not been determined.[7]

Obviously realising that the first mill would not last too long, in 1838 Gatenby began the task of replacing it with a new one. In November 1840 the building was finished and once Easby had installed the machinery the mill was started in April 1841.[*] The mill, still in Gatenby hands, was grinding flour in 1883 but in May 1887 Barton grain was being ground at Connorville so it appears that the mill did not work again.[8]

The second mill was built 50m to the west of Barton Road, 300m north of Macquarie Road (map reference Conara 204659). The building was still in place in 1971 when it was bought by Roger Smith and pulled down and transported to Launceston, where it was used as part of the Penny Royal complex.[9]

Figure 3: Excerpt from THEMATIC STUDY OF THE TASMANIAN FLOUR MILLING INDUSTRY by Jill Cassidy and Keith Preston

The photos following show the original Barton Mill ruin, and the now the Penny Royal Water Mill which comprises the original Barton Mill which was relocated and rebuilt stone by stone and is located at the front of the site on Paterson Street. This stone building has significant heritage value comprising the original fabric of the Barton Mill.

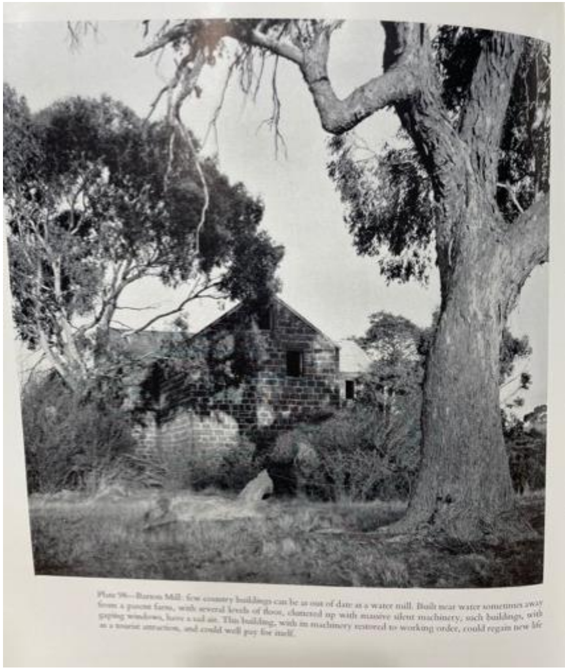

Figure 3: Photo from <u>Early Houses of Northern Tasmania</u>, 1964, pg 117 of the stone ruin of the Barton Mill before it was relocated, now the Penny Royal Water Mill.

Figure 4: Photo of the relocated Penny Royal Water Mill at the front of the site today. The subject building is hidden at the rear.

The replica 'working' corn mill proposed for demolition has no intrinsic heritage value, is no longer operational or economically viable, is falling into dis-repair, is situated at the rear of the site and does not contribute the streetscape or setting of the Penny Royal complex in any meaningful way.

The demolition of the building will not detract from the heritage values of the site, and currently obstructs the rear elevations of the state listed stone buildings, its removal would enhance the overall appreciation and townscape associations so many locals have with the Penny Royal Water Mill, allowing it to be viewed and appreciated from all sides.

C6.6.2 Site Coverage

0bjective:
That site coverage is compatible with the local historic heritage significance of local heritage places.

A1 – No Acceptable Solution.
P1 – The site coverage must be compatible with the local historic heritage significance of a local heritage place, having regard to:

(a) the topography of the site; and
(b) the historic heritage values of the local heritage place as identified in the relevant Local Provisions Schedule, or if there are no historic heritage values identified in the relevant Local Provisions Schedule, the historic heritage values as identified in a report prepared by a suitably qualified person.

Submission: Not applicable.

C6.6.3 Height and bulk of buildings

0bjective:
That the height and bulk of buildings are compatible with the local historic heritage significance of local heritage places.

A1 – No acceptable solution.
P1 – The height and bulk of buildings must be compatible with the historic cultural heritage significance of a local heritage place, having regard to:

(a) the historic heritage values of the local heritage place as identified in the relevant Local Provisions Schedule, or if there are no historic heritage values identified in the relevant Local Provisions Schedule, the historic heritage values as identified in a report prepared by a suitably qualified person;
(b) the character and appearance of the existing building or place;
(c) the height and bulk of other buildings in the surrounding area; and
(d) the setting of the local heritage place.

Submission: Not applicable. There is no new building proposed and no alteration to existing building.

C6.6.4 Siting of buildings and structures

0bjective:
That the siting of buildings is compatible with the local historic heritage significance of local heritage places.

A1 – No acceptable solution.
P1 – The front, side and rear setbacks of a building must be compatible with the local historic heritage significance of the place, having regard to:

- *(a) the historic heritage values of the local heritage place as identified in the relevant Local Provisions Schedule, or if there are no historic heritage values identified in the relevant Local Provisions Schedule, the historic heritage values as identified in a report prepared by a suitably qualified person;*
- *(b) the topography of the site;*
- *(c) the size, shape, and orientation of the lot; and*
- *(d) the setbacks of other buildings in the surrounding area;*

Submission: Not applicable. There is no new building proposed and no alteration to the existing buildings that holds significance value.

C6.6.5 Fences

0bjective:
That fences are compatible with the historic cultural heritage significance of local heritage places.

A1 – New fences and gates on local heritage places must be designed and constructed to match existing original fences on the site.

Submission: Not applicable. There is no new fence proposed.

C6.6.6 Roof form and materials

0bjective:
That roof form and materials are compatible with the local historic heritage significance of local heritage places.

A1 – Replacement roofs on local heritage places which will be visible from any road or public open space adjoining the site, must be of a form and material to match the existing roof being replaced.

Submission: Not applicable. There is no new building proposed.

C6.6.7 Building alterations, excluding roof form and materials

0bjective:
That building alterations, excluding roof form and materials, are compatible with the local historic heritage significance of local heritage places.

A1 – No acceptable solution.
P1 – Building alterations, excluding roof form and materials, of an existing building that is a local heritage place must be compatible with and not detract from the local historic heritage significance of the place, having regard to:

(a) the historic heritage values of the local heritage place as identified in the relevant Local Provisions Schedule, or if there are no historic heritage values identified in the relevant Local Provisions Schedule, the historic heritage values as identified in a report prepared by a suitably qualified person;
(b) the design, period of construction and materials of the building on the site that the building alterations most directly relate to;
(c) the streetscape.

Submission: Not applicable. There is no alteration of existing building.

C6.6.8 Outbuildings and structures

0bjective:
That the siting of outbuildings and structures are compatible with the local historic heritage significance of local heritage places.

A1 – Outbuildings and structures on heritage places must:

(a) not be located in the front setback;
(b) not visible from any road or public open space adjoining the site;
(c) not have a side that is longer than 3m;
(d) have a gross floor area less than 9m^2;
(e) have a combined total area of all outbuildings on the site of not more than 20m^2;
(f) have a maximum height less than 2.4m above existing ground level;
(g) not have a maximum change of level as a result of cut or fill if greater than 1m; and
(h) not encroach on any service easement or be located within 1m of any underground service.

Submission: Not applicable. There is no new building proposed.

C6.6.9 Driveways and parking for non-residential purpose

0bjective:
That driveways and parking for non-residential purposes are compatible with the local

historic heritage significance of local heritage places.

A1 – Parking areas for non-residential purposes on local heritage places must be located behind the building line of buildings located or proposed on a site.

Submission: Complies. The existing and proposed car parking area are located behind the building line of buildings.

C6.6.10 Removal, destruction or lopping of trees, or removal of vegetation, that is specifically part of a local heritage place

0bjective:
To ensure that the removal, destruction or lopping of trees or the removal of vegetation does not impact on the historic heritage significance of local heritage places and their settings.

A1 – No acceptable solution.
P1 – The removal, destruction or lopping of trees or the removal of vegetation which is specifically part of a local heritage place listed in the relevant Local Provisions Schedule, must not cause an unreasonable impact on the local historic heritage significance of a local heritage place, having regard to:

(a) the cultural heritage values of the local heritage places identified in the relevant Local Provisions Schedule, or if there are no historic heritage values identified in the relevant Local Provisions Schedule, the historic heritage values as identified in a report prepared by a suitably qualified person;
(b) the age and condition of the tree or vegetation;
(c) the size and form of the tree or vegetation;
(d) the importance of the tree or vegetation to the local historic heritage significance of a local heritage place; and
(e) any advice by a suitably qualified person.

Submission: Not applicable. There is only minor trimming or removal of vegetation. Vegetation is not specifically part of this place in the Local Provisions Schedule.

C15.0 Landslip Hazard Code

C15.5 Use Standards

C15.4.1 Use or Development Exempt from this Code

The development is on a land within a low or medium landslip hazard band and it does not involves in significant works as all existing retaining wall under the ground will be retained.

PLANNING EXHIBITED DOCUMENTS
Ref. No: DA 0612/2022
Date advertised: 05/11/2022
Planning Administration

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<u>C16.0 Safeguarding of Airports Code</u>

C16.5 Use Standards

C16.5.1 Sensitive use within an airport noise exposure area

0bjective:
That:
(a) sensitive uses are appropriately located or designed to minimise exposure to excessive aircraft noise; and
(b) the operation of airports are not compromised by the amenity expectations of sensitive uses.

A1 – A sensitive use must not be located within an airport noise exposure area.

Submission: Not applicable. It is not located within an airport noise exposure area.

C16.6 Development Standards for Buildings and Works

C16.5.1 Buildings and works within an airport obstacle limitation area

0bjective:
That buildings and works do not interfere with safe aircraft operations in the vicinity of an airport and on land within an airport obstacle limitation area.

A1 – Buildings and works within an airport obstacle limitation area associated with a Commonwealth-leased airport that exceed the specified height limit shown on the airport obstacle limitation area overlay applicable for the site of the development must have approval from the relevant Commonwealth department under the Airports Act 1996 (Commonwealth).

Submission: Complies. There is no new building proposed. Proposed work is not taller than existing buildings.

A2 – No acceptable solution.
P2 – Building and works within an airport obstacle limitation area associated with a non-Commonwealth-leased airport that exceed the specified height limit shown on the airport obstacle limitation area overlay applicable for the site of the development must not create an obstruction or hazard for the operation of aircraft, having regard to any advice from:
(a) airservices Australia;
(b) the Civil Aviation Safety Authority; and
(c) the airport operator.

Submission: Not applicable. Launceston airport is a Commonwealth-lease airport.

26 October 2022

DAVID DENMAN + ASSOCIATES
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Launceston City Council
18-28 St John Street,
Launceston,
TAS 7250

ADDITIONAL INFORMATION REQUIRED DEVELOPMENT APPLICATION
Demolition of Replica Corn Mill and Proposed Carpark Expansion
145-151 Paterson Street, Launceston, TAS 7250

To Launceston City Council Planning Department,

In response to your letter dated 18 October 2022 we provide the following information:

- Clause 6.1.2 – Use operation: The new parking spaces will be directly associated with the existing visitor accommodation use.
- Clause 13.3.1 – All uses - A2: excludes visitor accommodation.
- Clause 2.6.8 – Siting of parking and turning areas – the planning report has been updated to address P1. Please refer to updated Planning Report Version 2 dated 26.10.22, attached.

In response to your letter dated 21 October 2022 we provide the following information:

- Clause 2.6.2 – Use operation: Bay 10, the last bay on the eastern side of the carpark is located next to a kerb and NOT a wall. The aisle has been setback of 1m from bay 10 to comply with clause 2.6.2 in AS 28910.1:2004. The typical size of the parking bays complies with Table C2.3 in the Tasmanian Planning Scheme. Please refer updated drawing set showing the additional 1m of length to the end of the aisle at car space 10.

If you have further questions regarding these matters, please contact our office.

Kind Regards,
David Denman & Associates

PLANNING EXHIBITED DOCUMENTS
Ref. No: DA 0612/2022
Date advertised: 05/11/2022
Planning Administration

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SKETCH DESIGN

Demolition of Corn Mill and Carpark Expansion

145-151 Paterson Street Launceston TAS 7250
Leisure Inn Penny Royal

CONTENTS	NUMBER	DRAWING NAME	CURRENT ISSUE ID	ISSUED
ARCHITECTURALS				
	A00	COVER PAGE	05	☒
	A01	PROPOSED SITE PLAN	05	☒
	A02	DEMOLITION FLOOR PLAN	03	☒
	A03	PROPOSED CARPARK EXPANSION	05	☒

PLANNING EXHIBITED DOCUMENTS

Ref. No: DA 0612/2022
Date advertised: 05/11/2022
Planning Administration ____________

Revision	Change ID	Description	Date
01	0	OFFICE REVIEW	23/09/2022
02	1	CLIENT REVIEW	28/09/2022
03	2	CLIENT REVIEW	4/10/2022
04	3	PLANNING APPLICATION	7/10/2022
05	4	21.10.2022 RFI - PARKING LAYOUT	26/10/2022

SKETCH DESIGN
NOT FOR CONSTRUCTION

7/59 WILLIAM STREET
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DAVID DENMAN + ASSOCIATES
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PROJECT: Demolition of Corn Mill and Carpark Expansion

ADDRESS: 145-151 Paterson Street Launceston TAS 7250

CLIENT: Leisure Inn Penny Royal

drawing **COVER PAGE**

scale 1:1 (A2 paper)
date 26/10/2022
dwg #

A00_Rev05

Document Set ID: 4807110
Version: 3, Version Date: 03/11/2022

PROPOSED SITE PLAN
Scale 1:200

Revision	Change ID	Description	Date
01	0	OFFICE REVIEW	23/09/2022
02	1	CLIENT REVIEW	28/09/2022
03	2	CLIENT REVIEW	4/10/2022
04	3	PLANNING APPLICATION	7/10/2022
05	4	21.10.2022 RFI - PARKING LAYOUT	26/10/2022

SKETCH DESIGN
NOT FOR CONSTRUCTION

7/59 WILLIAM STREET
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PROJECT: Demolition of Corn Mill and Carpark Expansion

ADDRESS: 145-151 Paterson Street Launceston TAS 7250

CLIENT: Leisure Inn Penny Royal

drawing **PROPOSED SITE PLAN**

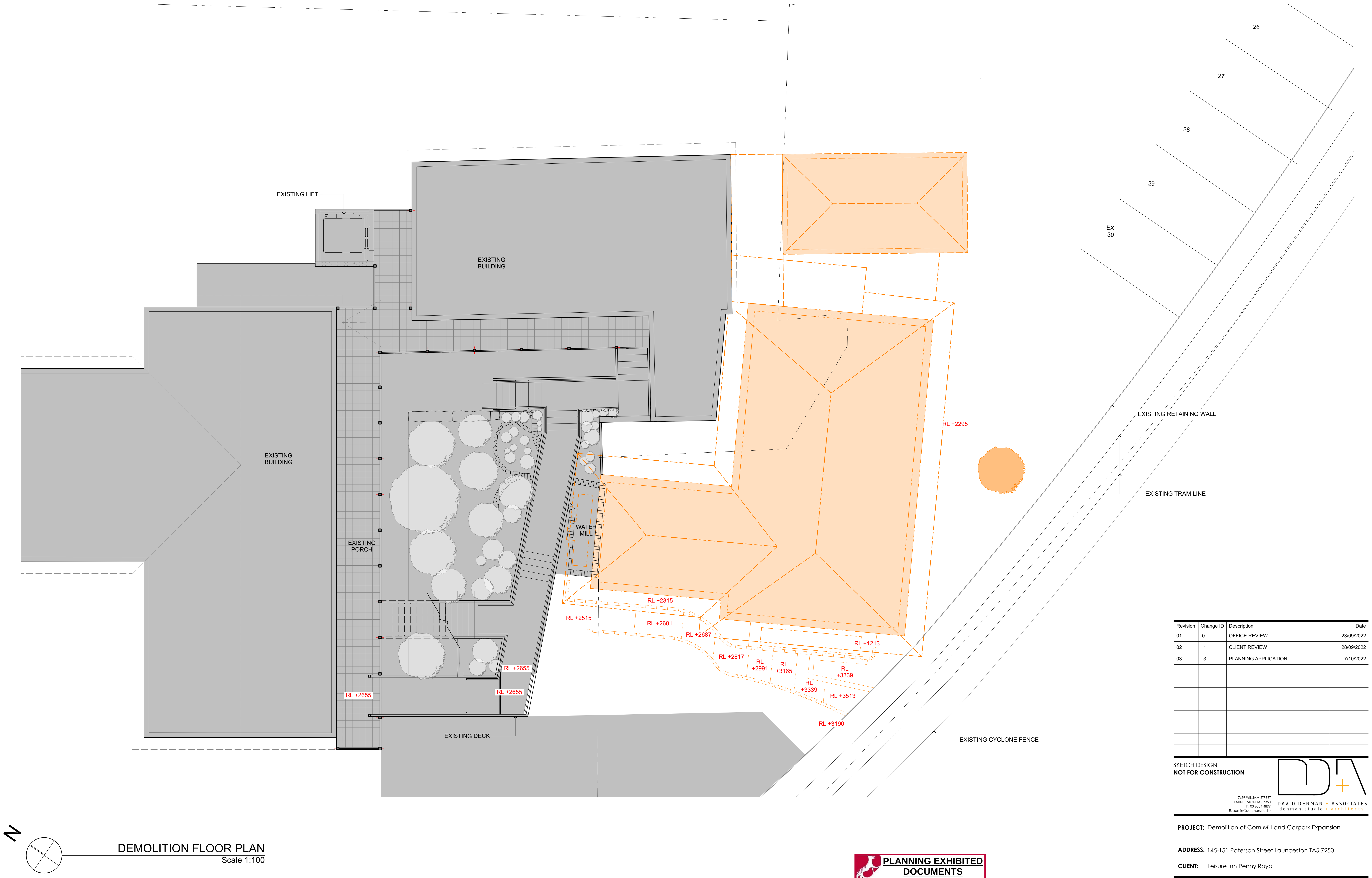
scale 1:200 (A2 paper)
date 26/10/2022
dwg # A01_Rev05

0m 2m 10m

PLANNING EXHIBITED DOCUMENTS

Ref. No: DA 0612/2022
Date advertised: 05/11/2022
Planning Administration

Document Set ID: 4807110
Version: 3, Version Date: 03/11/2022



DEMOLITION FLOOR PLAN
Scale 1:100

Revision	Change ID	Description	Date
01	0	OFFICE REVIEW	23/09/2022
02	1	CLIENT REVIEW	28/09/2022
03	3	PLANNING APPLICATION	7/10/2022

SKETCH DESIGN
NOT FOR CONSTRUCTION

DAVID DENMAN + ASSOCIATES
denman.studio / architects

PROJECT: Demolition of Corn Mill and Carpark Expansion

ADDRESS: 145-151 Paterson Street Launceston TAS 7250

CLIENT: Leisure Inn Penny Royal

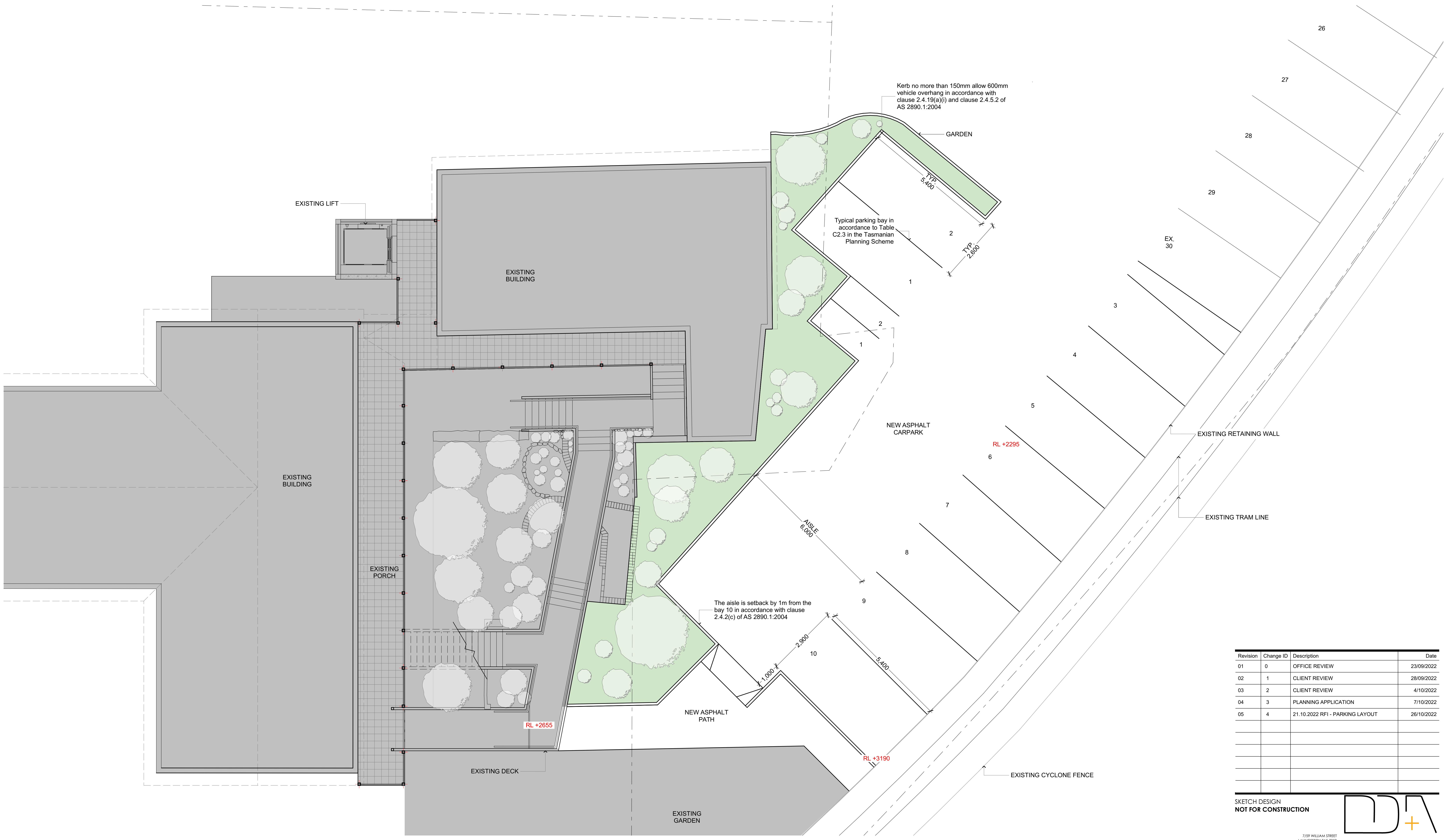
drawing **DEMOLITION FLOOR PLAN**

scale 1:100 (A2 paper)
date 7/10/2022
dwg # A02_Rev03

0m 1m 5m

PLANNING EXHIBITED DOCUMENTS
Ref. No: DA 0612/2022
Date advertised: 05/11/2022
Planning Administration

Document Set ID: 4807110
Version: 3, Version Date: 03/11/2022



PROPOSED CARPARK EXPANSION
Scale 1:100

Revision	Change ID	Description	Date
01	0	OFFICE REVIEW	23/09/2022
02	1	CLIENT REVIEW	28/09/2022
03	2	CLIENT REVIEW	4/10/2022
04	3	PLANNING APPLICATION	7/10/2022
05	4	21.10.2022 RFI - PARKING LAYOUT	26/10/2022

SKETCH DESIGN
NOT FOR CONSTRUCTION

7/59 WILLIAM STREET
LAUNCESTON TAS 7350
P: 03 6334 4899
E: admin@denman.studio

DAVID DENMAN + ASSOCIATES
denman.studio / architects

PROJECT: Demolition of Corn Mill and Carpark Expansion

ADDRESS: 145-151 Paterson Street Launceston TAS 7250

CLIENT: Leisure Inn Penny Royal

drawing **PROPOSED CARPARK EXPANSION**

scale 1:100 (A2 paper)
date 26/10/2022
dwg # A03_Rev05

0m 1m 5m

PLANNING EXHIBITED DOCUMENTS

Ref. No: DA 0612/2022
Date advertised: 05/11/2022
Planning Administration ____

Document Set ID: 4807110
Version: 3, Version Date: 03/11/2022

Tasmanian Heritage Council

Tasmanian Heritage Council
GPO Box 618 Hobart Tasmania 7000
Tel: 1300 850 332
enquiries@heritage.tas.gov.au
www.heritage.tas.gov.au

PLANNING REF:	DA0612/2022
THC WORKS REF:	#8015
REGISTERED PLACE NO:	#44492
FILE NO:	10-72-10 THC
APPLICANT:	Paterson Bridge Pty Ltd
DATE THC RECEIVED:	19 October 2022
DATE OF THIS NOTICE:	24 October 2022

NOTICE OF NO INTEREST

(*Historic Cultural Heritage Act 1995*)

The Place:	Penny Royal Motel (formerly Barton Mill), 145-151 Paterson Street, Launceston.
Proposed Works:	Demolish existing cornmill and construction of an extension to the carpark.

Under s36(3)(a) of the *Historic Cultural Heritage Act 1995* the Tasmanian Heritage Council provides notice that it has no interest in determining the discretionary permit application because the affected c1976 replica 'cornmill' museum building, and carpark are located within a part of the place (CT243810/1) that are not entered in the Tasmanian Heritage Register.

The works do not result in a change to the nature or appearance of the multi-storey stone mill buildings for which the place is permanently entered in the Tasmanian Heritage Register.

Please contact the undersigned on 1300 850 332 if you would like to discuss any matters relating to this application or this notice.

Chris Bonner
Regional Heritage Advisor – Heritage Tasmania
Under delegation of the Tasmanian Heritage Council

From: "Lionel Morrell"[redacted]
Sent: Mon, 21 Nov 2022 13:06:00 +1100
To: "Contact Us" <contactus@launceston.tas.gov.au>;"Michael Stretton"
[redacted]
Subject: Representation DA 0612/2022
Attachments: HPST Inc representation DA0612 2022 Proposed Demolition of Cornmill & Construction of a carpark Launceston 21 Nov 2022.pdf

PLEASE SEE ATTACHED REPRESENTATION

Sent from [redacted] for Windows

HERITAGE PROTECTION SOCIETY (TASMANIA) INC.

[redacted]

21 November 2022

City of Launceston Council
LAUNCESTON TAS 7250 Attention: General Manager, Mr Michael Stretton
By email to contactus@launceston.tas.gov.au

Dear Sir,

Re: Development Application DA 061/2022 - Demolition of the Corn Mill Building & Construction of a Carpark at 145-151 Paterson St Launceston.

This Development Application has been advertised with the address 145-151 Paterson Street Launceston.

There are 5 scheduled listings for 145-151 Paterson Street in the Planning Scheme's Local Heritage Code, all also scheduled as being entered on the Tasmanian Heritage Register. The advertised information outlining this Application regretfully does not provide sufficient information concerning the land in question to allow the proposed development land to be adequately identified, the relevance of the two heritage registers, or how the advertising has complied with statutory advertising requirements.
This leaves a question mark over whether this application, potentially flawed, can proceed to be assessed for Development Approval.

The proponent says the stone building (the Penny Royal Mill) IS LISTED, albeit also a faux heritage building!
The proponent makes great strength on how it was moved by the original developer/builder "stone by stone" from Barton (beyond Cressy) and reconstructed in Paterson Street.
This is not correct, and the structure in Paterson Street is really just a faint replica of the old mill that was at Barton.

The stones in the original Barton Mill were square coursed, not random rubble as re-built (evidenced on site by the historic photo's displayed). In fact the reconstructed faux building is constructed of Besser Concrete Blocks with just a stone veneer to the exterior, the floors upstairs are concrete and the underside ceilings have faux oak beams made of styro-foam ..... Of course, all of the windows and doors are modern, the roof framing is also and the concrete roof tiles are concrete faux slates. Some additional stone was required, and this was sourced from other old buildings and later from a quarry SW of Launceston.

The Cornmill that Roger Smith built nearly 50 years ago (a couple of years after he 'relocated' the old Barton Mill) was (Smith said) "a faithful reproduction of an English Cornmill, incorporating some old machinery & equipment", so it could have some level of cultural value and so does the old milling equipment.

Why can't the Cornmill Building be re-purposed for another tourism use? It seems a terrible waste of what was once a very popular part of the Penny Royal Tourism Precinct.
Gourlay's Lolly Shop/Factory is located in this part of the complex and one wonders if more of that sort of complementary activity could be incorporated into the old Cornmill Building?
Roger Smith, creator of the complex, argued it was quite an authentic replica mill. It must be close on 50 years old now? They complain of the maintenance costs for the empty building, but how hard have they tried to find a viable tourism use. What is the purpose of the carpark?
There must be many more potential uses than a few car spaces ......?
Could the Cornmill be repurposed for accommodation?

Accordingly, Heritage Protection Society (Tasmania) Inc. requests Councillors refuse to accept this application for demolition, and suggests the proponent gives a thorough consideration to giving the structure an alternate use.

Yours faithfully,

Lionel J. Morrell

President, for and on behalf of
Heritage Protection Society (Tasmania) Inc.

From: "Lionel Morrell"[redacted]
Sent: Mon, 21 Nov 2022 14:15:16 +1100
To: "Contact Us" <contactus@launceston.tas.gov.au>;"Michael Stretton"
[redacted]
Subject: Representation DA 061 2021 Demolition of Cornmill
Attachments: TRA Inc representation DA0612 2022 Proposed Demolition of Cornmill & Construction of a carpark Launceston 21 Nov 2022.pdf

Please see attached Representation

Sent from [redacted] for Windows

Tasmanian Ratepayers' Association Inc.
[redacted]

21 November 2022

City of Launceston Council
LAUNCESTON TAS 7250 Attention: General Manager, Mr Michael Stretton
By email to contactus@launceston.tas.gov.au

Dear Sir,

Re: Demolition of Corn Mill Exhibit & Construction of Carpark 145-151 Paterson St Launceston. DA061 2022

We are bemused by this application, given the various arguments publicly promoted by this property owner/developer/tourism business, that this is part of a key tourism precinct.
Whilst this is one element of reconstructed/faux milling facilities on this Penny Royal Mill/Corn Mill/Gunpowder Mill tourism attraction, it has a contextual relationship to the remaining exhibits that will become less representative of milling industries should the Corn Mill be demolished.
No evidence has been submitted to establish the alleged poor condition of this structure. The proponent exclaims that the Corn Mill structure is in a poorly-maintained state, however that has been the prevailing situation of all of the structures within this neglected tourism attraction complex, and there has been no case raised as to why it simply can't be repaired and maintained as an educational exhibit, or alternatively re-purposed for another worthwhile ancillary or new attraction or tourism facility. The level of maintenance cum neglect of this structure is completely of the owner's own making, and is no justification for demolition.

We are quite reasonably suspicious of what the true motive of this property owner may be, given the potential for the space to be used to construct a support pylon for potential Cableway Link to the Gorge First Basin.

Potential Cableway Link to Cataract Gorge First Basin

PDF
20220907_133259.PDF

The Chromy Group published a statement on its Facebook page (see pdf link above) stating ***"Located on the edge of the CBD, Penny Royal and Cataract Gorge, there is also scope to include a cableway link to the Cataract Gorge First Basin (subject to planning approval)."***
There is no reference to any Cableway Link in this application, however, the potential to do so from the roof level of the proposed Gorge Hotel Building (presently disputed in TASCAT), then via a series of intermediate pylons (one on the Corn Mill site) so as to pass over the West Tamar Highway to a secondary station as once proposed for a cableway link from above the cliff face on the Brisbane Street Zig-Zag Reserve area, is clearly a potential future planning application, that could only be facilitated from

1

the roof-top of such a tall building existing, as presently proposed, at around 39M above ground level.
Any Cableway Link over the West Launceston hill and impeding on the Cataract Gorge Reserve would have great and severe impacts and would raise tremendous public opposition.
Only if such an excessively-tall building were to already exist, could such a proposal be even remotely possible, and to potentially achieve such a proposal, intermediate pylons would be required.

Should in fact this portion of land become the location of a potential pylon for a Cableway Link, its foundations will be directly located over the major seismic fault line that extends down the western bank of the Tamar Estuary, grazing the sides of both pylons of Paterson Bridge and Ritchie's Mill Silos, then taking a course along Bourke Street to eventually bisect South Launceston in the Glen Dhu/Leslie Street valleys.

The precise location of this seismic fault line was established prior to the construction of Paterson Bridge, and dictated the design and positioning of the bridge to the western side of the fault, accordingly.

It would seem to be a remarkable folly to ever potentially consider a tall pylon structure on the present Cornmill site.

If a permit is issued for this proposed demolition and carparking, a condition must be imposed that the building cannot be used as a station for any future Cableway Link.

Management of Risk
Hazard consideration at strategic planning is critical to determining whether the benefits of allowing consideration of development in certain areas outweighs the cost to the community and individuals required to mitigate that hazard, short, medium and long term.
We refer you to **Guide to Considering Natural Hazard Risks in Land Use Planning and Building Control.** Department of Premier and Cabinet (dpac.tas.gov.au)
"The adoption of the hazard treatment approach recognizes, in part, that a legitimate role of governments is to protect public value by making judgements regarding risk, even in the absence of detailed information. Policy judgements regarding both hazard likelihood and appropriate control measures can be developed through active engagement with stakeholders to ensure they reflect community attitudes towards risk and tolerance to risk."
Natural Hazard Risks are not limited or restricted to landslip risk, as previously incorrectly done, but must include seismic risk.
Land stability (and also flooding) are provided for in LUPA Act and no-where is seismic risk excluded, and silence does not conflate our concerns.
We are concerned that the potential for seismic activity on this site directly positioned on a seismic fault line, may risk catastrophic collapse of such a tall pylon support structure and with a resultant death &/or injury to patrons/public potentially on board a gondola of a potential Cableway operation, and properties nearby.
Over the past few years, we have presented many, many technical and scientific reports to Council concerning Seismic Risk, Microzonation, Climate Risk,

Vulnerability and Impacts, including reports commissioned by Council itself and dealing specifically with the Tamar Rift Valley.
It is simply not adequate, and a complete ignorance of the ‘precautionary principle’ to simply rely on the Australian Standards referenced in the Building Code of Australia.
It is extremely unlikely that any prudent design can satisfactorily combat the very real risks and dangers that independent scientists have researched, warned and advised against for Launceston.
In the study *Seismic Microzonation of Launceston Tasmania* published by Marion Michael-Leiba (ASGO) & Vagn Jensen (Geology Dept UTas) and COMMISSIONED by Launceston City Council, they state:
Buildings in the city of Launceston have been damaged by five earthquakes with epicentres in the west Tasman Sea, since 1884. While the damage detailed later in this paper was not extensive, some of the reported cases had the potential to cause injury or loss of life. All of the events [listed in Table 1] occurred in a zone off the north-east tip of Tasmania. Over 2000 earthquakes in this zone were felt during the period 1883-1892, and the cluster of epicentres can be seen in Figure 1. The January 1892 event has the same magnitude as the highly damaging 1968 Meckering, Western Australia, and January 1995 Kobe, Japan , earthquakes. The magnitude of the smallest earthquake in Table 1 is <u>the same as that of the very destructive 1989 Newscastle earthquake.</u>
The rift valleys, now filled by a maximum sediment thickness of over 250M were identified and directly intersects this very site.
The full published summary report (with highlighted sections)can be read here, but in direct reference to this site **<u>warns against buildings taller than 4 storeys, being damaged</u>**.
Yes, the Australian Standards referenced in this report have been reviewed, but the essential research and recommendations, are completely relevant and remain valid.
We submit that as Council has no suitably qualified staff in this area of expertise, it is necessary and prudent that they seek a review of the data and recommendations in this study from the independent consultants/scientists, as Council cannot simply choose to rely on the advice proffered by the proponent.

PDF
20220907_150938.PDF

<u>Progressive Degeneration of the Area</u>

This is not the first time that Chromy Group has used the excuse of clearing a site for carparking, then once achieved, to propose a quite different development on the ‘vacant’ carpark site. (Four houses were demolished on the Margaret/Brisbane Street frontages of the proposed Gorge Hotel site for the construction of an allegedly vital carpark facility for the Penny Royal/Gunpowder Mill tourism complex, Launceston College students and the public generally, then this became the site for the proposed Gorge Hotel).

It is somewhat ironic that evidence submitted to RMPAT by the proponent’s experts supporting the disputed Gorge Hotel project, placed great significance on how this area had <u>degenerated</u> into carparking and caryard sales areas, thereby lessening the amenity and values for the Margaret Street/Brisbane Street area and afar, and yet once-again, here we have JAC Group demolishing yet another building for a ground level carparking development, and on a site that is completely open and visible to a public highway.

Enforcement of the *Land Use Planning And Approval Act 1993*
We refer you to the Act.
48. Enforcement of observance of planning schemes
Where a planning scheme is in force, the planning authority must, within the ambit of its power, observe, and enforce the observance of, that planning Scheme in respect of all use and development undertaken within the area to which the planning Scheme relates, whether by authority or by any other person.

And in that regard, we remind Councillors :
Planning is concerned with the public good, not private interests. Planning schemes are developed to reflect community aspirations for the future of their municipal area. Website: Premier of Tasmania, (formerly) RH. Peter Gutwein.

Accordingly, we implore that Councillors not approve this application for the demolition of this valuable building in order to construct a ground level carpark, and instead encourage the proponent to find a sustainable use for a repurposed Cornmill building and in so-doing derive a prudent and feasible alternative for this development.

Lionel J. Morrell

President, for and on behalf of
Tasmanian Ratepayers Association Incorporated

From: "Lionel Morrell[redacted]
Sent: Mon, 21 Nov 2022 14:50:25 +1100
To: "Contact Us" <contactus@launceston.tas.gov.au[redacted]
Subject: FW: Representation DA 061 2021 Demolition of Cornmill
Attachments: 20221121_135216.PDF

Representation re-sent.
It has been drawn to our attention that the plan embodied in the representation earlier sent, was of poor quality, and so here it is again as a separate attachment.
Please add this attachment to our earlier representation.

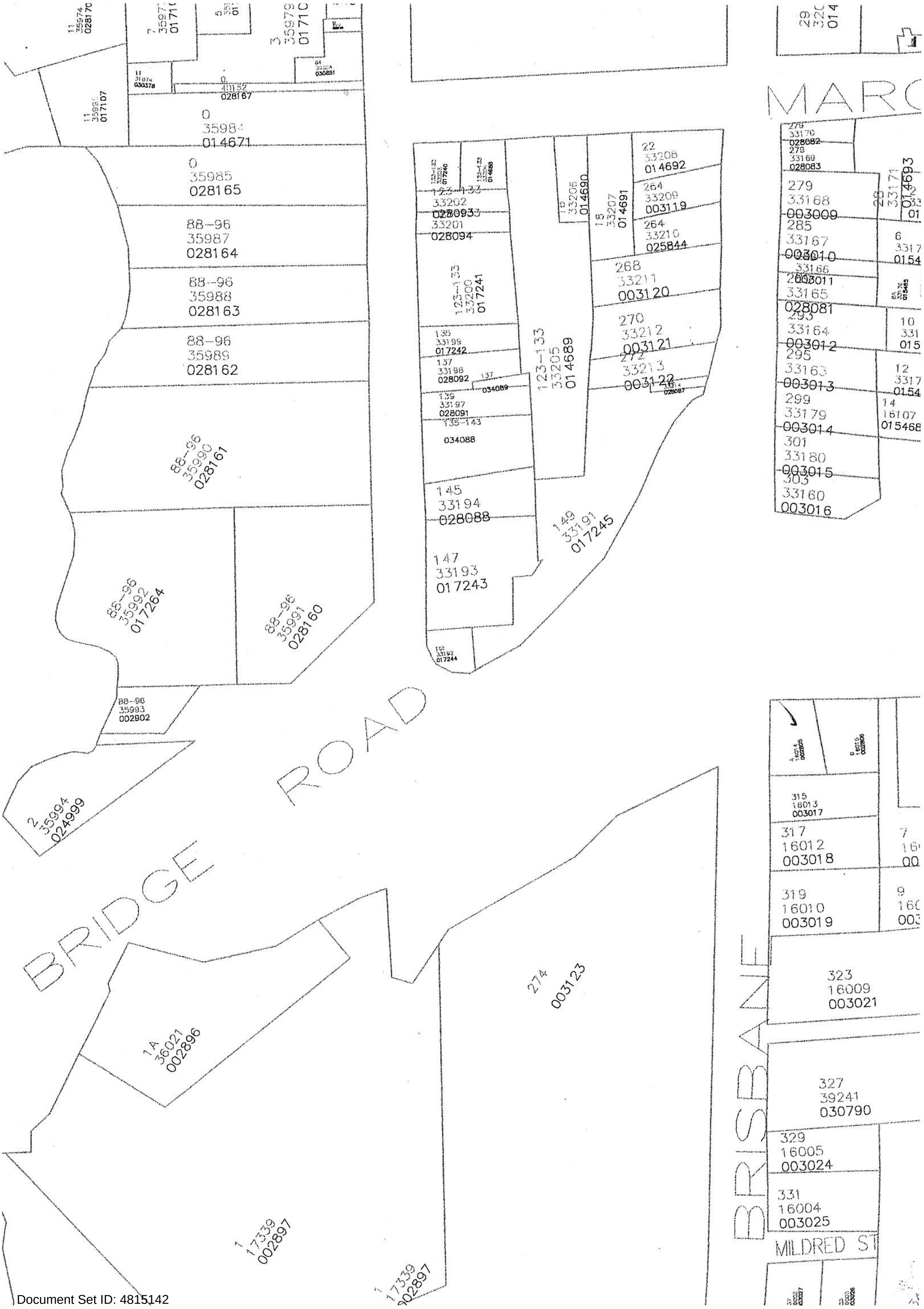
TASMANIAN RATEPAYERS ASSOCIATION INC.

Sent from [redacted] for Windows

From [redacted]
Sent: Monday, 21 November 2022 2:15 PM
To: Contact Us; Michael Stretton
Subject: Representation DA 061 2021 Demolition of Cornmill

Please see attached Representation

Sent from [redacted] for Windows



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Version: 1, Version Date: 21/11/2022

From: "LHNH Launceston Heritage Not High Rise"
[redacted]
Sent: Tue, 22 Nov 2022 14:02:44 +1100
To: "Contact Us" <contactus@launceston.tas.gov.au>
[redacted]ET
Attachments: Representation_DA06122022_ LHNH.pdf

Some people who received this message don't often get email from
[redacted]. Learn why this is important

Please find attached representation to Development Application DA0612/2022

LHNH LAUNCESTON HERITAGE NOT HIGHRISE

[redacted]

General Manager
Launceston Council
By email: contactus@launceston.tas.gov.au.

22 November 2022

Dear Mr Stretton,

REPRESENTATION - DA0612/2022
145 - 151 PATERSON STREET
Demolition of 1975 Corn Mill

Urban Mixed Use Zone A car park where one is not required.

C2.0 Parking and Sustainable Parking Code

C2.5.1 Car Parking Numbers The proponent states C2.5.1 A1 be applied in relation to number of parking spaces and that their actual requirement is for an additional 3 car spaces to supply the 33 units of the complex. The DA indicates 40 will be added with the proposed demolition. **However C2.5.1 P1.1 and P1.2 should be applied.**

Accessible Parking Spaces
The application appears to state that the Penny Royal, with it's second adjacent site, will give the required access to accessible parking. This should therefore also supply the additional 3 spaces required per C2.5.1

C2.7 Parking Precinct Plan This clause of the Parking Code is not fully addressed. The proponent maintains the proposed car park will not detract from the streetscape of the area, however with the new adjacent Specific Area Plan (the Margaret Street transition plan) the existence of a Precinct Parking Plan would be assumed.
Therefore full consideration of C2.7.1 P1 and P2 should be enacted.

C6.0 Local Historic Heritage Code

In a complex that for a long time has developed faux (and some real) history as a tourist asset it seems strange to single out one item for removal and not renovation. Demolition would be an unnecessary loss of a tourist asset - of the building itself, the equipment it housed and it's context within the complex. It could be argued that the weathering of the 1975 wooden structure could augment the 1800's look and so support a new tourist experience.

The application provides no evidence regarding the condition of the building. Demolition by neglect should not justify this change of use.

Whilst the building technically has no individual legal listing there are 5 scheduled listings for the 145-151 Patterson Street under the Local Heritage Code. Simply to 'value' add yet another car park that is not even required by the planning scheme and is already adequately available is curious: surely a repurposed building is of more value to the complex than a car park.
A modern car park will have a negative impact on the nearby listed items. **C6.6.1 should apply**

Future intended use of the location?

It has been stated publicly that a gondola **to** the Gorge is a future goal of the Chromy Group, in fact a current councillor once voiced support for this. This is no longer stated publicly, however, historic information of this is **attached (picture from 2018 DA and screenshot from JacGroup website)**. Whilst this current DA appears to be a a demolition it is probably groundwork to a future application to construct a pylon for a cableway over the goat track.

Lastly, this application highlights the deficiencies of the Urban Mixed Zone where Codes are not applied, leading to frequent claims in the DA: ***Submission: Not applicable. It is not located within the Central Business Zone***

We urge councillors to reject the application to demolish a valuable building for yet another car park and to instruct the proponent to renovate and repurpose this building in the interests of the precinct as a whole.

Yours sincerely,
Victoria Wilkinson on behalf of Launceston Heritage Not HighRise
[redacted]

[redacted]

SOURCE: The 2018 Gorge Hotel DA

From: "June Burnet" [redacted]
Sent: Tue, 22 Nov 2022 15:28:32 +1100
To: "Contact Us" <contactus@launceston.tas.gov.au>
Subject: DA 061/2022 Demo of the Corn Mill etc

Attention. general Manager, Mr Michael Stretton. 22nd November 2022

Representation DA0612/2022.. 145-151 Paterson Street
Demolition of 1975 Corn Mill and construction of a car park.

Dear Mr Stretton,

This, my submission, is stating that I strongly OBJECT to this Development Application by The JAC Group and my frustration with you, the planner/s and your councillors (in the past) not listening to what is said in our submissions.

Do you think this time around with yet another DA submitted by The Chromy Group that you will actually listen to the EXPERTS regarding this site, haven't they, JAC Group, already pulled down enough Heritage buildings to make car parks! Degrading the heritage/tourists destinations in Launceston.

JAC Group have managed to get their own way with Launceston Council because Council appear to bend over backwards to accomodate their requests, they just think 'oh we'll put in another DA, it'll be right with the Council Planners they recommend everything we submit to be passed!'

I don't know what it has to take to listen to the residents and actually HEAR what they have to say, I sincerely hope the NEW councillors will pay attention to the community they are representing and protect Launceston's heritage and tourism sites.

JAC Group cannot be trusted, they are pulling the wool over your eyes by putting in a DA now with an ulterior motive in the pipeline, we (residents) can see that, why can't you or the planners? JAC Group expect to get their own way, however long it takes, however many Tribunals because they have had that success so far. It is time the Cataract Gorge precinct is protected by this council, if this DA is passed by LCC then the future of Launceston as a tourist destination is doomed.

If you can't see what is suggested in the attached photo, I suggest you and the planners go along to SpecSavers!! As I said, what do we the residents have to do to save Launceston from developers such as The JAC Group?

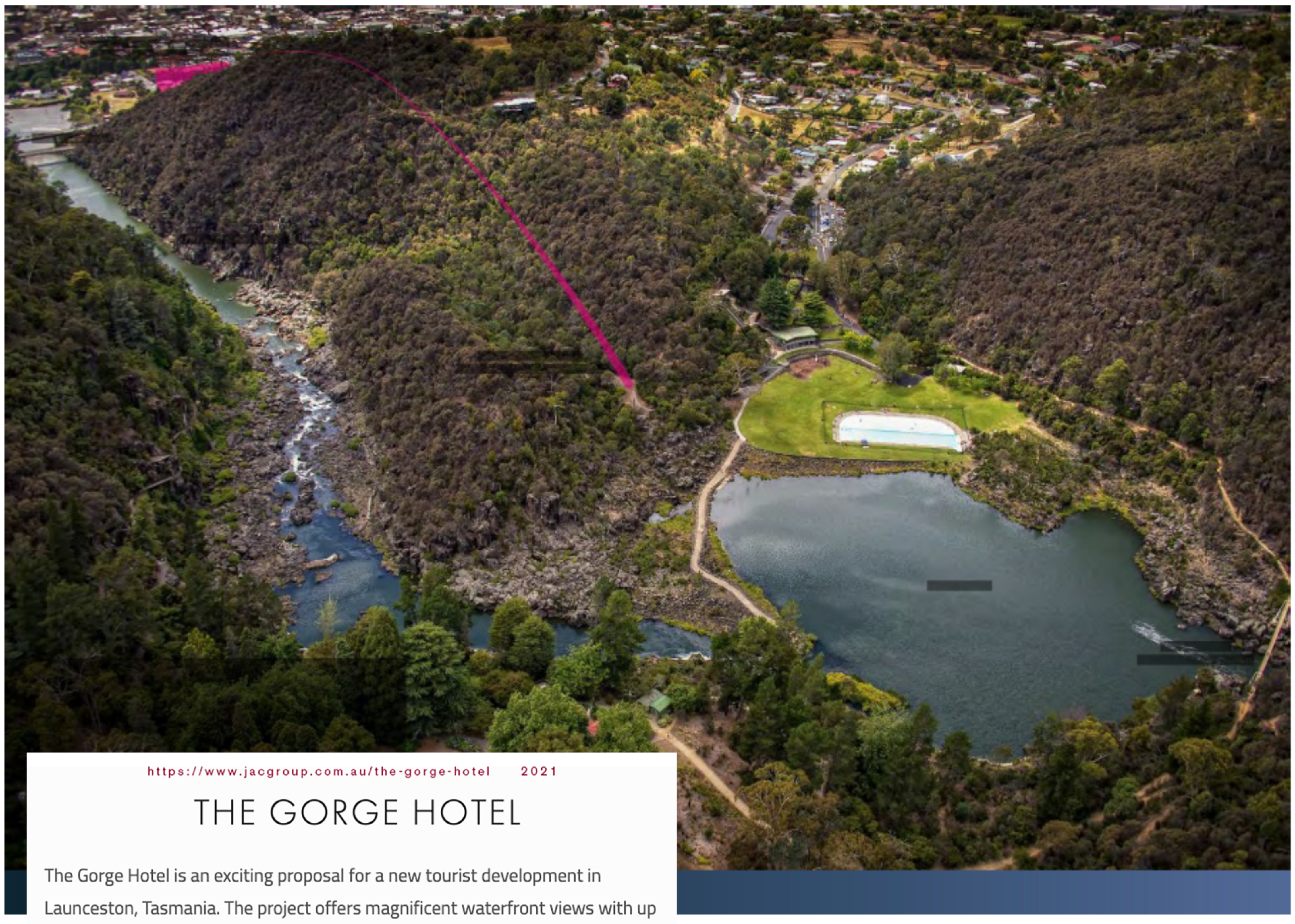
I strongly object to this Development Application in view of what's likely to follow in the future, see below what The JAC Website says quite clearly they want a Cable Car into the Cataract Gorge First Basin, are you going to be deceived once again or going to deceive the residents of Launceston (once again)?

This DA should NOT be passed by Councillors and should have Full Councillor representation even if via a proxy vote should a councillor is unable to be there on the day of the public meeting.

I support the submission of LHNH.

Yours sincerely,

June Burnet
[redacted]

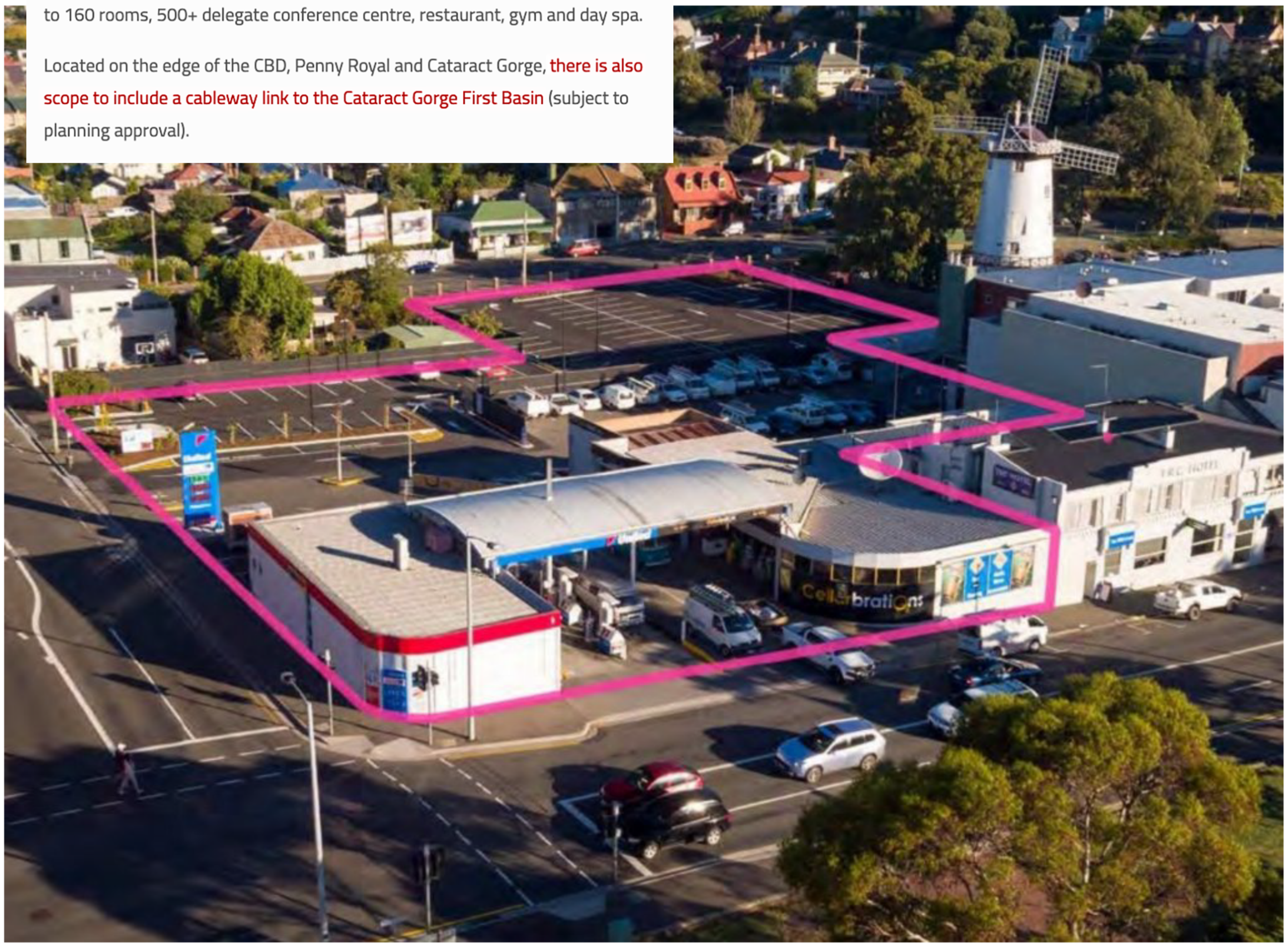


https://www.jacgroup.com.au/the-gorge-hotel 2021

THE GORGE HOTEL

The Gorge Hotel is an exciting proposal for a new tourist development in Launceston, Tasmania. The project offers magnificent waterfront views with up to 160 rooms, 500+ delegate conference centre, restaurant, gym and day spa.

Located on the edge of the CBD, Penny Royal and Cataract Gorge, there is also scope to include a cableway link to the Cataract Gorge First Basin (subject to planning approval).



SOURCE: The 2018 Gorge Hotel DA

From: "Helen Tait" [redacted]
Sent: Tue, 22 Nov 2022 16:14:59 +1100
To: "Contact Us" <contactus@launceston.tas.gov.au>
Subject: Helen Tait, Representation re DA0612/2022

Re: REPRESENTATION - DA0612/2022, 145 - 151 PATERSON STREET
To:General Manager, Launceston Council
From: Helen Tait,[redacted]

I write to make representation against this DA for demolition of a 'building of interest' to create further car parking in this historic and visually significant 'city entrance' block - Paterson St, Margaret St, West Tamar Highway.

Over-arching consideration of this DA, is that; all levels of LCC have a well established duty and moral requirement to respect the findings of numerous surveys and assessment that Launcestonians value history and character, and that they reasonably expect that to be recognised and protected in their city.

The DA is for within a precinct of particular interest; some partially authentically reconstructed history, some simply representative history, some registered heritage. However, whether or not locals are convinced of the authenticity of history transported, the milling theme is historically appropriate for here and is an accepted statement, or representation, of historic character.

The public has recently/often been informed by LCC planners that car parks and ubiquitous big box developments are what make for an 'ugly and uninteresting' Margret St . Yet in processing DA's the planners are repeatedly approving, (and I contend feel hand-tied by narrow interpretation of our Planning Scheme) to accept demolition of character and heritage value buildings in the area. Instance the recent demolition of several attractive and well kept cottages that fronted Margret St and on the highway, buildings that contributed considerably to the character and aesthetic value of the area.

A question: What actually is this extra set of parking places required for at this moment? Has it been precisely determined that there is a disturbing lack? There is plenty of parking spaces in the parking area nearby. Let LCC be cautious and duly diligent such this DA approval,that would result in reduction of local character could not happen until a well established need is apparent.

Let Council, with the people it serves, embrace establishment of a social licence for the further use of this area before we set this special area into a backspin of base commercial development.

I commend Council and Councillors;
-to listen and to embrace what representers such as those from LHNH Launceston Heritage Not Highrise, TRPA Tasmanian Rate Payers Association, LHPS Launceston Historical Protection Society responsibly express.
-to appreciate that a Planning scheme and associated legislation is created to provide a nuanced, constructive and protective role for the population that it serves not just the current developers' lofty ideas.

From: "Rocelyn Ives"[redacted]
Sent: Tue, 22 Nov 2022 16:28:32 +1100
To: "Contact Us" <contactus@launceston.tas.gov.au>
Subject: Attention of The General Manager
Attachments: General ManagerCOL Cornmill demolition.doc

REPRESENTATION : DA 0612/2022

Dear Mr Stretton

I provide this representation. I do hope the new Councillors will be able to have the opportunity to consider the commercialisation of previously established heritage precincts. This described "faux" structure is a small part of a much bigger picture that many citizens are concerned about. It is not development generally that is the issue. The bigger issue is the degradation of heritage buildings and precincts with intact heritage value that are essential to Launceston.

My representation is attached.

Thank you,

Rocelyn Ives

General Manager
COL Council
Email: contactus@launceston.tas.gov.au
Mr M Stretton,

22 November 2022

REPRESENTATION : DA 0612/2022

<u>Demolition of existing 1975 Corn Mill</u>
145-151 Paterson Street, Launceston Tas 7250

"Visitor Accommodation- Demolish existing corn mill and construction of an extension to the car-park"
Urban Mixed Use Zone

I ask COL Council to reject this application.

It is not clear why the need for 3 more accessible carparks for the 33 units within the Penny Royal precinct is valid. There are alternative areas within the complex that could be made accessible parking bays. It should be in consideration that additional parking being added while the SAP in the adjoining area of the proposed Gorge Hotel will also provide additional under building car parking and this increase in traffic movement along Paterson Street without a thoroughly researched traffic plan is foolish to agree to at this time. Surely this DA would be better considered after the Gorge Hotel traffic impact on Paterson Street is accounted for in a properly researched plan.

There has been little airing in the public domain for what could be argued is another piece of Launceston's heritage being demolished without consideration of community opinion. One should question why another piece of heritage is demolished just for a car park.

Recent demolition of a pre heritage listed house for a car yard in Wellington Street did draw attention to the issue of what the community expectation is. "We welcome more cars in Launceston" is not the story COL council has been pitching to the community through its City Plans. There is a problem with 20 th century thinking existing in a 21 st century world. Traffic management and addressing options for public transport and pedestrian ways and not cars should extend beyond the CBD

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Version: 1, Version Date: 22/11/2022

into urban zones because these areas are where the bottle-necks of traffic now occur especially in this Paterson Street area where turning in and out and along Margaret Street and towards the Paterson Street bridge is already a traffic problem.

In the DA it is described as a Discretionary Development Application and even accepting it as a "faux" corn-mill, this 1975 shingled building should be valued and refurbished/renovated as an integral part of Launceston's history for showcasing our story to tourists. What a draw card it could be if the building could be used as a museum showcasing Launceston's historic and innovative acquisition and transfer of fresh water through the harnessing of water from the Gorge for industry and other purposes. How hard would it be to refurbish? I know of many shingle buildings brought back to life and made structurally and physically attractive with not too many $s needing to be outlaid. The current Penny Royal complex is not what some would deem as the genuine article but it does attract many tourists.
An alternative could be a miniature working model space for Launceston's innovative hydro and other systems: a wonderful school's challenge to construct and exhibit. And so close to the Gorge and Duck Reach upstream is a wonderful opportunity. Penny Royal itself may not be the genuine article but its heritage value is the significance of the stories behind the bricks and mortar. The Corn Mill being retained would be a much greater profit-making and forward-thinking use.

Car parking already abounds and is extensive off Paterson Street if one has the funds to afford to pay for it. The Penny Royal precinct, owned by JAC group, contains a previously council owned parking area. One might ask is there a bigger plan in mind to have so many cleared spaces allocated to car parking? Might we learn of these future plans to understand this DA intent?

Thank you for considering my view.

Rocelyn Ives
[redacted]

[redacted]

TITLE: **DA0587/2022 - Subdivision - Subdivide Two Lots into Three Lots at 107 Elphin Road, Newstead**

FILE NO: DA0587/2022

AUTHOR: Duncan Payton (Town Planner)

GENERAL MANAGER: Dan Ryan (Community and Place Network)

ATTACHMENT ONE:

To consider and determine a development application pursuant to the *Land Use Planning and Approvals Act 1993.*

PLANNING APPLICATION INFORMATION:

Applicant:	S. Group Pty Ltd
Property:	107 Elphin Road, Newstead
Zoning:	General Residential
Receipt Date:	28/09/2022
Validity Date:	1/11/2022
Further Information Request:	04/10/2022
Further Information Received:	28/10/2022
Deemed Approval:	19/12/2022
Representations:	5

PLANNING SCHEME REQUIREMENTS

3.1 Zone Purpose

8.0 General Residential Zone

The purpose of the General Residential Zone is: 8.0.1 To provide for residential use or development that accommodates a range of dwelling types wherefull infrastructure services are available or can be provided. 8.0.2 To provide for the efficient utilisation of available social, transport and other service infrastructure. 8.0.3 To provide for non-residential use that: (a) primarily serves the local community; and (b) does not cause an unreasonable loss of amenity through scale, intensity, noise, activity outsideof business hours, traffic generation and movement, or other off site impacts. 8.0.4 To provide for Visitor Accommodation that is compatible with residential character.
Consistent The proposal provides for two vacant lots suitable for residential development within an area where full infrastructure services are available.

8.6.1 Lot design

That each lot: (a) has an area and dimensions appropriate for use and development in the zone; (b) is provided with appropriate access to a road;

(c) contains areas which are suitable for development appropriate to the zone purpose, located to avoid natural hazards; and (d) is orientated to provide solar access for future dwellings.
Consistent The proposal satisfies the applicable acceptable solutions and performance criteria.
A1 Each lot, or a lot proposed in a plan of subdivision, must: (a) have an area of not less than 450m^2 and: (i) be able to contain a minimum area of 10m x 15m with a gradient not steeper than 1 in 5, clear of: a. all setbacks required by clause 8.4.2 A1, A2 and A3, and 8.5.1 A1 and A2; and b. easements or other title restrictions that limit or restrict development; and (ii) existing buildings are consistent with the setback required by clause 8.4.2 A1, A2 and A3, and 8.5.1 A1 and A2; (b) be required for public use by the Crown, a council or a State authority; (c) be required for the provision of Utilities; or (d) be for the consolidation of a lot with another lot provided each lot is within the same zone.
Relies on Performance Criteria Lot 1, containing the existing dwelling and outbuildings, will retain 960m^2. Lots 2 and 3 will each have an area of 430m^2 and rely upon performance criteria.
P1 Each lot, or a lot proposed in a plan of subdivision, must have sufficient useable area and dimensions suitable for its intended use, having regard to: (a) the relevant requirements for development of buildings on the lots; (b) the intended location of buildings on the lots; (c) the topography of the site; (d) the presence of any natural hazards; (e) adequate provision of private open space; and (f) the pattern of development existing on established properties in the area.
Complies Having regard to the following, each proposed lot is considered to have sufficient usable area and dimensions suitable for its intended use. (a) the relevant requirements for development of buildings on the lots; Proposed lots 2 and 3 will each be approximately 11.16m x 38.8m and able to contain the minimum area of 10m x 15m, as specified in the acceptable solution, within the prescribed building envelope at clause 8.4.2. A single storey dwelling could be constructed on each lot consistent with the acceptable solutions. (b) the intended location of buildings on the lots; No buildings are included in this proposal, however a single dwelling could be located centrally within each lot. (c) the topography of the site; The site is generally level, rising gently from Olive Street at a gradient of around 4%. (d) the presence of any natural hazards; There are no recorded natural hazards at this site. (e) adequate provision of private open space; With a proposed area of 430m^2, lots 2 and 3 are capable of containing both a dwelling and the 24m^2 of private open space specified at clause 8.4.3 A2.

(f) the pattern of development existing on established properties in the area. The pattern of development in the surrounding area shows a range of lot sizes, including lots smaller that the proposal at 10 and 2A Olive Street and 103 Elphin Road. The surrounding lots also contain a mix of single and multiple dwelling development. The performance criteria are considered to be satisfied.	
P1 Each lot, or a lot proposed in a plan of subdivision, must have sufficient useable area and dimensions suitable for its intended use, having regard to: (a) the relevant requirements for development of buildings on the lots; (b) the intended location of buildings on the lots; (c) the topography of the site; (d) the presence of any natural hazards; (e) adequate provision of private open space; and (f) the pattern of development existing on established properties in the area.	
Relies on Performance Criteria Lot 1 will retain its 22.3m frontage to Elphin Road. Each of lots 2 and 3 will have a frontage of around 11.2m and rely upon performance criteria.	
P2 Each lot, or a lot proposed in a plan of subdivision, excluding for public open space, a riparian or littoral reserve or Utilities, must be provided with a frontage or legal connection to a road by a right of carriageway, that is sufficient for the intended use, having regard to: (a) the width of frontage proposed, if any; (b) the number of other lots which have the land subject to the right of carriageway as their sole or principal means of access; (c) the topography of the site; (d) the functionality and useability of the frontage; (e) the ability to manoeuvre vehicles on the site; and (f) the pattern of development existing on established properties in the area, and is not less than 3.6m wide.	
Complies Having regard to the following, lots 2 and 3 are considered to have sufficient frontage to Olive Street for their intended use: (a) the width of frontage proposed, if any; Lots 2 and 3 are each proposed to have a frontage of around 11.2m. (b) the number of other lots which have the land subject to the right of carriageway as their sole or principal means of access; No other rights of way are proposed for either of lots 2 or 3. (c) the topography of the site; The site is generally level with a gentle rise from Olive Street. (d) the functionality and useability of the frontage; The frontage to each lot is functional and able to be used to provide access. (e) the ability to manoeuvre vehicles on the site; The sites are currently vacant. The future manoeuvrability of vehicles will be subject to the design and siting of proposed dwellings. (f) the pattern of development existing on established properties in the area, The pattern of development in the surrounding area shows a range of lot sizes, including lots smaller that the proposal at 10 and 2A Olive Street and 103 Elphin Road. The surrounding lots also contain a mix of single and multiple dwelling development.	

Each lot has a frontage of 11.2m and is considered to satisfy the performance criteria.
A3 Each lot, or a lot proposed in a plan of subdivision, must be provided with a vehicular access from the boundary of the lot to a road in accordance with the requirements of the road authority.
Complies Each lot will have vehicular access from its boundary with a road.

8.6.3 Services

That the subdivision of land provides services for the future use and development of the land.
Consistent The proposal complies with the acceptable solutions.
A1 Each lot, or a lot proposed in a plan of subdivision, excluding for public open space, a riparian or littoral reserve or Utilities, must have a connection to a full water supply service.
Complies Each lot will be connected to the public water supply service.
A2 Each lot, or a lot proposed in a plan of subdivision, excluding for public open space, a riparian or littoral reserve or Utilities, must have a connection to a reticulated sewerage system.
Complies Each lot will be connected to the reticulated sewerage system.
A3 Each lot, or a lot proposed in a plan of subdivision, excluding for public open space, a riparian or littoral reserve or Utilities, must be capable of connecting to a public stormwater system.
Complies Each lot will be connected to the public stormwater system.

C2.0 Parking and Sustainable Transport Code

The purpose of the Parking and Sustainable Transport Code is: C2.1.1 To ensure that an appropriate level of parking facilities is provided to service use and development. C2.1.2 To ensure that cycling, walking and public transport are encouraged as a means of transport in urban areas. C2.1.3 To ensure that access for pedestrians, vehicles and cyclists is safe and adequate. C2.1.4 To ensure that parking does not cause an unreasonable loss of amenity to the surrounding area. C2.1.5 To ensure that parking spaces and accesses meet appropriate standards. C2.1.6 To provide for parking precincts and pedestrian priority streets.
Consistent The existing dwelling and outbuildings are retained on lot 1, with access to Elphin Road. No change to the existing access, parking and manoeuvring areas is proposed. Lots 2 and 3 are currently vacant, with no development other than the subdivision proposed. The proposal does not alter the provision of, or requirement for, car parking and further consideration of the code is not warranted.

GENERAL INFORMATION:

Accredited Architect:	Sam Haberle	
Accreditation Number:	CC5618U	
Land Title Reference Number:		
Municipality:	Launceston City Council	
Building Class:	N/A	
Soil classification:	TBC	Site classification to AS 2870-2011
Wind Classification:	TBC	Site classification to AS 4055-1012
Climate Zone:	1	
Bushfire-prone Area BAL Rating:	N/A	Bushfire Attack Level Assessment

Sheet Number	Sheet Title	Current Revision	CurrentRevisionDate
A001	Cover Page	A	14/9/22
A101	Site plan	A	14/9/22

PROPOSED SUBDIVISION
107 Elphin Road, Newstead

location plan NTS

create. wonder.

REVISION - A	DATE - 14/9/22	DESCRIPTION - DA	DATE 14/9/22
ADDRESS 107 Elphin Road, Newstead		do not scale off plans all dimensions in millimetres confirm all dimensions on site all work to relevant NCC and AS	ISSUE DA
CLIENT Jones		SCALE @ ISO A3 1:250	DWG # A001
DWG Cover Page		DRAWN SG	
		CHKD SG	PROJECT# J007935

S. Group

Level 1, 10-14 Paterson st, **Launceston** | Level 1, 90-92 Murray st, **Hobart**
T: 03 63 111 403 **E**: info@sgroup.com.au **sgroup.com.au**

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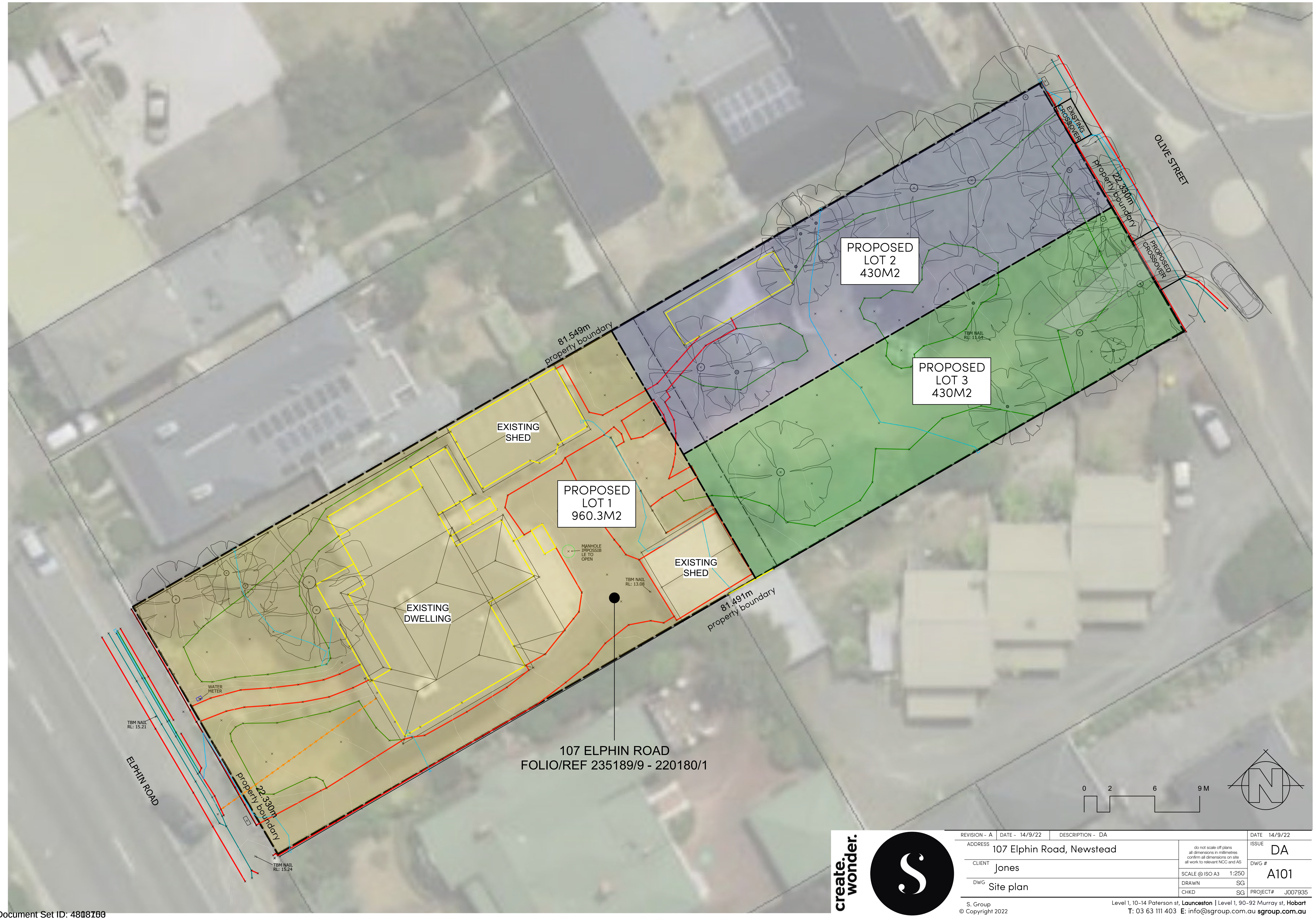

Document Set ID: 4808700
Version: 1, Version Date: 20/11/2022

DWG NO.	DRAWING	REV
C100	COVER PAGE	01
C101	SERVICES PLAN	01
C102	TASWATER STANDARD DETAIL	01
C103	TASWATER CONNECTION DETAIL	01
C104	LGAT STORMWATER CONNECTION DETAIL	01
C105	LGAT STORMWATER CONNECTION DETAIL	01
C106	LGAT STORMWATER CONNECTION DETAIL	01
C107	LGAT STORMWATER CONNECTION DETAIL	01
C108	LGAT STORMWATER CONNECTION DETAIL	01

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VIC: Level 14, 390 St Kilda Road, Melbourne, VIC 3004
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NORTH

SUBDIVISION UTILITIES PLAN

107 ELPHIN ROAD, NEWSTEAD, TAS 7250

JONES

SCALE: (A3)

REV	AMENDMENT	DATE
01	FOR REVIEW	26/10/2022

ISSUED BY: **JNg**
DRAWN BY: **JNg**
APPROVED BY:

COVER PAGE

DWG: **C100** REV: **01**

PROJECT: **P22001-480**

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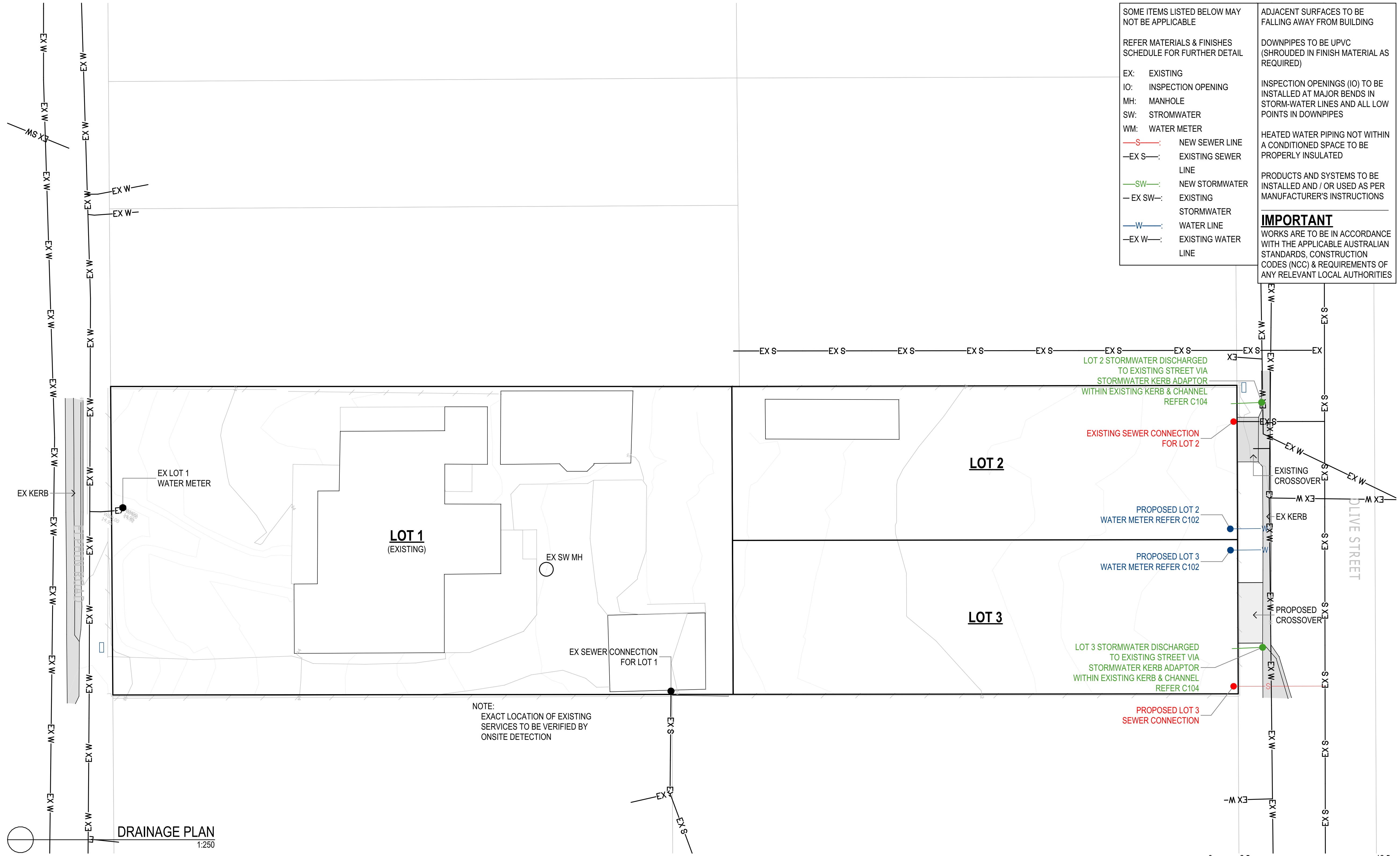

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SUBDIVISION UTILITIES PLAN

107 ELPHIN ROAD, NEWSTEAD, TAS 7250

JONES

SCALE: (A3)

REV	AMENDMENT	DATE
01	FOR REVIEW	26/10/2022

ISSUED BY: JNg
DRAWN BY: JNg
APPROVED BY:

SERVICES PLAN

DWG: C101 REV: 01

PROJECT: P22001-480

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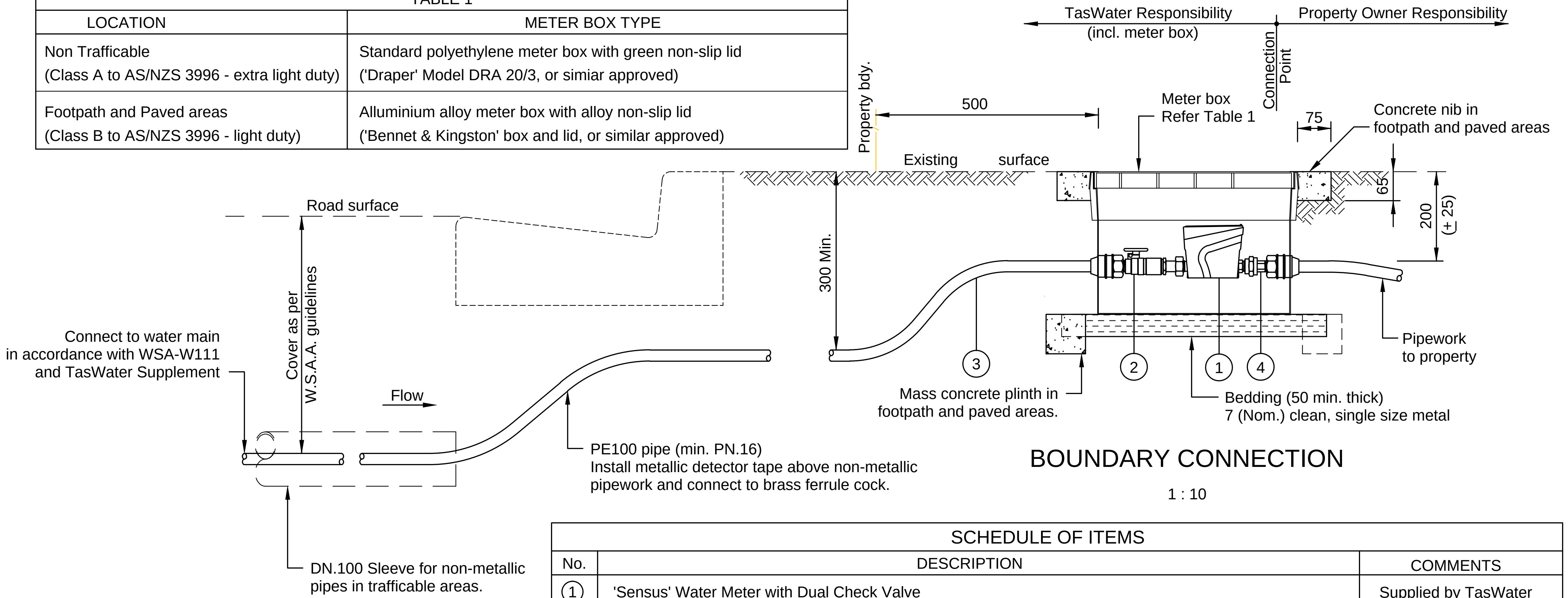
Document Set ID: 4808700
Version: 2, Version Date: 28/11/2022

TABLE 1	
LOCATION	METER BOX TYPE
Non Trafficable (Class A to AS/NZS 3996 - extra light duty)	Standard polyethylene meter box with green non-slip lid ('Draper' Model DRA 20/3, or simiar approved)
Footpath and Paved areas (Class B to AS/NZS 3996 - light duty)	Alluminium alloy meter box with alloy non-slip lid ('Bennet & Kingston' box and lid, or similar approved)



BOUNDARY CONNECTION

1 : 10

SCHEDULE OF ITEMS		
No.	DESCRIPTION	COMMENTS
1	'Sensus' Water Meter with Dual Check Valve	Supplied by TasWater
2	Ball Valve - W/MRK Lockable Quarter Turn Brass DZR, Resilient Seated with Extendable Nut and Tail	Supplied by TasWater
3	Pipe and Fittings (PN.16 minimum)	
4	Brass Nut and Tail	Supplied by TasWater

0 0.2 0.4 0.6 0.8 1.0 metres
SCALE - 1 : 10

VALVE & EQUIPMENT SCHEDULE

1. Only use products with watermark certification and approved for use by TasWater and listed within City West Water's approved products catalogue.
2. Installation must comply with manufacturer's written instructions
3. TPFNR ferrule cock, connectors, tapping band and gate valve must be pressure rated PN16 minimum body dezincification brass to AS/NZS 2345 and comply with potable water contact to AS/NZS 4020.
4. All valves must be resilient seated, clockwise closing to AS 1628 with 316 stainless steel bolts and washers.
5. In footpaths and paved areas the meter box must be supported with insitu N25 concrete.
6. Unless approved otherwise the water meter/s, tails and meter boxes are to be supplied by TasWater.

GENERAL NOTES

1. All dimensions in millimeters (mm), unless noted otherwise.
2. Water connection to be located next to driveway entrance.
3. Water connection point to be located between driveway entrance and nearest side boundary, unless otherwise approved.
4. Light trafficable areas are defined as areas with Class 'B' wheel loadings to AS/NZS 3996. In areas with wheel loadings greater than Class 'B' then an aluminium alloy pit with concrete surround is unsuitable.
5. In rural and semi-rural situations the cast iron mains cover may be replaced with a DN.150 PVC end connection and screw cap where approved by authorised officer.
6. Refer to TasWater's boundary backflow containment guidelines for hazard ratings.
7. Any pressure limiting valves installed under the requirements of clause 3.3.4 of AS.3500.1-2003 are to be installed outside of and downstream of the meter box.
8. After installation of meter, TasWater must be notified by returning meter sheet to "Development@taswater.com.au" stating TasWater reference number in subject line.
9. Failure to install or contact TasWater after installation will result in non issue of any compliance certificates.

TASWATER STANDARD DETAIL - PROPERTY SERVICE CONNECTION
DN.20 AND DN.25 WATER METER BELOW GROUND LOW HAZARD

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SUBDIVISION UTILITIES PLAN
107 ELPHIN ROAD, NEWSTEAD, TAS 7250
JONES
SCALE: (A3)

REV	AMENDMENT	DATE
01	FOR REVIEW	26/10/2022

ISSUED BY: JNg
DRAWN BY: JNg
APPROVED BY:

TASWATER STANDARD DETAIL
DWG: C102 REV: 01
PROJECT: P22001-480

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Document Set ID: 4808160
Version: 2, Version Date: 20/11/2022

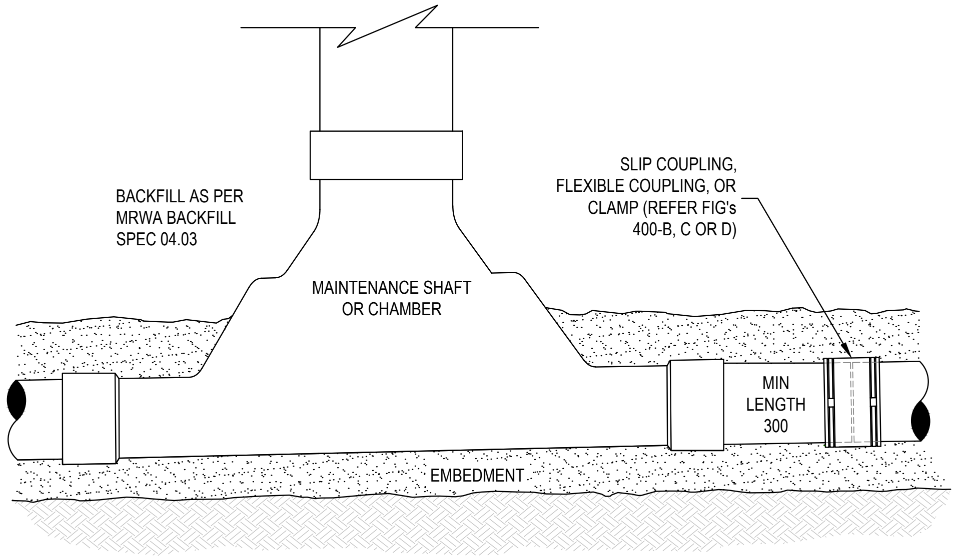

FIGURE 400-A: INSERTING MAINTENANCE SHAFTS AND CHAMBERS INTO EXISTING SEWERS

NOTES Regarding Inserting Maintenance Shafts and Chambers into Live Mains:

- MSs and MCs with flexible RRJ connectors are recommended where one is to be installed within an existing pipeline.
- Comply with confined space entry requirements of the Water Agency throughout the works.

1. Submit Work Method Statement if this has been requested by the Water Agency.
2. Excavate down to and around the pipe where the maintenance shaft / chamber is to be constructed.
3. Minimise the amount of pipe embedment removed around existing pipe.
4. Prepare the base in accordance with MRWA-S-305 & 306.
5. Stop sewer flow from entering the main to be cut.
6. Place a band around the existing pipe to mark straight cut lines where the pipe is to be cut.
7. Cut (+/- 3 mm from straight circumferential line) and dry the main.
8. Place maintenance shaft / chamber with pipe extension and lubricated coupling (if coupling).
9. Ensure grade of MS or MC base is consistent with existing main. If required, remove and adjust level of foundation to ensure correct grade.
10. Pull back couplings or place clamps over joins, ensuring fitting is centered over the gap.
11. Place embedment and backfill as per MRWA-S-201 and 202.

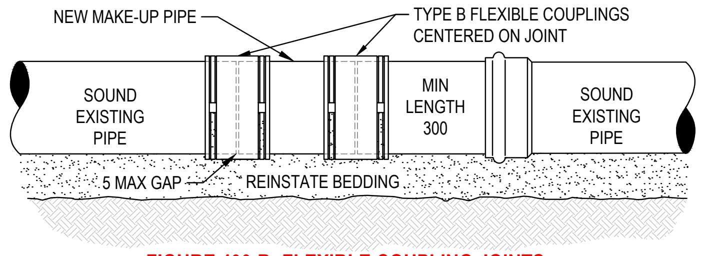

FIGURE 400-B: FLEXIBLE COUPLING JOINTS

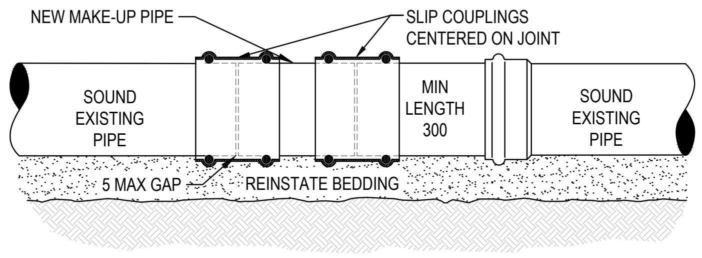

FIGURE 400-C: SLIP COUPLING JOINTS

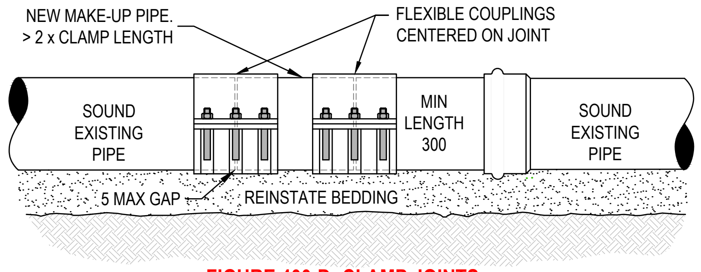

FIGURE 400-D: CLAMP JOINTS

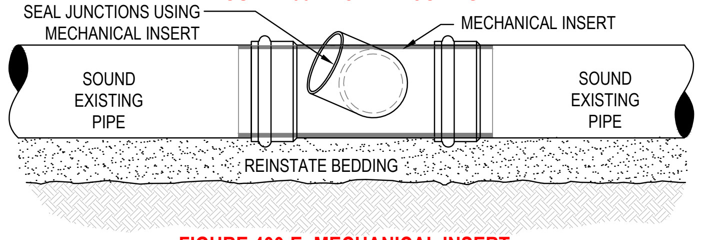

FIGURE 400-E: MECHANICAL INSERT

NOTES Regarding Repair of Damaged Pipe:

- Approved mechanical inserts may be used to repair small defects (ie: defects < $\frac{1}{2}$ length of insert). For larger defects, instead replace a section(s) of the pipe as per Figures 400-B to D.
- All protrusions into the bore of the pipe shall be removed. CCTV all repaired pipe to verify hydraulic integrity.

NOTES Regarding Couplings and Clamps:

- Clamps and couplings shall not be used in the construction of new pipelines.
- Repair clamps and joining clamps for insertion of pipe sections into profiled wall pipe (ie: PP pipe) are available from the relevant manufacturer.
- Ensure clamps overlap existing pipe as per Table 400-A.

TABLE 400-A: CLAMP OVERLAP

PIPE DN	MIN CLAMP LENGTH EITHER SIDE OF GAP
≤DN375	75
≥DN450	125

Pipe Insertion Procedure:

1. Submit Work Method Statement if this has been requested by the Water Agency.
2. Minimise the amount of pipe embedment removed around existing pipe.
3. Stop sewer flow from entering the main to be cut.
4. Place a band around the existing pipe and mark straight cut lines (+/- 3 from straight line).
5. Remove any redundant pipework.
6. Obtain confined space permits and prepare for confined space entry if this has not already been done.
7. Cut the main.
8. Cut an insertion piece, ensuring gaps will be < 5 wide and that the difference in ID is less than 5. Chamfer any internal edge which may protrude into the flow.
9. Clean insertion piece and 400 beyond each existing pipe end and lubricate if RRJ.
10. Place two couplings over insertion piece ends (if couplings being used),
11. Insert pipe piece and pull back couplings or place clamps over joins, ensuring fittings are centered over gaps.
12. Embed and backfill as per MRWA-S-201 and 202.

Maintenance Hole Construction Over Existing Sewers:

- The pipe should not be broken until the MH is virtually fully constructed.
- While it remains unbroken, the excavation may or not be a confined space depending on the likelihood of sewage or gases escaping the pipe. This will depend on the age, type and condition of the pipe.
- Comply with confined space entry requirements of the Water Agency throughout the works.

1. Submit Work Method Statement if this has been requested by the Water Agency.
2. Excavate down to and around the pipe where the maintenance hole is to be constructed, ensuring that the main is stable.
3. Prepare the base in accordance with with MRWA-S-310.
   - 3.2. Prepare the pipe which is to be encased in concrete by thoroughly cleaning the pipe and then;
     - 3.2.1. If PVC DWV- priming the pipe before applying solvent cement around the full circumference of the pipe. Sprinkle builders sand liberally to the solvent cement. Allow to harden before concreting.
     - 3.2.2. If PP- applying a circular hydrophilic rubber bandage on both sides to the outer diameter of a rib 75 back from where the pipe will be cut.
     - 3.2.3. If GRP- sanding the pipe with coarse sand paper. Then apply polyester resin to the abraded surface and then sprinkle builders sand liberally to resin. Allow to harden before concreting.
   - 3.3. Place polystyrene blockout above the existing pipe and for any new chase / channel (for new sewer connections) as per Figure 400-G.
   - 3.4. Install formwork as required in preparation for placement of concrete for the base.
4. Pour the in situ cast base including nib wall and starter bars.
5. Pour the wall segments, top and set cover and frame as per MRWA-S-300 series drawings.
6. Fix ladder / step irons / landings / drop pipe as necessary.
7. Remove the polystyrene blockout from the base.
8. Cut out the top of the pipe as per Figure 400-I or cut and remove all of pipe within the MH channel.
9. Cut out the side of the existing pipe to allow the new channel to enter the existing main.
10. "compo" (render) the top edges of the cut pipe and any gap between pipe and base with epoxy mortar (refer WSA-201- selection and application of protective coatings) in accordance with Figure 400-J
11. "compo" (render) the junction of the new channel where it junctions with the existing main.
12. Once the maintenance hole walls have set sufficiently, backfill in accordance with the MRWA backfill specification MRWA-04-03.

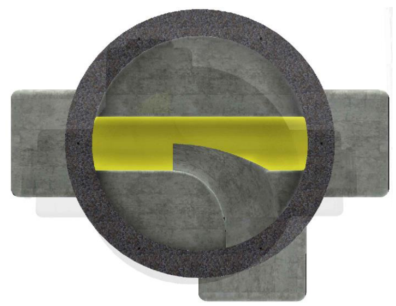

FIGURE 400-F: FINISHED MAINTENANCE HOLE CONNECTION TO AN EXISTING SEWER

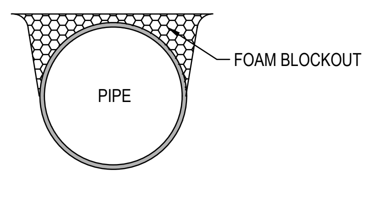

FIGURE 400-G: EXCAVATE AROUND MAIN & ATTACH BLOCKOUT

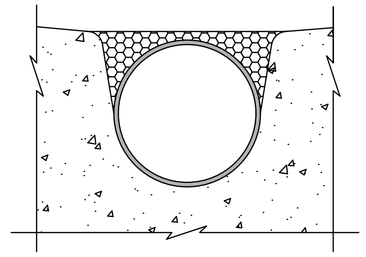

FIGURE 400-H: PLACE FORMWORK AND THEN CONCRETE

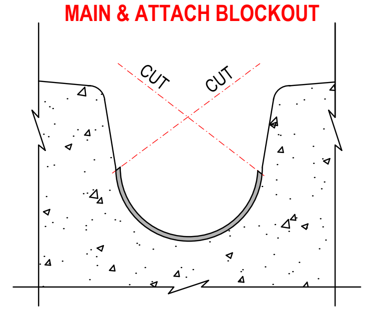

FIGURE 400-I: CUT OUT EXPOSED PIPE

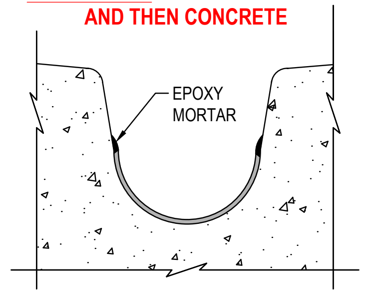

FIGURE 400-J: RENDER TOP EDGE OF PIPE

INSERTION INTO LIVE SEWERS, REDUNDANT PROPERTY CONNECTIONS

NOT FOR CONSTRUCTION

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NORTH

SUBDIVISION UTILITIES PLAN
107 ELPHIN ROAD, NEWSTEAD, TAS 7250
JONES

SCALE: (A3)

REV	AMENDMENT	DATE
01	FOR REVIEW	26/10/2022

ISSUED BY: JNg
DRAWN BY: JNg
APPROVED BY:

TASWATER CONNECTION DETAIL
DWG: C103 REV: 01
PROJECT: P22001-480

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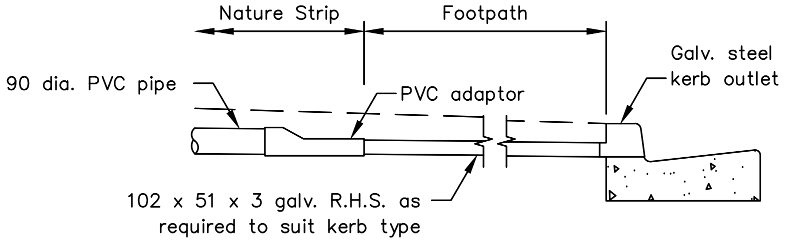
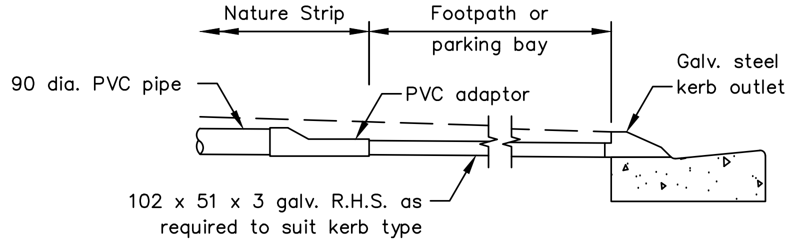
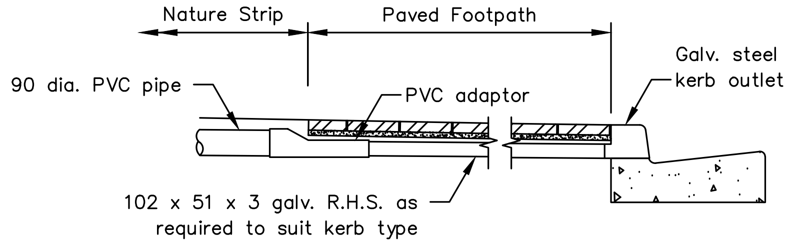


ASPHALT FOOTPATH / NATURE STRIP
(TYPES BK, KC AND KCS)
SCALE 1 : 25



TYPE KCM
SCALE 1 : 25



PAVED FOOTPATH
(TYPES KC AND KCS)
SCALE 1 : 25

* Refer to TSD–R11 for paving details.

STORMWATER KERB OUTLETS

KERB CONNECTION

NOT FOR CONSTRUCTION

FOR REVIEW

Exceed Engineering
LTN: 51 York Street, PO Box 1971, Launceston, TAS 7250
HBT: 1 Kyeema Place, Cambridge, TAS 7170
VIC: Level 14, 390 St Kilda Road, Melbourne, VIC 3004
NSW: Impact Centre, 19 Chetwynd Road, Erina, NSW 2250
P: +613 6332 6955 | E: info@exceedengineering.com.au | A: CC5339H

NORTH

SUBDIVISION UTILITIES PLAN
107 ELPHIN ROAD, NEWSTEAD, TAS 7250
JONES

SCALE: (A3)

REV	AMENDMENT	DATE
01	FOR REVIEW	26/10/2022

ISSUED BY: JNg
DRAWN BY: JNg
APPROVED BY:

LGAT STORMWATER CONNECTION DETAIL
DWG: **C104** REV: **01**
PROJECT: **P22001-480**

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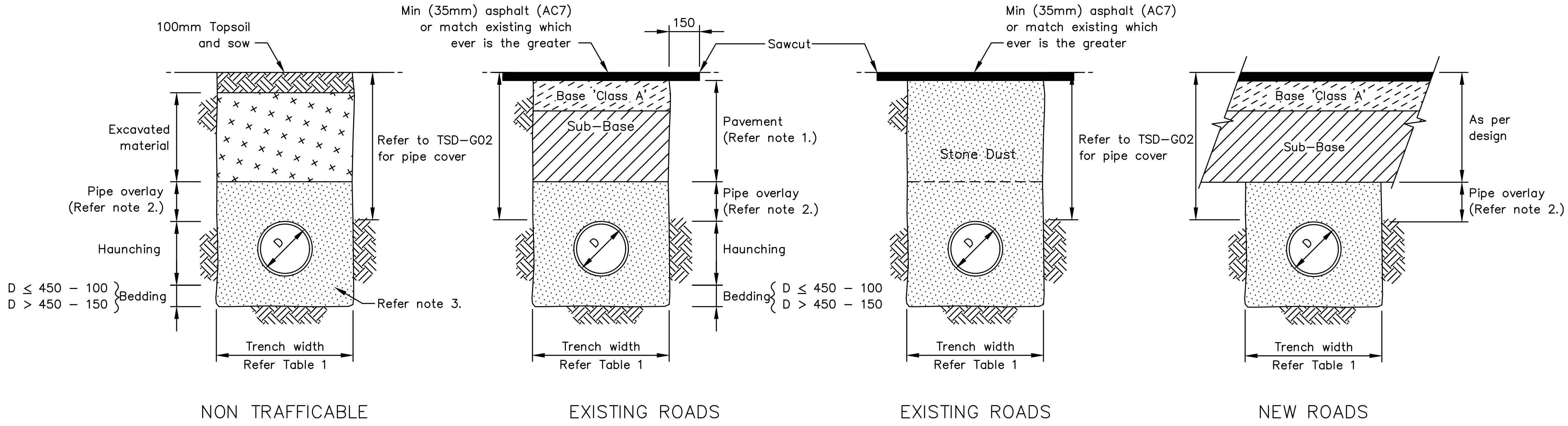

TABLE 1 – TRENCH WIDTH

PIPE TYPE	NOM. DIA. (D)	TRENCH WIDTH*
Concrete	≤ 1500	D + 300
	> 1500	Design required
Other pipes	100	300
	150	450
	225 – 300	600
	450	750
	450 – 1500	D + 600
	> 1500	Design required

* Minimum trench widths may be varied above the pipe overlay zone to meet 'Workplace Standards' requirements. (i.e. Trenches greater than 1.5m deep) Excavations over 1.5m may require risk assessment.

TABLE 2

MATERIAL TYPE	TEST METHOD	TRAFFICABLE	NON–TRAFFICABLE
Non–cohesive (i.e. Granular)	Density Index (I_D) AS 1289.5.6.1	70	60
Cohesive	Dry Density Ratio (R_D) AS 1289.5.4.1 and AS 1289.5.1.1	95	90

NOTES

1. Pavement = 300 min. Granular or match existing which ever is the greater.
2. Pipe overlay depth – Min. 150mm
3. Refer to manufacturers recommendations for bedding, haunching and overlay requirements.
4. Compaction of pipe bedding, haunching and overlay – Refer Table 2.
5. Refer to AS/NZS 3725–2007 Table B1 (H2/HS2 Bedding Support Type)

TRENCH REINSTATEMENT FLEXIBLE PAVEMENTS

NOT FOR CONSTRUCTION

FOR REVIEW

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NORTH

SUBDIVISION UTILITIES PLAN

107 ELPHIN ROAD, NEWSTEAD, TAS 7250

JONES

SCALE: (A3)

REV	AMENDMENT	DATE
01	FOR REVIEW	26/10/2022

ISSUED BY: JNg
DRAWN BY: JNg
APPROVED BY:

LGAT STORMWATER CONNECTION DETAIL

DWG: **C105** REV: **01**

PROJECT: **P22001-480**

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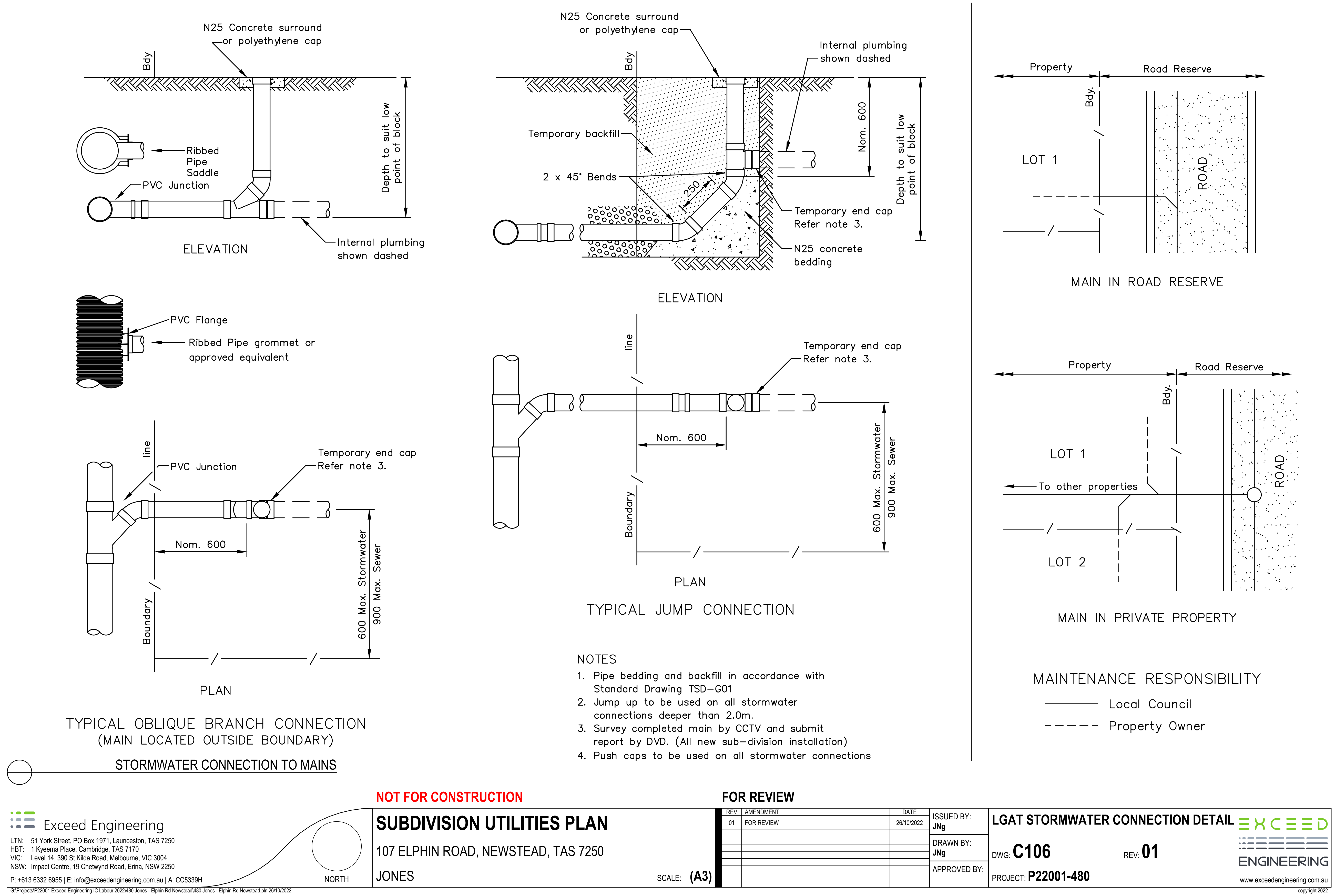
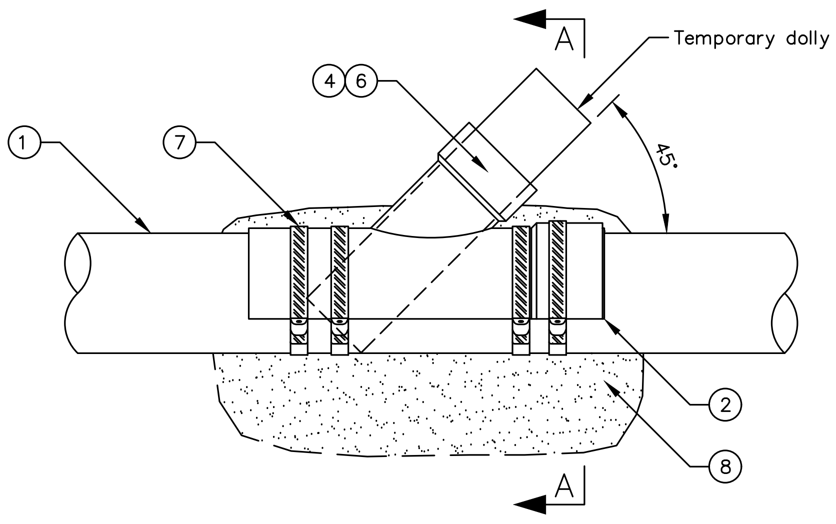
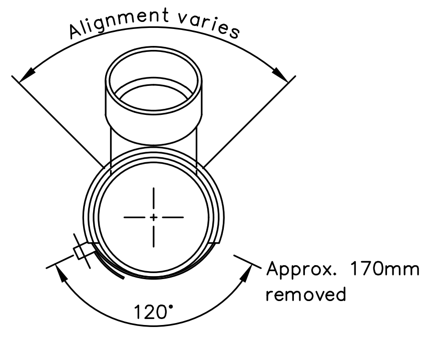
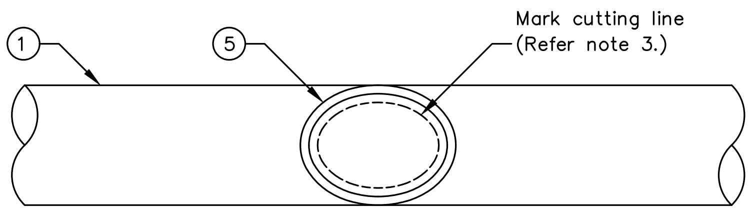


Document Set ID: 4808700
Version: 2, Version Date: 20/11/2022







NOTES

CASE 1 — P.V.C. SADDLE TO 160 O.D. POLY MAIN.

1. 160 O.D. Poly main.
2. Glue 75mm long piece of 150 dia. P.V.C. pipe into female socket. Cut down 45° 150 x 100 P.V.C. reducing junction.
3. Use inside of reducer as a template to mark poly main. Cut and remove sharp edges.
4. Check 102mm O.D. M.S. exhaust tubing dolly can be inserted approximately 280mm through 45° junction into main. Clean both mating surfaces.
5. Apply minimum 2 x 4mm continuous bead of Selleys 'Wet Seal' (Silicon) or similar 10mm from edge and 10mm apart.
6. Insert dolly into main, slide junction down onto silicon beads.
7. Clamp with 2 x 13mm stainless steel worm drive hose clamps both ends. Fully wrap clamps both ends with denso tape. Remove dolly.
8. Support/encase connections with cement stabilised stone dust (3% cement) minimum 500mm long 300mm wide x 300 deep.

CASE 2 — P.V.C. SADDLE TO P.V.C. MAIN.

1. Existing 150 dia. P.V.C. main.
2. Glue 75mm long piece of 150 dia. P.V.C. pipe into female socket. Cut down 45° 150 x 100 P.V.C. reducing junction.
3. Use inside of reducer as a template to mark P.V.C. main. Cut and remove sharp edges.
4. Check 102mm O.D. M.S. exhaust tubing dolly can be inserted approximately 280mm through 45° junction into main. Clean both mating surfaces.
5. Apply solvent cement to mating surfaces.
6. Insert dolly into main, slide junction down onto solvent cement.
7. Clamp with 2 x 13mm stainless steel worm drive hose clamps both ends. Fully wrap clamps both ends with denso tape. Remove dolly.
8. Support/encase connections with cement stabilised stone dust (3% cement) minimum 500mm long 300mm wide x 300 deep.

SADDLE CONNECTION TO STORMWATER DRAIN

NOT FOR CONSTRUCTION

FOR REVIEW

Exceed Engineering
LTN: 51 York Street, PO Box 1971, Launceston, TAS 7250
HBT: 1 Kyeema Place, Cambridge, TAS 7170
VIC: Level 14, 390 St Kilda Road, Melbourne, VIC 3004
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NORTH

SUBDIVISION UTILITIES PLAN

107 ELPHIN ROAD, NEWSTEAD, TAS 7250

JONES

SCALE: (A3)

REV	AMENDMENT	DATE
01	FOR REVIEW	26/10/2022

ISSUED BY: JNg
DRAWN BY: JNg
APPROVED BY:

LGAT STORMWATER CONNECTION DETAIL

DWG: **C107** REV: **01**

PROJECT: **P22001-480**

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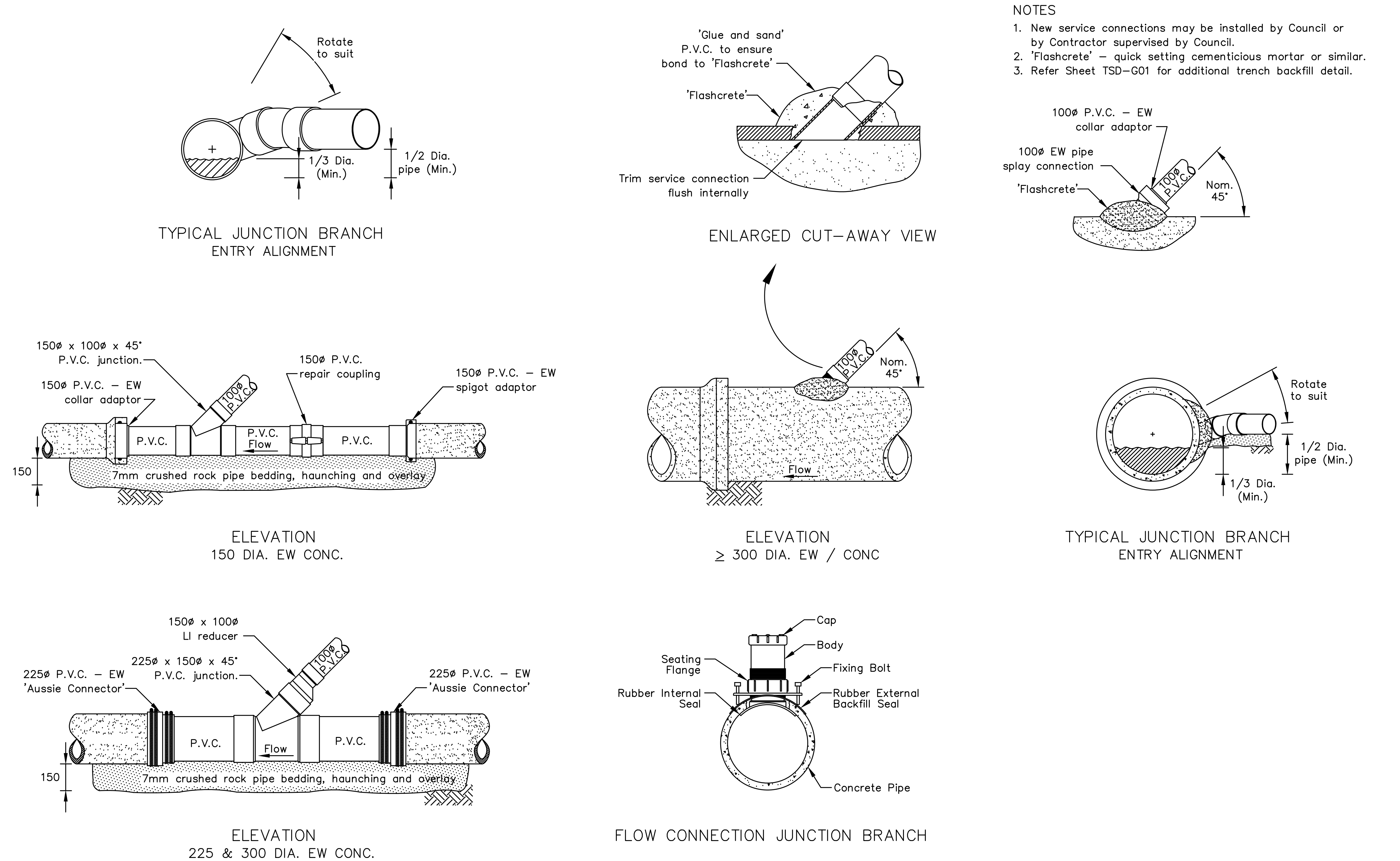
Version: 2, Version Date: 20/11/2022



REPAIRS/ NEW CONNECTION TO STORMWATER DRAIN

NOT FOR CONSTRUCTION

FOR REVIEW

Exceed Engineering
LTN: 51 York Street, PO Box 1971, Launceston, TAS 7250
HBT: 1 Kyeema Place, Cambridge, TAS 7170
VIC: Level 14, 390 St Kilda Road, Melbourne, VIC 3004
NSW: Impact Centre, 19 Chetwynd Road, Erina, NSW 2250
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NORTH

SUBDIVISION UTILITIES PLAN
107 ELPHIN ROAD, NEWSTEAD, TAS 7250
JONES
SCALE: (A3)

REV	AMENDMENT	DATE
01	FOR REVIEW	26/10/2022

ISSUED BY: JNg
DRAWN BY: JNg
APPROVED BY:

LGAT STORMWATER CONNECTION DETAIL
DWG: **C108** REV: **01**
PROJECT: **P22001-480**

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Document Set ID: 4808700
Version: 2, Version Date: 20/11/2022

Submission to Planning Authority Notice

Council Planning Permit No.	DA0587/2022		**Council notice date**	4/10/2022
TasWater details				
TasWater Reference No.	TWDA 2022/01625-LCC		**Date of response**	10/11/2022
TasWater Contact	David Boyle	**Phone No.**	0436 629 652	
Response issued to				
Council name	CITY OF LAUNCESTON			
Contact details	Planning.Admin@launceston.tas.gov.au			
Development details				
Address	107 ELPHIN RD, NEWSTEAD		**Property ID (PID)**	7827246
Description of development	3 lot subdivision			

Schedule of drawings/documents

Prepared by	Drawing/document No.	Revision No.	Date of Issue
Exceed Engineering	Services Plan / P22001-480 Dwg C101	01	26/10/2022

Conditions

Pursuant to the *Water and Sewerage Industry Act* 2008 (TAS) Section 56P(1) TasWater imposes the following conditions on the permit for this application:

CONNECTIONS, METERING & BACKFLOW

1. A suitably sized water supply with metered connections and sewerage system and connections to each lot of the development must be designed and constructed to TasWater's satisfaction and be in accordance with any other conditions in this permit.
2. Any removal/supply and installation of water meters and/or the removal of redundant and/or installation of new and modified property service connections must be carried out by TasWater at the developer's cost.
3. Prior to commencing construction of the subdivision, any water connection utilised for construction/the development must have a backflow prevention device and water meter installed, to the satisfaction of TasWater.

FINAL PLANS, EASEMENTS & ENDORSEMENTS

4. Prior to the Sealing of the Final Plan of Survey, a Consent to Register a Legal Document must be obtained from TasWater as evidence of compliance with these conditions when application for sealing is made.
   Advice: Council will refer the Final Plan of Survey to TasWater requesting Consent to Register a Legal Document be issued directly to them on behalf of the applicant.

DEVELOPMENT ASSESSMENT FEES

5. The applicant or landowner as the case may be, must pay a development assessment fee of $376.68 and a Consent to Register a Legal Document fee of $239.90 to TasWater, as approved by the Economic Regulator and the fees will be indexed, until the date paid to TasWater.

   The payment is required within 30 days of the issue of an invoice by TasWater.

Advice
General For information on TasWater development standards, please visit https://www.taswater.com.au/building-and-development/technical-standards For application forms please visit https://www.taswater.com.au/building-and-development/development-application-form **Advice to the Drainage Authority** The combined system is at capacity in this area. TasWater cannot accept additional flows of stormwater into this area within the combined system over those currently discharged. The Drainage Authority will be required to either refuse or condition the development to ensure the current service standard of the combined system is not compromised.
Declaration
The drawings/documents and conditions stated above constitute TasWater's Submission to Planning Authority Notice.

TasWater Contact Details			
Phone	13 6992	Email	development@taswater.com.au
Mail	GPO Box 1393 Hobart TAS 7001	Web	www.taswater.com.au

From: "PlanningAlerts" <contact@planningalerts.org.au>
Sent: Mon, 14 Nov 2022 12:21:11 +1100
To: "Council" <council@launceston.tas.gov.au>
Subject: Comment on application DA0587/2022

For the attention of the General Manager / Planning Manager / Planning Department

Application	DA0587/2022
Address	107 Elphin Road Newstead, TAS, 7250
Description	Subdivision - Subdivide two lots into three lots
Name of commenter	FB
[redacted]	[redacted]

Comment

Having looked at the dimensions of the proposed lots it appears that there is very poor utilisation of the available land area under the current proposal. The blocks after the subdivision is done (if approved) are extremely long and narrow and would severely restrict options for building decent residences on the blocks - amenity for the residents would be very poor under the current proposal as any residences would have no option but to be "cheek by jowl" - resulting in issues with extremely close proximity to each other on their adjoining boundaries.

I think it would be far better and create blocks of much more "usable" proportions with the available land area if the proposal were to create an internal "battle axe" block with its driveway access being part of that title. If the subdivision were to be done that way it would give both blocks the capacity to have reasonable residences built on them.

I believe that the current proposal should not be approved as submitted - it is not a a well thought out proposal for the reasons I have outlined above.

If any subdivision should go ahead I can only hope that residences built are not of the currently "in vogue" type of flat topped single pitch roofed dwellings clad in charcoal or black colourbond steel. The proliferation of these cheap and nasty buildings is rapidly becoming a total blot on Launceston's architectural landscape. Unfortunately the subdivision as currently proposed almost forces a builder into constructing such dwellings because of the shape of the resulting blocks. A "battle axe" subdivision would enable much better quality buildings more in keeping with the area.

[redacted]

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We specifically confirm that any consent given in any form (including pursuant to your privacy policy) to disclose personal information to third parties is withdrawn.

From: "Susan Hunter" [redacted]
Sent: Mon, 14 Nov 2022 17:21:17 +1100
To: "Contact Us" <contactus@launceston.tas.gov.au>
Subject: DA 0587/2022

[You don't often get email from [redacted] Learn why this is important at https://aka.ms/LearnAboutSenderIdentification]

Good afternoon
I would like to express my concerns about the proposed subdivision at the rear of 107 Elphin Road Newstead.
The planned additional crossover is proposed to be placed in the middle of the roundabout at the intersection of Olive and Dalwood Streets, although there is no indication of this on the advertised plan. I am at a loss to understand why an additional crossover in the middle of an intersection can even be contemplated.
This is a problematic intersection where speeding vehicles traveling south along Olive St proceed through the roundabout on the incorrect side of the road. This is a common occurrence, not an infrequent one.
Vehicles reversing out from the proposed two lots would increase the hazard. Council may well require that all vehicles leaving the lots do so front first, however this is unlikely to occur, and impossible to police.
If the property remains in its current two titles, the additional traffic would be half that which is proposed, and would be from a less dangerous part of the intersection.
It may not be pertinent to this application, but consideration should be given to the likelihood of all the mature trees being removed to allow for the building of two dwellings. If only one dwelling is constructed, then it would be possible for many of the mature trees to be retained. We need to protect all tree cover we can.
If the application is approved, the extra crossover would require the removal of an approximately 5m flowering gum. This is a feeding tree for critically endangered swift parrots who visit it each year during migration.
I trust that Council officers will take these issues into consideration, and recommend refusal of this application, resulting in only one additional dwelling being able to ultimately be approved.
kind regards Susan Hunter
[redacted]

From: "PlanningAlerts" <contact@planningalerts.org.au>
Sent: Mon, 14 Nov 2022 17:39:16 +1100
To: "Council" <council@launceston.tas.gov.au>
Subject: Comment on application DA0587/2022

For the attention of the General Manager / Planning Manager / Planning Department

Application	DA0587/2022
Address	107 Elphin Road Newstead, TAS, 7250
Description	Subdivision - Subdivide two lots into three lots
Name of commenter	SH
[redacted]	[redacted]

Comment

I would like to express my concerns about the proposed subdivision at the rear of 107 Elphin Road Newstead.
The planned additional crossover is proposed to be placed in the middle of the roundabout at the intersection of Olive and Dalwood Streets, although there is no indication of this on the advertised plan. I am at a loss to understand why an additional crossover in the middle of an intersection can even be contemplated.
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If the application is approved, the extra crossover would require the removal of an approximately 5m flowering gum. This is a feeding tree for critically endangered swift parrots who visit it each year during migration.
I trust that Council officers will take these issues into consideration, and recommend refusal of this application, resulting in only one additional dwelling being able to ultimately be approved.

[redacted]

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We specifically confirm that any consent given in any form (including pursuant to your privacy policy) to disclose personal information to third parties is withdrawn.

From: "PlanningAlerts" <contact@planningalerts.org.au>
Sent: Wed, 16 Nov 2022 10:56:28 +1100
To: "Council" <council@launceston.tas.gov.au>
Subject: Comment on application DA0587/2022

For the attention of the General Manager / Planning Manager / Planning Department

Application	DA0587/2022
Address	107 Elphin Road Newstead, TAS, 7250
Description	Subdivision - Subdivide two lots into three lots
Name of commenter	FB
[redacted]	[redacted]

Comment

When I uploaded my first comment a couple of days ago I did not realise that the proposed new crossover was right on the roundabout but having now looked at the site on Google maps satellite view I can 100% agree with SH's comment that allowing a driveway to come out directly onto a roundabout is sheet madness.

I also completely agree with SH's comments about vegetation removal - developers consistently have a bad habit of doing "scorched earth" developments but when the block sizes are as small and awkwardly shaped as those in this current proposal they are left with few other options. Profit maximisation is pretty much without exception the primary driver so quality and amenity definitely take a back seat.

In my first comment I also feel into the trap of "assuming" that given the general attitude of the Council to many poor quality proposals a subdivision of some kind was most likely to be approved (maybe even inevitable), which is why I commented on improving the proposal rather than just outright disagreeing with it. However, I neglected to note that my "first preference" would be for no subdivision to be approved at all - unfortunately this would not mitigate the risk of the ugly flat topped boxes type being built in the kind of unit development I also referred to - visual amenity for neighbours is always at the bottom of the list of priorities and does't even get a look in.

[redacted]

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From: "PlanningAlerts" <contact@planningalerts.org.au>
Sent: Mon, 21 Nov 2022 12:09:16 +1100
To: "Council" <council@launceston.tas.gov.au>
Subject: Comment on application DA0587/2022

For the attention of the General Manager / Planning Manager / Planning Department

Application	DA0587/2022
Address	107 Elphin Road Newstead, TAS, 7250
Description	Subdivision - Subdivide two lots into three lots
Name of commenter	jennifer smyth
[redacted]	[redacted]

Comment

I too express grave concern regarding the proposal to create 3 blocks from two at 107 Elphin Road; with the vacant lot being at the rear of the house and opening onto Olive street. I submit that it should remain as is; with only one vacant block on Olive street and thus keeping the land as two only lots and two titles. Any new dwellings exiting onto Olive Street would be very close to the round-about at the intersection of Dalwood Av and Olive St. One residential home would create more traffic at or near this T section and Two residents/dwellings would create more and make a serious hazard there.
Two separate dwellings there would create an unnecessary dangerous traffic hazard. It is a very busy road used to take children to and from the nearby Launceston Preparatory School. Other motorists use it as an access road to many of the houses between Hobbler's Bridge Road and Olive St and surrounding vicinity.
Council Officers should pay attention to the tall and marvellous trees on the rear block and endeavour to retain all of the best specimens. They put CO_2 into the ground and at night give off oxygen, thus our green trees and spaces are "the lungs of the City".
Consideration should also be given to how two dwellings put onto the rear block will give little space for visitor parking and all parking. The amenity for those living there being close and continues the trend of "homes being closer and closer" with no space for children to play, gardens and significantly small outdoor living space. All the extra covering of the earth with bitumen for driveways contributes greatly to Global warming. We have a duty now to enable gardens and green space and to keep tarmac and driveways at a minimum.
I ask that the planners involved in decision making about this particular piece of beautiful land give serious consideration to the points highlighted by others and expressed also by myself.
Thankyou in anticipation.

[redacted]

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We specifically confirm that any consent given in any form (including pursuant to your privacy policy) to disclose personal information to third parties is withdrawn.

From: "lyndellreed" [redacted]
Sent: Tue, 22 Nov 2022 09:02:33 +1100
To: "Contact Us" <contactus@launceston.tas.gov.au>
Subject: DA0587/2022
Importance: Normal

You don't often get email from [redacted] Learn why this is important

Good morning
I would like to express my concerns about the proposed subdivision located at 107 Elphin Road, Newstead.
I live at [redacted] and have done so for the previous 16 years. During the first few years there was a Keep Left sign located on the roundabout where the new crossover is proposed.
People would simply drive over the roundabout and smash the sign (and I assume the front of their vehicles). The sign would then be repeatedly replaced until the Council simply stopped putting up the sign. People continue to either drive over the roundabout or do not keep left and drive on the wrong side of the road,often at speed. My concern is the welfare of vehicles exiting that new proposed crossover directly on to the roundabout. The current crossover on the property is rarely used,or been rarely used as far as I'm aware, but is possibly less of a concern that the new proposed crossover.
I think too though that it would be better for vehicles to exit that property frontwards rather than reversing so that they have full vision of other vehicles travelling south along Olive Street.
My other concern is the removal of the flowering gum located on the property. I have witnessed the feeding from that tree of critically endangered Swift parrots each year during their migration. We must protect the welfare of our native animals and not approve new dwellings that impede on their lives.
If there must be an approval given,one additional dwelling only would be an acceptable alternative.
Kind regards
Lyndell Reed
[redacted]
Sent from Samsung tablet.

From: "PlanningAlerts" <contact@planningalerts.org.au>
Sent: Thu, 24 Nov 2022 12:03:44 +1100
To: "Council" <council@launceston.tas.gov.au>
Subject: Comment on application DA0587/2022

For the attention of the General Manager / Planning Manager / Planning Department

Application	DA0587/2022
Address	107 Elphin Road Newstead, TAS, 7250
Description	Subdivision - Subdivide two lots into three lots
Name of commenter	TW
[redacted]	[redacted]

Comment

I would like to agree in the strongest terms with all the above comments regarding this proposal. Particularly any access to the proposed blocks bordering an already problematic roundabout. Another cross over here would be positively dangerous.

[redacted]

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FOLIO PLAN

RECORDER OF TITLES

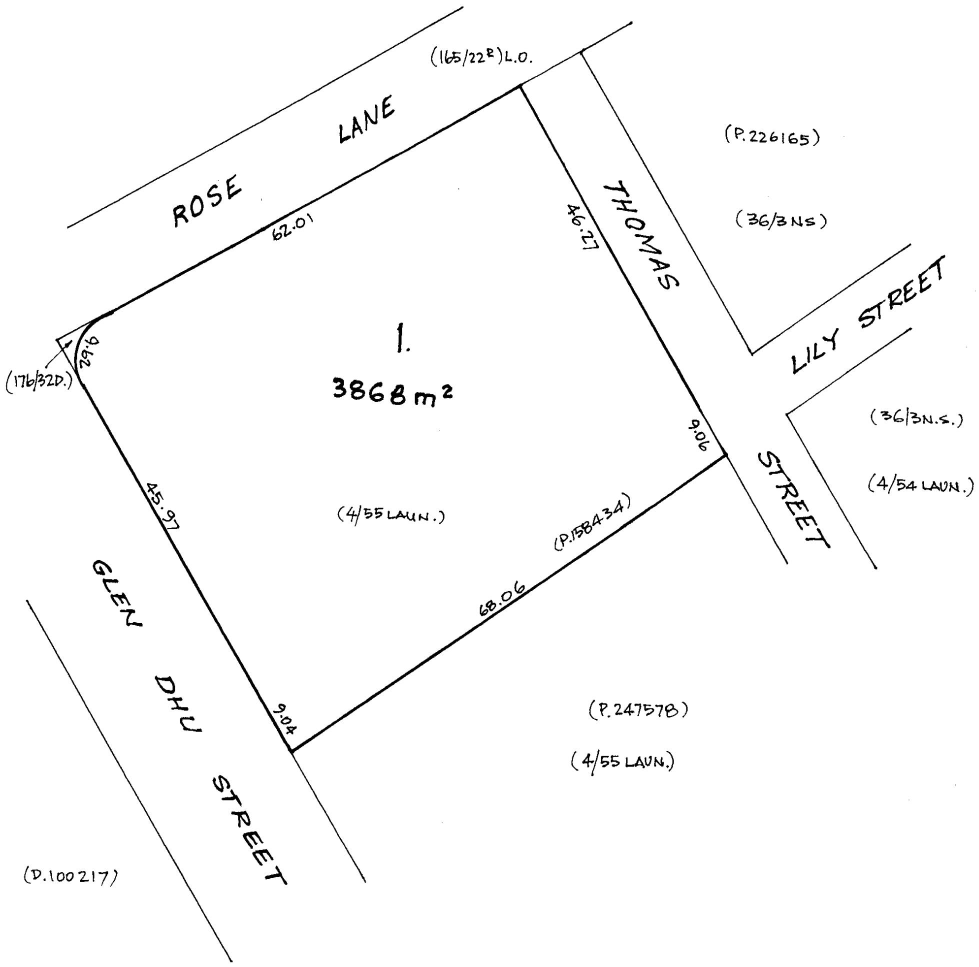
Issued Pursuant to the Land Titles Act 1980

Tasmanian Government

OWNER FOLIO REFERENCE F/R 158434 – 1 & F/R 247578 – 1 GRANTEE	PLAN OF TITLE LOCATION CITY OF LAUNCESTON FIRST SURVEY PLAN No. 4/55 LAUN. COMPILED BY L.T.O. SCALE 1: 500 LENGTHS IN METRES	REGISTERED NUMBER **P159336** APPROVED 29 MAR 2010 Alice Kava Recorder of Titles

MAPSHEET MUNICIPAL CODE No. 120	LAST UPI No JBS22	LAST PLAN P.158434 No. 4/55 LAUN.	ALL EXISTING SURVEY NUMBERS TO BE CROSS REFERENCED ON THIS PLAN

A.O. C.889177



FOLIO PLAN

RECORDER OF TITLES

Issued Pursuant to the Land Titles Act 1980

Tasmanian Government

PLAN OF TITLE

OWNER

FOLIO REFERENCE CT 2085/80

GRANTEE

LOCATION CITY OF LAUNCESTON.

FIRST SURVEY PLAN No. 170/14D

COMPILED BY L.T.O.

SCALE 1: 750 LENGTHS IN METRES

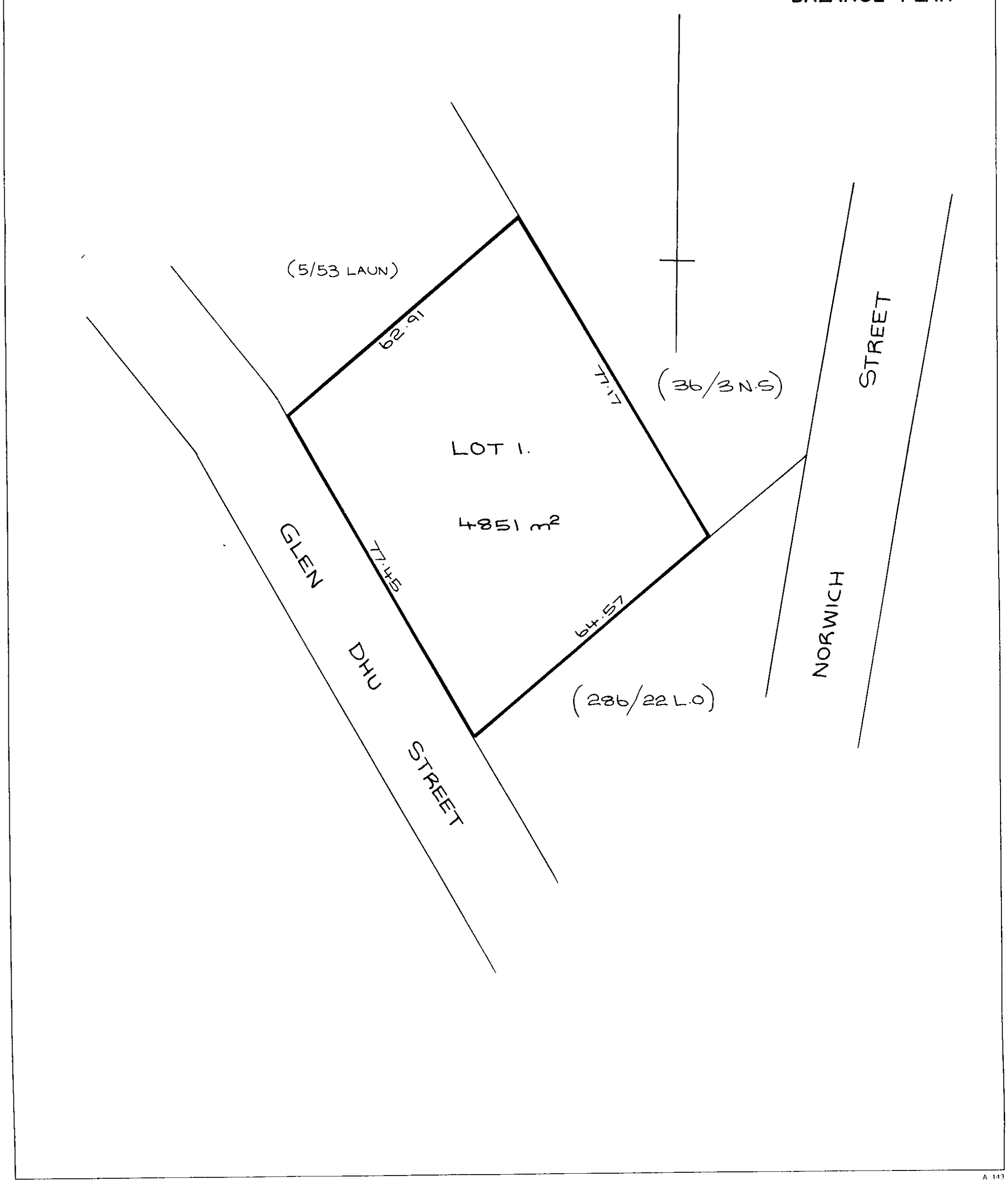
Registered Number P. 200709

APPROVED 23 JUL 1996

Recorder of Titles

MAPSHEET MUNICIPAL CODE No. 120	LAST UPI No 5416632	LAST PLAN No. 170/14D	ALL EXISTING SURVEY NUMBERS TO BE CROSS REFERENCED ON THIS PLAN

BALANCE PLAN



C.M.

FOLIO PLAN

RECORDER OF TITLES

Issued Pursuant to the Land Titles Act 1980

Tasmanian Government

ORIGINAL – NOT TO BE REMOVED FROM TITLES OFFICE

R.P. 1469

TASMANIA

REAL PROPERTY ACT, 1862, as amended

NOTE—REGISTERED FOR OFFICE CONVENIENCE TO REPLACE

CERTIFICATE OF TITLE

Register Book

Vol.	Fol.
2468	6

Purchase Grant Vol.192 Fol.92.

I certify that the person described in the First Schedule is the registered proprietor of an estate in fee simple in the land within described together with such interests and subject to such encumbrances and interests as are shown in the Second Schedule. In witness whereof I have hereunto signed my name and affixed my seal.

Recorder of Titles.

RECORDER OF TITLES TASMANIA

DESCRIPTION OF LAND

CITY OF LAUNCESTON
TWENTY TWO PERCHES AND FOUR TENTHS OF A PERCH on the Plan hereon.

FIRST SCHEDULE (continued overleaf)

THE MAYOR ALDERMEN AND CITIZENS OF THE CITY OF LAUNCESTON.

SECOND SCHEDULE (continued overleaf)

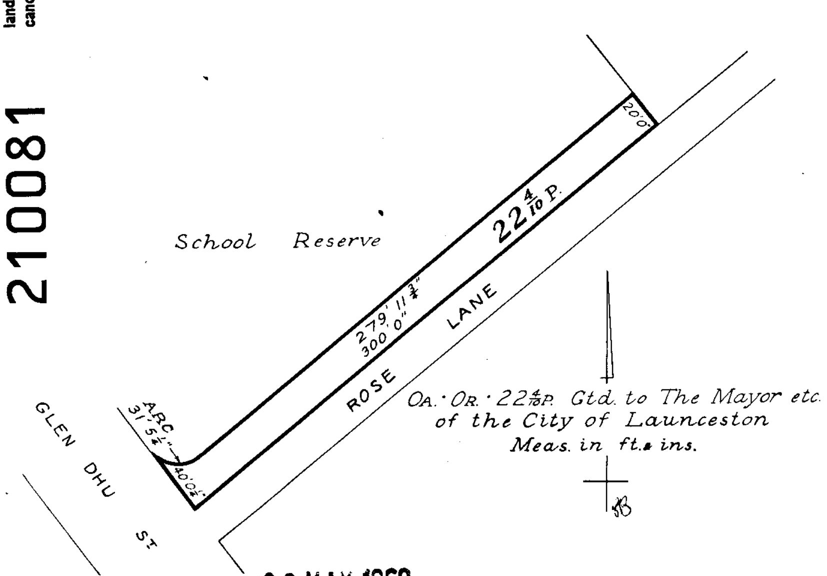
NIL.

CANCELLED
-9 DEC 1994
RECORDER OF TITLES
NEW TITLE ISSUED

...OF TITLES ARE NO LONGER SUBSISTING.

Lot 1 of this plan consists of all the land comprised in the above-mentioned cancelled folio of the Register.

REGISTERED NUMBER 210081



FIRST Edition. Registered 29 MAY 1969

Derived from P.G.Vol.192 Fol.92.

FOLIO PLAN

RECORDER OF TITLES

Issued Pursuant to the Land Titles Act 1980

Tasmanian Government

ORIGINAL – NOT TO BE REMOVED FROM TITLES OFFICE

R.P. 1469

TASMANIA

REAL PROPERTY ACT, 1862, as amended

NOTE—REGISTERED FOR OFFICE CONVENIENCE TO REPLACE

Cert.of Title Vol.508 Fol.36

CERTIFICATE OF TITLE

Register Book

Vol.	Fol.
2665	38

I certify that the person described in the First Schedule is the registered proprietor of an estate in fee simple in the land within described together with such interests and subject to such encumbrances and interests as are shown in the Second Schedule. In witness whereof I have hereunto signed my name and affixed my seal.

Recorder of Titles.

RECORDER OF TITLES TASMANIA

DESCRIPTION OF LAND

CITY OF LAUNCESTON
ONE THIRD OF A PERCH on the Plan hereon

FIRST SCHEDULE (Continued overleaf)

THE MAYOR ALDERMEN AND CITIZENS OF THE CITY OF LAUNCESTON

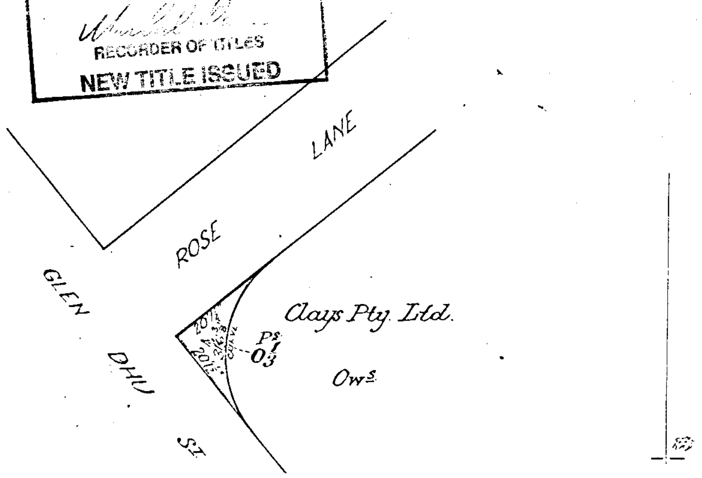
SECOND SCHEDULE (Continued overleaf)
NIL.

RECORDER OF TITLES ARE NO LONGER SUBSISTING.

Lot 1 of this plan consists of all the land comprised in the above-mentioned cancelled folio of the Register.

REGISTERED NUMBER 217855

CANCELLED
11 JAN 1995
RECORDER OF TITLES
NEW TITLE ISSUED



Part of 7A-1Rd-29Ps. Gtd. to P. Oakden

Meas.in Ft.&Ins. 172/36D

FIRST Edition. Registered 18 MAY 1970

Derived from C.T. Vol.508 Fol.36

Transfer 112337 Clays Proprietary Limited

FOLIO PLAN

RECORDER OF TITLES

Issued Pursuant to the Land Titles Act 1980

Tasmanian Government

ANNEXURE TO CERTIFICATE OF TITLE

VOL. 2905 **FOL.** 66

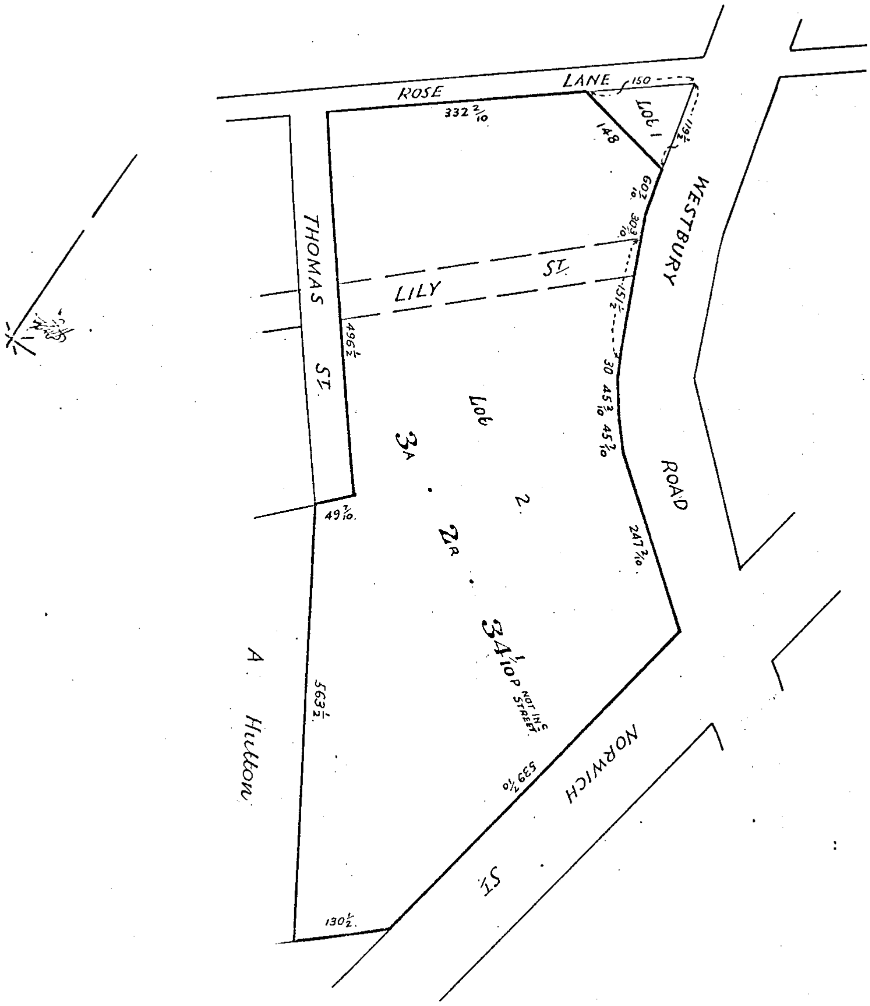
REGISTERED NUMBER

226165

Recorder of Titles

RECORDER OF TITLES TASMANIA

Lot 2 **of this plan consists of all the land comprised in the above-mentioned cancelled folio of the Register.**



FOLIO PLAN

RECORDER OF TITLES

Issued Pursuant to the Land Titles Act 1980

Tasmanian Government

ORIGINAL – NOT TO BE REMOVED FROM TITLES OFFICE

R.P. 1469
TASMANIA
REAL PROPERTY ACT, 1862, as amended

NOTE—REGISTERED FOR OFFICE CONVENIENCE TO REPLACE
Cert.of Title Vol.508 Fol.37

CERTIFICATE OF TITLE

Register Book
Vol. 2665 Fol. 39

I certify that the person described in the First Schedule is the registered proprietor of an estate in fee simple in the land within described together with such interests and subject to such encumbrances and interests as are shown in the Second Schedule. In witness whereof I have hereunto signed my name and affixed my seal.

Recorder of Titles.

RECORDER OF TITLES TASMANIA

DESCRIPTION OF LAND

CITY OF LAUNCESTON
(1) THREE ROODS EIGHT PERCHES AND TWO THIRDS OF A PERCH (2) AND ONE ACRE TWENTY FOUR PERCHES AND ONE TENTH OF A PERCH on the Plan hereon

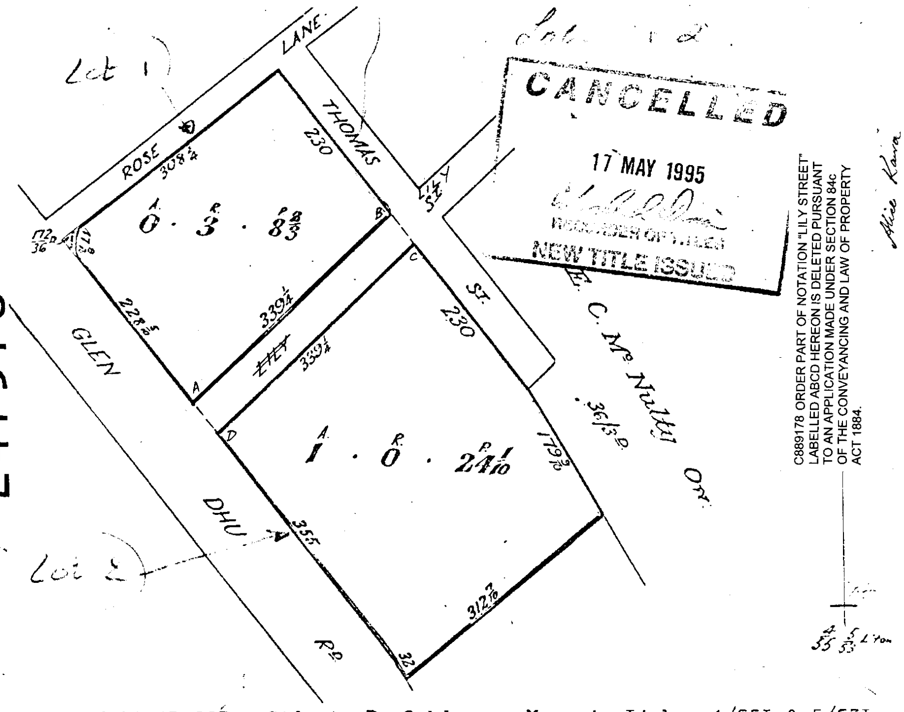
FIRST SCHEDULE (Continued overleaf)

RONALD NELSON WOODFIELD, Contractor and
DENVER CHARLES KENNY, Cartage Contractor, both of Riverside
AS TENANTS IN COMMON IN EQUAL SHARES

SECOND SCHEDULE (Continued overleaf)
NIL.

Lot 1+2 of this plan consists of all the land comprised in the above-mentioned cancelled folio of the Register.

REGISTERED NUMBER 247578



C889178 ORDER PART OF NOTATION "LILY STREET" LABELLED ABCD HEREON IS DELETED PURSUANT TO AN APPLICATION MADE UNDER SECTION 84c OF THE CONVEYANCING AND LAW OF PROPERTY ACT 1884.

RECORDER OF TITLES 29/3/2010

Parts of 7A-1R-29Ps. Gtd. to P. Oakden   Meas.in Links 4/55L & 5/53L

FIRST Edition. Registered 18 MAY 1970

Derived from C.T. Vol.508 Fol.37 Transfer A201762 Clays Proprietary Limited

RESULT OF SEARCH

RECORDER OF TITLES

Issued Pursuant to the Land Titles Act 1980

Tasmanian Government

SEARCH OF TORRENS TITLE

VOLUME	FOLIO
159336	1
EDITION	DATE OF ISSUE
2	15-Jan-2019

SEARCH DATE : 05-Jul-2022
SEARCH TIME : 03.14 PM

DESCRIPTION OF LAND

City of LAUNCESTON
Lot 1 on Plan 159336
Derivation : Part of 7A-1R-29P. Granted to Philip Oakden.
Prior CTs 158434/1 and 247578/1

SCHEDULE 1

M734377 TRANSFER to OLSP PTY LTD Registered 15-Jan-2019 at noon

SCHEDULE 2

Reservations and conditions in the Crown Grant if any
C889177 Adhesion Order Registered 29-Mar-2010 at noon

UNREGISTERED DEALINGS AND NOTATIONS

No unregistered dealings or other notations

RESULT OF SEARCH

RECORDER OF TITLES

Issued Pursuant to the Land Titles Act 1980

Tasmanian Government

SEARCH OF TORRENS TITLE

VOLUME	FOLIO
200709	1
EDITION	DATE OF ISSUE
4	15-Jan-2019

SEARCH DATE : 05-Jul-2022
SEARCH TIME : 03.16 PM

DESCRIPTION OF LAND

City of LAUNCESTON
Lot 1 on Plan 200709
Derivation : Part of 7A-1R-29P Gtd. to P.Oakden.
Prior CT 2085/80

SCHEDULE 1

M734377 TRANSFER to OLSP PTY LTD Registered 15-Jan-2019 at noon

SCHEDULE 2

Reservations and conditions in the Crown Grant if any

UNREGISTERED DEALINGS AND NOTATIONS

No unregistered dealings or other notations

RESULT OF SEARCH

RECORDER OF TITLES

Issued Pursuant to the Land Titles Act 1980

SEARCH OF TORRENS TITLE

VOLUME	FOLIO
210081	1
EDITION	DATE OF ISSUE
1	09-Dec-1994

SEARCH DATE : 18-Jul-2022
SEARCH TIME : 12.03 PM

DESCRIPTION OF LAND

City of LAUNCESTON
Lot 1 on Plan 210081
Derivation : 0A-0R-22.4/10Ps. Gtd. to The Mayor etc. of the City of Launceston.
Prior CT 2468/6

SCHEDULE 1

LAUNCESTON CITY COUNCIL

SCHEDULE 2

Reservations and conditions in the Crown Grant if any

UNREGISTERED DEALINGS AND NOTATIONS

No unregistered dealings or other notations

RESULT OF SEARCH

RECORDER OF TITLES

Issued Pursuant to the Land Titles Act 1980

Tasmanian Government

SEARCH OF TORRENS TITLE

VOLUME	FOLIO
217855	1
EDITION	**DATE OF ISSUE**
1	11-Jan-1995

SEARCH DATE : 18-Jul-2022
SEARCH TIME : 11.58 AM

DESCRIPTION OF LAND

City of LAUNCESTON
Lot 1 on Plan 217855
Derivation : Part of 7A-1R-29Ps. Gtd. to P. Oakden.
Prior CT 2663/38

SCHEDULE 1

112337 LAUNCESTON CITY COUNCIL

SCHEDULE 2

Reservations and conditions in the Crown Grant if any

UNREGISTERED DEALINGS AND NOTATIONS

No unregistered dealings or other notations

RESULT OF SEARCH

RECORDER OF TITLES

Issued Pursuant to the Land Titles Act 1980

Tasmanian Government

SEARCH OF TORRENS TITLE

VOLUME	FOLIO
226165	2
EDITION	DATE OF ISSUE
1	21-Feb-1995

SEARCH DATE : 05-Jul-2022
SEARCH TIME : 03.17 PM

DESCRIPTION OF LAND

City of LAUNCESTON
Lot 2 on Plan 226165
Derivation : Part of 7A-1R-29Ps. - Gtd. to P. Oakden.
Prior CT 2905/66

SCHEDULE 1

A110358 LAUNCESTON CITY COUNCIL

SCHEDULE 2

Reservations and conditions in the Crown Grant if any

UNREGISTERED DEALINGS AND NOTATIONS

No unregistered dealings or other notations

RESULT OF SEARCH

RECORDER OF TITLES

Issued Pursuant to the Land Titles Act 1980

Tasmanian Government

SEARCH OF TORRENS TITLE

VOLUME	FOLIO
247578	2
EDITION	DATE OF ISSUE
4	15-Jan-2019

SEARCH DATE : 05-Jul-2022
SEARCH TIME : 03.15 PM

DESCRIPTION OF LAND

City of LAUNCESTON
Lot 2 on Plan 247578
Derivation : Parts of 7A-1R-29Ps. Gtd. to P Oakden
Prior CT 2663/39

SCHEDULE 1

M734377 TRANSFER to OLSP PTY LTD Registered 15-Jan-2019 at noon

SCHEDULE 2

Reservations and conditions in the Crown Grant if any

UNREGISTERED DEALINGS AND NOTATIONS

No unregistered dealings or other notations

Scherzic
Ground Investigations

July 6, 2022

JMC Property Group c/- ERA Planning
Level 1, 125A Elizabeth St
Hobart, Tasmania 7000

Attention: Sarah Silva
Our Ref: 7390B

Dear Sarah

Re; 9 Rose Lane, Launceston South

Landslide Risk Assessment

We refer to our Geotechnical Site Review, report 7390A, dated November 2019 and Addendum, dated 3 June 2020 for a proposed residential development at 9 Rose Lane, Launceston South. (see Figure 1 below)

As per your request we have reassessed the Landslide Risk as per section 6 of our Addendum for the revised development of commercial buildings (Figure 2 below). The Risk to Life calculation is determined according to the following equation:

$$R_{(\,LOL)} = P_{(H)} \times P_{(S:H)} \times P_{(T:S)} \times V_{(D:T)}$$

$R_{(\,LOL)}$ = the risk to life (annual probability)

$P_{(H)}$ = the annual probability of landslide

$P_{(S:H)}$ = the probability of spatial impact by a landslide on persons (inhabitants of buildings typically higher than visitors to site)

$P_{(T:S)}$ = the temporal spatial probability (the probability of site occupied)

$V_{(D:T)}$ = vulnerability of the individuals (probability of loss of life of the individual in buildings/site given the impact)

In our revised assessment, all the above terms except for $P_{(T:S)}$ remain unchanged. We recommend adopting a P(T:S) of 0.75 revised down for a commercial development. Hence our revised Risk to Life remains as 0.0 for all cross sections assessed in our 7390A-Addendum. Similarly, the risk to property remains at $0.00.

Sincerely,

Martin Schult, BEng., MEngSc., DipGeoSc., MIE(Aust). CPEng, NER(No 193316)
Building Practitioner CC6587
Geotechnical Engineer

Scherzic Pty. Ltd. A.B.N 99 167 712 325
P.O. Box 555, Hobart North, TAS. 7002
Telephone 613 6273 6565
E-MAIL: info@scherzic.com
www.scherzic.com

Scherzic
Ground Investigations

Figure 1 - Original Residential Layout

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Figure 2 - Revised Commercial Layout

Document Set ID: 4723629
Version: 1, Version Date: 05/07/2022

Scherzic

Ground Investigations

JMC Property Group Pty Ltd

c/- RARE Innovation

Geotechnical Site Review

9 Rose Lane, Launceston South

November 2019

Report No: 7390A

SCHERZIC Pty Ltd
ABN 99 167 712 325
PO Box 555, North Hobart, TAS. 7002
Email: info@scherzic.com
www.scherzic.com

Contents

I. Limitations

This report has been prepared for JMC Property Group & RARE Innovation and is only for use by JMC Property Group & RARE Innovation for the purpose given below. No responsibility will be taken for use by other parties. Conclusions and recommendations are based on the investigation methods outlined and are considered to be a minimum requirement for the project. Further investigations and testing may be required where differing conditions or information are encountered. The recommendations contained in this report are based on the limited testing described within. The nature of foundation materials can vary over small areas and therefore conditions may exist which were not encountered or foreseen in this assessment. If conditions are found to differ from those described, then Scherzic should be contacted immediately to advise on the consequences. Conditions differing from those described may result in additional costs for footing and foundation works. Unless the site investigation points have been surveyed and clearly marked prior to the investigation, the location of the test sites should only be taken as approximate. This report does not assess contamination of soil or ground water.

Martin Schult, CPEng., NER

Geotechnical Engineer

Scherzic Pty Ltd

www.scherzic.com

Reports Issued			
Report No	Author	Review	Issue Date
DRAFT	DV	MBS	25/11/2019
7390A	DV	MBS	2/12/2019

II. Introduction

Rare Innovation Consulting Engineers, on behalf of JMC Property Group Pty Ltd (JMC) have appointed Scherzic to undertake a Geotechnical Review of stability of the surrounds to a proposed multi-unit site at

9 Rose Lane, Launceston South (Glen Dhu). JMC are proposing to construct 30 residential units on the site which is located at the north west corner on a large tract of west sloping vacant land vacant land that has reported landside issues. The location of the lots of land (green dashed rectangle) and nearby slopes are shown below:

FIGURE 1 - PLAN VIEW OF DEVELOPMENT SITE

The purpose of this review is to determine the level of risk to future development (landslide and stability) at the toe of the slopes.

Two very recent site classification reports made by Rare and six recent reports/assessments made by Geoton Pty Ltd for the vacant area upslope of the site have been provided.

A GHD report/assessment from 2014 cited in the Geoton reports has not been provided and has not been sighted by Scherzic. (It is noted that this GHD report was authored by the reviewer of this Scherzic report). This report has not been provided to Scherzic for its view and therefore Scherzic analysis and assessment have been focused on the available documents. Scherzic keeps the right to modifying its analysis/assessment upon view of the unprovided GHD report.

III. Site description

The site area includes two lots of land on the southern and eastern uphill sides of the northern portion of Rose Lane, South Launceston. The site is characterised by low angle slopes and grass cover, while eastern and south-eastern uphill nearby area towards Westbury Road tend to steep slopes angles and is more characterised by trees and bushes in respect to grassland. Towards south and south-east uphill from the site, an approximately 4 to 5m high batter face associated with past quarry activities exists. Above this batter face of the old quarry, the slope continues up to Peel Street. Further upslope of this area is located Westbury Road. Refer to Appendix C for photographic description.

IV. Geology

The area is included in the Tertiary Undifferentiated Paleogene-Neogene sequences Group, characterised by poorly consolidated clay, silt, and clayey labile sand with rare gravel and lignite and the presence of some iron oxide-cemented layers and concretions and some leaf fossils (see geological extract in Appendix A; source MRT Digital Geological Atlas 1:25000).

Previous excavations and drilling investigations in the interested area highlighted that the Rose Lane lots of land are mainly characterised by filling (at least 4-5m thick). While moving towards South the filling thickness diminished (about 2m) in proximity of the old quarry face. The first natural material encountered in the interested area during investigations is silty clay which can be interbedded by levels of clayey sand and fine gravel. Silty clay superimposing sandy clay and clayey sand levels alternance has been observed, until reaching sand at 20m depth. The quarry face, 4 to 5m height, is characterised by silty clay that could be interbedded. Above the quarry face, upslope towards Westbury Road, investigations reported a very thick silty clay layer (up to 18m), superimposed by moderate sandy clay/clayey sand and gravelly sand levels before to encountered again fill materials.

V. Previous reports

The area included between Rose Lane, Peel Street and Westbury Road has been investigated before, including landslide assessments, but was not conducted by Scherzic. In particular, the GHD report dated August 2014, reference number No 32/17320, focused on the immediate western side of Westbury Road and found that only localised downhill creep of the slope was related to the fill batter of Westbury Road, as it has been cited in other subsequent reports. The movement in the GHD report was estimated to be associated with two small-to-moderate landslides. This report has not been provided to Scherzic for view and therefore Scherzic analysis and assessment have been focused on the available documents only. Further reports by Geoton Pty Ltd dated between April and May 2015 (GL14281Ab and GL14281Bc), November 2017 (GL14281Df) and April 2018 (GL18044Ab) covered slope stability investigations and assessments, measuring land movements and groundwater levels variations. These reports mostly focused on the south-eastern uphill area below Westbury Road. These reports also mentioned that movements of Westbury Road surface were observed since the 1980's and continuous "levelling" of the road though application of asphalt was applied by Launceston City Council. The Geoton reports highlighted the presence of the groundwater level at a depth between 8 to 11 metres from surface level (around 50m altitude). Inclinometers data from boreholes located downhill in close proximity of the western side of Westbury Road, presented in the Geoton Pty Ltd reports, showed diverse sliding movements at different depths in about 2.5 years period (INC-1: about 10mm NW at 2 to 4m depth, about 15mm NW at a 13 to 15m depth; INC-2: between 10 to 17mm NW below 2m depth, less than 5mm N at 13m depth). Interestingly, both inclinometers data showed significant movement under 4m depth towards NW. One of the Geoton reports (GL14281Ab) showed that multiple asphalt layers have been found in different test pits excavated about 3m below Westbury Road, which the deepest was at 1.5m from surface (4.5m below the current Westbury Road level). Further Site Classification reports for the Rose Lane Units development area made by Rare Innovation Pty Ltd (April and August 2019) showed that groundwater level was encountered in test pits close to eastern slope between 1.9 and 3.75m depth and only in one test pit on the western side of the lots at 5m depth.

The Mineral Resources Tasmania (MRT) Tasmanian Landslide Inventory sheet, 1:25,000 scale, shows an active landslide (No. 1007) just below the western side of Westbury Road and including a significant area downhill (Figure 2). The same area is also shown as low to high slide susceptibility in the MRT Shallow Slide and/or Flow Susceptibility sheet. However, the same landslide is not present in the MRT Tasmanian Proclaimed Landslip Zones sheet, and it also has not been assessed as Zone A or Zone B. Two reports acquired from MRT database cited the landslip down to the western side of Westbury Road

(I. Jennings 1962 report No. TR7_87_90 and W.L. Matthews May 1975 report No. UR1975-37). The first available report from 1962 showed two landslip zones under the western side of Westbury Road, in which the northernmost was also used as a tip (Figure 2). The 1962 report stated that Westbury Road was affected in the past by slips and remedial measures were taken solving the slip problem, although advising about possible future reactivation. This report did not explicitly define what has been done as remedial measure to stop slipping. The second available report of May 1975 cited the presence of a known slip down on the western side of Westbury Road, connecting the slip movement to the past clay quarrying activity at the base of the slope. This report did not show any evidence or supporting material to support this statement. The 1975 report also added that blocks and nearby land showed no signs of movement, and only “very minor slumping may have taken place in a 3 m cutting along the road-side, but this has no signs of recent movement” related to Westbury Road. No other historic report is available for the landslide No. 1007, as MRT confirmed directly to Scherzic inquiry.

As indicated above, a GHD report prepared for the City of Launceston circa 2014 was prepared by the Scherzic reviewer of this report. According to some incomplete data and recollection of the investigation, the most pertinent observation was the absence of any distress consistent with landslide movements to the east (Westbury Road) side of the structures.

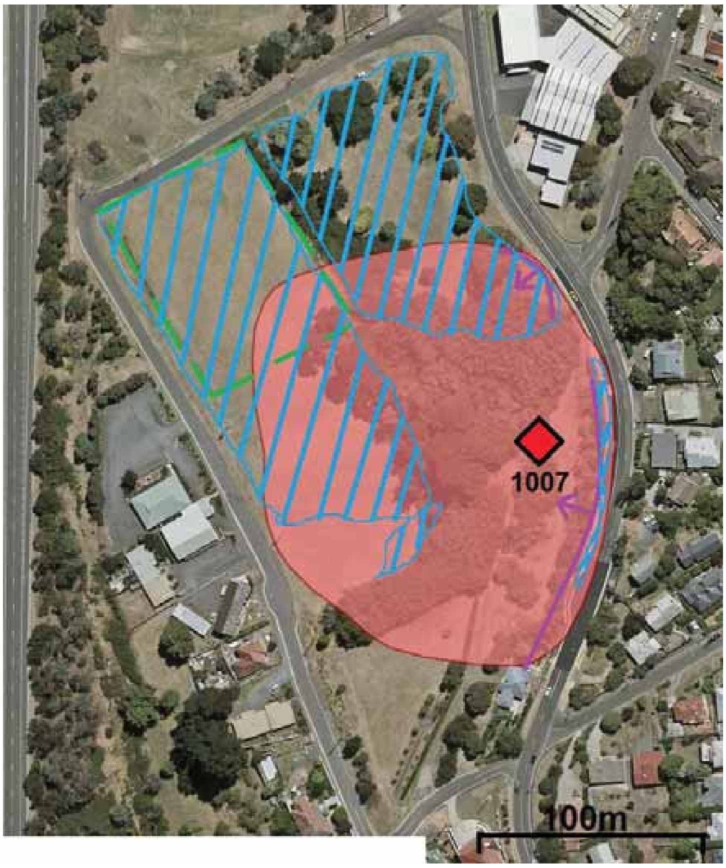

FIGURE 2 - MRT LANDSLIDE MAPPING

Recent aerial image showing the MRT Landslide No. 1007 extend (in red), the Rose Lane Units development area (green dashed), the two landslips cited in the I. Jennings 1962 report (in purple), and the observed areas that were filled during the past over 70 years since 1946 (lined blue).

VI. Aerial images analysis

Historic aerial images have been acquired from the Department of Primary Industries, Parks, Water and Environment. Refer to Appendix C. Aerial images have been observed and analysed by Scherzic covering a time span of more than 70 years, starting from 1946 to present. In particular, historic aerial images dated 10th April 1946, 26th March 1966 and 24th April 1977 have been closely reviewed. The analysis was focused on the differences in morphology of the interested area and the possible visible movements of the slopes. The lots of land interested by the Rose Lane Units development are located were formerly the clay works buildings were placed. This area was subsequently covered by filling at the end of the clay works activity during the fifties (Figure 2). On the eastern side of the interested lots of land, a large area (included between northern Rose Lane and Norwich Street intersections on Westbury Road) was covered with filling with different nature as also used as a tip during the fifties and sixties (Figure 2). This area constitutes the current eastern upslope towards Westbury Road. Dwellings were already present on the eastern side and on the western side of Westbury Road since 1946. The analysis showed that the housing structures are unchanged, excluding additions during the years. The south-eastern slope just below Westbury Road did not show any visible difference in morphology from aerial images, excepting the emplacement of filling in proximity of the western side of Westbury Road visible on March 1966 aerial image (Figure 2). The southern slope just below Peel Street did not show any visible difference in morphology from aerial images. The Westbury Road has not been modified in size in more than 70 years. However, two road bays on its western side have been made in recent years on the south-eastern slope (Figure 2)

VII. Assessment

The assessment of the stability of the lots of land for Rose Lane Units development and the nearby slopes has been carried out by Scherzic Principal Geotechnical Engineer, together with an experienced Geologist. The stability assessment has including reviewing historic reports, collating recent geotechnical data, including historical aerial images analysis, and modelling with Limit Equilibrium software. Three cross sections through the slopes intersecting the proposed unit site were adopted to undertake the quantitative analysis (Figure 3).

As discussed above, the trigger for the assessment is MRT Landslide No.1007 which produce debris that can impact the Rose Lane Unit development.

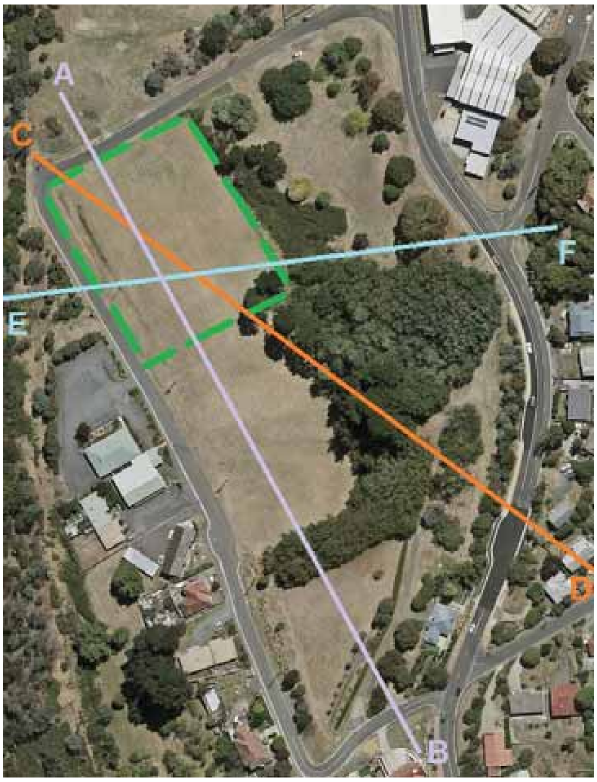

FIGURE 3 - SECTIONS OF SITE FOR ANALYSIS

1. Engineering Analysis

Three profile sections of the study area have been adopted for analysis as shown in Figure 2. All the significant data available in the cited reports have been adopted in the Limit Equilibrium Analysis using the Rocscience software SLIDE to provide both Factors of Safety (FOS) and Probability of Failure (Using Monte Carlo Method). All profile sections (A-B, C-D and E-F*) were assessed for both current conditions (quarry filled) and previous conditions at the tie of quarrying (ie deepest excavations). The SLIDE outputs are provided in Appendix D.

Sliding failure of slopes originate due to configuration, physical properties of the deposits, groundwater level and saturation, and external loads. Earthquakes can also trigger sliding due to external forces & effects on ground water pore pressures.

At this site, the configuration (previous quarry excavations) and soils/deposits which constitutes the slopes in the upslope areas may increase the risk of land sliding. Also, in the event of a landslide, the volume and travel distance of the landside debris are most important. The groundwater levels used in the sliding models produced and analysed by Scherzic have been collected from the available previous reports. Groundwater levels on the slopes of the three different profile sections analysed have been raised to ensure saturation. Loading upslope from Westbury Road has been added. No further loading has been considered as the slopes are mainly devoid of structures. The occurrence of an earthquake could affect the slopes modifying physical parameters of the deposits. Hence, the direct risk of sliding is commensurate with the risk of earthquakes.

The probability & FOS due to rotational sliding failure using current conditions (ie quarry filled) at the slopes modelled using the software SLIDE from Rocscience is summarised:

.

The probability at Section A-B is: 0.4%   The Factor of Safety is 2.5

The probability at Section C-D is: 0.0%   The Factor of Safety is 1.85

The probability at Section E-F is: 0.0%   The Factor of Safety is 2.1

For the conditions during operation of the brick works (quarry excavated) the probability & FOS due to rotational sliding failure is:

The probability at Section A-B is: 0.5%   The Factor of Safety is 2.1

The probability at Section C-D is: 0.0%   The Factor of Safety is 1.85

The probability at Section E-F is: 13.9%   The Factor of Safety is 1.3

The above results indicate that any land slide upslope of the proposed unit development would have been triggered by the quarry excavation and post filling, the probability of a land slide is very low. (*Note that the values indicated above are based on probabilistic analysis using estimated parameters. Although a quantitative analysis, variations on these results is likely with minor variations and assumptions; hence the numbers above should not be taken as absolute, but used for comparison between the differing scenarios*).

As indicated above, the existence of a landslide is secondary for development at the unit site compared to the mass/size of landslide debris and the travel distance of the debris. Hunter and Fell (2003) stated that possible landslides which have an unconfined travel path onto slopes with less than 15^o of slope angles will quickly come to rest close to their starting point. Qarinur (2015) defined landslides travel distances (L) using landslide height (H) (crown to toe) and slope angle (α) for different landslides types using a simple equation with coefficients obtained from statistical data. We applied the Qarinur (2015) equation using the slope data acquired from the two profile sections of the interested area related to the south-eastern slope. We considered the rotational landslide type as the most probable in relation to the deposits and slope settings. The results are as follows:

Slope angles for the different profile sections between slope toe and upslope road (Westbury Road, Peel Street):

Section A-B: 11^o

Section C-D: 13^o

Hypothetical landslide travel distance (L) in metres from toe:

Section A-B: $L=1.346 + 1.788\ H = 1.346 + 1.788\ (23) = 42.4$m

Section C-D: $L=1.346 + 1.788\ H = 1.346 + 1.788\ (26) = 47.8$m

The slope angles are all below 15^o and the hypothetical landslide travel distances obtained show limited cover at the toe area (i.e. below the old quarry face). This analysis indicates the occurrence of a landslide that quickly travels and covers the proposed unit site to be not credible for sections A-B and C-D. The volume of debris due to a landslide at section E-F is under current conditions is considered negligible.

VIII. Discussion

The Rose Lane Unit site is partially included in the MRT Landslide No. 1007 area at the south-eastern edge and is marginally included as low slide susceptibility zone.

Historic reports from 1962 and 1975 do not show evidence of a major landslide below the western side of Westbury Road, but do highlight and mention past slip movements in proximity of the western side of Westbury Road embankment.

Historic image analysis of the study area shows that the Rose Lane Unit development site is in proximity of the old brick clay works buildings, and the site has been subsequently filled during the 1950s. The slope east of the development site has also been created by indiscriminate filling with diverse materials over some time which is confirmed in the historic aerial pictures. Furthermore, the historic aerial images show there are not significant morphological differences related to the eastern and south-eastern slope below Westbury Road over time, while repairs the Westbury Road pavement (asphalt patches in the images and filling on the western side of the road) has been consistently performed during past years and also cited in other reports (e.g. GHD???, Geoton). Dwellings on the same slope below and above Westbury Road were present since 1946 and no damage consistent with landsliding has been observed or reported occurred during the past 70 years. This background is consistent with movement only in the fill embankment of Westbury Road and not from a larger slope movement.

Geoton report (GL1428Df) inclinometers data can show the relationship between slope movements (under 4m depth) and the embankment of Westbury Road as also GHD found in the past (sourced from Geoton reports as GHD report has not been provided). Deep inclinometer INC-1 NW movements (without corresponding surface movements) presented in the Geoton GL1428Df report are inconsistent with the shallow recorded NW movements and maybe the result of casing failure. The inconsistency of the inclinometer data may also be attributed to poor inclinometer positioning during the tests – which is discussed by a professional external review (see Appendix C for the external opinion from Dr Pennington). Inclinometer data from INC-2 have consistent distribution and showed mainly shallow movements (above 6m depth) towards NW. The variation in movement direction observed between the second and third measurements in INC-2 towards east and then towards west at depth between 10 and 15m are probably the result of reactive clays activity (contraction and swelling) as the measurements were taken in diverse seasons of the year (winter and summer). The deep movements recorded by all the inclinometers are located all above the level of the old quarry batter and thus they do not affect the entire slope as suggested by MRT Landslide No.1007 drawings.

Landslide No. 1007 presents in MRT Tasmanian Landslide Inventory has not shown in the MRT Proclaimed Landslip Zones sheet. This fact indicates that this area could be susceptible to landslide movement due to the nature of the sediments present (as shown in the MRT Shallow Slide and/or Flow Susceptibility sheet) but not currently considered as a proclaimed active and dangerous zone. The presence of Landslide No. 1007 with its entity was not clearly presented in the available historic reports and no supporting evidence was provided either. However, as said above, two landslip zones just below Westbury Road were highlighted. In addition, the area highlighted as landslide No. 1007 includes a large portion of the eastern and south-eastern slopes and at the toe of the slopes which can be associated with a massive landslide of the entire slope. Despite so, data from the provided and acquired reports and from this analysis do not show this possibility. The head of the No. 1007 landslide is also coinciding with the western side of Westbury Road and following its contours. If a massive landslide was present would has likely affected the road and above the road land and dwellings, as all the area as the same deposits. This fact is in support of a sliding movement related to the Westbury Road embankment only. Hypothesising the presence of possible landslides departing from the western side below Westbury Road, data provided and acquired showed that their travel distance and entity could not affect the new Rose Lane Units development.

Focusing on the nature of the deposits, the area is mainly characterised by fine particles deposits. Soils rich in fine particles, such as silty and clayey soils are more prone to developed pore-water pressure on contraction (Hunter and Fell 2003). Clay soils, if undisturbed, retain a solid structure although high water content due to surface tension which holds clay particles (Hunter and Fell 2003). Thus, only an earthquake or sufficient shear (from load or slope angle) could disturb this process and ignite a fluid state. The probability of major earthquake affecting the interested area is very low with a hazard factor of 0.05 (from AS1170.4-2007 Earthquake Action in Australia and shown also in the Atlas of Seismic Hazard Maps of Australia). The eastern and south-eastern slopes did not present any excessive loading above slopes and have slope angles that are less than 13º. As Hunter and Fell (2003) stated that possible landslips which have an unconfined travel path onto slopes with less than 15º of slope angles will quickly come to rest close to their starting point. These factors defining the unlikeness of the possible occurrence of a major landslide that relatively quickly travels and covers the entire toe area, as shown by MRT Landslide No. 1007. On the contrary, the embankment below the western side of Westbury Road could be affected by excessive loading due to the multiple asphalt and filling emplacement made in road fixing during the years. The consequent possible localised sliding would not affect the Rose Lane Units development area due to their very modest travel path.

It is always possible that the quarrying activity could have triggered movement above the quarry before 1946 (no data or reports have been sighted by Scherzic before that time), however the significant amount of filling placed at the toe of the slope may have prevented any further movement. In addition the movement and evidence of movements below Westbury Road during the course of the years are most likely associated with the movement of the road embankment that underwent multiple and persistent loading through continuous superimposing of asphalt layers and filling (as previously highlighted in this report), which could be quantifiable at more than 4m thick as also evidenced by test pits performed downslope of Westbury Road and presented in the Geoton reports.

The probability of large and rapid landslip is extremely low or absent. Consequent to our research and analysis, we suggest that no major or active landslide on the eastern and south-eastern slope below Westbury Road is present and we support the development of Rose Lane Units.

1. Conclusions

Based on our assessment of the stability of Rose Lane lots of land and nearby slopes towards Westbury Road we conclude and recommend the following:

1. No major landslide movements have been observed and no supporting evidence has been found that define a major landslide on the south-eastern slope below Westbury Road (as shown by landslide No. 1007) which could potentially travel towards the proposed Rose Lane Units development.
2. The observed sliding movements affecting Westbury Road and its western side downslope can be associated with failure of the road embankment and thus do not affect the Rose Lane Unit development.
3. Possible significant sliding movement could have occurred from slope toe removal caused by the quarrying activity before 1946. Although no data or reports are available before 1946, two sliding analyses have been produced in sections A-B and C-D for this eventuality presenting the failure probability and the factor of safety of the slope in absence of the post-1946 slope toe backfilling (Rose Lane lots of land). The data showed that failure would not occur and a factor of safety always above 1.8. Subsequently to the end of the quarrying activity, massive filling of the toe of the slope has been observed which can prevent any possible massive slope movement, as also has been showed by Scherzic kinetic analysis which results in 0% probability of failure and a factor of safety above 2.6.
4. The slope east of the Rose Lane Units proposal has been assessed (Section E-F) and we believe its formation is associated with diverse filling events occurring in the past 70 years. The slope has been analysed by Scherzic for stability showing that major sliding is improbable towards the Rose Lane Units development.
5. Based on our assessment, we conclude the risk of impact from a landside/mass movement on the proposed development is <u>not credible</u> (travel distance & mass).

6. Due to the nature of filling and natural soil type present in the unit site, we recommend further geotechnical investigation of Rose Lane Units development lots to provide footing/pile design parameters.

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Environmental Site Assessment

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South Launceston

Project No: 7928

Date: June 2022

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1 Executive Summary

Environmental Service and Design (ES&D) were commissioned by their client Errol Stewart, to undertake an Environmental Site Assessment of 6 Rose Lane, South Launceston 7249, specifically three land titles, CT 159336/1, 247578/2 and 200709/1.

The land is located downslope of a former small municipal landfill which extends from under Westbury Road to the boundary of 6 Rose Lane. However, the full extent of the landfilling has not been confirmed, and no post closure information is available of the municipal landfill as it ceased in the early 1970's.

It is proposed to develop the site into six commercial tenancies with car parking and associated infrastructure.

Our assessment has revealed the following;

- Concentration of contaminants in soil are within acceptable commercial screening levels of the *National Environmental Protection (Assessment of Site Contamination) Measure 1999* as amended 2013 (NEPASCM)
- Onsite gas measurements using portable Gas Detector and in bore gas sampler (gas clam) for 6 days revealed elevated concentrations of methane, carbon dioxide and carbon monoxide underground in vapour bores.
- Canister air samples taken from vapour bores detected elevated concentrations of methane and carbon dioxide. All other volatile compounds were below the limit of reporting (not detected).

Our recommendations are as follows.

The site is suitable for future commercial use with appropriate vapour mitigation measures as determined by a suitably qualified vapour mitigation design consultant.

2 Scope of Works

The scope included:

- Desktop review of the site and surrounding land use history,
- Determination of potential contaminants of concern,
- Field investigations and site visit,
- Sampling of the soil across the site focusing on disturbed and possible filled areas,
- Consideration of the site's environmental settings,
- Identification of potential human and ecological receptors and consideration of risks to identified receptors,
- Development of a Conceptual Site Model (CSM), and
- Preparation of the assessment report.

Figure 1: Assessment Area

3 Assessment Criteria

The assessment is required to be completed to address the *National Environmental protection (Assessment of Site Contamination) Measure* 1999, as amended April 11, 2013 (NEPASCM) and ground gas guidelines.

The following references have been considered in the assessment of ground gases:

- NSW EPA, *Guidelines for the Assessment and Management of Sites Impacted by Hazardous Ground Gases, 2012.*
- OSWER *Technical Guide for Assessing and Mitigating the Vapour Intrusion Pathway from Sub Surface Vapour Sources to Indoor Air, 2015.*

The following screening levels have been considered in the assessment: Health Screening Levels (HSLs), Health Investigation Levels (HILs), Ecological Investigation Levels (EILs), Ecological Screening Levels (ESLs) provided in the *National Environmental protection (Assessment of Site Contamination) Measure* 1999, as amended April 11, 2013 (NEPASCM).

Additional NEPASCM reference material considered in the assessment include CRC CARE *Technical Report No. 10 "Health Screening Levels for Petroleum Hydrocarbons in Soil and Groundwater Part 2: Application Document"*.

4 Sampling Plan and Methodology

A review of the historical aerial photographs revealed that a former small municipal landfill was located upslope of the subject sites. In addition, the sites were part of a former clay quarry and brickworks.

The sampling plan included the following sampling/assessment methods:

a. Soil Sampling

Assess the soil against the NEPASCM screening levels for commercial development to determine if an acceptable level of risk exists for the direct contact, inhalation and ingestion pathways.

b. Groundwater Assessment

Initial intentions were to install three groundwater monitoring wells to understand if volatile contaminants were present in groundwater under the site which could pose a vapour intrusion risk into the future buildings and to confirm groundwater depth, soil profile and groundwater flow direction. However, groundwater was not encountered up to 8.0 m in 'MW1' which was the depth extent of the driller. This hole was constructed as a vapour bore.

c. Gas Clam Monitoring

The gas clam was set up in vapour bores VB1, VB3 and MW1 for a total of 6 days. Attended measurements were also recorded using Gas Detector GA5000 in the same bores for comparison.

d. Canister sampling

Collection of canister samples were completed using ALS Newcastle issued 1.4 L canisters. Leak checks were completed using pressure pump on train lines and tracer gas, isobutylene. Canister samples were collected from vapour bores MW1 and VB3. A duplicate sample was collected at MW1, namely MW1-B.

Figure 2: The Site – Assessment Area includes three land titles shown

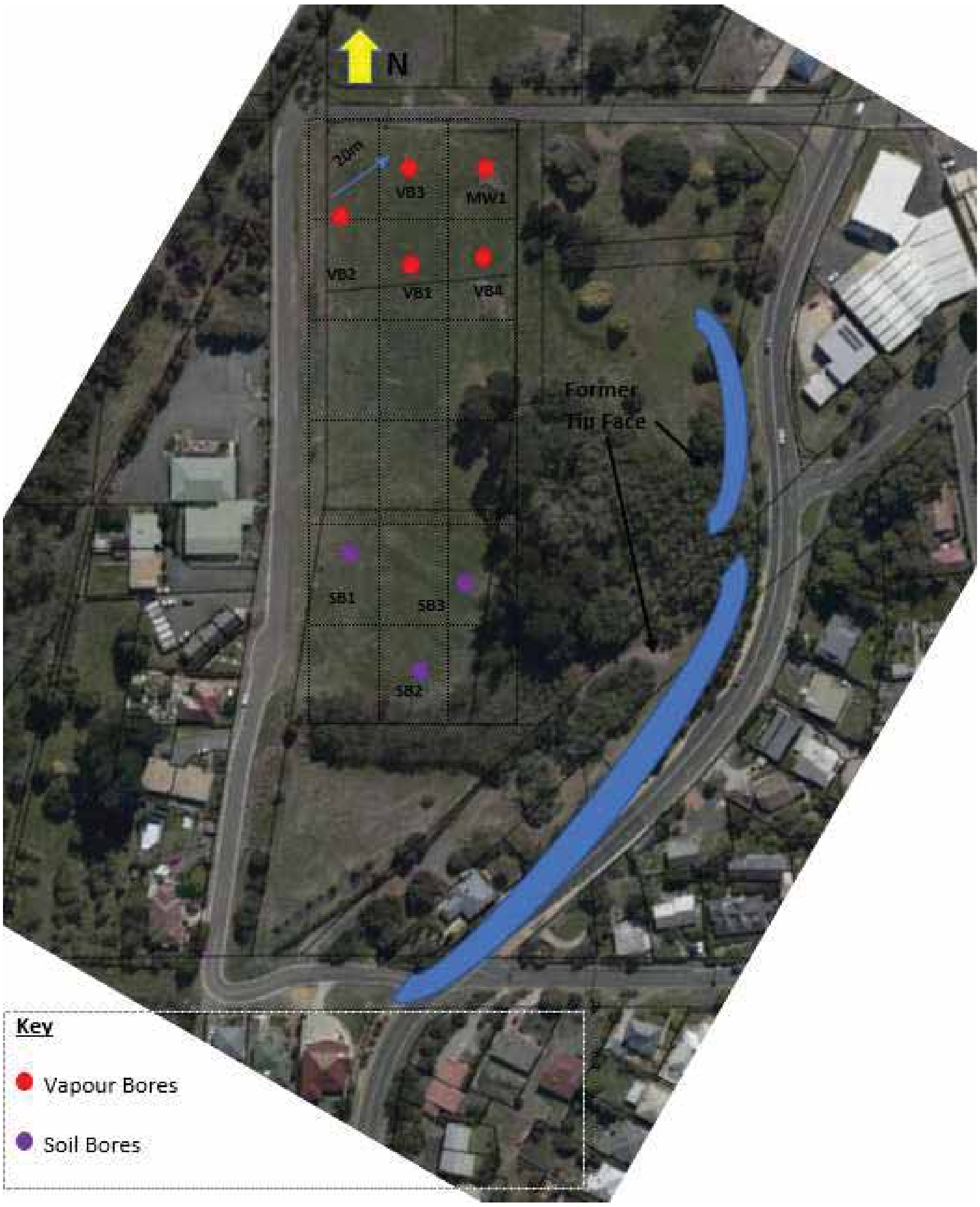

Figure 3: Sampling Points- vapour bores and soil bores.

5 Site Details

5.1 Ownership and Property Details

The land is owned by OSLP Pty Ltd, and this report has been prepared for the landowner Errol Stewart.

Site details are shown in Table 1.

Table 1: Property Identification Details

Street Address	*Property ID*	*Title Reference*	*Approx. Area (m^2)*
9 Rose Lane	6618792	159336/1 247578/2 200709/1	1.4 hectare (total)

5.2 Surrounding Land Use

The site is in South Launceston and adjacent to Westbury Road which is a main arterial Road. The site is currently vacant with no buildings on the site. Minor earthworks have been completed including placement of clean imported fill cover (fine aggregate) over the surface of the northern and middle lots up to a depth of 0.5 m with fill depth greatest towards the north.

The land borders Council owned land, upslope and to the east which is the location of the former clay quarry and later landfill which was closed in the early 1960's. The southern title (CT 200709/1) borders a convict cemetery which is located upslope to the subject site.

The surrounding land use includes a mix of residential and commercial. Commercial sites are located to the northeast in Norwich Street. These uses include a builder's material storage yard and offices and long-term storage facility and retail flooring office space and showroom. The land north across Rose Lane is the Glen Dhu Primary School. Downslope of the site to the east is a church and some residential dwellings. Residential dwellings are also located upslope of the site to the south and north (refer to Figure 4).

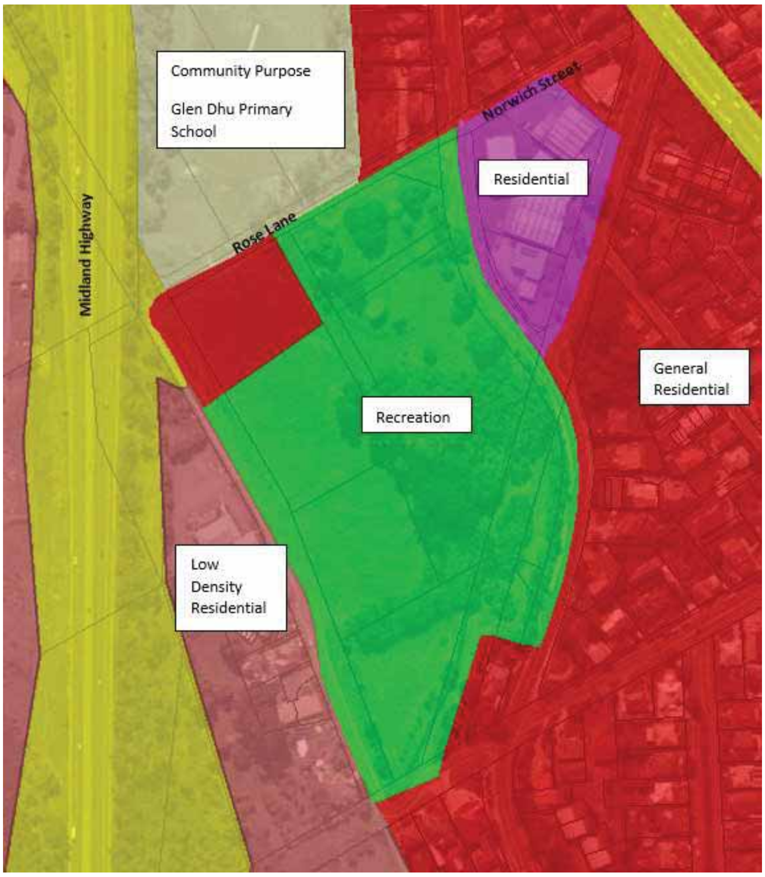

Figure 4: Surrounding Land Use and Planning Zones

5.3 Proposed Development

It is proposed to construct a commercial property comprising six tenancies on the property. The southern area will remain vacant as the shallow stormwater drainage network on this title makes building difficult to achieve. There is a web like network of PVC stormwater pipes running from east to west on the southern title which discharge into the Council stormwater main on Rose Lane.

Construction of the commercial buildings will require excavation and some cut and fill which will require some management measures.

6 Background Information Sources

- Land Information System Tasmania (The ListMap - www.thelist.tas.gov.au),
- DPIPWE Groundwater Information Portal (hhtp://wrt.tas.gov.au/groundwater-info

- Launceston Interim Planning Scheme 2015 (www.iplan.tas.gov.au)
- Google Earth Pro
- Mineral Resources Tasmania (MRT) Digital Geological Atlas (http://www.mrt.tas.gov.au/products/geoscience_maps/digital_geological_atlas_125_000_scale_series)
- EPBC Act search tool (https://www.environment.gov.au/epbc/protected-matters-search-tool)
- Trove, https://trove.nla.gov.au/
- Examiner Newspaper, Convict cemetery article.

6.1 Zoning

The middle and southern lots are located within the ‘Recreation’ zone and the northern most lot is located within the ‘General Residential’ zone of the City of Launceston Interim Planning Scheme 2015 (refer to Figure 4).

6.2 Topography

A review of Google Earth and topographic contours via The LISTMap indicates that the site slopes east to west Refer to Figure 6). A large fall of 25 m (60 to 35 AHD) is seen from the top of Westbury Road to the western section of Rose Lane (lower title boundary of 6 Rose Lane) The title above 6 Rose Lane has been filled approximately 15 metres above the current title. Therefore, the municipal waste is likely to be sitting level with the AHD of 6 Rose Lane, although this has not been confirmed and could be deeper than AHD 35m. Also, it is important to note that 6 Rose Lane has also been filled up to 5 metres. Therefore, the upslope landfill could possibly be situated at AHD 30 which would be consistent with the fill level at 6 Rose Lane.

Figure 5: Elevation contours (DPIPWE, ListMap)

6.3 Surface Water

The nearest surface water body is the Tamar Estuary, approximately 2.2 kilometres to the north. The Midland Highway was constructed on a former riverbed and surface and groundwater flows are expected to be to the north, northwest.

6.4 Hydrogeology

Based on contours, groundwater from the site is likely to flow to the north, northwest.

Figure 6: Topography and inferred groundwater flow direction

6.5 Geology

The site is underlain predominantly by high plasticity SILTY CLAY with pockets of low to moderate plasticity SANDY CLAY and CLAYEY SAND. The upper adjacent Council land was former mined for clay for the manufacture of bricks, at the brickworks on the subject site. Whilst there are natural high plasticity CLAY bands these vary in thickness and are intercepted with sand pockets (refer to Field Sheets and Bore logs Appendix B and C.

6.6 Acid Sulphate Soils

Acid sulphate soils (ASS) are soils which contain naturally occurring sulphides. If left undisturbed and waterlogged they are harmless, however, exposure to air can cause oxidation which allows subsequent rain events to produce sulfuric acid. According to the LIST, the site is located within an unmapped area for acid sulphate soils however the land to the north is mapped as low probability for acid sulphate soils. The likelihood of the occurrence of acid sulphate soils is low.

6.7 Flora and Fauna

The site has been subject to clearing, mining activity and manufacturing and is not likely to contain significant threatened species. A review of The ListMap indicates that threatened species have not been observed on the site or within 100 metres of the site. There is remnant vegetation remaining on the adjacent Council land, however this will not be disturbed by the development.

6.8 European and Aboriginal Heritage

The site is not listed on the Australian heritage database, nor is it listed as a site at risk of impacting Aboriginal relics (Aboriginal Heritage property search record Job Number: 30302754 (Sequence Number: 201765500) on 13 August 2021.

The site is not listed as protected under the EPBC Act (*Environment Protection and Biodiversity Conservation Act 1999*).

7 Site History

The following information has been reviewed alongside the above to determine the historical land use and assess the likelihood of potentially contaminating activities occurring on the site:

- ES&D Contaminated Sites Database,
- ListMap dangerous good storage,
- Site visit, and
- Historical aerial photographs.

Dangerous goods are not known to be stored on the site. The site has been vacant for the past sixty years. Previous buildings can be seen on aerial photographs (refer to Figure 12 and 13).

7.1 Contaminated Sites Database

The contaminated sites database contains information on sites which have held or currently hold Workplace Standards (now WorkSafe Tasmania) dangerous goods licenses. This database shows the nearest underground petroleum tank/s are approximately 400 metres to the north (Ampol, Wellington Street).

Figure 7: Nearby DG licenses

Licence No.	Address	Distance from Site	Details
unknown	325-327 Wellington Street	400 m	Underground Tanks at Service Station

7.2 Historical Aerial photography

A review of historical aerial photographs and satellite imagery available on The LISTMap and Google Earth Pro was undertaken to identify any historical potentially contaminating land uses in the area.

Figure 8: 1945 Aerial photo- showing former brickworks and quarry

Figure 9: 1945 Possible former brickworks and quarry

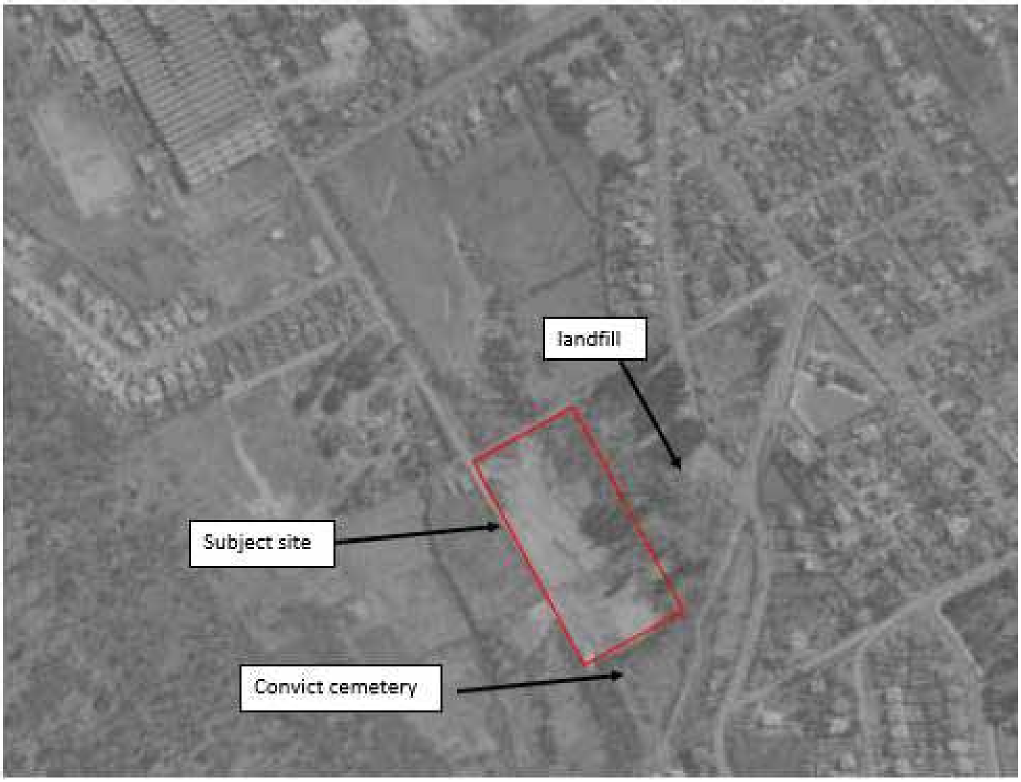

Figure 10: 1957

Figure 11: 1967

Figure 12: 1971

7.3 Potential Sources of Contamination

The following activities have been identified as potential sources of contaminants on the subject sites:

- Onsite Brickworks – petroleum hydrocarbons, including possible diesel fired kiln,
- Land filling on the site – observations of materials include crushed brick, aggregate, concrete, coal, metal fragments,
- Municipal Landfill upslope at 5 Rose Lane, and
- Convict cemetery.

Brickworks

Anecdotal information exists on the use of the site in the early 1900's as 'brick manufacturing'. This is consistent with the type of fill materials found on the site including crushed brick, coal and low-level hydrocarbons detected in soil samples.

Landfilling of inert waste onsite

The onsite soil investigations revealed foreign fill material buried up to 5 metres below the existing ground surface. The foreign material found included crushed brick, glass, coal, plastic and sawdust.

Offsite Municipal Landfill

The historical operation of a landfill at 5 Rose Lane, land upslope and adjacent to the subject site is confirmed by Geological Report[1]. The report shows on site plan the location of the landfill.

Convict Cemetery

Although the exact size and outer boundary of the convict cemetery cannot be confirmed we can see that the lower extent of the cemetery is not likely to extend onto the subject site. Cemeteries can contribute to underground methane concentrations and other gases similar to landfills, as well as groundwater contamination.

8 Onsite Investigations

Five vapour bores were installed on the 16th and 17th August 2021, on the northern lot which is the location of some of the future commercial buildings. It was intended to drill a groundwater bore. However, groundwater was not encountered in the bore up to 8 metres which was the maximum capacity of the drill rig. Therefore, 'MW1' was constructed for use as a vapour bore.

High plasticity, orange mottled clay then light grey CLAY was encountered in the bore 'MW1' from 5.3 to 8.0 mbgs. The top 0.0 to 5.3 mbgs contained fill material imported gravel and foreign materials (brick, coal). The remaining vapour bores (VB1, 2 and 3) were terminated in fill up to 3.0 mbgs and did not intersect natural ground. Natural ground was intersected on the southernmost lot at around 1.2-1.5 mbgs although further investigation would be required to confirm the depth of fill on this lot. The middle and northern lots appear to have been filled up to 5.0 mbgs. It is important to note that recent works have included the addition of clean imported road base on the middle and northern lots. However, the depth of this

[1] Jennings, I., Geological Factors Affecting Proposed Building at Cosgrove Park Launceston, MRT resourcehttps://www.mrt.tas.gov.au/mrtdoc/dominfo/download/TR7_87_90/TR7_87_90.pdf

recent cover was only around 0.2-0.4 mbgs on average and the maximum depth of fill has been reported by the landowner to be up to 1.0 m in parts.

9 Ground Gases

Methane

Soil gas methane concentrations may provide an indication of biological degradation processes occurring under the ground whereby anaerobic bacteria release methane during degradation of waste (i.e., putrescible landfill waste).

Hydrogen Sulphide

Hydrogen Sulphide was only detected in vapour bore ‘MW1’ during testing of the bore with Gas Detector GA5000 and the result was very low at 1.0 ppm. The Gas Clam results for the bore on the same day did not detect H_2S. ES&D requested H_2S analysis in our chain of custody (COC) for canister samples however laboratory malfunction and pending repairs would have delayed results a further two weeks and given low detections in previous gas clam results the H_2S test request was cancelled.

Carbon Monoxide

Carbon monoxide concentrations were detected in three vapour bores, VB1, VB3 and MW1 at low to high concentrations. Attended readings with the gas detector GA5000 and long-term data logging detected the highest readings of 23.5 ppm of CO in VB1 and 22 ppm in MW1.

10 Results from Field Investigations

Results are presented below for field investigations.

Figure 13: Soil Results compared to Commercial D Land Use Screening Levels and Disposal Criteria

Sample Details and Results (mg/kg)													Criteria	
Sample Date													**NEPASCM**	**IB 105 L1**
Sample ID (mbgs)	SB3 - 0.5	SB3 - 0.3	MW1-1.5	MW1-1.5B	MW1-2.7	MW1-2.8	MW1-4.5	SB1-0.5	SB1-0.8	SB2-0.25	SB2-0.5	VB2-0.5	**HIL-D**	
Metals (mg/kg)														
Arsenic	<5	<5	<5	8	<5	<5	<5	<5	<5	<5	<5	<5	3000	20
Barium	90	100	40	120	190	70	130	140	130	100	140	170		300
Beryllium	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	2	500	2
Cadmium	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	800	3
Chromium	34	25	28	28	15	10	22	35	24	24	29	68	3,000	50
Cobalt	53	20	12	13	9	5	9	11	11	26	25	48	4,000	100
Copper	61	37	34	76	26	16	20	115	69	60	69	46	250,000	100
Lead	20	17	23	587	299	16	36	137	77	29	21	<5	1,500	300
Manganese	604	166	159	309	552	566	315	211	214	402	197	878	40,000	500
Nickel	50	23	14	17	15	10	15	16	16	16	19	134	4,000	60
Vanadium	178	95	141	143	48	36	61	126	92	172	242	55		
Zinc	97	58	34	164	603	100	242	434	137	52	24	56	400,000	200
Mercury	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	4,000	1

Sample Details and Results (mg/kg)										Criteria	
Sample Date										**NEPASCM**	**IB 105 L1**
Sample ID (mbgs)	VB4-1.5	VB4-1.6	VB2-2.0	VB2-1.5	VB3-1.3	VB1-0.5	VB1-1.0m	VB1-1.5m	VB1-2.0m	**HIL-D**	
Metals (mg/kg)											
Arsenic	13	<5	<5	5	<5	<5	<5	<5	<5	3000	20
Barium	370	110	30	120	70	210	80	30	30		300
Beryllium	<1	<1	<1	<1	<1	2	<1	<1	<1	500	2
Cadmium	2	<1	<1	<1	<1	<1	<1	<1	<5	800	3
Chromium	48	18	43	27	32	118	26	18	33	3,000	50
Cobalt	18	18	2	11	10	59	16	4	6	4,000	100
Copper	186	27	34	67	51	37	45	17	34	250,000	100
Lead	474	36	18	169	69	<5	51	43	29	1,500	300
Manganese	354	243	64	231	187	1040	257	45	105	40,000	500
Nickel	34	19	6	17	26	126	14	4	6	4,000	60
Vanadium	97	60	198	110	103	93	132	150	187		
Zinc	1380	187	41	262	66	43	96	21	40	400,000	200
Mercury	0.2	<0.1	<0.1	0.2	0.2	<0.1	<0.1	0.1	<0.1	4,000	1

Figure 14: Soil Results

Criteria						
Sample Date				HIL/HSL-D		IB 105 L1
Sample ID/mbgs	MW1-2.8	SB1-0.5	VB4-1.5	0-1	1-2	
TPH (mg/kg)						
C6 - C9 Fraction	<10	<10	<10			65
C10 - C36 Fraction (sum)	<50	<50	<50			1,000
TRH (mg/kg)						
C6 - C10 Fraction minus BTEX (F1)	<10	<10	<10	260	370	
>C16 - C34 Fraction F3	**110**	**110**	**150**			
>C34 - C40 Fraction F4	<100	<100	<100			
>C10 - C16 Fraction minus Naphthalene (F2)	<50	<50	<50	110	240	
BTEXN (mg/kg)						
Benzene	<0.2	<0.2	<0.2	3	3	1
Toluene	<0.5	<0.5	<0.5	NL	NL	1
Ethylbenzene	<0.5	<0.5	<0.5	NL	NL	3
meta- & para-Xylene	<0.5	<0.5	<0.5			
ortho-Xylene	<0.5	<0.5	<0.5			
Total Xylenes	<0.5	<0.5	<0.5	230	NL	14
Sum of BTEX	<0.5	<0.5	<0.5			
Polycyclic Aromatic Hydrocarbons						
Sum of PAHs	-	**4.8**	-	4,000		20

Table Notes

1. Only samples that returned results above the LOR have been displayed in the table. All other results for TRH, BTEXN, PAH were below the LOR.

Table 2: Gas Clam and Gas Detector (GA5000) Results Summary Tables

Attended In bore Measurements with GA5000			Monitoring Location				
Parameter	**Unit**	**Ambient**	**MW1**	**MW1**	**VB1**	**VB1**	**VB3**
	Date	24-08-2021	24-08-2021	27-08-2021	26-08-21	27-08-2021	24-08-2021
PID	ppm	0.0	3.4	3.2	1.9	2.0	0.7
CH4	%	0.0	0.0	0.9	8.0	8.3	8.7
CO2	%	0.2	0.2	12.6	16.8	17.6	16.9
O2	%	20.5	2.0	3.8	0.8	0.0	0.0
CO	ppm	1.0	1.0	22	1	1	3.0
H2S	ppm	0	0	1	0	0	3.0
Barometric Press	mb	1019	1019	1020	1021	1020	1018

Monitoring Location	VB3	Gas Clam Measurements							
Date	Time	Parameters							
24/08/2021	Time	CH4 %	CO2%	O2 %	H2S ppm	CO ppm	Bore press	Atm press mb	Temp oC
Max value	13.09-16.41	9.1	20.6	10.1	0	23.5	992	989	17.1
Min value	13.09-16.41	4	9.2	0	0	0.1	991	988	13.4
25/08/2021	8:57	0.1	0.4	21	0	0	997	994	9.2
25/08/2021	16:51	3.3	7.1	11	0	0	995	992	9.1

Monitoring Location	VB1	Gas Clam Measurements						
Date /Time	Parameters							
26/08/2021 9.46-12.46	CH4 %	CO2 %	O2 %	H2S ppm	CO ppm	Bore press	Atm press mb	Temp oC
Min value	8.6	20.1	0	0	0	995	992	9.6
Max Value	9.6	22	0.5	0	2.7	996	993	12

Monitoring Location	MW1	Gas Clam Measurements						
Date /Time	Parameters							
27/08/2021 11.54-16.34	CH4 %	CO2 %	O2 %	H2S ppm	CO ppm	Bore press	Atm press mb	Temp oC
Min value	8.6	20.1	0	0	0	995	992	9.6
Max Value	9.6	22	0.5	0	2.7	996	993	12

Monitoring Location	MW1	Gas Clam Measurements						
Date /Time	Parameters							
27/08/2021 to 29/08/2021 16.54 to 8.15	CH4 %	CO2 %	O2 %	H2S ppm	CO ppm	Bore press	Atm press mb	Temp oC
Min value	0.5	12.2	2.7	0	1.3	985	983	8.7
Max Value	1.2	16.1	7.7	0	7.8	993	990	9.1

Comparison of In Ground Results against Assessment Criteria (refer to Footnote 3)						
	CH4 % v/v	CO2 % v/v	O2 % v/v	H2S ppm	CO ppm	VOC ppm
Guideline NSW	<5%	<3	NA	<10 TWA	<10	NA - indicator
Result range Min	0.0	9.2	0.0	0.0	0.0	0.0
Max	9.6	20.6	11.0	1.0	23.5	3.4

Reference/Results	**CH4 % v/v**	**CO2 % v/v**	**CO % v/v**
Typical Landfill	20 to 65	15 to 40	0 to 5
Typical Natural Background Concentrations Underground	0.002 up to 90.0 (i.e., wetland, waterlogged soils)	0.035 to 20	0.0005
9 Rose Lane Result (max)	9.6	22	0.0023
Landfill typical adjacent land	0.01 to 0.1	2.0 to 3.5	0.002 to 1.28
VIC EPA Action Levels	<1% v/v <5% v/v lower explosive limit	<2% v/v	<0.003
	The result is less than a typical landfill scenario but higher conc's in comparison to other landfills and higher than Vic EPA recommended action levels. CH4 oxidises to CO2 through bacterial action	May be higher due to elevated methane concentrations. Slightly higher than natural background levels. Higher in comparison to other landfills.	The result is on the low end of what may be from a landfill and slightly higher than general background concentration.

11 Discussion of Gas Clam Results

Carbon monoxide is likely to be present in moderate concentrations where there are good subsurface oxygen levels due to the presence of fill and gravelly sandy soils combined with high organic material and inert waste both on and offsite, as well as putrescible waste on the former landfill. Spontaneous underground combustion of waste materials and organic material produces carbon monoxide which is a by-product of this process. In addition, the oxidation of methane produces carbon dioxide as a by-product.

Our assessment found elevated carbon dioxide and methane gas concentrations, indicating that there is bacterial action underground which is creating the release of methane and consequently carbon dioxide. Whilst the concentrations are on the lower end of the scale they cannot be dismissed as likely to be from naturally occurring activity and further assessment and mitigation is required to ensure that a future gas migration issue into future buildings is avoided. Whilst methane levels are less than what is likely to be found on a landfill site, the concentrations are higher than what would be expected in the natural background environment and therefore should be assessed by a vapour consultant. It should also be noted that gas concentrations produced from putrescible landfills decrease from time of closure as degradation slows down. Carbon dioxide concentrations are higher than what would be expected in the natural environment and are within the range of what would be expected to be found on a landfill site.

There is not likely to be a leachate collection system from the landfill due to the age of the landfill closure (1960s). However, there is an intricate sub-surface collection system under the southernmost lot of 9 Rose Lane which discharges to the main stormwater system. Although we do not have specific information on the landfill activity – such as total waste materials, number of years filled and tonnage and putrescible and inert waste stream types and ratios - we can presume that the landfill was a small landfill with only a small number of operational years and tonnages. In addition, the landfill is located at a higher elevation than the subject site and although leachate may flow under the subject site, we have considered groundwater depth to be favourable to reducing potential exposure.

The age of the landfill, which has been closed for around 60 years and the small size of the landfill presents a low risk of volatile and hazardous gases being emitted from the former landfill. According to NSW EPA[2], low levels of methane are generally released from landfills after 30 or more years of closure. The Victorian Landfill Rehabilitation Guidelines[3] recommend a 200 to 500 metre buffer distance to nearest residential houses from closed landfills (refer to Table 8.2, p56 in the guidelines).

[2] NSW EPA 2012, *Guidelines for the Assessment and Management of Sites Impacted by Hazardous Ground Gases*.
[3] EPA Victoria, 2015, *Siting, Design, Operation and Rehabilitation of Landfills*

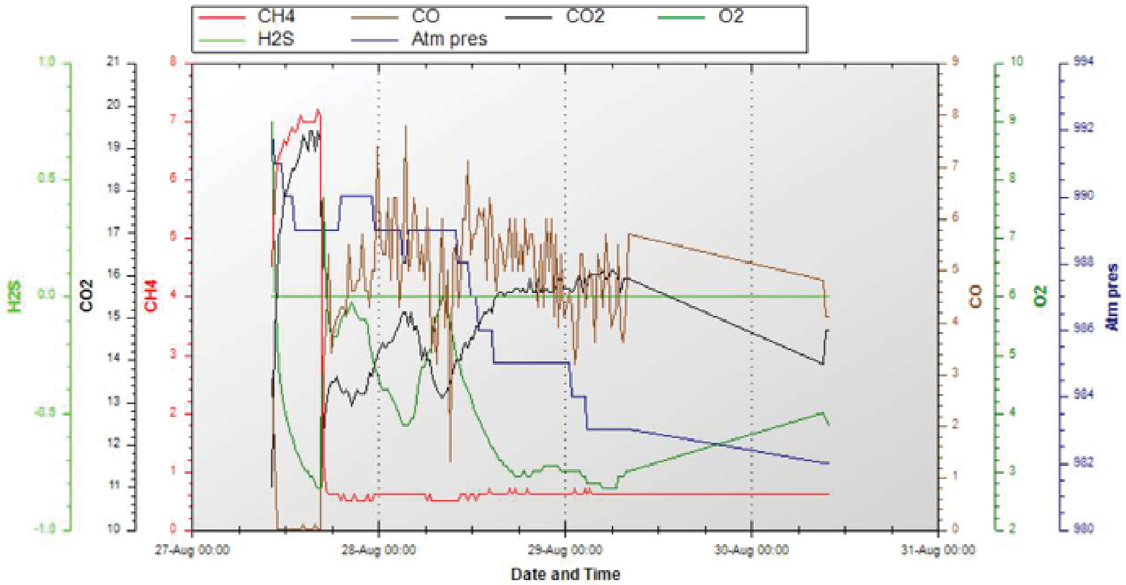

Figure 15: All Gas Clam Results for 27 to 29 August

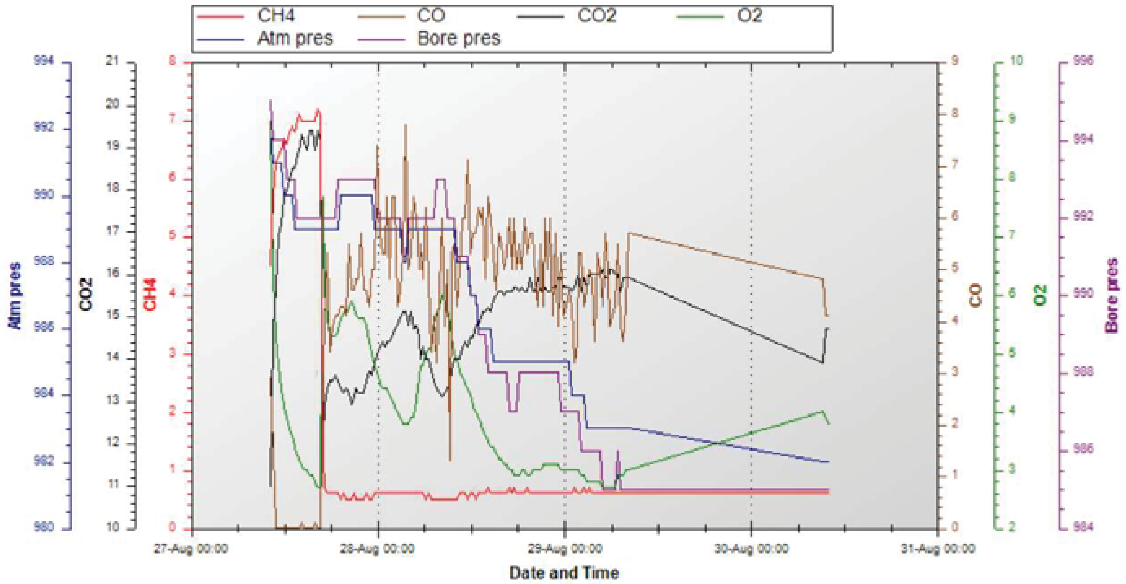

Figure 16: All Gas Clam results - H2S excluded

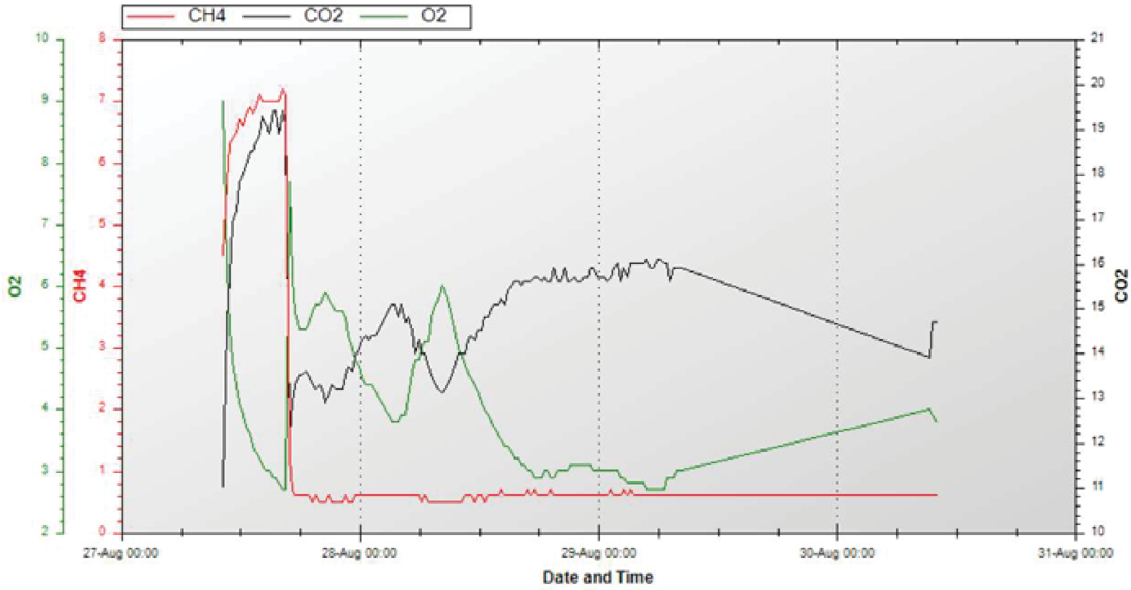

Figure 17: Gas Clam Results for CH4, CO2 and O2

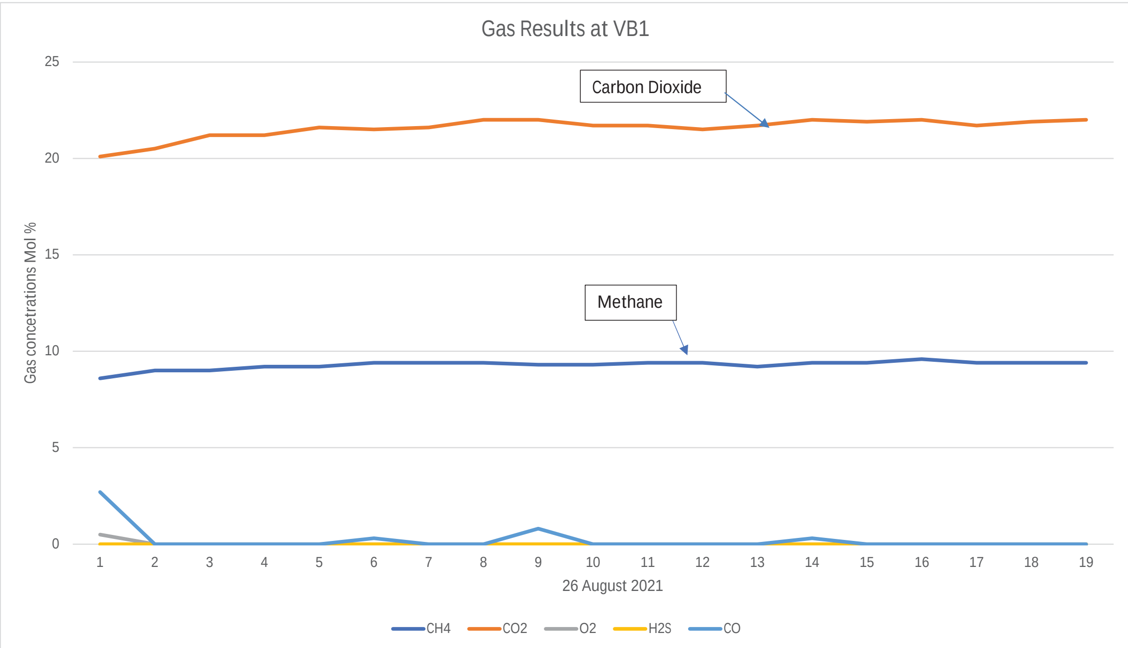

Figure 18: Gas Clam Results from vapour bore VB1 26 August 2021 9.46 to 12.46am

Table 3: Canister Sample Results

		Monitoring Location – Vapour Bore			Expected Result
Compound	Unit	MW1	MW1-B	VB3	
Methane	% v/v (Mol%)	0.147	0.146	9.08	0.01 to 0.1
	mg/m3	961	955	59,400	
Carbon Dioxide	% v/v (Mol%)	13.2	13.1	16.4	2.0 to 3.5
	mg/m3	237,000	236,000	295,000	
Oxygen	% v/v (Mol%)	2.20	2.19	0.87	NA
	mg/m3	28,700	28,600	11,300	

Table Notes

1. Carbon Monoxide results below the LOR
2. Petroleum hydrocarbon results TPH/TRH including BTEXN all below the LOR
3. Volatile Gases (Suite EP101 by USEPA Method TO15r) all results below the LOR
4. Refer to Laboratory Report in Appendix EN2108379

12 All Results

Carbon monoxide and methane concentrations were elevated more than expected. Methane concentrations detected in all vapour bores with a maximum result of 9.6 % v/v in vapour bore VB1 and 9.1 % v/v in vapour bore VB3. Background concentrations for methane have not been established and there is no data available to establish background methane levels in this location. Carbon monoxide concentrations of up to 23.5 ppm were detected with the highest result in MW1.

All Gases Ambient Air

Ambient air, surface concentrations of gases were generally low, and concentrations did not indicate the presence of potential underground landfill gases being released to the atmosphere. Volatile gas readings with the PID meter were all 0.0 ppm as were measurements for methane, and hydrogen sulphide. Oxygen concentration in ambient air were as expected at 20.5% and carbon dioxide was 0.2%. Carbon monoxide concentrations in ambient surface air were 1.0 ppm (0.0001%) which is consistent with general background air concentrations.

Carbon Monoxide

Carbon monoxide concentrations underground, in the vapour bores were higher than expected, with a maximum reading of 23.5 ppm (0.0023%). However, this is relatively low in comparison to acceptable guideline limits inside buildings and enclosed spaces of 0.003% [8 hr TWA] to 0.01 % [acute toxicity].

Carbon Dioxide

Carbon Dioxide concentrations may be indicative of biodegradation of organic material or onsite or offsite (landfill) biodegradation. Underground concentrations are higher than expected. However, considering that air concentrations are 400 ppm, underground concentrations may not be a concern. However, the underground concentrations of 200,000 ppm (20 %) are possibly indicative of biodegradation of onsite sources (petroleum and inert materials) or the adjacent landfill at 5 Rose Lane.

Methane

Similar to elevated carbon dioxide concentrations, methane underground concentrations were elevated above what would be considered normal background levels.

Canister sample results for methane were higher than expected in VB3 at 9.08 % v/v or 59,400 mg/m3. Conversion of methane results from mg/m3 to ppm is as follows:

24.45 (Conversion factor) x 59,400 (Result mg/m3) / 16.04 (MW) = 90,544 ppm

13 Comparison of Results to Soil Disposal Guidelines

Soil sample results indicate that soil on the site is likely to meet Level 2 and Level 3 classification for offsite disposal. Soil to be excavated will be required to be stockpiled onsite and tested in accordance with *Tasmanian Bulletin 105 Classification and Management of Contaminated Soil for Disposal (IB105).* Soil must not be taken offsite without prior EPA written approval.

14 Final Conceptual Site Model

A preliminary conceptual site model was developed based on site history information and the model was reviewed to consider onsite findings and testing results. The final conceptual site model is explained in the following section.

Exposure Pathways

Direct Contact and Ingestion - The potential for direct contact and ingestion of contaminants in soil was considered with reference to the soil results. Concentrations of metals and petroleum hydrocarbons are below acceptable health screening levels for direct contact and ingestion pathways for recreational use and Commercial D land use scenario under the NEPASCM.

Direct contact and ingestion of contaminated groundwater was considered in the assessment of potential exposure. Groundwater was not intersected in the borehole up to 8 metres below the existing ground surface. As groundwater will not be extracted and is at a depth not likely to be encountered by site users the direct contact and ingestion risks are eliminated.

Inhalation – The potential for groundwater to be contaminated with landfill leachate was considered when assessing the potential inhalation exposure of future building occupiers to volatile compounds from groundwater. Groundwater is expected to be at a depth greater than 8 metres and is overlain by 5 metres of loose gravel, sandy fill materials and moderate to high density CLAY (orange mottled and grey CLAY) from 5.3 to 8.0 metres. The high plasticity grey CLAY is not likely to be easily penetrable and is likely to hold gases at depth under the ground. Laboratory analysis of the grey clay indicated a 51% CLAY content and soil particle density of 2.53 g/m3. Gases are likely to move easily through the 5 metres of fill material, however the natural clay from 5.0-5.3 mbgs is likely to act as a barrier to volatile gases as there is a good 2.7-3.0 metres of moderate to high density clay. The inhalation route has been directly assessed by the monitoring of gases in the sub-surface in vapour bores installed at depths of 2.0 to 8.0 metres. Whilst volatile compounds were not detected in the canister samples the presence of methane in elevated concentrations indicates a potential risk of vapour intrusion into future buildings. This risk must be further assessed, and mitigation measures implemented in the building design.

Figure 19: Final Conceptual Site Model

Contamination Source	COPC	Pathway	Receptor
OFFSITE Former landfill at 5 Rose Lane closed in the early 1960s	Aromatic and aliphatic hydrocarbons Heavy metals Methane and Landfill gases – carbon monoxide, hydrogen sulphide.	**Dermal contact of soil –** Low detections of petroleum compounds **<u>do not</u>** pose an unacceptable risk of direct contact with soil and ingestion of contaminants in soil.	Commercial Land Users Construction workers
		Inhalation of soil vapour – Low detections of petroleum compounds **<u>do not</u>** pose an unacceptable risk of inhalation.	Commercial Land Users Construction workers
ONSITE Past Land Use activity – BRICKWORKS and land filling with inert waste materials up to the 1960s.	Low levels of petroleum hydrocarbons Metals Foreign materials – i.e. glass, brick.	**Dermal contact of soil –** Low detections of petroleum compounds **<u>do not</u>** pose an unacceptable risk of direct contact with soil and ingestion of contaminants in soil.	Commercial Land Users Construction workers
		Inhalation of soil vapour – Low detections of petroleum compounds **<u>do not</u>** pose an unacceptable risk of inhalation.	

15 Council Planning Scheme Compliance

The following Clauses of the City of *Launceston Interim Planning Scheme 2015* - *Potentially Contaminated Land Code* have been considered in the assessment:

- Clause E2.5.1 (P1) – Use Standard
- Clause E2.6.2 (P1) – Excavation

15.1 Clause E2.5.1 (P1)

The Clause states:

> "Land is suitable for the intended use, having regard to:
>
> (a) an environmental site assessment that demonstrates there is no evidence the land is contaminated; or
>
> (b) an environmental site assessment that demonstrates that the level of contamination does not present a risk to human health or the environment; or
>
> (c) a plan to manage contamination and associated risk to human health or the environment that includes:
>
> (i) an environmental site assessment;
>
> (ii) any specific remediation and protection measures required to be implemented before any use commences; and
>
> (iii) a statement that the land is suitable for the intended use."

15.1.1 Assessment against Clause E2.5.1 (P1)

ES&D have completed an assessment of the land which has included soil analysis, attended gas measurements and gas clam measurements and canister samples. Whilst volatile gas results did not indicate an exceedance of hydrocarbons and other gases specified in the *National Environmental Protection (Assessment of Site Contamination) Measure 1999* as amended 2013 (NEPASCM), there were elevated concentrations of methane and carbon dioxide detected in below ground vapour bores.

Due to the close proximity of the site to the former landfill and convict cemetery further assessment of these concentrations should be considered by a vapour consultant to understand if these concentrations pose a risk of vapour intrusion into future buildings and if so, what mitigation measures are to be incorporated into the design of the apartment building. Our conclusion is that the land is suitable for future commercial development with review of gas results by vapour consultant and building design mitigation recommendations by vapour consultant.

Therefore, the following management measure is proposed:

1. Engage a suitably qualified vapour mitigation design consultant to review the vapour results and provide recommendations for future commercial development including mitigation measures for prevent the ingress of vapours into the proposed buildings.

15.2 Clause E2.6.2 (P1)

The Clause states:

"Excavation does not adversely impact on health and the environment, having regard to:

(a) an environmental site assessment that demonstrates there is no evidence the land is contaminated; or

(b) an environmental site assessment that demonstrates that the level of contamination does not present a risk to human health or the environment; or

(c) a plan to manage contamination and associated risk to human health and the environment that includes:

(i) an environmental site assessment;

(ii) any specific remediation and protection measures required to be implemented before excavation commences; and

(iii) a statement that the excavation does not adversely impact on human health or the environment."

15.2.1 Assessment against Clause E2.6.2 (P1)

Excavation does not pose an unacceptable risk to the public or the environment provide that the following management measures are implemented:

1. Construction workers, including trench workers likely to come into contact with the soil wear appropriate personal protective equipment (PPE) to prevent contact with the soil and

2. All excavated soil intended to be disposed offsite shall be stockpiled onsite and tested and approval sought from EPA Tasmania for disposal if the soil does not meet Level 1 classification in accordance with the *Environmental Management and Pollution Control (Waste Management) Regulations 2020* and *Tasmanian EPA Bulletin 105 Classification and Management of Contaminated Soil for Disposal (IB105).*

16 Conclusions and Recommendations

The onsite measurements, data logging with gas clam and canister sample results indicate the presence of elevated methane and carbon dioxide concentrations under the ground at the location of the proposed commercial buildings. In the absence of other markers, it is not clear if the elevated underground methane and carbon dioxide concentrations are from local landfilling onsite or offsite sources (i.e. former landfill at 5 Rose Lane). However, our preliminary assessment indicates that the source of the elevated concentrations is likely to be the former adjacent landfill at 5 Rose Lane. The potential risk of vapour intrusion should be further assessed by a vapour consultant and recommendations sought from the consultant for mitigation measures for building design to eliminate vapour intrusion into the proposed future commercial buildings.

Soil sample results indicate that the soil on the site does not pose a direct contact, inhalation, or ingestion risk to future land users. Elevated concentrations of metals are likely to classify the soil as mostly Level 2 and a smaller portion classified as Level 3 for disposal. Classification of the soil prior to disposal is required in accordance with *Environmental Management and Pollution Control (Waste Management) Regulations 2020* and *Tasmanian EPA Bulletin 105 Classification and Management of Contaminated Soil for Disposal (IB105).*

Our results indicate that the site is suitable for the proposed commercial development with management measures to be implemented in the design of the building such as a vapour barrier or similar. Vapour mitigation design is a specialised area which should be completed by a competent vapour design consultant. ES&D have briefed a suitably qualified vapour mitigation design consultant on our findings and will provide a copy of this report to the consultant. The landowner has commenced conversations with the design consultant to explore mitigation options and building design requirements to mitigate vapour intrusion into the proposed commercial buildings.

This assessment has been completed in accordance with the *National Environmental Protection (Assessment of Site Contamination) Measure 1999* as amended 2013 (NEPASCM).

Yours sincerely,

Rod Cooper BSc., CEnvP Site Contamination
Principal Consultant ES&D

References

Launceston Interim Planning Scheme 2015

Land Information System Tasmania (The ListMap), www.thelist.tas.gov.au

Department of Primary Industries, Parks, Water and Environment (DPIPWE) Groundwater Information Access Portal: http://wrt.tas.gov.au/groundwater-info/,

McCLENAGHAN, M.P. and VICARY, M.J. 2010. Digital Geological Atlas 1:25 000 Scale Series.

Australian Heritage Database, http://www.environment.gov.au/cgi-bin/ahdb/search.pl, accessed 16/7/20

Trove, https://trove.nla.gov.au/

Appendices

Environmental Site Assessment - 9 Rose Lane

Appendix A: Laboratory Results Certificates

Appendix B: Field Sheets

Appendix C: Current Development Plans (ARTAS)

Appendix A: Laboratory Results Certificates

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EM2116487**	Page	: 1 of 24
Client	: **ENVIRONMENTAL SERVICE AND DESIGN PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: CARMEL PARKER	Contact	: Shirley LeCornu
Address	: Level 1 49-51 Elizabeth Street Launceston 7250	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +6138549 9630
Project	: 7928	Date Samples Received	: 19-Aug-2021 11:10
Order number	: 7928	Date Analysis Commenced	: 23-Aug-2021
C-O-C number	: ----	Issue Date	: 27-Aug-2021 13:12
Sampler	: CP		
Site	: ----		
Quote number	: EN/222		
No. of samples received	: 30		
No. of samples analysed	: 24		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

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
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Organics, Springvale, VIC
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC

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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 Contact 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.

- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) per the NEPM (2013) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP074: Where reported, Total Trihalomethanes is the sum of the reported concentrations of all Trihalomethanes at or above the LOR.
- EP074: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP074: Where reported, Sum of chlorinated hydrocarbons includes carbon tetrachloride, chlorobenzene, chloroform, 1,2-dichlorobenzene, 1,4-dichlorobenzene, 1,2-dichloroethane, 1,1-dichloroethene, cis-1,2-dichlorothene, trans-1,2-dichlorothene, 1,1,1,2-tetrachloroethane, 1,1,2,2-tetrachloroethane, 1,2,4-trichlorobenzene, 1,1,1-trichloroethane, 1,1,2-trichloroethane, trichloroethene, vinyl chloride, hexachlorobutadiene and methylene chloride.
- EP074: Where reported, Total Trimethylbenzenes is the sum of the reported concentrations of 1.2.3-Trimethylbenzene, 1.2.4-Trimethylbenzene and 1.3.5-Trimethylbenzene at or above the LOR.
- EP075(SIM): Where reported, Total Cresol is the sum of the reported concentrations of 2-Methylphenol and 3- & 4-Methylphenol at or above the LOR.
- EG005T:EM2116487 #30 has been diluted prior to cadmium analysis due to sample matrix. LOR value has been raised accordingly.
- EP075: Where reported, 'Sum of PAH' is the sum of the USEPA 16 priority PAHs
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.

Analytical Results

Sub-Matrix: SOIL
(Matrix: SOIL)

Compound	CAS Number	LOR	Unit	SB3 - 0.5	SB3 - 0.3	MW1-1.5	MW1-1.5B	MW1-2.7
			Sampling date / time	17-Aug-2021 13:13	17-Aug-2021 13:11	17-Aug-2021 11:38	17-Aug-2021 11:38	17-Aug-2021 11:49
				EM2116487-001	EM2116487-002	EM2116487-003	EM2116487-004	EM2116487-006
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	17.3	23.3	17.0	13.3	18.9
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	<5	<5	8	<5
Barium	7440-39-3	10	mg/kg	90	100	40	120	190
Beryllium	7440-41-7	1	mg/kg	<1	<1	<1	<1	<1
Boron	7440-42-8	50	mg/kg	<50	<50	<50	<50	<50
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	34	25	28	28	15
Cobalt	7440-48-4	2	mg/kg	53	20	12	13	9
Copper	7440-50-8	5	mg/kg	61	37	34	76	26
Lead	7439-92-1	5	mg/kg	20	17	23	587	299
Manganese	7439-96-5	5	mg/kg	604	166	159	309	552
Nickel	7440-02-0	2	mg/kg	50	23	14	17	15
Selenium	7782-49-2	5	mg/kg	<5	<5	<5	<5	<5
Vanadium	7440-62-2	5	mg/kg	178	95	141	143	48
Zinc	7440-66-6	5	mg/kg	97	58	34	164	603
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	----	----	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	----	----	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	----	----	----
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	----	----	----
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	----	----	----

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Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	SB3 - 0.5	SB3 - 0.3	MW1-1.5	MW1-1.5B	MW1-2.7
			Sampling date / time	17-Aug-2021 13:13	17-Aug-2021 13:11	17-Aug-2021 11:38	17-Aug-2021 11:38	17-Aug-2021 11:49
Compound	CAS Number	LOR	Unit	EM2116487-001	EM2116487-002	EM2116487-003	EM2116487-004	EM2116487-006
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	**0.6**	**0.6**	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	**1.2**	**1.2**	----	----	----
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
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	**90.9**	**92.7**	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	**88.2**	**90.4**	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	**69.4**	**75.1**	----	----	----

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Project	: 7928

Analytical Results

Sub-Matrix: SOIL
(Matrix: SOIL)

Compound	CAS Number	LOR	Unit	SB3 - 0.5	SB3 - 0.3	MW1-1.5	MW1-1.5B	MW1-2.7
			Sampling date / time	17-Aug-2021 13:13	17-Aug-2021 13:11	17-Aug-2021 11:38	17-Aug-2021 11:38	17-Aug-2021 11:49
				EM2116487-001	EM2116487-002	EM2116487-003	EM2116487-004	EM2116487-006
				Result	Result	Result	Result	Result
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	102	105	----	----	----
Anthracene-d10	1719-06-8	0.5	%	104	106	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	101	105	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	90.6	92.2	86.5	79.8	83.0
Toluene-D8	2037-26-5	0.2	%	94.2	94.8	93.0	84.1	86.4
4-Bromofluorobenzene	460-00-4	0.2	%	106	103	105	93.2	97.5

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Project : 7928

Analytical Results

Sub-Matrix: SOIL
(Matrix: SOIL)

Compound	CAS Number	LOR	Unit	MW1-2.8	MW1-4.5	SB1-0.5	SB1-0.8	SB2-0.25
Sampling date / time				17-Aug-2021 11:49	17-Aug-2021 11:56	17-Aug-2021 13:32	17-Aug-2021 01:33	17-Aug-2021 13:26
				EM2116487-007	EM2116487-009	EM2116487-012	EM2116487-013	EM2116487-014
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	12.6	19.2	23.0	22.9	19.2
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	<5	<5	<5	<5
Barium	7440-39-3	10	mg/kg	70	130	140	130	100
Beryllium	7440-41-7	1	mg/kg	<1	<1	<1	<1	<1
Boron	7440-42-8	50	mg/kg	<50	<50	<50	<50	<50
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	10	22	35	24	24
Cobalt	7440-48-4	2	mg/kg	5	9	11	11	26
Copper	7440-50-8	5	mg/kg	16	20	115	69	60
Lead	7439-92-1	5	mg/kg	16	36	137	77	29
Manganese	7439-96-5	5	mg/kg	566	315	211	214	402
Nickel	7440-02-0	2	mg/kg	10	15	16	16	16
Selenium	7782-49-2	5	mg/kg	<5	<5	<5	<5	<5
Vanadium	7440-62-2	5	mg/kg	36	61	126	92	172
Zinc	7440-66-6	5	mg/kg	100	242	434	137	52
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.1	<0.1	<0.1
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	<0.5	----	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	<0.5	----	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	----	----	<0.5	----	<0.5
Fluorene	86-73-7	0.5	mg/kg	----	----	<0.5	----	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	----	----	<0.5	----	<0.5
Anthracene	120-12-7	0.5	mg/kg	----	----	<0.5	----	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	----	----	0.8	----	<0.5
Pyrene	129-00-0	0.5	mg/kg	----	----	1.0	----	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	0.8	----	<0.5
Chrysene	218-01-9	0.5	mg/kg	----	----	0.6	----	<0.5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	0.8	----	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	<0.5	----	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	0.8	----	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	<0.5	----	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	<0.5	----	<0.5

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Project	: 7928

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	MW1-2.8	MW1-4.5	SB1-0.5	SB1-0.8	SB2-0.25
			Sampling date / time	17-Aug-2021 11:49	17-Aug-2021 11:56	17-Aug-2021 13:32	17-Aug-2021 01:33	17-Aug-2021 13:26
Compound	CAS Number	LOR	Unit	EM2116487-007	EM2116487-009	EM2116487-012	EM2116487-013	EM2116487-014
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	<0.5	----	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	**4.8**	----	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	**1.0**	----	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	**1.3**	----	**0.6**
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	**1.6**	----	**1.2**
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	**110**	<100	**110**	<100	<100
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	**110**	<50	**110**	<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
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	**94.8**	----	**87.2**
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	**93.2**	----	**86.4**
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	**82.2**	----	**76.6**

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Project	: 7928

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	MW1-2.8	MW1-4.5	SB1-0.5	SB1-0.8	SB2-0.25
			Sampling date / time	17-Aug-2021 11:49	17-Aug-2021 11:56	17-Aug-2021 13:32	17-Aug-2021 01:33	17-Aug-2021 13:26
Compound	CAS Number	LOR	Unit	EM2116487-007	EM2116487-009	EM2116487-012	EM2116487-013	EM2116487-014
				Result	Result	Result	Result	Result
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	109	----	102
Anthracene-d10	1719-06-8	0.5	%	----	----	107	----	103
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	105	----	102
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	83.3	86.5	79.2	84.8	84.8
Toluene-D8	2037-26-5	0.2	%	85.7	89.2	84.6	89.4	91.1
4-Bromofluorobenzene	460-00-4	0.2	%	95.2	95.6	92.5	96.6	97.4

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Analytical Results

Sub-Matrix: SOIL
(Matrix: SOIL)

Compound	CAS Number	LOR	Unit	SB2-0.5	VB2-0.5	VB2-1.5	VB2-2.0	VB3-0.3
Sampling date / time				17-Aug-2021 01:26	17-Aug-2021 09:15	17-Aug-2021 09:19	17-Aug-2021 09:35	17-Aug-2021 10:43
				EM2116487-015	EM2116487-016	EM2116487-017	EM2116487-018	EM2116487-019
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	26.4	16.4	19.3	23.6	28.7
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	<5	5	<5	----
Barium	7440-39-3	10	mg/kg	140	170	120	30	----
Beryllium	7440-41-7	1	mg/kg	<1	2	<1	<1	----
Boron	7440-42-8	50	mg/kg	<50	<50	<50	<50	----
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	----
Chromium	7440-47-3	2	mg/kg	29	68	27	43	----
Cobalt	7440-48-4	2	mg/kg	25	48	11	2	----
Copper	7440-50-8	5	mg/kg	69	46	67	34	----
Lead	7439-92-1	5	mg/kg	21	<5	169	18	----
Manganese	7439-96-5	5	mg/kg	197	878	231	64	----
Nickel	7440-02-0	2	mg/kg	19	134	17	6	----
Selenium	7782-49-2	5	mg/kg	<5	<5	<5	<5	----
Vanadium	7440-62-2	5	mg/kg	242	55	110	198	----
Zinc	7440-66-6	5	mg/kg	24	56	262	41	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.2	<0.1	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	----	----	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	----	----	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	----	----	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	----	----	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	----	----	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	----	----	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	----	----	<0.5
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	----	----	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	----	----	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	----	----	<0.5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	----	----	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	----	----	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	----	----	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	----	----	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	----	----	<0.5

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Work Order	: EM2116487
Client	: ENVIRONMENTAL SERVICE AND DESIGN PTY LTD
Project	: 7928

Analytical Results

Sub-Matrix: SOIL
(Matrix: SOIL)

Compound	CAS Number	LOR	Unit	SB2-0.5	VB2-0.5	VB2-1.5	VB2-2.0	VB3-0.3
			Sampling date / time	17-Aug-2021 01:26	17-Aug-2021 09:15	17-Aug-2021 09:19	17-Aug-2021 09:35	17-Aug-2021 10:43
				EM2116487-015	EM2116487-016	EM2116487-017	EM2116487-018	EM2116487-019
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	----	----	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	----	----	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	----	----	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	**0.6**	**0.6**	----	----	**0.6**
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	**1.2**	**1.2**	----	----	**1.2**
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
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	**86.2**	**90.1**	----	----	**93.2**
2-Chlorophenol-D4	93951-73-6	0.5	%	**84.3**	**88.8**	----	----	**94.2**
2.4.6-Tribromophenol	118-79-6	0.5	%	**67.9**	**70.1**	----	----	**80.7**

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Work Order	: EM2116487
Client	: ENVIRONMENTAL SERVICE AND DESIGN PTY LTD
Project	: 7928

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	SB2-0.5	VB2-0.5	VB2-1.5	VB2-2.0	VB3-0.3
			Sampling date / time	17-Aug-2021 01:26	17-Aug-2021 09:15	17-Aug-2021 09:19	17-Aug-2021 09:35	17-Aug-2021 10:43
Compound	CAS Number	LOR	Unit	EM2116487-015	EM2116487-016	EM2116487-017	EM2116487-018	EM2116487-019
				Result	Result	Result	Result	Result
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	99.6	101	----	----	108
Anthracene-d10	1719-06-8	0.5	%	103	106	----	----	110
4-Terphenyl-d14	1718-51-0	0.5	%	99.8	101	----	----	106
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	86.9	81.6	79.8	71.8	80.8
Toluene-D8	2037-26-5	0.2	%	88.8	81.6	78.8	74.7	76.2
4-Bromofluorobenzene	460-00-4	0.2	%	99.1	83.9	77.6	75.2	77.7

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Work Order	:	EM2116487
Client	:	ENVIRONMENTAL SERVICE AND DESIGN PTY LTD
Project	:	7928

Analytical Results

Sub-Matrix: SOIL
(Matrix: SOIL)

Compound	CAS Number	LOR	Unit	VB3-1.3	VB4-1.0	VB4-1.6	VB4-1.5	Composite 1
			Sampling date / time	17-Aug-2021 10:45	17-Aug-2021 11:55	17-Aug-2021 12:05	17-Aug-2021 11:58	17-Aug-2021 00:00
				EM2116487-020	EM2116487-021	EM2116487-022	EM2116487-023	EM2116487-024
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	19.8	18.2	17.4	15.0	----
EA150: Soil Classification based on Particle Size								
Clay (<2 µm)	----	1	%	----	----	----	----	51
EA152: Soil Particle Density								
Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3	----	----	----	----	2.53
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	----	<5	13	----
Barium	7440-39-3	10	mg/kg	70	----	110	370	----
Beryllium	7440-41-7	1	mg/kg	<1	----	<1	<1	----
Boron	7440-42-8	50	mg/kg	<50	----	<50	<50	----
Cadmium	7440-43-9	1	mg/kg	<1	----	<1	2	----
Chromium	7440-47-3	2	mg/kg	32	----	18	48	----
Cobalt	7440-48-4	2	mg/kg	10	----	18	18	----
Copper	7440-50-8	5	mg/kg	51	----	27	186	----
Lead	7439-92-1	5	mg/kg	69	----	36	474	----
Manganese	7439-96-5	5	mg/kg	187	----	243	354	----
Nickel	7440-02-0	2	mg/kg	26	----	19	34	----
Selenium	7782-49-2	5	mg/kg	<5	----	<5	<5	----
Vanadium	7440-62-2	5	mg/kg	103	----	60	97	----
Zinc	7440-66-6	5	mg/kg	66	----	187	1380	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	0.2	----	<0.1	0.2	----
EP074A: Monocyclic Aromatic Hydrocarbons								
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	----	----	----	----
Styrene	100-42-5	0.5	mg/kg	<0.5	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	----	----	----	----
Isopropylbenzene	98-82-8	0.5	mg/kg	<0.5	----	----	----	----
n-Propylbenzene	103-65-1	0.5	mg/kg	<0.5	----	----	----	----
1.3.5-Trimethylbenzene	108-67-8	0.5	mg/kg	<0.5	----	----	----	----
sec-Butylbenzene	135-98-8	0.5	mg/kg	<0.5	----	----	----	----
1.2.4-Trimethylbenzene	95-63-6	0.5	mg/kg	<0.5	----	----	----	----

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Work Order	: EM2116487
Client	: ENVIRONMENTAL SERVICE AND DESIGN PTY LTD
Project	: 7928

Analytical Results

Sub-Matrix: SOIL
(Matrix: SOIL)

Compound	CAS Number	LOR	Unit	VB3-1.3	VB4-1.0	VB4-1.6	VB4-1.5	Composite 1
			Sampling date / time	17-Aug-2021 10:45	17-Aug-2021 11:55	17-Aug-2021 12:05	17-Aug-2021 11:58	17-Aug-2021 00:00
				EM2116487-020	EM2116487-021	EM2116487-022	EM2116487-023	EM2116487-024
				Result	Result	Result	Result	Result
EP074A: Monocyclic Aromatic Hydrocarbons - Continued								
tert-Butylbenzene	98-06-6	0.5	mg/kg	<0.5	----	----	----	----
p-Isopropyltoluene	99-87-6	0.5	mg/kg	<0.5	----	----	----	----
n-Butylbenzene	104-51-8	0.5	mg/kg	<0.5	----	----	----	----
EP074B: Oxygenated Compounds								
Vinyl Acetate	108-05-4	5	mg/kg	<5	----	----	----	----
2-Butanone (MEK)	78-93-3	5	mg/kg	<5	----	----	----	----
4-Methyl-2-pentanone (MIBK)	108-10-1	5	mg/kg	<5	----	----	----	----
2-Hexanone (MBK)	591-78-6	5	mg/kg	<5	----	----	----	----
EP074C: Sulfonated Compounds								
Carbon disulfide	75-15-0	0.5	mg/kg	<0.5	----	----	----	----
EP074D: Fumigants								
2.2-Dichloropropane	594-20-7	0.5	mg/kg	<0.5	----	----	----	----
1.2-Dichloropropane	78-87-5	0.5	mg/kg	<0.5	----	----	----	----
cis-1.3-Dichloropropylene	10061-01-5	0.5	mg/kg	<0.5	----	----	----	----
trans-1.3-Dichloropropylene	10061-02-6	0.5	mg/kg	<0.5	----	----	----	----
1.2-Dibromoethane (EDB)	106-93-4	0.5	mg/kg	<0.5	----	----	----	----
EP074E: Halogenated Aliphatic Compounds								
Dichlorodifluoromethane	75-71-8	5	mg/kg	<5	----	----	----	----
Chloromethane	74-87-3	5	mg/kg	<5	----	----	----	----
Vinyl chloride	75-01-4	5	mg/kg	<5	----	----	----	----
Bromomethane	74-83-9	5	mg/kg	<5	----	----	----	----
Chloroethane	75-00-3	5	mg/kg	<5	----	----	----	----
Trichlorofluoromethane	75-69-4	5	mg/kg	<5	----	----	----	----
1.1-Dichloroethene	75-35-4	0.5	mg/kg	<0.5	----	----	----	----
Iodomethane	74-88-4	0.5	mg/kg	<0.5	----	----	----	----
trans-1.2-Dichloroethene	156-60-5	0.5	mg/kg	<0.5	----	----	----	----
1.1-Dichloroethane	75-34-3	0.5	mg/kg	<0.5	----	----	----	----
cis-1.2-Dichloroethene	156-59-2	0.5	mg/kg	<0.5	----	----	----	----
1.1.1-Trichloroethane	71-55-6	0.5	mg/kg	<0.5	----	----	----	----
1.1-Dichloropropylene	563-58-6	0.5	mg/kg	<0.5	----	----	----	----
Carbon Tetrachloride	56-23-5	0.5	mg/kg	<0.5	----	----	----	----
1.2-Dichloroethane	107-06-2	0.5	mg/kg	<0.5	----	----	----	----
Trichloroethene	79-01-6	0.5	mg/kg	<0.5	----	----	----	----
Dibromomethane	74-95-3	0.5	mg/kg	<0.5	----	----	----	----

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Work Order : EM2116487
Client : ENVIRONMENTAL SERVICE AND DESIGN PTY LTD
Project : 7928

Analytical Results

Sub-Matrix: SOIL
(Matrix: SOIL)

Compound	CAS Number	LOR	Unit	VB3-1.3	VB4-1.0	VB4-1.6	VB4-1.5	Composite 1
			Sampling date / time	17-Aug-2021 10:45	17-Aug-2021 11:55	17-Aug-2021 12:05	17-Aug-2021 11:58	17-Aug-2021 00:00
				EM2116487-020	EM2116487-021	EM2116487-022	EM2116487-023	EM2116487-024
				Result	Result	Result	Result	Result
EP074E: Halogenated Aliphatic Compounds - Continued								
1.1.2-Trichloroethane	79-00-5	0.5	mg/kg	<0.5	----	----	----	----
1.3-Dichloropropane	142-28-9	0.5	mg/kg	<0.5	----	----	----	----
Tetrachloroethene	127-18-4	0.5	mg/kg	<0.5	----	----	----	----
1.1.1.2-Tetrachloroethane	630-20-6	0.5	mg/kg	<0.5	----	----	----	----
trans-1.4-Dichloro-2-butene	110-57-6	0.5	mg/kg	<0.5	----	----	----	----
cis-1.4-Dichloro-2-butene	1476-11-5	0.5	mg/kg	<0.5	----	----	----	----
1.1.2.2-Tetrachloroethane	79-34-5	0.5	mg/kg	<0.5	----	----	----	----
1.2.3-Trichloropropane	96-18-4	0.5	mg/kg	<0.5	----	----	----	----
Pentachloroethane	76-01-7	0.5	mg/kg	<0.5	----	----	----	----
1.2-Dibromo-3-chloropropane	96-12-8	0.5	mg/kg	<0.5	----	----	----	----
EP074F: Halogenated Aromatic Compounds								
Chlorobenzene	108-90-7	0.5	mg/kg	<0.5	----	----	----	----
Bromobenzene	108-86-1	0.5	mg/kg	<0.5	----	----	----	----
2-Chlorotoluene	95-49-8	0.5	mg/kg	<0.5	----	----	----	----
4-Chlorotoluene	106-43-4	0.5	mg/kg	<0.5	----	----	----	----
1.2.3-Trichlorobenzene	87-61-6	0.5	mg/kg	<0.5	----	----	----	----
EP074G: Trihalomethanes								
Chloroform	67-66-3	0.5	mg/kg	<0.5	----	----	----	----
Bromodichloromethane	75-27-4	0.5	mg/kg	<0.5	----	----	----	----
Dibromochloromethane	124-48-1	0.5	mg/kg	<0.5	----	----	----	----
Bromoform	75-25-2	0.5	mg/kg	<0.5	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	<0.5	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	<0.5	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	<0.5	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	<0.5	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	<0.5	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	<0.5	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	<0.5	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	<0.5	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	<0.5	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	<0.5	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	<0.5	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	<0.5	----	----	----

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Work Order : EM2116487
Client : ENVIRONMENTAL SERVICE AND DESIGN PTY LTD
Project : 7928

Analytical Results

Sub-Matrix: SOIL
(Matrix: SOIL)

Compound	CAS Number	LOR	Unit	VB3-1.3	VB4-1.0	VB4-1.6	VB4-1.5	Composite 1
			Sampling date / time	17-Aug-2021 10:45	17-Aug-2021 11:55	17-Aug-2021 12:05	17-Aug-2021 11:58	17-Aug-2021 00:00
				EM2116487-020	EM2116487-021	EM2116487-022	EM2116487-023	EM2116487-024
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	<0.5	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	<0.5	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	<0.5	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	<0.5	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	**0.6**	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	**1.2**	----	----	----
EP075A: Phenolic Compounds								
Phenol	108-95-2	0.5	mg/kg	<0.5	----	----	----	----
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	----	----	----	----
2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	----	----	----	----
3- & 4-Methylphenol	1319-77-3	0.5	mg/kg	<0.5	----	----	----	----
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	----	----	----	----
2.4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	----	----	----	----
2.4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	----	----	----	----
2.6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	----	----	----	----
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	----	----	----	----
2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	----	----	----	----
2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	----	----	----	----
Pentachlorophenol	87-86-5	1	mg/kg	<1	----	----	----	----
EP075B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	----	----	----	----
2-Methylnaphthalene	91-57-6	0.5	mg/kg	<0.5	----	----	----	----
2-Chloronaphthalene	91-58-7	0.5	mg/kg	<0.5	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	<0.5	----	----	----	----
N-2-Fluorenyl Acetamide	53-96-3	0.5	mg/kg	<0.5	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	----	----	----	----

Analytical Results

Sub-Matrix: SOIL
(Matrix: SOIL)

Compound	CAS Number	LOR	Unit	VB3-1.3	VB4-1.0	VB4-1.6	VB4-1.5	Composite 1
			Sampling date / time	17-Aug-2021 10:45	17-Aug-2021 11:55	17-Aug-2021 12:05	17-Aug-2021 11:58	17-Aug-2021 00:00
				EM2116487-020	EM2116487-021	EM2116487-022	EM2116487-023	EM2116487-024
				Result	Result	Result	Result	Result
EP075B: Polynuclear Aromatic Hydrocarbons - Continued								
Chrysene	218-01-9	0.5	mg/kg	<0.5	----	----	----	----
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	1	mg/kg	<1	----	----	----	----
7.12-Dimethylbenz(a)anthracene	57-97-6	0.5	mg/kg	<0.5	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	----	----	----	----
3-Methylcholanthrene	56-49-5	0.5	mg/kg	<0.5	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	----	----	----	----
^ Sum of PAHs	----	0.5	mg/kg	<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	**0.6**	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	**1.2**	----	----	----	----
EP075C: Phthalate Esters								
Dimethyl phthalate	131-11-3	0.5	mg/kg	<0.5	----	----	----	----
Diethyl phthalate	84-66-2	0.5	mg/kg	<0.5	----	----	----	----
Di-n-butyl phthalate	84-74-2	0.5	mg/kg	<0.5	----	----	----	----
Butyl benzyl phthalate	85-68-7	0.5	mg/kg	<0.5	----	----	----	----
bis(2-ethylhexyl) phthalate	117-81-7	5.0	mg/kg	<5.0	----	----	----	----
Di-n-octylphthalate	117-84-0	0.5	mg/kg	<0.5	----	----	----	----
EP075D: Nitrosamines								
N-Nitrosomethylethylamine	10595-95-6	0.5	mg/kg	<0.5	----	----	----	----
N-Nitrosodiethylamine	55-18-5	0.5	mg/kg	<0.5	----	----	----	----
N-Nitrosopyrrolidine	930-55-2	1.0	mg/kg	<1.0	----	----	----	----
N-Nitrosomorpholine	59-89-2	0.5	mg/kg	<0.5	----	----	----	----
N-Nitrosodi-n-propylamine	621-64-7	0.5	mg/kg	<0.5	----	----	----	----
N-Nitrosopiperidine	100-75-4	0.5	mg/kg	<0.5	----	----	----	----
N-Nitrosodibutylamine	924-16-3	0.5	mg/kg	<0.5	----	----	----	----
N-Nitrosodiphenyl & Diphenylamine	86-30-6 122-39-4	1.0	mg/kg	<1.0	----	----	----	----
Methapyrilene	91-80-5	0.5	mg/kg	<0.5	----	----	----	----
EP075E: Nitroaromatics and Ketones								
2-Picoline	109-06-8	0.5	mg/kg	<0.5	----	----	----	----
Acetophenone	98-86-2	0.5	mg/kg	<0.5	----	----	----	----
Nitrobenzene	98-95-3	0.5	mg/kg	<0.5	----	----	----	----

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Work Order : EM2116487
Client : ENVIRONMENTAL SERVICE AND DESIGN PTY LTD
Project : 7928

Analytical Results

Sub-Matrix: SOIL
(Matrix: SOIL)

Compound	CAS Number	LOR	Unit	VB3-1.3	VB4-1.0	VB4-1.6	VB4-1.5	Composite 1
			Sampling date / time	17-Aug-2021 10:45	17-Aug-2021 11:55	17-Aug-2021 12:05	17-Aug-2021 11:58	17-Aug-2021 00:00
				EM2116487-020	EM2116487-021	EM2116487-022	EM2116487-023	EM2116487-024
				Result	Result	Result	Result	Result
EP075E: Nitroaromatics and Ketones - Continued								
Isophorone	78-59-1	0.5	mg/kg	<0.5	----	----	----	----
2.6-Dinitrotoluene	606-20-2	1.0	mg/kg	<1.0	----	----	----	----
2.4-Dinitrotoluene	121-14-2	1.0	mg/kg	<1.0	----	----	----	----
1-Naphthylamine	134-32-7	0.5	mg/kg	<0.5	----	----	----	----
4-Nitroquinoline-N-oxide	56-57-5	0.5	mg/kg	<0.5	----	----	----	----
5-Nitro-o-toluidine	99-55-8	0.5	mg/kg	<0.5	----	----	----	----
Azobenzene	103-33-3	1	mg/kg	<1	----	----	----	----
1.3.5-Trinitrobenzene	99-35-4	0.5	mg/kg	<0.5	----	----	----	----
Phenacetin	62-44-2	0.5	mg/kg	<0.5	----	----	----	----
4-Aminobiphenyl	92-67-1	0.5	mg/kg	<0.5	----	----	----	----
Pentachloronitrobenzene	82-68-8	0.5	mg/kg	<0.5	----	----	----	----
Pronamide	23950-58-5	0.5	mg/kg	<0.5	----	----	----	----
Dimethylaminoazobenzene	60-11-7	0.5	mg/kg	<0.5	----	----	----	----
Chlorobenzilate	510-15-6	0.5	mg/kg	<0.5	----	----	----	----
EP075F: Haloethers								
Bis(2-chloroethyl) ether	111-44-4	0.5	mg/kg	<0.5	----	----	----	----
Bis(2-chloroethoxy) methane	111-91-1	0.5	mg/kg	<0.5	----	----	----	----
4-Chlorophenyl phenyl ether	7005-72-3	0.5	mg/kg	<0.5	----	----	----	----
4-Bromophenyl phenyl ether	101-55-3	0.5	mg/kg	<0.5	----	----	----	----
EP075G: Chlorinated Hydrocarbons								
1.3-Dichlorobenzene	541-73-1	0.5	mg/kg	<0.5	----	----	----	----
1.4-Dichlorobenzene	106-46-7	0.5	mg/kg	<0.5	----	----	----	----
1.2-Dichlorobenzene	95-50-1	0.5	mg/kg	<0.5	----	----	----	----
Hexachloroethane	67-72-1	0.5	mg/kg	<0.5	----	----	----	----
1.2.4-Trichlorobenzene	120-82-1	0.5	mg/kg	<0.5	----	----	----	----
Hexachloropropylene	1888-71-7	0.5	mg/kg	<0.5	----	----	----	----
Hexachlorobutadiene	87-68-3	0.5	mg/kg	<0.5	----	----	----	----
Hexachlorocyclopentadiene	77-47-4	2.5	mg/kg	<2.5	----	----	----	----
Pentachlorobenzene	608-93-5	0.5	mg/kg	<0.5	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	1.0	mg/kg	<1.0	----	----	----	----
EP075H: Anilines and Benzidines								
Aniline	62-53-3	0.5	mg/kg	<0.5	----	----	----	----
4-Chloroaniline	106-47-8	0.5	mg/kg	<0.5	----	----	----	----
2-Nitroaniline	88-74-4	1.0	mg/kg	<1.0	----	----	----	----

Analytical Results

Sub-Matrix: SOIL
(Matrix: SOIL)

Compound	CAS Number	LOR	Unit	VB3-1.3	VB4-1.0	VB4-1.6	VB4-1.5	Composite 1
			Sampling date / time	17-Aug-2021 10:45	17-Aug-2021 11:55	17-Aug-2021 12:05	17-Aug-2021 11:58	17-Aug-2021 00:00
				EM2116487-020	EM2116487-021	EM2116487-022	EM2116487-023	EM2116487-024
				Result	Result	Result	Result	Result
EP075H: Anilines and Benzidines - Continued								
3-Nitroaniline	99-09-2	1.0	mg/kg	<1.0	----	----	----	----
Dibenzofuran	132-64-9	0.5	mg/kg	<0.5	----	----	----	----
4-Nitroaniline	100-01-6	0.5	mg/kg	<0.5	----	----	----	----
Carbazole	86-74-8	0.5	mg/kg	<0.5	----	----	----	----
3.3`-Dichlorobenzidine	91-94-1	0.5	mg/kg	<0.5	----	----	----	----
EP075I: Organochlorine Pesticides								
alpha-BHC	319-84-6	0.5	mg/kg	<0.5	----	----	----	----
beta-BHC	319-85-7	0.5	mg/kg	<0.5	----	----	----	----
gamma-BHC	58-89-9	0.5	mg/kg	<0.5	----	----	----	----
delta-BHC	319-86-8	0.5	mg/kg	<0.5	----	----	----	----
Heptachlor	76-44-8	0.5	mg/kg	<0.5	----	----	----	----
Aldrin	309-00-2	0.5	mg/kg	<0.5	----	----	----	----
Heptachlor epoxide	1024-57-3	0.5	mg/kg	<0.5	----	----	----	----
alpha-Endosulfan	959-98-8	0.5	mg/kg	<0.5	----	----	----	----
4.4`-DDE	72-55-9	0.5	mg/kg	<0.5	----	----	----	----
Dieldrin	60-57-1	0.5	mg/kg	<0.5	----	----	----	----
Endrin	72-20-8	0.5	mg/kg	<0.5	----	----	----	----
beta-Endosulfan	33213-65-9	0.5	mg/kg	<0.5	----	----	----	----
4.4`-DDD	72-54-8	0.5	mg/kg	<0.5	----	----	----	----
Endosulfan sulfate	1031-07-8	0.5	mg/kg	<0.5	----	----	----	----
4.4`-DDT	50-29-3	1.0	mg/kg	<1.0	----	----	----	----
EP075J: Organophosphorus Pesticides								
Dichlorvos	62-73-7	0.5	mg/kg	<0.5	----	----	----	----
Dimethoate	60-51-5	0.5	mg/kg	<0.5	----	----	----	----
Diazinon	333-41-5	0.5	mg/kg	<0.5	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.5	mg/kg	<0.5	----	----	----	----
Malathion	121-75-5	0.5	mg/kg	<0.5	----	----	----	----
Fenthion	55-38-9	0.5	mg/kg	<0.5	----	----	----	----
Chlorpyrifos	2921-88-2	0.5	mg/kg	<0.5	----	----	----	----
Pirimphos-ethyl	23505-41-1	0.5	mg/kg	<0.5	----	----	----	----
Chlorfenvinphos	470-90-6	0.5	mg/kg	<0.5	----	----	----	----
Prothiofos	34643-46-4	0.5	mg/kg	<0.5	----	----	----	----
Ethion	563-12-2	0.5	mg/kg	<0.5	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								

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Work Order : EM2116487
Client : ENVIRONMENTAL SERVICE AND DESIGN PTY LTD
Project : 7928

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Compound	CAS Number	LOR	Unit	VB3-1.3	VB4-1.0	VB4-1.6	VB4-1.5	Composite 1
Sampling date / time				17-Aug-2021 10:45	17-Aug-2021 11:55	17-Aug-2021 12:05	17-Aug-2021 11:58	17-Aug-2021 00:00
				EM2116487-020	EM2116487-021	EM2116487-022	EM2116487-023	EM2116487-024
				Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued								
C6 - C9 Fraction	----	10	mg/kg	----	<10	<10	<10	----
C10 - C14 Fraction	----	50	mg/kg	----	<50	<50	<50	----
C15 - C28 Fraction	----	100	mg/kg	----	<100	<100	<100	----
C29 - C36 Fraction	----	100	mg/kg	----	<100	<100	<100	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	<50	<50	<50	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	<10	<10	<10	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	<10	<10	<10	----
>C10 - C16 Fraction	----	50	mg/kg	----	<50	<50	<50	----
>C16 - C34 Fraction	----	100	mg/kg	----	<100	<100	**150**	----
>C34 - C40 Fraction	----	100	mg/kg	----	<100	<100	<100	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	<50	<50	**150**	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	<50	<50	<50	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	<0.2	<0.2	<0.2	----
Toluene	108-88-3	0.5	mg/kg	----	<0.5	<0.5	<0.5	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	<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	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	<0.5	<0.5	<0.5	----
^ Sum of BTEX	----	0.2	mg/kg	----	<0.2	<0.2	<0.2	----
^ Total Xylenes	----	0.5	mg/kg	----	<0.5	<0.5	<0.5	----
Naphthalene	91-20-3	1	mg/kg	----	<1	<1	<1	----
EP074S: VOC Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.5	%	**65.6**	----	----	----	----
Toluene-D8	2037-26-5	0.5	%	**77.3**	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.5	%	**84.8**	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	**88.0**	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	**86.1**	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	**77.2**	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	**98.8**	----	----	----

Analytical Results

Sub-Matrix: SOIL
(Matrix: SOIL)

Compound	CAS Number	LOR	Unit	VB3-1.3	VB4-1.0	VB4-1.6	VB4-1.5	Composite 1
			Sampling date / time	17-Aug-2021 10:45	17-Aug-2021 11:55	17-Aug-2021 12:05	17-Aug-2021 11:58	17-Aug-2021 00:00
				EM2116487-020	EM2116487-021	EM2116487-022	EM2116487-023	EM2116487-024
				Result	Result	Result	Result	Result
EP075(SIM)T: PAH Surrogates - Continued								
Anthracene-d10	1719-06-8	0.5	%	----	101	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	98.9	----	----	----
EP075S: Acid Extractable Surrogates								
2-Fluorophenol	367-12-4	0.5	%	96.0	----	----	----	----
Phenol-d6	13127-88-3	0.5	%	92.8	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	85.3	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	77.3	----	----	----	----
EP075T: Base/Neutral Extractable Surrogates								
Nitrobenzene-D5	4165-60-0	0.5	%	90.7	----	----	----	----
1.2-Dichlorobenzene-D4	2199-69-1	0.5	%	89.9	----	----	----	----
2-Fluorobiphenyl	321-60-8	0.5	%	95.0	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	94.0	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	84.7	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	77.5	75.6	76.8	----
Toluene-D8	2037-26-5	0.2	%	----	80.1	75.6	76.5	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	78.0	72.4	78.7	----

Analytical Results

Sub-Matrix: SOIL
(Matrix: SOIL)

Compound	CAS Number	LOR	Unit	VB1-0.5	VB1-1.0m	VB1-1.5m	VB1-2.0m	----
			Sampling date / time	25-Aug-2021 00:00	25-Aug-2021 00:00	25-Aug-2021 00:00	25-Aug-2021 00:00	----
				EM2116487-027	EM2116487-028	EM2116487-029	EM2116487-030	--------
				Result	Result	Result	Result	----
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	28.7	21.6	11.9	13.5	----
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	<5	<5	<5	----
Barium	7440-39-3	10	mg/kg	210	80	30	30	----
Beryllium	7440-41-7	1	mg/kg	2	<1	<1	<1	----
Boron	7440-42-8	50	mg/kg	<50	<50	<50	<50	----
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<5	----
Chromium	7440-47-3	2	mg/kg	118	26	18	33	----
Cobalt	7440-48-4	2	mg/kg	59	16	4	6	----
Copper	7440-50-8	5	mg/kg	37	45	17	34	----
Lead	7439-92-1	5	mg/kg	<5	51	43	29	----
Manganese	7439-96-5	5	mg/kg	1040	257	45	105	----
Nickel	7440-02-0	2	mg/kg	126	14	4	6	----
Selenium	7782-49-2	5	mg/kg	<5	<5	<5	<5	----
Vanadium	7440-62-2	5	mg/kg	93	132	150	187	----
Zinc	7440-66-6	5	mg/kg	43	96	21	40	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.1	<0.1	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	<0.5	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	<0.5	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	----	----	----	----

Analytical Results

Sub-Matrix: SOIL
(Matrix: SOIL)

Compound	CAS Number	LOR	Unit	VB1-0.5	VB1-1.0m	VB1-1.5m	VB1-2.0m	----
			Sampling date / time	25-Aug-2021 00:00	25-Aug-2021 00:00	25-Aug-2021 00:00	25-Aug-2021 00:00	----
				EM2116487-027	EM2116487-028	EM2116487-029	EM2116487-030	--------
				Result	Result	Result	Result	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	**0.6**	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	**1.2**	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	----
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	----
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	----
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	----
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	<50	<50	----
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	<100	<100	----
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	<100	<100	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	<50	<50	<50	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	----
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Ethylbenzene	100-41-4	0.5	mg/kg	<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	----
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	----
^ Total Xylenes	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	**88.6**	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	**87.7**	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	**78.3**	----	----	----	----

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Work Order : EM2116487
Client : ENVIRONMENTAL SERVICE AND DESIGN PTY LTD
Project : 7928

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	VB1-0.5	VB1-1.0m	VB1-1.5m	VB1-2.0m	----
			Sampling date / time	25-Aug-2021 00:00	25-Aug-2021 00:00	25-Aug-2021 00:00	25-Aug-2021 00:00	----
Compound	CAS Number	LOR	Unit	EM2116487-027	EM2116487-028	EM2116487-029	EM2116487-030	--------
				Result	Result	Result	Result	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	106	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	108	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	104	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	100	97.3	109	90.5	----
Toluene-D8	2037-26-5	0.2	%	87.8	83.0	95.1	78.5	----
4-Bromofluorobenzene	460-00-4	0.2	%	78.3	76.4	85.7	72.6	----

Surrogate Control Limits

Sub-Matrix: **SOIL**

Compound	*CAS Number*	*Recovery Limits (%)* Low	*Recovery Limits (%)* High
EP074S: VOC Surrogates			
1.2-Dichloroethane-D4	17060-07-0	62	122
Toluene-D8	2037-26-5	64	120
4-Bromofluorobenzene	460-00-4	66	124
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	54	125
2-Chlorophenol-D4	93951-73-6	65	123
2.4.6-Tribromophenol	118-79-6	34	122
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	61	125
Anthracene-d10	1719-06-8	62	130
4-Terphenyl-d14	1718-51-0	67	133
EP075S: Acid Extractable Surrogates			
2-Fluorophenol	367-12-4	54	134
Phenol-d6	13127-88-3	62	122
2-Chlorophenol-D4	93951-73-6	52	127
2.4.6-Tribromophenol	118-79-6	38	133
EP075T: Base/Neutral Extractable Surrogates			
Nitrobenzene-D5	4165-60-0	67	128
1.2-Dichlorobenzene-D4	2199-69-1	63	108
2-Fluorobiphenyl	321-60-8	70	127
Anthracene-d10	1719-06-8	58	138
4-Terphenyl-d14	1718-51-0	50	138
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

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) EA152: Soil Particle Density

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **EM2116487**	Page	: 1 of 24
Client	: **ENVIRONMENTAL SERVICE AND DESIGN PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: CARMEL PARKER	Contact	: Shirley LeCornu
Address	: Level 1 49-51 Elizabeth Street Launceston 7250	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +6138549 9630
Project	: 7928	Date Samples Received	: 19-Aug-2021
Order number	: 7928	Date Analysis Commenced	: 23-Aug-2021
C-O-C number	: ----	Issue Date	: 27-Aug-2021
Sampler	: CP		
Site	: ----		
Quote number	: EN/222		
No. of samples received	: 30		
No. of samples analysed	: 24		

ilac-MRA

NATA
Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

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*
Aleksandar Vujkovic	Laboratory Technician	Newcastle - Inorganics, Mayfield West, NSW
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Organics, Springvale, VIC
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC

RIGHT SOLUTIONS | RIGHT PARTNER

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 (%)*
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 3860237)									
EM2115405-001	Anonymous	EG005T: Beryllium	7440-41-7	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Barium	7440-39-3	10	mg/kg	120	120	0.0	0% - 50%
		EG005T: Chromium	7440-47-3	2	mg/kg	34	34	0.0	0% - 50%
		EG005T: Cobalt	7440-48-4	2	mg/kg	8	8	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	17	17	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	18	18	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	7	7	0.0	No Limit
		EG005T: Manganese	7439-96-5	5	mg/kg	263	247	6.2	0% - 20%
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Vanadium	7440-62-2	5	mg/kg	43	42	0.0	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	25	27	7.7	No Limit
		EG005T: Boron	7440-42-8	50	mg/kg	<50	<50	0.0	No Limit
EM2115405-028	Anonymous	EG005T: Beryllium	7440-41-7	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Barium	7440-39-3	10	mg/kg	100	110	0.0	0% - 50%
		EG005T: Chromium	7440-47-3	2	mg/kg	28	29	0.0	0% - 50%
		EG005T: Cobalt	7440-48-4	2	mg/kg	7	7	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	16	16	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	17	17	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	10	10	0.0	No Limit
		EG005T: Manganese	7439-96-5	5	mg/kg	201	199	0.9	0% - 20%

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Work Order	:	EM2116487
Client	:	ENVIRONMENTAL SERVICE AND DESIGN PTY LTD
Project	:	7928

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 (%)*
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 3860237) - continued									
EM2115405-028	Anonymous	EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Vanadium	7440-62-2	5	mg/kg	40	41	0.0	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	68	54	22.4	0% - 50%
		EG005T: Boron	7440-42-8	50	mg/kg	<50	<50	0.0	No Limit
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 3860239)									
EM2116487-015	SB2-0.5	EG005T: Beryllium	7440-41-7	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Barium	7440-39-3	10	mg/kg	140	130	0.0	0% - 50%
		EG005T: Chromium	7440-47-3	2	mg/kg	29	22	28.3	0% - 50%
		EG005T: Cobalt	7440-48-4	2	mg/kg	25	28	9.7	0% - 50%
		EG005T: Nickel	7440-02-0	2	mg/kg	19	17	9.7	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	69	69	0.0	0% - 50%
		EG005T: Lead	7439-92-1	5	mg/kg	21	18	13.4	No Limit
		EG005T: Manganese	7439-96-5	5	mg/kg	197	187	5.3	0% - 20%
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Vanadium	7440-62-2	5	mg/kg	242	211	13.5	0% - 20%
		EG005T: Zinc	7440-66-6	5	mg/kg	24	24	0.0	No Limit
		EG005T: Boron	7440-42-8	50	mg/kg	<50	<50	0.0	No Limit
EM2116568-003	Anonymous	EG005T: Beryllium	7440-41-7	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Barium	7440-39-3	10	mg/kg	70	80	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	18	19	0.0	No Limit
		EG005T: Cobalt	7440-48-4	2	mg/kg	8	8	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	10	11	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	6	6	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	12	12	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	28	32	11.7	No Limit
		EG005T: Manganese	7439-96-5	5	mg/kg	225	234	3.7	0% - 20%
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Vanadium	7440-62-2	5	mg/kg	25	25	0.0	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	46	43	7.3	No Limit
		EG005T: Boron	7440-42-8	50	mg/kg	<50	<50	0.0	No Limit
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 3866187)									
EM2116487-027	VB1-0.5	EG005T: Beryllium	7440-41-7	1	mg/kg	2	2	0.0	No Limit
		EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Barium	7440-39-3	10	mg/kg	210	230	7.9	0% - 20%
		EG005T: Chromium	7440-47-3	2	mg/kg	118	120	1.4	0% - 20%
		EG005T: Cobalt	7440-48-4	2	mg/kg	59	64	7.8	0% - 20%
		EG005T: Nickel	7440-02-0	2	mg/kg	126	131	4.4	0% - 20%

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Work Order	: EM2116487
Client	: ENVIRONMENTAL SERVICE AND DESIGN PTY LTD
Project	: 7928

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 (%)
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 3866187) - continued									
EM2116487-027	VB1-0.5	EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	37	42	12.5	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Manganese	7439-96-5	5	mg/kg	1040	1210	15.0	0% - 20%
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Vanadium	7440-62-2	5	mg/kg	93	109	15.9	0% - 20%
		EG005T: Zinc	7440-66-6	5	mg/kg	43	47	9.5	No Limit
		EG005T: Boron	7440-42-8	50	mg/kg	<50	<50	0.0	No Limit
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 3860065)									
EM2116487-001	SB3 - 0.5	EA055: Moisture Content	----	0.1	%	17.3	18.0	3.8	0% - 50%
EM2116487-015	SB2-0.5	EA055: Moisture Content	----	0.1	%	26.4	23.5	11.6	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 3866192)									
EM2116487-029	VB1-1.5m	EA055: Moisture Content	----	0.1	%	11.9	11.7	1.8	0% - 50%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3860236)									
EM2115405-001	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EM2115405-028	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3860238)									
EM2116487-015	SB2-0.5	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EM2116568-003	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3866188)									
EM2116487-027	VB1-0.5	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 3859788)									
EM2116319-001	Anonymous	EP074: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP074: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Isopropylbenzene	98-82-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: n-Propylbenzene	103-65-1	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1.3.5-Trimethylbenzene	108-67-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: sec-Butylbenzene	135-98-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1.2.4-Trimethylbenzene	95-63-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: tert-Butylbenzene	98-06-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: p-Isopropyltoluene	99-87-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: n-Butylbenzene	104-51-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EM2116568-003	Anonymous	EP074: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP074: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit

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Work Order	: EM2116487
Client	: ENVIRONMENTAL SERVICE AND DESIGN PTY LTD
Project	: 7928

Sub-Matrix: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
				Laboratory Duplicate (DUP) Report					
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 3859788) - continued									
EM2116568-003	Anonymous	EP074: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Isopropylbenzene	98-82-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: n-Propylbenzene	103-65-1	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1.3.5-Trimethylbenzene	108-67-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: sec-Butylbenzene	135-98-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1.2.4-Trimethylbenzene	95-63-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: tert-Butylbenzene	98-06-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: p-Isopropyltoluene	99-87-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: n-Butylbenzene	104-51-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP074B: Oxygenated Compounds (QC Lot: 3859788)									
EM2116319-001	Anonymous	EP074: Vinyl Acetate	108-05-4	5	mg/kg	<5	<5	0.0	No Limit
		EP074: 2-Butanone (MEK)	78-93-3	5	mg/kg	<5	<5	0.0	No Limit
		EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	5	mg/kg	<5	<5	0.0	No Limit
		EP074: 2-Hexanone (MBK)	591-78-6	5	mg/kg	<5	<5	0.0	No Limit
EM2116568-003	Anonymous	EP074: Vinyl Acetate	108-05-4	5	mg/kg	<5	<5	0.0	No Limit
		EP074: 2-Butanone (MEK)	78-93-3	5	mg/kg	<5	<5	0.0	No Limit
		EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	5	mg/kg	<5	<5	0.0	No Limit
		EP074: 2-Hexanone (MBK)	591-78-6	5	mg/kg	<5	<5	0.0	No Limit
EP074C: Sulfonated Compounds (QC Lot: 3859788)									
EM2116319-001	Anonymous	EP074: Carbon disulfide	75-15-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EM2116568-003	Anonymous	EP074: Carbon disulfide	75-15-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP074D: Fumigants (QC Lot: 3859788)									
EM2116319-001	Anonymous	EP074: 2.2-Dichloropropane	594-20-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1.2-Dichloropropane	78-87-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: cis-1.3-Dichloropropylene	10061-01-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: trans-1.3-Dichloropropylene	10061-02-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1.2-Dibromoethane (EDB)	106-93-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EM2116568-003	Anonymous	EP074: 2.2-Dichloropropane	594-20-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1.2-Dichloropropane	78-87-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: cis-1.3-Dichloropropylene	10061-01-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: trans-1.3-Dichloropropylene	10061-02-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1.2-Dibromoethane (EDB)	106-93-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP074E: Halogenated Aliphatic Compounds (QC Lot: 3859788)									
EM2116319-001	Anonymous	EP074: 1.1-Dichloroethene	75-35-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Iodomethane	74-88-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit

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Work Order	: EM2116487
Client	: ENVIRONMENTAL SERVICE AND DESIGN PTY LTD
Project	: 7928

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 (%)*
EP074E: Halogenated Aliphatic Compounds (QC Lot: 3859788) - continued									
EM2116319-001	Anonymous	EP074: trans-1.2-Dichloroethene	156-60-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1.1-Dichloroethane	75-34-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: cis-1.2-Dichloroethene	156-59-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1.1.1-Trichloroethane	71-55-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1.1-Dichloropropylene	563-58-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Carbon Tetrachloride	56-23-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1.2-Dichloroethane	107-06-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Trichloroethene	79-01-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Dibromomethane	74-95-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1.1.2-Trichloroethane	79-00-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1.3-Dichloropropane	142-28-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Tetrachloroethene	127-18-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1.1.1.2-Tetrachloroethane	630-20-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: trans-1.4-Dichloro-2-butene	110-57-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: cis-1.4-Dichloro-2-butene	1476-11-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1.1.2.2-Tetrachloroethane	79-34-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1.2.3-Trichloropropane	96-18-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Pentachloroethane	76-01-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1.2-Dibromo-3-chloropropane	96-12-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Dichlorodifluoromethane	75-71-8	5	mg/kg	<5	<5	0.0	No Limit
		EP074: Chloromethane	74-87-3	5	mg/kg	<5	<5	0.0	No Limit
		EP074: Vinyl chloride	75-01-4	5	mg/kg	<5	<5	0.0	No Limit
		EP074: Bromomethane	74-83-9	5	mg/kg	<5	<5	0.0	No Limit
		EP074: Chloroethane	75-00-3	5	mg/kg	<5	<5	0.0	No Limit
		EP074: Trichlorofluoromethane	75-69-4	5	mg/kg	<5	<5	0.0	No Limit
EM2116568-003	Anonymous	EP074: 1.1-Dichloroethene	75-35-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Iodomethane	74-88-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: trans-1.2-Dichloroethene	156-60-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1.1-Dichloroethane	75-34-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: cis-1.2-Dichloroethene	156-59-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1.1.1-Trichloroethane	71-55-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1.1-Dichloropropylene	563-58-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Carbon Tetrachloride	56-23-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1.2-Dichloroethane	107-06-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Trichloroethene	79-01-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Dibromomethane	74-95-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1.1.2-Trichloroethane	79-00-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1.3-Dichloropropane	142-28-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Tetrachloroethene	127-18-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1.1.1.2-Tetrachloroethane	630-20-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit

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Work Order : EM2116487
Client : ENVIRONMENTAL SERVICE AND DESIGN PTY LTD
Project : 7928

Sub-Matrix: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Laboratory Duplicate (DUP) Report Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP074E: Halogenated Aliphatic Compounds (QC Lot: 3859788) - continued									
EM2116568-003	Anonymous	EP074: trans-1.4-Dichloro-2-butene	110-57-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: cis-1.4-Dichloro-2-butene	1476-11-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1.1.2.2-Tetrachloroethane	79-34-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1.2.3-Trichloropropane	96-18-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Pentachloroethane	76-01-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1.2-Dibromo-3-chloropropane	96-12-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Dichlorodifluoromethane	75-71-8	5	mg/kg	<5	<5	0.0	No Limit
		EP074: Chloromethane	74-87-3	5	mg/kg	<5	<5	0.0	No Limit
		EP074: Vinyl chloride	75-01-4	5	mg/kg	<5	<5	0.0	No Limit
		EP074: Bromomethane	74-83-9	5	mg/kg	<5	<5	0.0	No Limit
		EP074: Chloroethane	75-00-3	5	mg/kg	<5	<5	0.0	No Limit
		EP074: Trichlorofluoromethane	75-69-4	5	mg/kg	<5	<5	0.0	No Limit
EP074F: Halogenated Aromatic Compounds (QC Lot: 3859788)									
EM2116319-001	Anonymous	EP074: Chlorobenzene	108-90-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Bromobenzene	108-86-1	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 2-Chlorotoluene	95-49-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 4-Chlorotoluene	106-43-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1.2.3-Trichlorobenzene	87-61-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EM2116568-003	Anonymous	EP074: Chlorobenzene	108-90-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Bromobenzene	108-86-1	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 2-Chlorotoluene	95-49-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 4-Chlorotoluene	106-43-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1.2.3-Trichlorobenzene	87-61-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP074G: Trihalomethanes (QC Lot: 3859788)									
EM2116319-001	Anonymous	EP074: Chloroform	67-66-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Bromodichloromethane	75-27-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Dibromochloromethane	124-48-1	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Bromoform	75-25-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EM2116568-003	Anonymous	EP074: Chloroform	67-66-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Bromodichloromethane	75-27-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Dibromochloromethane	124-48-1	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Bromoform	75-25-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3860896)									
EM2116487-001	SB3 - 0.5	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
				Laboratory Duplicate (DUP) Report					
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3860896) - continued									
EM2116487-001	SB3 - 0.5	EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3866193)									
EM2116487-027	VB1-0.5	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP075A: Phenolic Compounds (QC Lot: 3860898)									
EM2116487-020	VB3-1.3	EP075: Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075: 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075: 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075: 3- & 4-Methylphenol	1319-77-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075: 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075: 2.4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075: 2.4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075: 2.6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075: 4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075: 2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075: 2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit

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Sub-Matrix: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Laboratory Duplicate (DUP) Report: Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP075A: Phenolic Compounds (QC Lot: 3860898) - continued									
EM2116487-020	VB3-1.3	EP075: Pentachlorophenol	87-86-5	1	mg/kg	<1	<1	0.0	No Limit
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3860898)									
EM2116487-020	VB3-1.3	EP075: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075: 2-Methylnaphthalene	91-57-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075: 2-Chloronaphthalene	91-58-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075: N-2-Fluorenyl Acetamide	53-96-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075: 7.12-Dimethylbenz(a)anthracene	57-97-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075: 3-Methylcholanthrene	56-49-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075: Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075: Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075: Sum of PAHs	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	1	mg/kg	<1	<1	0.0	No Limit
EP075C: Phthalate Esters (QC Lot: 3860898)									
EM2116487-020	VB3-1.3	EP075: Dimethyl phthalate	131-11-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075: Diethyl phthalate	84-66-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075: Di-n-butyl phthalate	84-74-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075: Butyl benzyl phthalate	85-68-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075: bis(2-ethylhexyl) phthalate	117-81-7	0.5	mg/kg	<5.0	<5.0	0.0	No Limit
		EP075: Di-n-octylphthalate	117-84-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP075D: Nitrosamines (QC Lot: 3860898)									
EM2116487-020	VB3-1.3	EP075: N-Nitrosomethylethylamine	10595-95-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075: N-Nitrosodiethylamine	55-18-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075: N-Nitrosopyrrolidine	930-55-2	0.5	mg/kg	<1.0	<1.0	0.0	No Limit
		EP075: N-Nitrosomorpholine	59-89-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075: N-Nitrosodi-n-propylamine	621-64-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075: N-Nitrosopiperidine	100-75-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075: N-Nitrosodibutylamine	924-16-3	0.5	mg/kg	<0.5	<0.5	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 (%)**
EP075D: Nitrosamines (QC Lot: 3860898) - continued									
EM2116487-020	VB3-1.3	EP075: N-Nitrosodiphenyl & Diphenylamine	86-30-6 122-39-4	0.5	mg/kg	<1.0	<1.0	0.0	No Limit
		EP075: Methapyrilene	91-80-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP075E: Nitroaromatics and Ketones (QC Lot: 3860898)									
EM2116487-020	VB3-1.3	EP075: 2-Picoline	109-06-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075: Acetophenone	98-86-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075: Nitrobenzene	98-95-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075: Isophorone	78-59-1	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075: 2.6-Dinitrotoluene	606-20-2	0.5	mg/kg	<1.0	<1.0	0.0	No Limit
		EP075: 2.4-Dinitrotoluene	121-14-2	0.5	mg/kg	<1.0	<1.0	0.0	No Limit
		EP075: 1-Naphthylamine	134-32-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075: 4-Nitroquinoline-N-oxide	56-57-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075: 5-Nitro-o-toluidine	99-55-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075: 1.3.5-Trinitrobenzene	99-35-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075: Phenacetin	62-44-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075: 4-Aminobiphenyl	92-67-1	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075: Pentachloronitrobenzene	82-68-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075: Pronamide	23950-58-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075: Dimethylaminoazobenzene	60-11-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075: Chlorobenzilate	510-15-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075: Azobenzene	103-33-3	1	mg/kg	<1	<1	0.0	No Limit
EP075F: Haloethers (QC Lot: 3860898)									
EM2116487-020	VB3-1.3	EP075: Bis(2-chloroethyl) ether	111-44-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075: Bis(2-chloroethoxy) methane	111-91-1	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075: 4-Chlorophenyl phenyl ether	7005-72-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075: 4-Bromophenyl phenyl ether	101-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP075G: Chlorinated Hydrocarbons (QC Lot: 3860898)									
EM2116487-020	VB3-1.3	EP075: 1.3-Dichlorobenzene	541-73-1	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075: 1.4-Dichlorobenzene	106-46-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075: 1.2-Dichlorobenzene	95-50-1	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075: Hexachloroethane	67-72-1	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075: 1.2.4-Trichlorobenzene	120-82-1	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075: Hexachloropropylene	1888-71-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075: Hexachlorobutadiene	87-68-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075: Pentachlorobenzene	608-93-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075: Hexachlorobenzene (HCB)	118-74-1	0.5	mg/kg	<1.0	<1.0	0.0	No Limit
		EP075: Hexachlorocyclopentadiene	77-47-4	2.5	mg/kg	<2.5	<2.5	0.0	No Limit
EP075H: Anilines and Benzidines (QC Lot: 3860898)									
EM2116487-020	VB3-1.3	EP075: Aniline	62-53-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075: 4-Chloroaniline	106-47-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit

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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 (%)*
EP075H: Anilines and Benzidines (QC Lot: 3860898) - continued									
EM2116487-020	VB3-1.3	EP075: 2-Nitroaniline	88-74-4	0.5	mg/kg	<1.0	<1.0	0.0	No Limit
		EP075: 3-Nitroaniline	99-09-2	0.5	mg/kg	<1.0	<1.0	0.0	No Limit
		EP075: Dibenzofuran	132-64-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075: 4-Nitroaniline	100-01-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075: Carbazole	86-74-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075: 3.3`-Dichlorobenzidine	91-94-1	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP075I: Organochlorine Pesticides (QC Lot: 3860898)									
EM2116487-020	VB3-1.3	EP075: alpha-BHC	319-84-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075: beta-BHC	319-85-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075: gamma-BHC	58-89-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075: delta-BHC	319-86-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075: Heptachlor	76-44-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075: Aldrin	309-00-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075: Heptachlor epoxide	1024-57-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075: alpha-Endosulfan	959-98-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075: 4.4`-DDE	72-55-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075: Dieldrin	60-57-1	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075: Endrin	72-20-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075: beta-Endosulfan	33213-65-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075: 4.4`-DDD	72-54-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075: Endosulfan sulfate	1031-07-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075: 4.4`-DDT	50-29-3	0.5	mg/kg	<1.0	<1.0	0.0	No Limit
EP075J: Organophosphorus Pesticides (QC Lot: 3860898)									
EM2116487-020	VB3-1.3	EP075: Dichlorvos	62-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075: Dimethoate	60-51-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075: Diazinon	333-41-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075: Chlorpyrifos-methyl	5598-13-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075: Malathion	121-75-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075: Fenthion	55-38-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075: Chlorpyrifos	2921-88-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075: Pirimphos-ethyl	23505-41-1	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075: Chlorfenvinphos	470-90-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075: Prothiofos	34643-46-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075: Ethion	563-12-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3859862)									
EM2116487-001	SB3 - 0.5	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
EM2116487-015	SB2-0.5	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3860897)									
EM2116487-015	SB2-0.5	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit

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Sub-Matrix: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
				Laboratory Duplicate (DUP) Report					
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3860897) - continued									
EM2116487-015	SB2-0.5	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
		EP071: C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	0.0	No Limit
EM2116487-001	SB3 - 0.5	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
		EP071: C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3866194)									
EM2116487-027	VB1-0.5	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
		EP071: C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3866195)									
EM2116487-027	VB1-0.5	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 3859862)									
EM2116487-001	SB3 - 0.5	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
EM2116487-015	SB2-0.5	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: 3860897)									
EM2116487-015	SB2-0.5	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
		EP071: >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	0.0	No Limit
EM2116487-001	SB3 - 0.5	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
		EP071: >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 3866194)									
EM2116487-027	VB1-0.5	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
		EP071: >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 3866195)									
EM2116487-027	VB1-0.5	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
EP080: BTEXN (QC Lot: 3859862)									
EM2116487-001	SB3 - 0.5	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

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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: 3859862) - continued									
EM2116487-001	SB3 - 0.5	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
EM2116487-015	SB2-0.5	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
EP080: BTEXN (QC Lot: 3866195)									
EM2116487-027	VB1-0.5	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

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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			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 3860237)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	123 mg/kg	103	70.0	130
EG005T: Barium	7440-39-3	10	mg/kg	<10	99.3 mg/kg	94.0	70.0	130
EG005T: Beryllium	7440-41-7	1	mg/kg	<1	0.67 mg/kg	95.4	70.0	130
EG005T: Boron	7440-42-8	50	mg/kg	<50	----	----	----	----
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	1.23 mg/kg	65.1	50.0	130
EG005T: Chromium	7440-47-3	2	mg/kg	<2	20.2 mg/kg	99.6	70.0	130
EG005T: Cobalt	7440-48-4	2	mg/kg	<2	11.2 mg/kg	91.4	70.0	130
EG005T: Copper	7440-50-8	5	mg/kg	<5	55.9 mg/kg	96.6	70.0	130
EG005T: Lead	7439-92-1	5	mg/kg	<5	62.4 mg/kg	95.4	70.0	130
EG005T: Manganese	7439-96-5	5	mg/kg	<5	590 mg/kg	94.7	70.0	130
EG005T: Nickel	7440-02-0	2	mg/kg	<2	15.4 mg/kg	97.0	70.0	130
EG005T: Selenium	7782-49-2	5	mg/kg	<5	----	----	----	----
EG005T: Vanadium	7440-62-2	5	mg/kg	<5	61.3 mg/kg	97.9	70.0	130
EG005T: Zinc	7440-66-6	5	mg/kg	<5	162 mg/kg	77.0	70.0	130
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 3860239)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	123 mg/kg	99.1	70.0	130
EG005T: Barium	7440-39-3	10	mg/kg	<10	99.3 mg/kg	93.6	70.0	130
EG005T: Beryllium	7440-41-7	1	mg/kg	<1	0.67 mg/kg	99.0	70.0	130
EG005T: Boron	7440-42-8	50	mg/kg	<50	----	----	----	----
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	1.23 mg/kg	62.2	50.0	130
EG005T: Chromium	7440-47-3	2	mg/kg	<2	20.2 mg/kg	100	70.0	130
EG005T: Cobalt	7440-48-4	2	mg/kg	<2	11.2 mg/kg	91.4	70.0	130
EG005T: Copper	7440-50-8	5	mg/kg	<5	55.9 mg/kg	94.9	70.0	130
EG005T: Lead	7439-92-1	5	mg/kg	<5	62.4 mg/kg	93.3	70.0	130
EG005T: Manganese	7439-96-5	5	mg/kg	<5	590 mg/kg	93.6	70.0	130
EG005T: Nickel	7440-02-0	2	mg/kg	<2	15.4 mg/kg	97.4	70.0	130
EG005T: Selenium	7782-49-2	5	mg/kg	<5	----	----	----	----
EG005T: Vanadium	7440-62-2	5	mg/kg	<5	61.3 mg/kg	96.4	70.0	130
EG005T: Zinc	7440-66-6	5	mg/kg	<5	162 mg/kg	78.4	70.0	130
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 3866187)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	123 mg/kg	101	70.0	130
EG005T: Barium	7440-39-3	10	mg/kg	<10	99.3 mg/kg	94.8	70.0	130
EG005T: Beryllium	7440-41-7	1	mg/kg	<1	0.67 mg/kg	100	70.0	130
EG005T: Boron	7440-42-8	50	mg/kg	<50	----	----	----	----

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Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	*CAS Number*	*LOR*	*Unit*	*Result*	*Concentration*	*LCS*	*Low*	*High*
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 3866187) - continued								
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	1.23 mg/kg	59.7	50.0	130
EG005T: Chromium	7440-47-3	2	mg/kg	<2	20.2 mg/kg	105	70.0	130
EG005T: Cobalt	7440-48-4	2	mg/kg	<2	11.2 mg/kg	91.2	70.0	130
EG005T: Copper	7440-50-8	5	mg/kg	<5	55.9 mg/kg	94.7	70.0	130
EG005T: Lead	7439-92-1	5	mg/kg	<5	62.4 mg/kg	93.8	70.0	130
EG005T: Manganese	7439-96-5	5	mg/kg	<5	590 mg/kg	90.9	70.0	130
EG005T: Nickel	7440-02-0	2	mg/kg	<2	15.4 mg/kg	100	70.0	130
EG005T: Selenium	7782-49-2	5	mg/kg	<5	----	----	----	----
EG005T: Vanadium	7440-62-2	5	mg/kg	<5	61.3 mg/kg	98.4	70.0	130
EG005T: Zinc	7440-66-6	5	mg/kg	<5	162 mg/kg	74.1	70.0	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3860236)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	0.64 mg/kg	90.6	70.0	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3860238)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	0.64 mg/kg	89.1	70.0	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3866188)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	0.64 mg/kg	92.2	70.0	130
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 3859788)								
EP074: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	96.4	66.4	121
EP074: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	93.6	70.6	116
EP074: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	95.0	70.4	117
EP074: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	2 mg/kg	96.1	70.0	119
EP074: Styrene	100-42-5	0.5	mg/kg	<0.5	1 mg/kg	94.1	70.8	115
EP074: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	99.4	72.6	120
EP074: Isopropylbenzene	98-82-8	0.5	mg/kg	<0.5	1 mg/kg	93.3	68.6	116
EP074: n-Propylbenzene	103-65-1	0.5	mg/kg	<0.5	1 mg/kg	76.9	59.8	113
EP074: 1.3.5-Trimethylbenzene	108-67-8	0.5	mg/kg	<0.5	1 mg/kg	81.7	63.4	112
EP074: sec-Butylbenzene	135-98-8	0.5	mg/kg	<0.5	1 mg/kg	83.3	61.5	114
EP074: 1.2.4-Trimethylbenzene	95-63-6	0.5	mg/kg	<0.5	1 mg/kg	82.0	63.1	112
EP074: tert-Butylbenzene	98-06-6	0.5	mg/kg	<0.5	1 mg/kg	83.5	63.6	113
EP074: p-Isopropyltoluene	99-87-6	0.5	mg/kg	<0.5	1 mg/kg	85.8	60.8	114
EP074: n-Butylbenzene	104-51-8	0.5	mg/kg	<0.5	1 mg/kg	76.3	54.9	113
EP074B: Oxygenated Compounds (QCLot: 3859788)								
EP074: Vinyl Acetate	108-05-4	5	mg/kg	<5	10 mg/kg	96.2	51.4	128
EP074: 2-Butanone (MEK)	78-93-3	5	mg/kg	<5	10 mg/kg	92.9	61.2	128
EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	5	mg/kg	<5	10 mg/kg	94.6	63.2	137
EP074: 2-Hexanone (MBK)	591-78-6	5	mg/kg	<5	10 mg/kg	87.9	65.0	130
EP074C: Sulfonated Compounds (QCLot: 3859788)								

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP074C: Sulfonated Compounds (QCLot: 3859788) - continued								
EP074: Carbon disulfide	75-15-0	0.5	mg/kg	<0.5	1 mg/kg	87.9	48.5	132
EP074D: Fumigants (QCLot: 3859788)								
EP074: 2.2-Dichloropropane	594-20-7	0.5	mg/kg	<0.5	1 mg/kg	85.1	61.4	116
EP074: 1.2-Dichloropropane	78-87-5	0.5	mg/kg	<0.5	1 mg/kg	90.2	70.1	116
EP074: cis-1.3-Dichloropropylene	10061-01-5	0.5	mg/kg	<0.5	1 mg/kg	85.2	61.7	112
EP074: trans-1.3-Dichloropropylene	10061-02-6	0.5	mg/kg	<0.5	1 mg/kg	82.5	63.8	110
EP074: 1.2-Dibromoethane (EDB)	106-93-4	0.5	mg/kg	<0.5	1 mg/kg	85.4	67.0	114
EP074E: Halogenated Aliphatic Compounds (QCLot: 3859788)								
EP074: Dichlorodifluoromethane	75-71-8	5	mg/kg	<5	10 mg/kg	69.9	26.0	137
EP074: Chloromethane	74-87-3	5	mg/kg	<5	10 mg/kg	86.2	49.4	140
EP074: Vinyl chloride	75-01-4	5	mg/kg	<5	10 mg/kg	81.8	46.0	138
EP074: Bromomethane	74-83-9	5	mg/kg	<5	10 mg/kg	89.2	39.1	127
EP074: Chloroethane	75-00-3	5	mg/kg	<5	10 mg/kg	81.2	59.2	128
EP074: Trichlorofluoromethane	75-69-4	5	mg/kg	<5	10 mg/kg	86.6	60.1	124
EP074: 1.1-Dichloroethene	75-35-4	0.5	mg/kg	<0.5	1 mg/kg	87.6	55.2	122
EP074: Iodomethane	74-88-4	0.5	mg/kg	<0.5	1 mg/kg	71.4	47.0	125
EP074: trans-1.2-Dichloroethene	156-60-5	0.5	mg/kg	<0.5	1 mg/kg	90.1	63.6	120
EP074: 1.1-Dichloroethane	75-34-3	0.5	mg/kg	<0.5	1 mg/kg	94.4	64.5	120
EP074: cis-1.2-Dichloroethene	156-59-2	0.5	mg/kg	<0.5	1 mg/kg	96.4	67.5	121
EP074: 1.1.1-Trichloroethane	71-55-6	0.5	mg/kg	<0.5	1 mg/kg	89.3	57.0	117
EP074: 1.1-Dichloropropylene	563-58-6	0.5	mg/kg	<0.5	1 mg/kg	90.1	60.3	120
EP074: Carbon Tetrachloride	56-23-5	0.5	mg/kg	<0.5	1 mg/kg	85.1	57.7	113
EP074: 1.2-Dichloroethane	107-06-2	0.5	mg/kg	<0.5	1 mg/kg	90.2	68.9	117
EP074: Trichloroethene	79-01-6	0.5	mg/kg	<0.5	1 mg/kg	94.3	65.5	119
EP074: Dibromomethane	74-95-3	0.5	mg/kg	<0.5	1 mg/kg	87.5	68.4	115
EP074: 1.1.2-Trichloroethane	79-00-5	0.5	mg/kg	<0.5	1 mg/kg	94.6	69.8	118
EP074: 1.3-Dichloropropane	142-28-9	0.5	mg/kg	<0.5	1 mg/kg	94.7	70.6	118
EP074: Tetrachloroethene	127-18-4	0.5	mg/kg	<0.5	1 mg/kg	86.4	65.6	117
EP074: 1.1.1.2-Tetrachloroethane	630-20-6	0.5	mg/kg	<0.5	1 mg/kg	85.7	62.8	106
EP074: trans-1.4-Dichloro-2-butene	110-57-6	0.5	mg/kg	<0.5	1 mg/kg	81.1	58.9	117
EP074: cis-1.4-Dichloro-2-butene	1476-11-5	0.5	mg/kg	<0.5	1 mg/kg	68.4	57.8	110
EP074: 1.1.2.2-Tetrachloroethane	79-34-5	0.5	mg/kg	<0.5	1 mg/kg	103	72.3	127
EP074: 1.2.3-Trichloropropane	96-18-4	0.5	mg/kg	<0.5	1 mg/kg	90.9	69.0	123
EP074: Pentachloroethane	76-01-7	0.5	mg/kg	<0.5	1 mg/kg	78.7	59.0	100
EP074: 1.2-Dibromo-3-chloropropane	96-12-8	0.5	mg/kg	<0.5	1 mg/kg	76.0	60.8	111
EP074F: Halogenated Aromatic Compounds (QCLot: 3859788)								
EP074: Chlorobenzene	108-90-7	0.5	mg/kg	<0.5	1 mg/kg	95.7	72.5	115
EP074: Bromobenzene	108-86-1	0.5	mg/kg	<0.5	1 mg/kg	84.1	69.2	112

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Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP074F: Halogenated Aromatic Compounds (QCLot: 3859788) - continued								
EP074: 2-Chlorotoluene	95-49-8	0.5	mg/kg	<0.5	1 mg/kg	83.4	65.9	114
EP074: 4-Chlorotoluene	106-43-4	0.5	mg/kg	<0.5	1 mg/kg	83.5	65.4	113
EP074: 1.2.3-Trichlorobenzene	87-61-6	0.5	mg/kg	<0.5	1 mg/kg	89.1	59.3	123
EP074G: Trihalomethanes (QCLot: 3859788)								
EP074: Chloroform	67-66-3	0.5	mg/kg	<0.5	1 mg/kg	94.2	67.5	119
EP074: Bromodichloromethane	75-27-4	0.5	mg/kg	<0.5	1 mg/kg	92.1	57.8	117
EP074: Dibromochloromethane	124-48-1	0.5	mg/kg	<0.5	1 mg/kg	86.0	60.3	108
EP074: Bromoform	75-25-2	0.5	mg/kg	<0.5	1 mg/kg	81.9	55.7	108
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3860896)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	3 mg/kg	109	85.7	123
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	3 mg/kg	110	81.0	123
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	3 mg/kg	106	83.6	120
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	3 mg/kg	102	81.3	126
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	3 mg/kg	104	79.4	123
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	3 mg/kg	109	81.7	127
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	3 mg/kg	104	78.3	124
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	3 mg/kg	108	79.9	128
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	3 mg/kg	101	76.9	123
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	3 mg/kg	106	80.9	130
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	3 mg/kg	92.8	70.0	121
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	3 mg/kg	114	80.4	130
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	3 mg/kg	107	70.2	123
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	3 mg/kg	89.1	67.9	122
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	3 mg/kg	90.5	65.8	123
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	3 mg/kg	95.9	65.8	127
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3866193)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	3 mg/kg	109	85.7	123
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	3 mg/kg	110	81.0	123
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	3 mg/kg	106	83.6	120
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	3 mg/kg	102	81.3	126
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	3 mg/kg	104	79.4	123
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	3 mg/kg	109	81.7	127
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	3 mg/kg	104	78.3	124
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	3 mg/kg	108	79.9	128
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	3 mg/kg	101	76.9	123
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	3 mg/kg	106	80.9	130

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3866193) - continued								
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	3 mg/kg	92.8	70.0	121
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	3 mg/kg	114	80.4	130
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	3 mg/kg	107	70.2	123
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	3 mg/kg	89.1	67.9	122
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	3 mg/kg	90.5	65.8	123
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	3 mg/kg	95.9	65.8	127
EP075A: Phenolic Compounds (QCLot: 3860898)								
EP075: Phenol	108-95-2	0.5	mg/kg	<0.5	1.5 mg/kg	107	75.1	127
EP075: 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	1.5 mg/kg	107	77.7	123
EP075: 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	1.5 mg/kg	111	72.1	127
EP075: 3- & 4-Methylphenol	1319-77-3	0.5	mg/kg	<0.5	1.5 mg/kg	108	73.1	127
EP075: 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	1.5 mg/kg	103	64.0	126
EP075: 2.4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	1.5 mg/kg	106	74.4	126
EP075: 2.4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	1.5 mg/kg	102	69.2	123
EP075: 2.6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	1.5 mg/kg	101	76.2	122
EP075: 4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	1.5 mg/kg	99.4	68.9	124
EP075: 2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	1.5 mg/kg	101	65.5	123
EP075: 2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	1.5 mg/kg	105	61.0	123
EP075: Pentachlorophenol	87-86-5	1	mg/kg	<1	1.5 mg/kg	90.8	43.1	131
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 3860898)								
EP075: Naphthalene	91-20-3	0.5	mg/kg	<0.5	1.5 mg/kg	106	78.7	126
EP075: 2-Methylnaphthalene	91-57-6	0.5	mg/kg	<0.5	1.5 mg/kg	103	77.5	126
EP075: 2-Chloronaphthalene	91-58-7	0.5	mg/kg	<0.5	1.5 mg/kg	102	74.7	126
EP075: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	1.5 mg/kg	106	77.2	126
EP075: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	1.5 mg/kg	105	75.7	126
EP075: Fluorene	86-73-7	0.5	mg/kg	<0.5	1.5 mg/kg	103	78.6	126
EP075: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	1.5 mg/kg	98.4	78.1	128
EP075: Anthracene	120-12-7	0.5	mg/kg	<0.5	1.5 mg/kg	97.9	77.1	130
EP075: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	1.5 mg/kg	94.8	76.2	132
EP075: Pyrene	129-00-0	0.5	mg/kg	<0.5	1.5 mg/kg	95.3	70.7	135
EP075: N-2-Fluorenyl Acetamide	53-96-3	0.5	mg/kg	<0.5	1.5 mg/kg	85.3	63.8	134
EP075: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	1.5 mg/kg	87.2	75.1	133
EP075: Chrysene	218-01-9	0.5	mg/kg	<0.5	1.5 mg/kg	96.3	76.2	132
EP075: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	1	mg/kg	<1	3 mg/kg	95.2	76.5	128
EP075: 7.12-Dimethylbenz(a)anthracene	57-97-6	0.5	mg/kg	<0.5	1.5 mg/kg	95.2	75.7	134
EP075: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	1.5 mg/kg	97.0	72.4	128
EP075: 3-Methylcholanthrene	56-49-5	0.5	mg/kg	<0.5	1.5 mg/kg	92.8	70.6	130

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Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 3860898) - continued								
EP075: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	1.5 mg/kg	98.0	68.7	123
EP075: Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	1.5 mg/kg	98.5	69.7	123
EP075: Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	1.5 mg/kg	96.0	67.3	125
EP075: Sum of PAHs	----	0.5	mg/kg	<0.5	----	----	----	----
EP075C: Phthalate Esters (QCLot: 3860898)								
EP075: Dimethyl phthalate	131-11-3	0.5	mg/kg	<0.5	1.5 mg/kg	103	74.6	125
EP075: Diethyl phthalate	84-66-2	0.5	mg/kg	<0.5	1.5 mg/kg	98.6	76.7	126
EP075: Di-n-butyl phthalate	84-74-2	0.5	mg/kg	<0.5	1.5 mg/kg	95.0	76.0	132
EP075: Butyl benzyl phthalate	85-68-7	0.5	mg/kg	<0.5	1.5 mg/kg	93.1	74.1	134
EP075: bis(2-ethylhexyl) phthalate	117-81-7	0.5	mg/kg	<0.5	1.5 mg/kg	96.4	74.1	122
EP075: Di-n-octylphthalate	117-84-0	0.5	mg/kg	<0.5	1.5 mg/kg	94.9	73.5	130
EP075D: Nitrosamines (QCLot: 3860898)								
EP075: N-Nitrosomethylethylamine	10595-95-6	0.5	mg/kg	<0.5	1.5 mg/kg	104	65.0	136
EP075: N-Nitrosodiethylamine	55-18-5	0.5	mg/kg	<0.5	1.5 mg/kg	98.8	68.8	130
EP075: N-Nitrosopyrrolidine	930-55-2	0.5	mg/kg	<0.5	1.5 mg/kg	99.9	67.7	126
EP075: N-Nitrosomorpholine	59-89-2	0.5	mg/kg	<0.5	1.5 mg/kg	106	69.3	130
EP075: N-Nitrosodi-n-propylamine	621-64-7	0.5	mg/kg	<0.5	1.5 mg/kg	107	70.8	130
EP075: N-Nitrosopiperidine	100-75-4	0.5	mg/kg	<0.5	1.5 mg/kg	96.7	73.3	128
EP075: N-Nitrosodibutylamine	924-16-3	0.5	mg/kg	<0.5	1.5 mg/kg	113	60.6	136
EP075: N-Nitrosodiphenyl & Diphenylamine	86-30-6 122-39-4	0.5	mg/kg	<0.5	1.5 mg/kg	102	74.0	125
EP075: Methapyrilene	91-80-5	0.5	mg/kg	<0.5	1.5 mg/kg	17.8	10.0	115
EP075E: Nitroaromatics and Ketones (QCLot: 3860898)								
EP075: 2-Picoline	109-06-8	0.5	mg/kg	<0.5	1.5 mg/kg	90.9	54.0	131
EP075: Acetophenone	98-86-2	0.5	mg/kg	<0.5	1.5 mg/kg	108	76.6	125
EP075: Nitrobenzene	98-95-3	0.5	mg/kg	<0.5	1.5 mg/kg	106	75.7	125
EP075: Isophorone	78-59-1	0.5	mg/kg	<0.5	1.5 mg/kg	104	76.8	126
EP075: 2.6-Dinitrotoluene	606-20-2	0.5	mg/kg	<0.5	1.5 mg/kg	98.4	70.5	124
EP075: 2.4-Dinitrotoluene	121-14-2	0.5	mg/kg	<0.5	1.5 mg/kg	97.2	68.3	124
EP075: 1-Naphthylamine	134-32-7	0.5	mg/kg	<0.5	1.5 mg/kg	# 118	10.0	107
EP075: 4-Nitroquinoline-N-oxide	56-57-5	0.5	mg/kg	<0.5	1.5 mg/kg	38.2	10.0	134
EP075: 5-Nitro-o-toluidine	99-55-8	0.5	mg/kg	<0.5	1.5 mg/kg	83.3	56.8	132
EP075: Azobenzene	103-33-3	1	mg/kg	<1	1.5 mg/kg	99.1	74.4	125
EP075: 1.3.5-Trinitrobenzene	99-35-4	0.5	mg/kg	<0.5	1.5 mg/kg	75.4	37.9	132
EP075: Phenacetin	62-44-2	0.5	mg/kg	<0.5	1.5 mg/kg	96.6	69.7	128
EP075: 4-Aminobiphenyl	92-67-1	0.5	mg/kg	<0.5	1.5 mg/kg	126	25.6	130
EP075: Pentachloronitrobenzene	82-68-8	0.5	mg/kg	<0.5	1.5 mg/kg	98.0	74.9	127
EP075: Pronamide	23950-58-5	0.5	mg/kg	<0.5	1.5 mg/kg	93.9	77.2	132

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Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP075E: Nitroaromatics and Ketones (QCLot: 3860898) - continued								
EP075: Dimethylaminoazobenzene	60-11-7	0.5	mg/kg	<0.5	1.5 mg/kg	84.2	71.4	132
EP075: Chlorobenzilate	510-15-6	0.5	mg/kg	<0.5	1.5 mg/kg	89.5	73.4	131
EP075F: Haloethers (QCLot: 3860898)								
EP075: Bis(2-chloroethyl) ether	111-44-4	0.5	mg/kg	<0.5	1.5 mg/kg	104	74.0	131
EP075: Bis(2-chloroethoxy) methane	111-91-1	0.5	mg/kg	<0.5	1.5 mg/kg	109	75.2	127
EP075: 4-Chlorophenyl phenyl ether	7005-72-3	0.5	mg/kg	<0.5	1.5 mg/kg	101	77.0	126
EP075: 4-Bromophenyl phenyl ether	101-55-3	0.5	mg/kg	<0.5	1.5 mg/kg	104	73.9	125
EP075G: Chlorinated Hydrocarbons (QCLot: 3860898)								
EP075: 1.3-Dichlorobenzene	541-73-1	0.5	mg/kg	<0.5	1.5 mg/kg	105	77.9	123
EP075: 1.4-Dichlorobenzene	106-46-7	0.5	mg/kg	<0.5	1.5 mg/kg	104	77.3	124
EP075: 1.2-Dichlorobenzene	95-50-1	0.5	mg/kg	<0.5	1.5 mg/kg	107	76.8	125
EP075: Hexachloroethane	67-72-1	0.5	mg/kg	<0.5	1.5 mg/kg	110	73.1	125
EP075: 1.2.4-Trichlorobenzene	120-82-1	0.5	mg/kg	<0.5	1.5 mg/kg	110	72.8	125
EP075: Hexachloropropylene	1888-71-7	0.5	mg/kg	<0.5	1.5 mg/kg	101	64.5	131
EP075: Hexachlorobutadiene	87-68-3	0.5	mg/kg	<0.5	1.5 mg/kg	101	75.8	127
EP075: Hexachlorocyclopentadiene	77-47-4	2.5	mg/kg	<2.5	1.5 mg/kg	43.6	10.0	128
EP075: Pentachlorobenzene	608-93-5	0.5	mg/kg	<0.5	1.5 mg/kg	102	76.7	125
EP075: Hexachlorobenzene (HCB)	118-74-1	0.5	mg/kg	<0.5	1.5 mg/kg	92.0	75.1	128
EP075H: Anilines and Benzidines (QCLot: 3860898)								
EP075: Aniline	62-53-3	0.5	mg/kg	<0.5	1.5 mg/kg	110	40.2	131
EP075: 4-Chloroaniline	106-47-8	0.5	mg/kg	<0.5	1.5 mg/kg	81.6	10.0	114
EP075: 2-Nitroaniline	88-74-4	0.5	mg/kg	<0.5	1.5 mg/kg	101	65.9	122
EP075: 3-Nitroaniline	99-09-2	0.5	mg/kg	<0.5	1.5 mg/kg	77.3	40.6	137
EP075: Dibenzofuran	132-64-9	0.5	mg/kg	<0.5	1.5 mg/kg	100	78.0	126
EP075: 4-Nitroaniline	100-01-6	0.5	mg/kg	<0.5	1.5 mg/kg	103	54.4	137
EP075: Carbazole	86-74-8	0.5	mg/kg	<0.5	1.5 mg/kg	96.4	67.3	134
EP075: 3.3`-Dichlorobenzidine	91-94-1	0.5	mg/kg	<0.5	1.5 mg/kg	77.4	72.6	130
EP075I: Organochlorine Pesticides (QCLot: 3860898)								
EP075: alpha-BHC	319-84-6	0.5	mg/kg	<0.5	1.5 mg/kg	100	76.6	127
EP075: beta-BHC	319-85-7	0.5	mg/kg	<0.5	1.5 mg/kg	99.9	72.5	132
EP075: gamma-BHC	58-89-9	0.5	mg/kg	<0.5	1.5 mg/kg	98.8	75.3	129
EP075: delta-BHC	319-86-8	0.5	mg/kg	<0.5	1.5 mg/kg	93.9	72.1	133
EP075: Heptachlor	76-44-8	0.5	mg/kg	<0.5	1.5 mg/kg	91.2	71.5	131
EP075: Aldrin	309-00-2	0.5	mg/kg	<0.5	1.5 mg/kg	92.7	74.7	132
EP075: Heptachlor epoxide	1024-57-3	0.5	mg/kg	<0.5	1.5 mg/kg	92.3	73.1	132
EP075: alpha-Endosulfan	959-98-8	0.5	mg/kg	<0.5	1.5 mg/kg	103	72.8	132
EP075: 4.4`-DDE	72-55-9	0.5	mg/kg	<0.5	1.5 mg/kg	88.6	76.1	129
EP075: Dieldrin	60-57-1	0.5	mg/kg	<0.5	1.5 mg/kg	94.2	74.7	133

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Client : ENVIRONMENTAL SERVICE AND DESIGN PTY LTD
Project : 7928

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EP075I: Organochlorine Pesticides (QCLot: 3860898) - continued								
EP075: Endrin	72-20-8	0.5	mg/kg	<0.5	1.5 mg/kg	94.9	70.4	129
EP075: beta-Endosulfan	33213-65-9	0.5	mg/kg	<0.5	1.5 mg/kg	95.8	72.1	129
EP075: 4.4`-DDD	72-54-8	0.5	mg/kg	<0.5	1.5 mg/kg	89.6	75.0	130
EP075: Endosulfan sulfate	1031-07-8	0.5	mg/kg	<0.5	1.5 mg/kg	90.6	67.2	137
EP075: 4.4`-DDT	50-29-3	0.5	mg/kg	<0.5	1.5 mg/kg	104	57.5	136
EP075J: Organophosphorus Pesticides (QCLot: 3860898)								
EP075: Dichlorvos	62-73-7	0.5	mg/kg	<0.5	1.5 mg/kg	92.4	65.4	123
EP075: Dimethoate	60-51-5	0.5	mg/kg	<0.5	1.5 mg/kg	83.2	49.2	138
EP075: Diazinon	333-41-5	0.5	mg/kg	<0.5	1.5 mg/kg	99.7	75.8	132
EP075: Chlorpyrifos-methyl	5598-13-0	0.5	mg/kg	<0.5	1.5 mg/kg	87.5	70.9	129
EP075: Malathion	121-75-5	0.5	mg/kg	<0.5	1.5 mg/kg	90.2	67.9	134
EP075: Fenthion	55-38-9	0.5	mg/kg	<0.5	1.5 mg/kg	92.0	73.2	131
EP075: Chlorpyrifos	2921-88-2	0.5	mg/kg	<0.5	1.5 mg/kg	95.1	76.3	130
EP075: Pirimphos-ethyl	23505-41-1	0.5	mg/kg	<0.5	1.5 mg/kg	99.6	74.5	133
EP075: Chlorfenvinphos	470-90-6	0.5	mg/kg	<0.5	1.5 mg/kg	78.3	55.3	131
EP075: Prothiofos	34643-46-4	0.5	mg/kg	<0.5	1.5 mg/kg	93.9	75.2	130
EP075: Ethion	563-12-2	0.5	mg/kg	<0.5	1.5 mg/kg	94.8	76.5	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3859862)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	36 mg/kg	114	58.6	131
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3860897)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	840 mg/kg	97.9	75.0	128
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	2900 mg/kg	98.0	82.0	123
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	1490 mg/kg	91.5	82.4	121
EP071: C10 - C36 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3866194)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	840 mg/kg	94.9	75.0	128
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	2900 mg/kg	94.0	82.0	123
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	1490 mg/kg	94.0	82.4	121
EP071: C10 - C36 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3866195)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	36 mg/kg	99.0	58.6	131
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3859862)								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	45 mg/kg	110	59.3	128
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3860897)								
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	1110 mg/kg	100	77.0	130
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	3900 mg/kg	92.3	81.5	120
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	290 mg/kg	93.4	73.3	137
EP071: >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----

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Work Order	: EM2116487
Client	: ENVIRONMENTAL SERVICE AND DESIGN PTY LTD
Project	: 7928

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3866194)								
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	1110 mg/kg	108	77.0	130
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	3900 mg/kg	89.3	81.5	120
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	290 mg/kg	94.6	73.3	137
EP071: >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3866195)								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	45 mg/kg	104	59.3	128
EP080: BTEXN (QCLot: 3859862)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	2 mg/kg	107	61.6	117
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	2 mg/kg	112	65.8	125
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	2 mg/kg	114	65.8	124
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	4 mg/kg	119	64.8	134
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	2 mg/kg	118	68.7	132
EP080: Naphthalene	91-20-3	1	mg/kg	<1	0.5 mg/kg	90.0	61.8	123
EP080: BTEXN (QCLot: 3866195)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	2 mg/kg	103	61.6	117
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	2 mg/kg	104	65.8	125
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	2 mg/kg	104	65.8	124
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	4 mg/kg	105	64.8	134
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	2 mg/kg	106	68.7	132
EP080: Naphthalene	91-20-3	1	mg/kg	<1	0.5 mg/kg	91.7	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	SpikeRecovery(%)	Acceptable Limits (%)	
				Concentration	MS	Low	High
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 3860237)							
EM2115405-002	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	102	78.0	124
		EG005T: Cadmium	7440-43-9	50 mg/kg	96.4	79.7	116
		EG005T: Chromium	7440-47-3	50 mg/kg	97.5	79.0	121
		EG005T: Copper	7440-50-8	250 mg/kg	106	80.0	120
		EG005T: Lead	7439-92-1	250 mg/kg	99.6	80.0	120
		EG005T: Nickel	7440-02-0	50 mg/kg	96.5	78.0	120
		EG005T: Zinc	7440-66-6	250 mg/kg	91.8	80.0	120

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Work Order : EM2116487
Client : ENVIRONMENTAL SERVICE AND DESIGN PTY LTD
Project : 7928

Sub-Matrix: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Spike Concentration	Matrix Spike (MS) Report SpikeRecovery(%) MS	Acceptable Limits (%) Low	Acceptable Limits (%) High
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 3860239)							
EM2116487-016	VB2-0.5	EG005T: Arsenic	7440-38-2	50 mg/kg	96.7	78.0	124
		EG005T: Cadmium	7440-43-9	50 mg/kg	92.4	79.7	116
		EG005T: Chromium	7440-47-3	50 mg/kg	92.2	79.0	121
		EG005T: Copper	7440-50-8	250 mg/kg	103	80.0	120
		EG005T: Lead	7439-92-1	250 mg/kg	94.4	80.0	120
		EG005T: Nickel	7440-02-0	50 mg/kg	91.1	78.0	120
		EG005T: Zinc	7440-66-6	250 mg/kg	87.5	80.0	120
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 3866187)							
EM2116487-028	VB1-1.0m	EG005T: Arsenic	7440-38-2	50 mg/kg	93.1	78.0	124
		EG005T: Cadmium	7440-43-9	50 mg/kg	96.3	79.7	116
		EG005T: Chromium	7440-47-3	50 mg/kg	99.7	79.0	121
		EG005T: Copper	7440-50-8	250 mg/kg	102	80.0	120
		EG005T: Lead	7439-92-1	250 mg/kg	95.8	80.0	120
		EG005T: Nickel	7440-02-0	50 mg/kg	94.5	78.0	120
		EG005T: Zinc	7440-66-6	250 mg/kg	86.0	80.0	120
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3860236)							
EM2115405-002	Anonymous	EG035T: Mercury	7439-97-6	0.5 mg/kg	97.8	76.0	116
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3860238)							
EM2116487-016	VB2-0.5	EG035T: Mercury	7439-97-6	0.5 mg/kg	105	76.0	116
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3866188)							
EM2116487-028	VB1-1.0m	EG035T: Mercury	7439-97-6	0.5 mg/kg	102	76.0	116
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 3859788)							
EM2116319-012	Anonymous	EP074: Benzene	71-43-2	2 mg/kg	104	51.0	137
		EP074: Toluene	108-88-3	2 mg/kg	85.9	54.0	141
EP074E: Halogenated Aliphatic Compounds (QCLot: 3859788)							
EM2116319-012	Anonymous	EP074: 1.1-Dichloroethene	75-35-4	2 mg/kg	90.7	29.0	141
		EP074: Trichloroethene	79-01-6	2 mg/kg	85.4	50.0	126
EP074F: Halogenated Aromatic Compounds (QCLot: 3859788)							
EM2116319-012	Anonymous	EP074: Chlorobenzene	108-90-7	2 mg/kg	90.0	65.0	133
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3860896)							
EM2116487-002	SB3 - 0.3	EP075(SIM): Acenaphthene	83-32-9	3 mg/kg	87.6	77.2	116
		EP075(SIM): Pyrene	129-00-0	3 mg/kg	94.9	65.5	136
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3859862)							
EM2116487-002	SB3 - 0.3	EP080: C6 - C9 Fraction	----	28 mg/kg	99.5	33.4	124
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3860897)							
EM2116487-002	SB3 - 0.3						

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Work Order : EM2116487
Client : ENVIRONMENTAL SERVICE AND DESIGN PTY LTD
Project : 7928

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: 3860897) - continued							
EM2116487-002	SB3 - 0.3	EP071: C10 - C14 Fraction	----	840 mg/kg	98.5	71.2	125
		EP071: C15 - C28 Fraction	----	2900 mg/kg	97.3	75.6	122
		EP071: C29 - C36 Fraction	----	1490 mg/kg	90.8	78.0	120
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3866194)							
EM2116487-028	VB1-1.0m	EP071: C10 - C14 Fraction	----	840 mg/kg	91.1	71.2	125
		EP071: C15 - C28 Fraction	----	2900 mg/kg	89.9	75.6	122
		EP071: C29 - C36 Fraction	----	1490 mg/kg	91.1	78.0	120
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3866195)							
EM2116487-028	VB1-1.0m	EP080: C6 - C9 Fraction	----	28 mg/kg	74.0	33.4	124
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3859862)							
EM2116487-002	SB3 - 0.3	EP080: C6 - C10 Fraction	C6_C10	33 mg/kg	94.5	30.8	120
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3860897)							
EM2116487-002	SB3 - 0.3	EP071: >C10 - C16 Fraction	----	1110 mg/kg	100	72.2	128
		EP071: >C16 - C34 Fraction	----	3900 mg/kg	91.5	76.5	119
		EP071: >C34 - C40 Fraction	----	290 mg/kg	94.1	66.8	138
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3866194)							
EM2116487-028	VB1-1.0m	EP071: >C10 - C16 Fraction	----	1110 mg/kg	103	72.2	128
		EP071: >C16 - C34 Fraction	----	3900 mg/kg	85.7	76.5	119
		EP071: >C34 - C40 Fraction	----	290 mg/kg	97.8	66.8	138
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3866195)							
EM2116487-028	VB1-1.0m	EP080: C6 - C10 Fraction	C6_C10	33 mg/kg	68.0	30.8	120
EP080: BTEXN (QCLot: 3859862)							
EM2116487-002	SB3 - 0.3	EP080: Benzene	71-43-2	2 mg/kg	108	54.4	127
		EP080: Toluene	108-88-3	2 mg/kg	108	57.1	131
EP080: BTEXN (QCLot: 3866195)							
EM2116487-028	VB1-1.0m	EP080: Benzene	71-43-2	2 mg/kg	80.1	54.4	127
		EP080: Toluene	108-88-3	2 mg/kg	83.1	57.1	131

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EM2116487**	Page	: 1 of 9
Client	: **ENVIRONMENTAL SERVICE AND DESIGN PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: CARMEL PARKER	Telephone	: +6138549 9630
Project	: 7928	Date Samples Received	: 19-Aug-2021
Site	: ----	Issue Date	: 27-Aug-2021
Sampler	: CP	No. of samples received	: 30
Order number	: 7928	No. of samples analysed	: 24

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 Matrix Spike outliers occur.**
- **Laboratory Control outliers exist - please see following pages for full details.**
- **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.**

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Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Laboratory Control Spike (LCS) Recoveries							
EP075E: Nitroaromatics and Ketones	QC-3860898-001	----	**1-Naphthylamine**	134-32-7	118 %	10.0-107%	**Recovery greater than upper control limit**

Outliers : Frequency of Quality Control Samples

Matrix: **SOIL**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Matrix Spikes (MS)					
Semivolatile Organic Compounds	0	1	0.00	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: **SOIL**

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

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA055: Moisture Content (Dried @ 105-110°C)								
Soil Glass Jar - Unpreserved (EA055)								
SB3 - 0.5,	SB3 - 0.3,	**17-Aug-2021**	----	----	----	**23-Aug-2021**	31-Aug-2021	✓
MW1-1.5,	MW1-1.5B,							
MW1-2.7,	MW1-2.8,							
MW1-4.5,	SB1-0.5,							
SB1-0.8,	SB2-0.25,							
SB2-0.5,	VB2-0.5,							
VB2-1.5,	VB2-2.0,							
VB3-0.3,	VB3-1.3,							
VB4-1.0,	VB4-1.6,							
VB4-1.5								
Soil Glass Jar - Unpreserved (EA055)								
VB1-0.5,	VB1-1.0m,	**25-Aug-2021**	----	----	----	**25-Aug-2021**	08-Sep-2021	✓
VB1-1.5m,	VB1-2.0m							
EA150: Soil Classification based on Particle Size								
Snap Lock Bag (EA150H)								
Composite 1		**17-Aug-2021**	----	----	----	**27-Aug-2021**	13-Feb-2022	✓

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Matrix: **SOIL**

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

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation: Date extracted	Extraction / Preparation: Due for extraction	Extraction / Preparation: Evaluation	Analysis: Date analysed	Analysis: Due for analysis	Analysis: Evaluation
EA152: Soil Particle Density							
Snap Lock Bag (EA152) Composite 1	**17-Aug-2021**	**----**	----	----	**27-Aug-2021**	13-Feb-2022	✓
EG005(ED093)T: Total Metals by ICP-AES							
Soil Glass Jar - Unpreserved (EG005T) SB3 - 0.5, SB3 - 0.3, MW1-1.5, MW1-1.5B, MW1-2.7, MW1-2.8, MW1-4.5, SB1-0.5, SB1-0.8, SB2-0.25, SB2-0.5, VB2-0.5, VB2-1.5, VB2-2.0, VB3-1.3, VB4-1.6, VB4-1.5	**17-Aug-2021**	**24-Aug-2021**	13-Feb-2022	✓	**25-Aug-2021**	13-Feb-2022	✓
Soil Glass Jar - Unpreserved (EG005T) VB1-0.5, VB1-1.0m, VB1-1.5m, VB1-2.0m	**25-Aug-2021**	**25-Aug-2021**	21-Feb-2022	✓	**26-Aug-2021**	21-Feb-2022	✓
EG035T: Total Recoverable Mercury by FIMS							
Soil Glass Jar - Unpreserved (EG035T) SB3 - 0.5, SB3 - 0.3, MW1-1.5, MW1-1.5B, MW1-2.7, MW1-2.8, MW1-4.5, SB1-0.5, SB1-0.8, SB2-0.25, SB2-0.5, VB2-0.5, VB2-1.5, VB2-2.0, VB3-1.3, VB4-1.6, VB4-1.5	**17-Aug-2021**	**24-Aug-2021**	14-Sep-2021	✓	**25-Aug-2021**	14-Sep-2021	✓
Soil Glass Jar - Unpreserved (EG035T) VB1-0.5, VB1-1.0m, VB1-1.5m, VB1-2.0m	**25-Aug-2021**	**25-Aug-2021**	22-Sep-2021	✓	**26-Aug-2021**	22-Sep-2021	✓
EP074A: Monocyclic Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved (EP074) VB3-1.3	**17-Aug-2021**	**23-Aug-2021**	24-Aug-2021	✓	**23-Aug-2021**	24-Aug-2021	✓
EP074B: Oxygenated Compounds							
Soil Glass Jar - Unpreserved (EP074) VB3-1.3	**17-Aug-2021**	**23-Aug-2021**	24-Aug-2021	✓	**23-Aug-2021**	24-Aug-2021	✓
EP074C: Sulfonated Compounds							
Soil Glass Jar - Unpreserved (EP074) VB3-1.3	**17-Aug-2021**	**23-Aug-2021**	24-Aug-2021	✓	**23-Aug-2021**	24-Aug-2021	✓

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Matrix: **SOIL**

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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation Date extracted	 Due for extraction	 Evaluation	Analysis Date analysed	 Due for analysis	 Evaluation
EP074D: Fumigants							
Soil Glass Jar - Unpreserved (EP074) VB3-1.3	**17-Aug-2021**	**23-Aug-2021**	24-Aug-2021	✓	**23-Aug-2021**	24-Aug-2021	✓
EP074E: Halogenated Aliphatic Compounds							
Soil Glass Jar - Unpreserved (EP074) VB3-1.3	**17-Aug-2021**	**23-Aug-2021**	24-Aug-2021	✓	**23-Aug-2021**	24-Aug-2021	✓
EP074F: Halogenated Aromatic Compounds							
Soil Glass Jar - Unpreserved (EP074) VB3-1.3	**17-Aug-2021**	**23-Aug-2021**	24-Aug-2021	✓	**23-Aug-2021**	24-Aug-2021	✓
EP074G: Trihalomethanes							
Soil Glass Jar - Unpreserved (EP074) VB3-1.3	**17-Aug-2021**	**23-Aug-2021**	24-Aug-2021	✓	**23-Aug-2021**	24-Aug-2021	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved (EP075(SIM)) SB3 - 0.5, SB3 - 0.3, SB1-0.5, SB2-0.25, SB2-0.5, VB2-0.5, VB3-0.3, VB4-1.0	**17-Aug-2021**	**24-Aug-2021**	31-Aug-2021	✓	**24-Aug-2021**	03-Oct-2021	✓
Soil Glass Jar - Unpreserved (EP075(SIM)) VB1-0.5	**25-Aug-2021**	**25-Aug-2021**	08-Sep-2021	✓	**26-Aug-2021**	04-Oct-2021	✓
EP075A: Phenolic Compounds							
Soil Glass Jar - Unpreserved (EP075) VB3-1.3	**17-Aug-2021**	**24-Aug-2021**	31-Aug-2021	✓	**24-Aug-2021**	03-Oct-2021	✓
EP075B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved (EP075) VB3-1.3	**17-Aug-2021**	**24-Aug-2021**	31-Aug-2021	✓	**24-Aug-2021**	03-Oct-2021	✓
EP075C: Phthalate Esters							
Soil Glass Jar - Unpreserved (EP075) VB3-1.3	**17-Aug-2021**	**24-Aug-2021**	31-Aug-2021	✓	**24-Aug-2021**	03-Oct-2021	✓
EP075D: Nitrosamines							
Soil Glass Jar - Unpreserved (EP075) VB3-1.3	**17-Aug-2021**	**24-Aug-2021**	31-Aug-2021	✓	**24-Aug-2021**	03-Oct-2021	✓
EP075E: Nitroaromatics and Ketones							
Soil Glass Jar - Unpreserved (EP075) VB3-1.3	**17-Aug-2021**	**24-Aug-2021**	31-Aug-2021	✓	**24-Aug-2021**	03-Oct-2021	✓
EP075F: Haloethers							
Soil Glass Jar - Unpreserved (EP075) VB3-1.3	**17-Aug-2021**	**24-Aug-2021**	31-Aug-2021	✓	**24-Aug-2021**	03-Oct-2021	✓
EP075G: Chlorinated Hydrocarbons							
Soil Glass Jar - Unpreserved (EP075) VB3-1.3	**17-Aug-2021**	**24-Aug-2021**	31-Aug-2021	✓	**24-Aug-2021**	03-Oct-2021	✓

Matrix: **SOIL**

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

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation: Date extracted	Extraction / Preparation: Due for extraction	Extraction / Preparation: Evaluation	Analysis: Date analysed	Analysis: Due for analysis	Analysis: Evaluation
EP075H: Anilines and Benzidines							
Soil Glass Jar - Unpreserved (EP075) VB3-1.3	**17-Aug-2021**	**24-Aug-2021**	31-Aug-2021	✓	**24-Aug-2021**	03-Oct-2021	✓
EP075I: Organochlorine Pesticides							
Soil Glass Jar - Unpreserved (EP075) VB3-1.3	**17-Aug-2021**	**24-Aug-2021**	31-Aug-2021	✓	**24-Aug-2021**	03-Oct-2021	✓
EP075J: Organophosphorus Pesticides							
Soil Glass Jar - Unpreserved (EP075) VB3-1.3	**17-Aug-2021**	**24-Aug-2021**	31-Aug-2021	✓	**24-Aug-2021**	03-Oct-2021	✓
EP080/071: Total Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved (EP080) SB3 - 0.5, SB3 - 0.3, MW1-1.5, MW1-1.5B, MW1-2.7, MW1-2.8, MW1-4.5, SB1-0.5, SB1-0.8, SB2-0.25, SB2-0.5, VB2-0.5, VB2-1.5, VB2-2.0, VB3-0.3, VB4-1.0, VB4-1.6, VB4-1.5	**17-Aug-2021**	**23-Aug-2021**	31-Aug-2021	✓	**24-Aug-2021**	31-Aug-2021	✓
Soil Glass Jar - Unpreserved (EP071) SB3 - 0.5, SB3 - 0.3, MW1-1.5, MW1-1.5B, MW1-2.7, MW1-2.8, MW1-4.5, SB1-0.5, SB1-0.8, SB2-0.25, SB2-0.5, VB2-0.5, VB2-1.5, VB2-2.0, VB3-0.3, VB4-1.0, VB4-1.6, VB4-1.5	**17-Aug-2021**	**24-Aug-2021**	31-Aug-2021	✓	**24-Aug-2021**	03-Oct-2021	✓
Soil Glass Jar - Unpreserved (EP080) VB1-0.5, VB1-1.0m, VB1-1.5m, VB1-2.0m	**25-Aug-2021**	**25-Aug-2021**	08-Sep-2021	✓	**25-Aug-2021**	08-Sep-2021	✓
Soil Glass Jar - Unpreserved (EP071) VB1-0.5, VB1-1.0m, VB1-1.5m, VB1-2.0m	**25-Aug-2021**	**25-Aug-2021**	08-Sep-2021	✓	**26-Aug-2021**	04-Oct-2021	✓

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Matrix: **SOIL**

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

Method ***Container*** */ Client Sample ID(s)*	***Sample Date***	*Extraction / Preparation* ***Date extracted***	*Due for extraction*	*Evaluation*	*Analysis* ***Date analysed***	*Due for analysis*	*Evaluation*
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Soil Glass Jar - Unpreserved (EP080) SB3 - 0.5, SB3 - 0.3, MW1-1.5, MW1-1.5B, MW1-2.7, MW1-2.8, MW1-4.5, SB1-0.5, SB1-0.8, SB2-0.25, SB2-0.5, VB2-0.5, VB2-1.5, VB2-2.0, VB3-0.3, VB4-1.0, VB4-1.6, VB4-1.5	**17-Aug-2021**	**23-Aug-2021**	31-Aug-2021	✓	**24-Aug-2021**	31-Aug-2021	✓
Soil Glass Jar - Unpreserved (EP071) SB3 - 0.5, SB3 - 0.3, MW1-1.5, MW1-1.5B, MW1-2.7, MW1-2.8, MW1-4.5, SB1-0.5, SB1-0.8, SB2-0.25, SB2-0.5, VB2-0.5, VB2-1.5, VB2-2.0, VB3-0.3, VB4-1.0, VB4-1.6, VB4-1.5	**17-Aug-2021**	**24-Aug-2021**	31-Aug-2021	✓	**24-Aug-2021**	03-Oct-2021	✓
Soil Glass Jar - Unpreserved (EP080) VB1-0.5, VB1-1.0m, VB1-1.5m, VB1-2.0m	**25-Aug-2021**	**25-Aug-2021**	08-Sep-2021	✓	**25-Aug-2021**	08-Sep-2021	✓
Soil Glass Jar - Unpreserved (EP071) VB1-0.5, VB1-1.0m, VB1-1.5m, VB1-2.0m	**25-Aug-2021**	**25-Aug-2021**	08-Sep-2021	✓	**26-Aug-2021**	04-Oct-2021	✓
EP080: BTEXN							
Soil Glass Jar - Unpreserved (EP080) SB3 - 0.5, SB3 - 0.3, MW1-1.5, MW1-1.5B, MW1-2.7, MW1-2.8, MW1-4.5, SB1-0.5, SB1-0.8, SB2-0.25, SB2-0.5, VB2-0.5, VB2-1.5, VB2-2.0, VB3-0.3, VB4-1.0, VB4-1.6, VB4-1.5	**17-Aug-2021**	**23-Aug-2021**	31-Aug-2021	✓	**24-Aug-2021**	31-Aug-2021	✓
Soil Glass Jar - Unpreserved (EP080) VB1-0.5, VB1-1.0m, VB1-1.5m, VB1-2.0m	**25-Aug-2021**	**25-Aug-2021**	08-Sep-2021	✓	**25-Aug-2021**	08-Sep-2021	✓

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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		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Moisture Content	EA055	3	24	**12.50**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	2	9	**22.22**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds	EP075	1	1	**100.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	5	42	**11.90**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	5	42	**11.90**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	3	22	**13.64**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	3	24	**12.50**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
PAH/Phenols (SIM)	EP075(SIM)	2	9	**22.22**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds	EP075	1	1	**100.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	3	42	**7.14**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	3	42	**7.14**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	22	**9.09**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	24	**8.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
PAH/Phenols (SIM)	EP075(SIM)	2	9	**22.22**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds	EP075	1	1	**100.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	3	42	**7.14**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	3	42	**7.14**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	22	**9.09**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	24	**8.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
PAH/Phenols (SIM)	EP075(SIM)	1	9	**11.11**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds	EP075	0	1	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	3	42	**7.14**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	3	42	**7.14**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	22	**9.09**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	24	**8.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

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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
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl2) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. 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).
Volatile Organic Compounds	EP074	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. This method is compliant with NEPM Schedule B(3).
Semivolatile Organic Compounds	EP075	SOIL	In house: Referenced to USEPA SW 846 - 8270 Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM Schedule B(3).
PAH/Phenols (SIM)	EP075(SIM)	SOIL	In house: Referenced to USEPA SW 846 - 8270. Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is 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.

Preparation Methods	*Method*	*Matrix*	*Method Descriptions*
Sample Compositing	EN020	SOIL	Equal weights of each original soil are taken, then mixed and homogenised. The combined mixture is labelled as a new sample.
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with 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, Na_2SO_4 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.

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EN2108379**	Page	: 1 of 9
Client	: **ENVIRONMENTAL SERVICE AND DESIGN PTY LTD**	Laboratory	: Environmental Division Newcastle
Contact	: CARMEL PARKER	Contact	: Gregory Gommers
Address	: Level 1 49-51 Elizabeth Street Launceston 7250	Address	: 5/585 Maitland Road Mayfield West NSW Australia 2304
Telephone	: ----	Telephone	: +61 2 4014 2500
Project	: 7928	Date Samples Received	: 24-Sep-2021 09:00
Order number	: 7928	Date Analysis Commenced	: 24-Sep-2021
C-O-C number	: ----	Issue Date	: 06-Oct-2021 13:40
Sampler	: CARMEL PARKER		
Site	: ----		
Quote number	: EN/222		
No. of samples received	: 3		
No. of samples analysed	: 3		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

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*
Dale Semple	Analyst	Newcastle - Organics, Mayfield West, NSW
Daniel Junek	Senior Air Analyst	Newcastle - Organics, Mayfield West, NSW
Daniel Junek	Senior Air Analyst	Newcastle, Mayfield West, NSW

RIGHT SOLUTIONS | RIGHT PARTNER

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 Contact 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.

- EP251 conducted by ALS Brisbane, NATA Site No. 818.
- EP101: ALS is unable to report results for ethanol during the COVID-19 pandemic due to elevated background levels from laboratory disinfection procedures.
- EP101, EP103: Results reported in mg/m³ are calculated from PPMV results based on a temperature of 25°C and atmospheric pressure of 101.3 kPa.
- CAN-001: Results for Pressure - As Received are measured under controlled conditions using calibrated laboratory gauges. These results are expressed as an Absolute Pressure. Equivalent gauge pressures may be calculated by subtracting the Pressure - Laboratory Atmosphere taken at the time of measurement.
- CAN-001: Results for Pressure - Gauge as Received are obtained from uncalibrated field gauges and are indicative only. These results may not precisely match calibrated gauge readings and may vary from field measurements due to changes in temperature and pressure
- EP104: Results reported in mg/m³ are calculated from Mol% results based on a temperature of 25°C and atmospheric pressure of 101.3 kPa
- EP104: Sample canisters were received at sub-ambient pressures and required dilution in the laboratory prior to analysis. LOR values have been adjusted accordingly

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Analytical Results

Sub-Matrix: SOIL GAS
(Matrix: AIR)

Compound	CAS Number	LOR	Unit	MW1 C869_S245	MW1-B C832_S245	VB3 C1020_S034	----	----
			Sampling date / time	22-Sep-2021 16:45	22-Sep-2021 16:45	23-Sep-2021 12:13	----	----
				EN2108379-001	EN2108379-002	EN2108379-003	--------	--------
				Result	Result	Result	----	----
EP101: VOCs by USEPA Method TO15 (Calculated Concentration)								
Freon 12	75-71-8	0.250	mg/m³	----	----	<0.250	----	----
Chloromethane	74-87-3	0.100	mg/m³	----	----	<0.100	----	----
Freon 114	76-14-2	0.350	mg/m³	----	----	<0.350	----	----
Vinyl chloride	75-01-4	0.0051	mg/m³	<0.0051	<0.0051	<0.0051	----	----
Bromomethane	74-83-9	0.190	mg/m³	----	----	<0.190	----	----
Chloroethane	75-00-3	0.130	mg/m³	----	----	<0.130	----	----
Freon 11	75-69-4	0.280	mg/m³	----	----	<0.280	----	----
1.1-Dichloroethene	75-35-4	0.200	mg/m³	----	----	<0.200	----	----
Dichloromethane	75-09-2	0.170	mg/m³	----	----	<0.170	----	----
Freon 113	76-13-1	0.380	mg/m³	----	----	<0.380	----	----
1.1-Dichloroethane	75-34-3	0.200	mg/m³	----	----	<0.200	----	----
cis-1.2-Dichloroethene	156-59-2	0.0200	mg/m³	<0.0200	<0.0200	<0.0200	----	----
Chloroform	67-66-3	0.240	mg/m³	----	----	<0.240	----	----
1.2-Dichloroethane	107-06-2	0.200	mg/m³	----	----	<0.200	----	----
1.1.1-Trichloroethane	71-55-6	0.270	mg/m³	<0.270	<0.270	<0.270	----	----
Benzene	71-43-2	0.100	mg/m³	<0.100	<0.100	<0.100	----	----
Carbon Tetrachloride	56-23-5	0.310	mg/m³	----	----	<0.310	----	----
1.2-Dichloropropane	78-87-5	0.230	mg/m³	----	----	<0.230	----	----
Trichloroethene	79-01-6	0.0054	mg/m³	<0.0054	<0.0054	<0.0054	----	----
cis-1.3-Dichloropropylene	10061-01-5	0.230	mg/m³	----	----	<0.230	----	----
trans-1.3-Dichloropropene	10061-02-6	0.230	mg/m³	----	----	<0.230	----	----
1.1.2-Trichloroethane	79-00-5	0.270	mg/m³	----	----	<0.270	----	----
Toluene	108-88-3	0.190	mg/m³	<0.190	<0.190	<0.190	----	----
1.2-Dibromoethane (EDB)	106-93-4	0.380	mg/m³	----	----	<0.380	----	----
Tetrachloroethene	127-18-4	0.340	mg/m³	<0.340	<0.340	<0.340	----	----
Chlorobenzene	108-90-7	0.230	mg/m³	----	----	<0.230	----	----
Ethylbenzene	100-41-4	0.220	mg/m³	<0.220	<0.220	<0.220	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.430	mg/m³	<0.430	<0.430	<0.430	----	----
Styrene	100-42-5	0.210	mg/m³	----	----	<0.210	----	----
1.1.2.2-Tetrachloroethane	79-34-5	0.340	mg/m³	----	----	<0.340	----	----
ortho-Xylene	95-47-6	0.220	mg/m³	<0.220	<0.220	<0.220	----	----
4-Ethyltoluene	622-96-8	0.240	mg/m³	----	----	<0.240	----	----
Total Xylenes	----	0.650	mg/m³	----	----	<0.650	----	----
1.3.5-Trimethylbenzene	108-67-8	0.240	mg/m³	----	----	<0.240	----	----

Page : 4 of 9
Work Order : EN2108379
Client : ENVIRONMENTAL SERVICE AND DESIGN PTY LTD
Project : 7928

Analytical Results

Sub-Matrix: **SOIL GAS**
(Matrix: **AIR**)

Compound	CAS Number	LOR	Unit	MW1 C869_S245	MW1-B C832_S245	VB3 C1020_S034	----	----
			Sampling date / time	22-Sep-2021 16:45	22-Sep-2021 16:45	23-Sep-2021 12:13	----	----
				EN2108379-001	EN2108379-002	EN2108379-003	--------	--------
				Result	Result	Result	----	----
EP101: VOCs by USEPA Method TO15 (Calculated Concentration) - Continued								
1.2.4-Trimethylbenzene	95-63-6	0.240	mg/m³	----	----	<0.240	----	----
1.3-Dichlorobenzene	541-73-1	0.300	mg/m³	----	----	<0.300	----	----
Benzylchloride	100-44-7	0.260	mg/m³	----	----	<0.260	----	----
1.4-Dichlorobenzene	106-46-7	0.300	mg/m³	----	----	<0.300	----	----
1.2-Dichlorobenzene	95-50-1	0.300	mg/m³	----	----	<0.300	----	----
1.2.4-Trichlorobenzene	120-82-1	0.370	mg/m³	----	----	<0.370	----	----
Hexachlorobutadiene	87-68-3	0.530	mg/m³	----	----	<0.530	----	----
Acetone	67-64-1	0.120	mg/m³	----	----	<0.120	----	----
Bromodichloromethane	75-27-4	0.340	mg/m³	----	----	<0.340	----	----
1.3-Butadiene	106-99-0	0.110	mg/m³	----	----	<0.110	----	----
Carbon disulfide	75-15-0	0.160	mg/m³	----	----	<0.160	----	----
2-Chlorotoluene	95-49-8	0.260	mg/m³	----	----	<0.260	----	----
1-Chloro-2-propene (Allyl chloride)	107-05-1	0.160	mg/m³	----	----	<0.160	----	----
Cyclohexane	110-82-7	0.170	mg/m³	----	----	<0.170	----	----
Dibromochloromethane	124-48-1	0.430	mg/m³	----	----	<0.430	----	----
1.4-Dioxane	123-91-1	0.180	mg/m³	----	----	<0.180	----	----
Ethylacetate	9002-89-5	0.180	mg/m³	----	----	<0.180	----	----
trans-1.2-Dichloroethene	156-60-5	0.200	mg/m³	----	----	<0.200	----	----
Heptane	142-82-5	0.200	mg/m³	----	----	<0.200	----	----
Hexane	110-54-3	0.180	mg/m³	----	----	<0.180	----	----
Isooctane	540-84-1	0.230	mg/m³	----	----	<0.230	----	----
Isopropyl Alcohol	67-63-0	0.120	mg/m³	<0.120	<0.120	<0.120	----	----
2-Butanone (MEK)	78-93-3	0.150	mg/m³	----	----	<0.150	----	----
Methyl iso-Butyl ketone	108-10-1	0.200	mg/m³	----	----	<0.200	----	----
2-Hexanone (MBK)	591-78-6	0.200	mg/m³	----	----	<0.200	----	----
Propene	115-07-1	0.0900	mg/m³	----	----	<0.0900	----	----
Methyl tert-Butyl Ether (MTBE)	1634-04-4	0.180	mg/m³	----	----	<0.180	----	----
Tetrahydrofuran	109-99-9	0.150	mg/m³	----	----	<0.150	----	----
Bromoform	75-25-2	0.520	mg/m³	----	----	<0.520	----	----
Vinyl Acetate	108-05-4	0.180	mg/m³	----	----	<0.180	----	----
Vinyl bromide	593-60-2	0.220	mg/m³	----	----	<0.220	----	----
Acetonitrile	75-05-8	0.0800	mg/m³	----	----	<0.0800	----	----
Acrolein	107-02-8	0.110	mg/m³	----	----	<0.110	----	----
Acrylonitrile	107-13-1	0.110	mg/m³	----	----	<0.110	----	----

Analytical Results

Sub-Matrix: **SOIL GAS**
(Matrix: **AIR**)

Compound	CAS Number	LOR	Unit	MW1 C869_S245	MW1-B C832_S245	VB3 C1020_S034	----	----
			Sampling date / time	22-Sep-2021 16:45	22-Sep-2021 16:45	23-Sep-2021 12:13	----	----
				EN2108379-001	EN2108379-002	EN2108379-003	--------	--------
				Result	Result	Result	----	----
EP101: VOCs by USEPA Method TO15 (Calculated Concentration) - Continued								
tert-Butyl alcohol	75-65-0	0.150	mg/m³	----	----	<0.150	----	----
2-Chloro-1.3-butadiene	126-99-8	0.180	mg/m³	----	----	<0.180	----	----
Di-isopropyl Ether	108-20-3	0.210	mg/m³	----	----	<0.210	----	----
Ethyl tert-Butyl Ether (ETBE)	637-92-3	0.210	mg/m³	----	----	<0.210	----	----
tert-Amyl Methyl Ether (TAME)	994-05-8	0.210	mg/m³	----	----	<0.210	----	----
Methyl Methacrylate	80-62-6	0.210	mg/m³	----	----	<0.210	----	----
1.1.1.2-Tetrachloroethane	630-20-6	0.340	mg/m³	----	----	<0.340	----	----
Isopropylbenzene	98-82-8	0.250	mg/m³	----	----	<0.250	----	----
n-Propylbenzene	103-65-1	0.250	mg/m³	----	----	<0.250	----	----
tert-Butylbenzene	98-06-6	0.270	mg/m³	----	----	<0.270	----	----
sec-Butylbenzene	135-98-8	0.270	mg/m³	----	----	<0.270	----	----
2-isopropyltoluene	527-84-4	0.270	mg/m³	----	----	<0.270	----	----
n-Butylbenzene	104-51-8	0.270	mg/m³	----	----	<0.270	----	----
Naphthalene	91-20-3	0.100	mg/m³	<0.100	<0.100	<0.100	----	----
EP101: VOCs by USEPA Method TO15r								
Freon 12	75-71-8	0.0500	ppmv	----	----	<0.0500	----	----
Chloromethane	74-87-3	0.0500	ppmv	----	----	<0.0500	----	----
Freon 114	76-14-2	0.0500	ppmv	----	----	<0.0500	----	----
Vinyl chloride	75-01-4	0.0020	ppmv	<0.0020	<0.0020	<0.0020	----	----
Bromomethane	74-83-9	0.0500	ppmv	----	----	<0.0500	----	----
Chloroethane	75-00-3	0.0500	ppmv	----	----	<0.0500	----	----
Freon 11	75-69-4	0.0500	ppmv	----	----	<0.0500	----	----
1.1-Dichloroethene	75-35-4	0.0500	ppmv	----	----	<0.0500	----	----
Dichloromethane	75-09-2	0.0500	ppmv	----	----	<0.0500	----	----
Freon 113	76-13-1	0.0500	ppmv	----	----	<0.0500	----	----
1.1-Dichloroethane	75-34-3	0.0500	ppmv	----	----	<0.0500	----	----
cis-1.2-Dichloroethene	156-59-2	0.0050	ppmv	<0.0050	<0.0050	<0.0050	----	----
Chloroform	67-66-3	0.0500	ppmv	----	----	<0.0500	----	----
1.2-Dichloroethane	107-06-2	0.0500	ppmv	----	----	<0.0500	----	----
1.1.1-Trichloroethane	71-55-6	0.0500	ppmv	<0.0500	<0.0500	<0.0500	----	----
Benzene	71-43-2	0.0300	ppmv	<0.0300	<0.0300	<0.0300	----	----
Carbon Tetrachloride	56-23-5	0.0500	ppmv	----	----	<0.0500	----	----
1.2-Dichloropropane	78-87-5	0.0500	ppmv	----	----	<0.0500	----	----
Trichloroethene	79-01-6	0.0010	ppmv	<0.0010	<0.0010	<0.0010	----	----

Analytical Results

Sub-Matrix: SOIL GAS
(Matrix: AIR)

Compound	CAS Number	LOR	Unit	MW1 C869_S245	MW1-B C832_S245	VB3 C1020_S034	----	----
			Sampling date / time	22-Sep-2021 16:45	22-Sep-2021 16:45	23-Sep-2021 12:13	----	----
				EN2108379-001	EN2108379-002	EN2108379-003	--------	--------
				Result	Result	Result	----	----
EP101: VOCs by USEPA Method TO15r - Continued								
cis-1.3-Dichloropropylene	10061-01-5	0.0500	ppmv	----	----	<0.0500	----	----
trans-1.3-Dichloropropene	10061-02-6	0.0500	ppmv	----	----	<0.0500	----	----
1.1.2-Trichloroethane	79-00-5	0.0500	ppmv	----	----	<0.0500	----	----
Toluene	108-88-3	0.0500	ppmv	<0.0500	<0.0500	<0.0500	----	----
1.2-Dibromoethane (EDB)	106-93-4	0.0500	ppmv	----	----	<0.0500	----	----
Tetrachloroethene	127-18-4	0.0500	ppmv	<0.0500	<0.0500	<0.0500	----	----
Chlorobenzene	108-90-7	0.0500	ppmv	----	----	<0.0500	----	----
Ethylbenzene	100-41-4	0.0500	ppmv	<0.0500	<0.0500	<0.0500	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.100	ppmv	<0.100	<0.100	<0.100	----	----
Styrene	100-42-5	0.0500	ppmv	----	----	<0.0500	----	----
1.1.2.2-Tetrachloroethane	79-34-5	0.0500	ppmv	----	----	<0.0500	----	----
ortho-Xylene	95-47-6	0.0500	ppmv	<0.0500	<0.0500	<0.0500	----	----
4-Ethyltoluene	622-96-8	0.0500	ppmv	----	----	<0.0500	----	----
1.3.5-Trimethylbenzene	108-67-8	0.0500	ppmv	----	----	<0.0500	----	----
1.2.4-Trimethylbenzene	95-63-6	0.0500	ppmv	----	----	<0.0500	----	----
1.3-Dichlorobenzene	541-73-1	0.0500	ppmv	----	----	<0.0500	----	----
Benzylchloride	100-44-7	0.0500	ppmv	----	----	<0.0500	----	----
1.4-Dichlorobenzene	106-46-7	0.0500	ppmv	----	----	<0.0500	----	----
1.2-Dichlorobenzene	95-50-1	0.0500	ppmv	----	----	<0.0500	----	----
1.2.4-Trichlorobenzene	120-82-1	0.0500	ppmv	----	----	<0.0500	----	----
Hexachlorobutadiene	87-68-3	0.0500	ppmv	----	----	<0.0500	----	----
Acetone	67-64-1	0.0500	ppmv	----	----	<0.0500	----	----
Bromodichloromethane	75-27-4	0.0500	ppmv	----	----	<0.0500	----	----
1.3-Butadiene	106-99-0	0.0500	ppmv	----	----	<0.0500	----	----
Carbon disulfide	75-15-0	0.0500	ppmv	----	----	<0.0500	----	----
2-Chlorotoluene	95-49-8	0.0500	ppmv	----	----	<0.0500	----	----
1-Chloro-2-propene (Allyl chloride)	107-05-1	0.0500	ppmv	----	----	<0.0500	----	----
Cyclohexane	110-82-7	0.0500	ppmv	----	----	<0.0500	----	----
Dibromochloromethane	124-48-1	0.0500	ppmv	----	----	<0.0500	----	----
1.4-Dioxane	123-91-1	0.0500	ppmv	----	----	<0.0500	----	----
Ethylacetate	9002-89-5	0.0500	ppmv	----	----	<0.0500	----	----
trans-1.2-Dichloroethene	156-60-5	0.0500	ppmv	----	----	<0.0500	----	----
Heptane	142-82-5	0.0500	ppmv	----	----	<0.0500	----	----
Hexane	110-54-3	0.0500	ppmv	----	----	<0.0500	----	----

Page	: 7 of 9
Work Order	: EN2108379
Client	: ENVIRONMENTAL SERVICE AND DESIGN PTY LTD
Project	: 7928

Analytical Results

Sub-Matrix: SOIL GAS
(Matrix: AIR)

Compound	CAS Number	LOR	Unit	MW1 C869_S245	MW1-B C832_S245	VB3 C1020_S034	----	----
			Sampling date / time	22-Sep-2021 16:45	22-Sep-2021 16:45	23-Sep-2021 12:13	----	----
				EN2108379-001	EN2108379-002	EN2108379-003	--------	--------
				Result	Result	Result	----	----
EP101: VOCs by USEPA Method TO15r - Continued								
Isooctane	540-84-1	0.0500	ppmv	----	----	<0.0500	----	----
Isopropyl Alcohol	67-63-0	0.0500	ppmv	<0.0500	<0.0500	<0.0500	----	----
2-Butanone (MEK)	78-93-3	0.0500	ppmv	----	----	<0.0500	----	----
Methyl iso-Butyl ketone	108-10-1	0.0500	ppmv	----	----	<0.0500	----	----
2-Hexanone (MBK)	591-78-6	0.0500	ppmv	----	----	<0.0500	----	----
Propene	115-07-1	0.0500	ppmv	----	----	<0.0500	----	----
Methyl tert-Butyl Ether (MTBE)	1634-04-4	0.0500	ppmv	----	----	<0.0500	----	----
Tetrahydrofuran	109-99-9	0.0500	ppmv	----	----	<0.0500	----	----
Bromoform	75-25-2	0.0500	ppmv	----	----	<0.0500	----	----
Vinyl Acetate	108-05-4	0.0500	ppmv	----	----	<0.0500	----	----
Vinyl bromide	593-60-2	0.0500	ppmv	----	----	<0.0500	----	----
Acetonitrile	75-05-8	0.0500	ppmv	----	----	<0.0500	----	----
Acrolein	107-02-8	0.0500	ppmv	----	----	<0.0500	----	----
Acrylonitrile	107-13-1	0.0500	ppmv	----	----	<0.0500	----	----
tert-Butyl alcohol	75-65-0	0.0500	ppmv	----	----	<0.0500	----	----
2-Chloro-1.3-butadiene	126-99-8	0.0500	ppmv	----	----	<0.0500	----	----
Di-isopropyl Ether	108-20-3	0.0500	ppmv	----	----	<0.0500	----	----
Ethyl tert-Butyl Ether (ETBE)	637-92-3	0.0500	ppmv	----	----	<0.0500	----	----
tert-Amyl Methyl Ether (TAME)	994-05-8	0.0500	ppmv	----	----	<0.0500	----	----
Methyl Methacrylate	80-62-6	0.0500	ppmv	----	----	<0.0500	----	----
1.1.1.2-Tetrachloroethane	630-20-6	0.0500	ppmv	----	----	<0.0500	----	----
Isopropylbenzene	98-82-8	0.0500	ppmv	----	----	<0.0500	----	----
n-Propylbenzene	103-65-1	0.0500	ppmv	----	----	<0.0500	----	----
tert-Butylbenzene	98-06-6	0.0500	ppmv	----	----	<0.0500	----	----
sec-Butylbenzene	135-98-8	0.0500	ppmv	----	----	<0.0500	----	----
2-isopropyltoluene	527-84-4	0.0500	ppmv	----	----	<0.0500	----	----
n-Butylbenzene	104-51-8	0.0500	ppmv	----	----	<0.0500	----	----
Naphthalene	91-20-3	0.0190	ppmv	<0.0190	<0.0190	<0.0190	----	----
EP103: Petroleum Hydrocarbons in Gaseous Samples								
C6 - C9 Fraction	----	5.00	ppmv	<5.00	<5.00	<5.00	----	----
C10 - C14 Fraction	----	5.00	ppmv	<5.00	<5.00	<5.00	----	----
EP103: Petroleum Hydrocarbons in Gaseous Samples (Calc Conc)								
C6 - C9 Fraction	----	20.0	mg/m^3	<20.0	<20.0	<20.0	----	----
C10 - C14 Fraction	----	35.0	mg/m^3	<35.0	<35.0	<35.0	----	----

Analytical Results

Sub-Matrix: **SOIL GAS**
(Matrix: **AIR**)

Compound	CAS Number	LOR	Unit	MW1	MW1-B	VB3	----	----
Sample ID				C869_S245	C832_S245	C1020_S034		
Sampling date / time				22-Sep-2021 16:45	22-Sep-2021 16:45	23-Sep-2021 12:13	----	----
				EN2108379-001	EN2108379-002	EN2108379-003	--------	--------
				Result	Result	Result	----	----
EP103: Total Recoverable Hydrocarbons - NEPM 2013								
C6 - C10 Fraction	C6_C10	5.00	ppmv	<5.00	<5.00	<5.00	----	----
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	5.00	ppmv	<5.00	<5.00	<5.00	----	----
>C10 - C16 Fraction	----	5.00	ppmv	<5.00	<5.00	<5.00	----	----
>C10 - C16 Fraction minus Naphthalene (F2)	----	5.00	ppmv	<5.00	<5.00	<5.00	----	----
EP103: Total Recoverable Hydrocarbons - NEPM 2013 (Calc Conc)								
C6 - C10 Fraction	C6_C10	20.0	mg/m^3	<20.0	<20.0	<20.0	----	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20.0	mg/m^3	<20.0	<20.0	<20.0	----	----
>C10 - C16 Fraction	----	40.0	mg/m^3	<40.0	<40.0	<40.0	----	----
>C10 - C16 Fraction minus Naphthalene (F2)	----	40.0	mg/m^3	<40.0	<40.0	<40.0	----	----
EP104: Light Hydrocarbons								
Methane	74-82-8	0.005	Mol %	**0.147**	**0.146**	**9.08**	----	----
EP104: Light Hydrocarbons (Calc Conc)								
Methane	74-82-8	33	mg/m^3	**961**	**955**	**59400**	----	----
EP104: Permanent Gases								
Carbon Dioxide	124-38-9	0.005	Mol %	**13.2**	**13.1**	**16.4**	----	----
Carbon Monoxide	630-08-0	0.005	Mol %	<0.012	<0.012	<0.010	----	----
Oxygen	7782-44-7	0.10	Mol %	**2.20**	**2.19**	**0.87**	----	----
EP104: Permanent Gases (Calc Conc)								
Carbon Dioxide	124-38-9	90	mg/m^3	**237000**	**236000**	**295000**	----	----
Carbon Monoxide	630-08-0	60	mg/m^3	<150	<150	<120	----	----
Oxygen	7782-44-7	1310	mg/m^3	**28700**	**28600**	**11300**	----	----
Sampling Quality Assurance								
Pressure - As received	PRESSURE	0.1	kPaa	**67.8**	**68.0**	**95.7**	----	----
Pressure - Laboratory Atmosphere	----	0.1	kPaa	**101**	**101**	**101**	----	----
Temperature as Received	----	0.1	°C	**19.0**	**19.0**	**19.0**	----	----
Vacuum - As received	----	0.03	Inches Hg	**9.83**	**9.80**	**1.59**	----	----
USEPA Air Toxics Method TO15r Surrogates								
4-Bromofluorobenzene	460-00-4	0.5	%	**106**	**105**	**106**	----	----

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Client	: ENVIRONMENTAL SERVICE AND DESIGN PTY LTD
Project	: 7928

Surrogate Control Limits

Sub-Matrix: **SOIL GAS**

Compound	*CAS Number*	*Recovery Limits (%)* Low	*Recovery Limits (%)* High
USEPA Air Toxics Method TO15r Surrogates			
4-Bromofluorobenzene	460-00-4	60	140

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **EN2108379**	Page	: 1 of 7
Client	: **ENVIRONMENTAL SERVICE AND DESIGN PTY LTD**	Laboratory	: Environmental Division Newcastle
Contact	: CARMEL PARKER	Contact	: Gregory Gommers
Address	: Level 1 49-51 Elizabeth Street Launceston 7250	Address	: 5/585 Maitland Road Mayfield West NSW Australia 2304
Telephone	: ----	Telephone	: +61 2 4014 2500
Project	: 7928	Date Samples Received	: 24-Sep-2021
Order number	: 7928	Date Analysis Commenced	: 24-Sep-2021
C-O-C number	: ----	Issue Date	: 06-Oct-2021
Sampler	: CARMEL PARKER		
Site	: ----		
Quote number	: EN/222		
No. of samples received	: 3		
No. of samples analysed	: 3		

NATA
Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

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), Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report ; Recovery and Acceptance Limits
- Matrix Spike (MS) and Matrix Spike Duplicate (MSD) 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*
Dale Semple	Analyst	Newcastle - Organics, Mayfield West, NSW
Daniel Junek	Senior Air Analyst	Newcastle - Organics, Mayfield West, NSW
Daniel Junek	Senior Air Analyst	Newcastle, Mayfield West, NSW

RIGHT SOLUTIONS | RIGHT PARTNER

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: **AIR**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP101: VOCs by USEPA Method TO15r (QC Lot: 3922359)									
EN2108379-001	MW1 C869_S245	EP101-15X: Freon 12	75-71-8	0.5	ppbv	<0.0500 ppmv	<50.0	0.0	No Limit
		EP101-15X: Chloromethane	74-87-3	0.5	ppbv	<0.0500 ppmv	<50.0	0.0	No Limit
		EP101-15X: Freon 114	76-14-2	0.5	ppbv	<0.0500 ppmv	<50.0	0.0	No Limit
		EP101-15X: Vinyl chloride	75-01-4	0.5	ppbv	<0.0020 ppmv	<2.0	0.0	No Limit
		EP101-15X: Bromomethane	74-83-9	0.5	ppbv	<0.0500 ppmv	<50.0	0.0	No Limit
		EP101-15X: Chloroethane	75-00-3	0.5	ppbv	<0.0500 ppmv	<50.0	0.0	No Limit
		EP101-15X: Freon 11	75-69-4	0.5	ppbv	<0.0500 ppmv	<50.0	0.0	No Limit
		EP101-15X: 1.1-Dichloroethene	75-35-4	0.5	ppbv	<0.0500 ppmv	<50.0	0.0	No Limit
		EP101-15X: Dichloromethane	75-09-2	0.5	ppbv	<0.0500 ppmv	<50.0	0.0	No Limit
		EP101-15X: Freon 113	76-13-1	0.5	ppbv	<0.0500 ppmv	<50.0	0.0	No Limit
		EP101-15X: 1.1-Dichloroethane	75-34-3	0.5	ppbv	<0.0500 ppmv	<50.0	0.0	No Limit
		EP101-15X: cis-1.2-Dichloroethene	156-59-2	0.5	ppbv	<0.0050 ppmv	<5.0	0.0	No Limit
		EP101-15X: Chloroform	67-66-3	0.5	ppbv	<0.0500 ppmv	<50.0	0.0	No Limit
		EP101-15X: 1.2-Dichloroethane	107-06-2	0.5	ppbv	<0.0500 ppmv	<50.0	0.0	No Limit
		EP101-15X: 1.1.1-Trichloroethane	71-55-6	0.5	ppbv	<0.0500 ppmv	<50.0	0.0	No Limit
		EP101-15X: Benzene	71-43-2	0.5	ppbv	<0.0300 ppmv	<30.0	0.0	No Limit
		EP101-15X: Carbon Tetrachloride	56-23-5	0.5	ppbv	<0.0500 ppmv	<50.0	0.0	No Limit
		EP101-15X: 1.2-Dichloropropane	78-87-5	0.5	ppbv	<0.0500 ppmv	<50.0	0.0	No Limit
		EP101-15X: Trichloroethene	79-01-6	0.5	ppbv	<0.0010 ppmv	<1.0	0.0	No Limit
		EP101-15X: cis-1.3-Dichloropropylene	10061-01-5	0.5	ppbv	<0.0500 ppmv	<50.0	0.0	No Limit
		EP101-15X: trans-1.3-Dichloropropene	10061-02-6	0.5	ppbv	<0.0500 ppmv	<50.0	0.0	No Limit
		EP101-15X: 1.1.2-Trichloroethane	79-00-5	0.5	ppbv	<0.0500 ppmv	<50.0	0.0	No Limit
		EP101-15X: Toluene	108-88-3	0.5	ppbv	<0.0500 ppmv	<50.0	0.0	No Limit
		EP101-15X: 1.2-Dibromoethane (EDB)	106-93-4	0.5	ppbv	<0.0500 ppmv	<50.0	0.0	No Limit

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Work Order	: EN2108379
Client	: ENVIRONMENTAL SERVICE AND DESIGN PTY LTD
Project	: 7928

Sub-Matrix: **AIR**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
				Laboratory Duplicate (DUP) Report					
EP101: VOCs by USEPA Method TO15r (QC Lot: 3922359) - continued									
EN2108379-001	MW1 C869_S245	EP101-15X: Tetrachloroethene	127-18-4	0.5	ppbv	<0.0500 ppmv	<50.0	0.0	No Limit
		EP101-15X: Chlorobenzene	108-90-7	0.5	ppbv	<0.0500 ppmv	<50.0	0.0	No Limit
		EP101-15X: Ethylbenzene	100-41-4	0.5	ppbv	<0.0500 ppmv	<50.0	0.0	No Limit
		EP101-15X: Styrene	100-42-5	0.5	ppbv	<0.0500 ppmv	<50.0	0.0	No Limit
		EP101-15X: 1.1.2.2-Tetrachloroethane	79-34-5	0.5	ppbv	<0.0500 ppmv	<50.0	0.0	No Limit
		EP101-15X: ortho-Xylene	95-47-6	0.5	ppbv	<0.0500 ppmv	<50.0	0.0	No Limit
		EP101-15X: 4-Ethyltoluene	622-96-8	0.5	ppbv	<0.0500 ppmv	<50.0	0.0	No Limit
		EP101-15X: 1.3.5-Trimethylbenzene	108-67-8	0.5	ppbv	<0.0500 ppmv	<50.0	0.0	No Limit
		EP101-15X: 1.2.4-Trimethylbenzene	95-63-6	0.5	ppbv	<0.0500 ppmv	<50.0	0.0	No Limit
		EP101-15X: 1.3-Dichlorobenzene	541-73-1	0.5	ppbv	<0.0500 ppmv	<50.0	0.0	No Limit
		EP101-15X: Benzylchloride	100-44-7	0.5	ppbv	<0.0500 ppmv	<50.0	0.0	No Limit
		EP101-15X: 1.4-Dichlorobenzene	106-46-7	0.5	ppbv	<0.0500 ppmv	<50.0	0.0	No Limit
		EP101-15X: 1.2-Dichlorobenzene	95-50-1	0.5	ppbv	<0.0500 ppmv	<50.0	0.0	No Limit
		EP101-15X: 1.2.4-Trichlorobenzene	120-82-1	0.5	ppbv	<0.0500 ppmv	<50.0	0.0	No Limit
		EP101-15X: Hexachlorobutadiene	87-68-3	0.5	ppbv	<0.0500 ppmv	<50.0	0.0	No Limit
		EP101-15X: Acetone	67-64-1	0.5	ppbv	0.246 ppmv	247	0.5	No Limit
		EP101-15X: Bromodichloromethane	75-27-4	0.5	ppbv	<0.0500 ppmv	<50.0	0.0	No Limit
		EP101-15X: 1.3-Butadiene	106-99-0	0.5	ppbv	<0.0500 ppmv	<50.0	0.0	No Limit
		EP101-15X: Carbon disulfide	75-15-0	0.5	ppbv	<0.0500 ppmv	<50.0	0.0	No Limit
		EP101-15X: 2-Chlorotoluene	95-49-8	0.5	ppbv	<0.0500 ppmv	<50.0	0.0	No Limit
		EP101-15X: 1-Chloro-2-propene (Allyl chloride)	107-05-1	0.5	ppbv	<0.0500 ppmv	<50.0	0.0	No Limit
		EP101-15X: Cyclohexane	110-82-7	0.5	ppbv	<0.0500 ppmv	<50.0	0.0	No Limit
		EP101-15X: Dibromochloromethane	124-48-1	0.5	ppbv	<0.0500 ppmv	<50.0	0.0	No Limit
		EP101-15X: 1.4-Dioxane	123-91-1	0.5	ppbv	<0.0500 ppmv	<50.0	0.0	No Limit
		EP101-15X: Ethylacetate	9002-89-5	0.5	ppbv	<0.0500 ppmv	<50.0	0.0	No Limit
		EP101-15X: trans-1.2-Dichloroethene	156-60-5	0.5	ppbv	<0.0500 ppmv	<50.0	0.0	No Limit
		EP101-15X: Heptane	142-82-5	0.5	ppbv	<0.0500 ppmv	<50.0	0.0	No Limit
		EP101-15X: Hexane	110-54-3	0.5	ppbv	<0.0500 ppmv	<50.0	0.0	No Limit
		EP101-15X: Isooctane	540-84-1	0.5	ppbv	<0.0500 ppmv	<50.0	0.0	No Limit
		EP101-15X: Isopropyl Alcohol	67-63-0	0.5	ppbv	<0.0500 ppmv	<50.0	0.0	No Limit
		EP101-15X: 2-Butanone (MEK)	78-93-3	0.5	ppbv	<0.0500 ppmv	<50.0	0.0	No Limit
		EP101-15X: Methyl iso-Butyl ketone	108-10-1	0.5	ppbv	<0.0500 ppmv	<50.0	0.0	No Limit
		EP101-15X: 2-Hexanone (MBK)	591-78-6	0.5	ppbv	<0.0500 ppmv	<50.0	0.0	No Limit
		EP101-15X: Propene	115-07-1	0.5	ppbv	0.0630 ppmv	64.3	2.0	No Limit
		EP101-15X: Methyl tert-Butyl Ether (MTBE)	1634-04-4	0.5	ppbv	<0.0500 ppmv	<50.0	0.0	No Limit
		EP101-15X: Tetrahydrofuran	109-99-9	0.5	ppbv	<0.0500 ppmv	<50.0	0.0	No Limit
		EP101-15X: Bromoform	75-25-2	0.5	ppbv	<0.0500 ppmv	<50.0	0.0	No Limit
		EP101-15X: Vinyl Acetate	108-05-4	0.5	ppbv	<0.0500 ppmv	<50.0	0.0	No Limit
		EP101-15X: Vinyl bromide	593-60-2	0.5	ppbv	<0.0500 ppmv	<50.0	0.0	No Limit
		EP101-15X: Acetonitrile	75-05-8	0.5	ppbv	<0.0500 ppmv	<50.0	0.0	No Limit

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Client : ENVIRONMENTAL SERVICE AND DESIGN PTY LTD
Project : 7928

Sub-Matrix: **AIR**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Laboratory Duplicate (DUP) Report: Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP101: VOCs by USEPA Method TO15r (QC Lot: 3922359) - continued									
EN2108379-001	MW1 C869_S245	EP101-15X: Acrolein	107-02-8	0.5	ppbv	<0.0500 ppmv	<50.0	0.0	No Limit
		EP101-15X: Acrylonitrile	107-13-1	0.5	ppbv	<0.0500 ppmv	<50.0	0.0	No Limit
		EP101-15X: tert-Butyl alcohol	75-65-0	0.5	ppbv	<0.0500 ppmv	<50.0	0.0	No Limit
		EP101-15X: 2-Chloro-1.3-butadiene	126-99-8	0.5	ppbv	<0.0500 ppmv	<50.0	0.0	No Limit
		EP101-15X: Di-isopropyl Ether	108-20-3	0.5	ppbv	<0.0500 ppmv	<50.0	0.0	No Limit
		EP101-15X: Ethyl tert-Butyl Ether (ETBE)	637-92-3	0.5	ppbv	<0.0500 ppmv	<50.0	0.0	No Limit
		EP101-15X: tert-Amyl Methyl Ether (TAME)	994-05-8	0.5	ppbv	<0.0500 ppmv	<50.0	0.0	No Limit
		EP101-15X: Methyl Methacrylate	80-62-6	0.5	ppbv	<0.0500 ppmv	<50.0	0.0	No Limit
		EP101-15X: 1.1.1.2-Tetrachloroethane	630-20-6	0.5	ppbv	<0.0500 ppmv	<50.0	0.0	No Limit
		EP101-15X: Isopropylbenzene	98-82-8	0.5	ppbv	<0.0500 ppmv	<50.0	0.0	No Limit
		EP101-15X: n-Propylbenzene	103-65-1	0.5	ppbv	<0.0500 ppmv	<50.0	0.0	No Limit
		EP101-15X: tert-Butylbenzene	98-06-6	0.5	ppbv	<0.0500 ppmv	<50.0	0.0	No Limit
		EP101-15X: sec-Butylbenzene	135-98-8	0.5	ppbv	<0.0500 ppmv	<50.0	0.0	No Limit
		EP101-15X: 2-isopropyltoluene	527-84-4	0.5	ppbv	<0.0500 ppmv	<50.0	0.0	No Limit
		EP101-15X: n-Butylbenzene	104-51-8	0.5	ppbv	<0.0500 ppmv	<50.0	0.0	No Limit
		EP101-15X: Naphthalene	91-20-3	0.5	ppbv	<0.0190 ppmv	<19.0	0.0	No Limit
		EP101-15X: meta- & para-Xylene	108-38-3 106-42-3	1	ppbv	<0.100 ppmv	<100	0.0	No Limit
EP103: Petroleum Hydrocarbons in Gaseous Samples (QC Lot: 3922360)									
EN2108379-001	MW1 C869_S245	EP103-PC: C6 - C9 Fraction	----	50	ppbv	<5.00 ppmv	<5000	0.0	No Limit
		EP103-PC: C10 - C14 Fraction	----	50	ppbv	<5.00 ppmv	<5000	0.0	No Limit
EP103: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3922360)									
EN2108379-001	MW1 C869_S245	EP103-PC: C6 - C10 Fraction	C6_C10	50	ppbv	<5.00 ppmv	<5000	0.0	No Limit
		EP103-PC: >C10 - C16 Fraction	----	50	ppbv	<5.00 ppmv	<5000	0.0	No Limit
EP104: Light Hydrocarbons (QC Lot: 3920798)									
EN2108183-001	Anonymous	EP104: Methane	74-82-8	0.005	Mol %	<0.010	<0.010	0.0	No Limit
EN2108292-001	Anonymous	EP104: Methane	74-82-8	0.005	Mol %	0.605	0.607	0.3	0% - 20%
EP104: Permanent Gases (QC Lot: 3920798)									
EN2108183-001	Anonymous	EP104: Carbon Dioxide	124-38-9	0.005	Mol %	2.04	2.05	0.1	0% - 20%
		EP104: Carbon Monoxide	630-08-0	0.005	Mol %	<0.010	<0.010	0.0	No Limit
		EP104: Oxygen	7782-44-7	0.1	Mol %	8.91	8.93	0.2	0% - 20%
EN2108292-001	Anonymous	EP104: Carbon Dioxide	124-38-9	0.005	Mol %	0.101	0.100	1.2	0% - 50%
		EP104: Carbon Monoxide	630-08-0	0.005	Mol %	<0.010	<0.010	0.0	No Limit
		EP104: Oxygen	7782-44-7	0.1	Mol %	15.8	15.9	0.2	0% - 20%

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Project : 7928

Method Blank (MB), Laboratory Control Sample (LCS) and Laboratory Control Sample Duplicate (DCS) 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 terms Laboratory Control Sample (LCS) and Laboratory Control Sample Duplicate (DCS) refers to certified reference materials, or known interference free matrices spiked with target analytes. The purpose of these QC parameters are to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS and DCS.

Sub-Matrix: **AIR**

		Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
					Spike	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
Method: Compound	*CAS Number*	*LOR*	*Unit*	*Result*	*Concentration*	*LCS*	*DCS*	*Low*	*High*	*Value*	*Control Limit*
EP101: VOCs by USEPA Method TO15r (QCLot: 3922359)											
EP101-15X: Freon 12	75-71-8	0.5	ppbv	<0.5	10 ppbv	101	101	84.5	116	20	----
EP101-15X: Chloromethane	74-87-3	0.5	ppbv	<0.5	10 ppbv	101	97.2	74.5	130	20	----
EP101-15X: Freon 114	76-14-2	0.5	ppbv	<0.5	10 ppbv	103	103	86.1	120	20	----
EP101-15X: Vinyl chloride	75-01-4	0.5	ppbv	<0.5	10 ppbv	96.1	96.5	81.4	121	20	----
EP101-15X: Bromomethane	74-83-9	0.5	ppbv	<0.5	10 ppbv	105	105	83.2	122	20	----
EP101-15X: Chloroethane	75-00-3	0.5	ppbv	<0.5	10 ppbv	97.1	97.4	82.9	122	20	----
EP101-15X: Freon 11	75-69-4	0.5	ppbv	<0.5	10 ppbv	103	103	82.1	118	20	----
EP101-15X: 1.1-Dichloroethene	75-35-4	0.5	ppbv	<0.5	10 ppbv	99.9	100	81.8	123	20	----
EP101-15X: Dichloromethane	75-09-2	0.5	ppbv	<0.5	10 ppbv	94.5	93.0	71.6	129	20	----
EP101-15X: Freon 113	76-13-1	0.5	ppbv	<0.5	10 ppbv	107	106	75.5	130	20	----
EP101-15X: 1.1-Dichloroethane	75-34-3	0.5	ppbv	<0.5	10 ppbv	95.3	95.7	82.6	124	20	----
EP101-15X: cis-1.2-Dichloroethene	156-59-2	0.5	ppbv	<0.5	10 ppbv	97.5	97.7	81.9	120	20	----
EP101-15X: Chloroform	67-66-3	0.5	ppbv	<0.5	10 ppbv	98.6	98.2	86.2	115	20	----
EP101-15X: 1.2-Dichloroethane	107-06-2	0.5	ppbv	<0.5	10 ppbv	92.8	92.6	80.3	114	20	----
EP101-15X: 1.1.1-Trichloroethane	71-55-6	0.5	ppbv	<0.5	10 ppbv	96.3	96.5	77.6	128	20	----
EP101-15X: Benzene	71-43-2	0.5	ppbv	<0.5	10 ppbv	92.1	92.2	82.8	119	20	----
EP101-15X: Carbon Tetrachloride	56-23-5	0.5	ppbv	<0.5	10 ppbv	99.9	99.4	75.5	129	20	----
EP101-15X: 1.2-Dichloropropane	78-87-5	0.5	ppbv	<0.5	10 ppbv	91.8	91.8	80.8	122	20	----
EP101-15X: Trichloroethene	79-01-6	0.5	ppbv	<0.5	10 ppbv	101	100	80.0	120	20	----
EP101-15X: cis-1.3-Dichloropropylene	10061-01-5	0.5	ppbv	<0.5	10 ppbv	88.3	88.4	77.7	120	20	----
EP101-15X: trans-1.3-Dichloropropene	10061-02-6	0.5	ppbv	<0.5	10 ppbv	81.3	82.6	70.1	123	20	----
EP101-15X: 1.1.2-Trichloroethane	79-00-5	0.5	ppbv	<0.5	10 ppbv	107	106	78.5	130	20	----
EP101-15X: Toluene	108-88-3	0.5	ppbv	<0.5	10 ppbv	95.2	96.0	76.5	130	20	----
EP101-15X: 1.2-Dibromoethane (EDB)	106-93-4	0.5	ppbv	<0.5	10 ppbv	102	102	72.0	130	20	----
EP101-15X: Tetrachloroethene	127-18-4	0.5	ppbv	<0.5	10 ppbv	108	106	70.3	130	20	----
EP101-15X: Chlorobenzene	108-90-7	0.5	ppbv	<0.5	10 ppbv	105	104	72.9	129	20	----
EP101-15X: Ethylbenzene	100-41-4	0.5	ppbv	<0.5	10 ppbv	96.4	96.9	73.4	123	20	----
EP101-15X: meta- & para-Xylene	108-38-3 106-42-3	1	ppbv	<1.0	20 ppbv	97.9	98.2	77.2	122	20	----
EP101-15X: Styrene	100-42-5	0.5	ppbv	<0.5	10 ppbv	91.7	92.3	70.0	130	20	----
EP101-15X: 1.1.2.2-Tetrachloroethane	79-34-5	0.5	ppbv	<0.5	10 ppbv	108	107	74.9	119	20	----
EP101-15X: ortho-Xylene	95-47-6	0.5	ppbv	<0.5	10 ppbv	100.0	99.4	72.1	122	20	----
EP101-15X: 4-Ethyltoluene	622-96-8	0.5	ppbv	<0.5	10 ppbv	110	110	70.0	130	20	----

Work Order : EN2108379
Client : ENVIRONMENTAL SERVICE AND DESIGN PTY LTD
Project : 7928

Sub-Matrix: **AIR**

		Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
					Spike	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	DCS	Low	High	Value	Control Limit
EP101: VOCs by USEPA Method TO15r (QCLot: 3922359) - continued											
EP101-15X: 1.3.5-Trimethylbenzene	108-67-8	0.5	ppbv	<0.5	10 ppbv	105	104	70.0	126	20	----
EP101-15X: 1.2.4-Trimethylbenzene	95-63-6	0.5	ppbv	<0.5	10 ppbv	101	101	70.0	121	20	----
EP101-15X: 1.3-Dichlorobenzene	541-73-1	0.5	ppbv	<0.5	10 ppbv	107	106	70.0	123	20	----
EP101-15X: Benzylchloride	100-44-7	0.5	ppbv	<0.5	10 ppbv	89.8	90.4	70.0	130	20	----
EP101-15X: 1.4-Dichlorobenzene	106-46-7	0.5	ppbv	<0.5	10 ppbv	106	106	70.0	122	20	----
EP101-15X: 1.2-Dichlorobenzene	95-50-1	0.5	ppbv	<0.5	10 ppbv	106	106	70.0	125	20	----
EP101-15X: 1.2.4-Trichlorobenzene	120-82-1	0.5	ppbv	<0.5	10 ppbv	111	111	70.0	127	20	----
EP101-15X: Hexachlorobutadiene	87-68-3	0.5	ppbv	<0.5	10 ppbv	112	110	70.0	130	20	----
EP101-15X: Acetone	67-64-1	0.5	ppbv	<0.5	10 ppbv	108	105	70.0	130	20	----
EP101-15X: Bromodichloromethane	75-27-4	0.5	ppbv	<0.5	10 ppbv	99.8	99.6	80.7	118	20	----
EP101-15X: 1.3-Butadiene	106-99-0	0.5	ppbv	<0.5	10 ppbv	88.3	89.7	75.3	125	20	----
EP101-15X: Carbon disulfide	75-15-0	0.5	ppbv	<0.5	10 ppbv	102	101	83.1	117	20	----
EP101-15X: 2-Chlorotoluene	95-49-8	0.5	ppbv	<0.5	10 ppbv	105	105	70.0	126	20	----
EP101-15X: 1-Chloro-2-propene (Allyl chloride)	107-05-1	0.5	ppbv	<0.5	10 ppbv	83.6	84.2	73.7	129	20	----
EP101-15X: Cyclohexane	110-82-7	0.5	ppbv	<0.5	10 ppbv	100	99.9	78.1	126	20	----
EP101-15X: Dibromochloromethane	124-48-1	0.5	ppbv	<0.5	10 ppbv	108	107	70.0	130	20	----
EP101-15X: 1.4-Dioxane	123-91-1	0.5	ppbv	<0.5	10 ppbv	87.5	88.4	70.8	119	20	----
EP101-15X: Ethylacetate	9002-89-5	0.5	ppbv	<0.5	10 ppbv	79.8	80.4	74.8	128	20	----
EP101-15X: trans-1.2-Dichloroethene	156-60-5	0.5	ppbv	<0.5	10 ppbv	93.9	93.9	78.0	120	20	----
EP101-15X: Heptane	142-82-5	0.5	ppbv	<0.5	10 ppbv	96.8	97.3	76.8	127	20	----
EP101-15X: Hexane	110-54-3	0.5	ppbv	<0.5	10 ppbv	95.5	95.7	79.4	123	20	----
EP101-15X: Isooctane	540-84-1	0.5	ppbv	<0.5	10 ppbv	93.9	93.8	77.7	124	20	----
EP101-15X: Isopropyl Alcohol	67-63-0	0.5	ppbv	<0.5	10 ppbv	78.2	81.1	70.0	126	20	----
EP101-15X: 2-Butanone (MEK)	78-93-3	0.5	ppbv	<0.5	10 ppbv	88.7	89.6	75.6	122	20	----
EP101-15X: Methyl iso-Butyl ketone	108-10-1	0.5	ppbv	<0.5	10 ppbv	79.0	80.2	70.0	121	20	----
EP101-15X: 2-Hexanone (MBK)	591-78-6	0.5	ppbv	<0.5	10 ppbv	77.6	78.6	70.0	127	20	----
EP101-15X: Propene	115-07-1	0.5	ppbv	<0.5	10 ppbv	89.5	90.2	70.0	130	20	----
EP101-15X: Methyl tert-Butyl Ether (MTBE)	1634-04-4	0.5	ppbv	<0.5	10 ppbv	84.0	85.6	70.1	130	20	----
EP101-15X: Tetrahydrofuran	109-99-9	0.5	ppbv	<0.5	10 ppbv	86.3	87.2	70.5	121	20	----
EP101-15X: Bromoform	75-25-2	0.5	ppbv	<0.5	10 ppbv	102	101	70.0	130	20	----
EP101-15X: Vinyl Acetate	108-05-4	0.5	ppbv	<0.5	10 ppbv	75.7	76.8	70.0	130	20	----
EP101-15X: Vinyl bromide	593-60-2	0.5	ppbv	<0.5	10 ppbv	101	102	78.8	122	20	----
EP101-15X: Acetonitrile	75-05-8	0.5	ppbv	<0.5	10 ppbv	80.7	81.1	70.0	130	20	----
EP101-15X: Acrolein	107-02-8	0.5	ppbv	<0.5	10 ppbv	70.8	70.7	70.0	130	20	----
EP101-15X: Acrylonitrile	107-13-1	0.5	ppbv	<0.5	10 ppbv	86.3	86.7	73.5	129	20	----
EP101-15X: tert-Butyl alcohol	75-65-0	0.5	ppbv	<0.5	10 ppbv	84.2	85.0	70.0	130	20	----
EP101-15X: 2-Chloro-1.3-butadiene	126-99-8	0.5	ppbv	<0.5	10 ppbv	83.4	84.3	77.4	118	20	----
EP101-15X: Di-isopropyl Ether	108-20-3	0.5	ppbv	<0.5	10 ppbv	87.0	87.8	73.0	128	20	----
EP101-15X: Ethyl tert-Butyl Ether (ETBE)	637-92-3	0.5	ppbv	<0.5	10 ppbv	81.0	83.0	76.1	124	20	----
EP101-15X: tert-Amyl Methyl Ether (TAME)	994-05-8	0.5	ppbv	<0.5	10 ppbv	79.7	81.1	72.9	128	20	----

Page	:	7 of 7
Work Order	:	EN2108379
Client	:	ENVIRONMENTAL SERVICE AND DESIGN PTY LTD
Project	:	7928

Sub-Matrix: **AIR**

		Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
					Spike	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	DCS	Low	High	Value	Control Limit
EP101: VOCs by USEPA Method TO15r (QCLot: 3922359) - continued											
EP101-15X: Methyl Methacrylate	80-62-6	0.5	ppbv	<0.5	10 ppbv	83.7	84.4	70.5	123	20	----
EP101-15X: 1.1.1.2-Tetrachloroethane	630-20-6	0.5	ppbv	<0.5	10 ppbv	108	106	71.4	130	20	----
EP101-15X: Isopropylbenzene	98-82-8	0.5	ppbv	<0.5	10 ppbv	106	105	70.2	125	20	----
EP101-15X: n-Propylbenzene	103-65-1	0.5	ppbv	<0.5	10 ppbv	104	104	70.0	130	20	----
EP101-15X: tert-Butylbenzene	98-06-6	0.5	ppbv	<0.5	10 ppbv	107	106	70.0	130	20	----
EP101-15X: sec-Butylbenzene	135-98-8	0.5	ppbv	<0.5	10 ppbv	108	108	70.0	125	20	----
EP101-15X: 2-isopropyltoluene	527-84-4	0.5	ppbv	<0.5	10 ppbv	105	105	70.0	130	20	----
EP101-15X: n-Butylbenzene	104-51-8	0.5	ppbv	<0.5	10 ppbv	104	104	70.0	130	20	----
EP101-15X: Naphthalene	91-20-3	0.5	ppbv	<0.5	10 ppbv	70.7	73.4	70.0	130	20	----
EP103: Petroleum Hydrocarbons in Gaseous Samples (QCLot: 3922360)											
EP103-PC: C6 - C9 Fraction	----	50	ppbv	<50	2800 ppbv	88.6	88.4	70.0	130	25	25
EP103-PC: C10 - C14 Fraction	----	50	ppbv	<50	1200 ppbv	88.7	88.6	70.0	130	25	25
EP103: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3922360)											
EP103-PC: C6 - C10 Fraction	C6_C10	50	ppbv	<50	3000 ppbv	88.3	88.0	70.0	130	25	25
EP103-PC: >C10 - C16 Fraction	----	50	ppbv	<50	500 ppbv	86.1	86.2	70.0	130	25	25
EP104: Light Hydrocarbons (QCLot: 3920798)											
EP104: Methane	74-82-8	0.005	Mol %	<0.005	0.105 Mol %	102	102	90.0	110	25	25
				<0.005	8.515 Mol %	99.3	99.3	90.0	110	25	25
EP104: Permanent Gases (QCLot: 3920798)											
EP104: Carbon Dioxide	124-38-9	0.005	Mol %	<0.005	5.266 Mol %	101	101	90.0	110	25	25
EP104: Carbon Monoxide	630-08-0	0.005	Mol %	<0.005	----	----	----	----	----	----	----
EP104: Oxygen	7782-44-7	0.1	Mol %	<0.10	9.312 Mol %	96.7	97.4	90.0	110	25	25

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

Appendix B: Field Sheets

Project No: 7928
Address: 9 Rose Lane Sth Ltn.

Investigation Date: 17-08-21

FIELD LOG

GPS Ref Photo (P)	S.Point	Depth mbgs	Sample ID & Depth	Material Description	Observations odour, staining, colour	Consistency (VL to VD)	M (D,M,W)	PID (ppm)
	SB3	0-0.2	SB3-0.3 1:11 SB3-0.5 1:13	Grass cover, wet loam, to 0.2;	No odour	L	M-W	0.0
		0.2-0.5	~~SB3~~	Yellow clay with brick, black staining, glass	HC odour?	L	M	0.0
	Fill	0.5-1.3		" + coal, aggregate	No odour/ Staining evident	M	M	0.0
	Nat	1.3-1.5		yellow clay - no foreign material possibly natural.	"	M	M	0.0
	SB2	0-0.2		Grass cover then yellow clay, plant roots	No odour/S	M	M	0.0
	Fill/ Disturbed	0.2-0.4	SB2-0.25 1:26	Bricks, coal mixed with brown clay	"	M	M	0.0
		0.4-0.7	0.5 1:26.	black stain/organic? brown clay	Stain?	M	M	0.0
		0.7-1.2		yellow clay with some black coal	No odour/S	M	M	0.0
	Nat	1.2-1.5		natural? yellow clay	No odour/S	~~M~~D	M	0.0
	SB1	0-0.4		Grass cover, plant roots, yellow clay	No odour/S	M	M	0.0
		0.4-1.3		fragments concrete, brick, coal mixed with sandy yellow clay.	"	M	M	0.0
			fill					
		1.3-1.5		Tree roots, plastic, geotech fabric, sawdust?	"	M-L	D.	0.0

C:\CARMEL\CONTAMINATED SITE\TEMPLATES\Field Log June 2017

Date: 16-08-21

Address: 9 Rose Lane

Staff: C Parker.

Job Number: 7928

FIELD LOG

GPS Ref	S.Point	Depth mbgs	Sample ID & Depth	Material Description	Observations	Consistency	M	PID
Photo (P)					odour, staining, colour	(VL to VD)	(D,M,W)	(ppm)
		0-1.5		recent clean fill (compacted gravel)	No odour	L	D	
	MW1	1.5-2.7	MW1-1.5m 11:38	Dense clay (yellow) with grey stain to 2.0	Slight HC od	L-M	D	
			MW1-1.5B "	then brick fragments, sandy	@-1.5 to 2m.			
			Fill					
			2.5 11:41	Broken bricks, coal, pebbles, crumbly sand	No odour/S	L	D	
				to 2.7				
		2.7-3.9	2.7 11:49	crumbly sand mixed with brick	No odour/S	L	D.	
			2.8 11:49	fragments, coal, pebbles.				
			3.0 11:50					
		3.9-5.1		Same as 2.7 to 3.9 - Fill material, crumbly	No odour ?	L	D	
			4.5m 11:56	yellow sand mixed with coal, brick	black stain?			
				fragments (small), some black stain? (coal)				
		5.1-6.3	5.9m 12:08	coal, red rock, brick, black gravel to 5.3m	No odour	L	D-W	
			6.3m 12:16	then natural orange then grey clay to	black stain.			
				6.3m. wet at 5.3 then dry to				
				6.3m. Solid auger from 6.3m				

Date: 16-8-21
Address: 9 Rose Lane
Staff: C Parker.

Job Number: 7928

FIELD LOG

GPS Ref Photo (P)	S.Point	Depth mbgs	Sample ID & Depth	Material Description	Observations odour, staining, colour	Consistency (VL to VD)	M (D,M,W)	PID (ppm)
	VB1	0-1.5		fresh gravel to 0.3 then sandy gravel, some	No odour/s	L	D	0.0
			VB1-0.5 2:27	yellow clay with brick fragments				
			VB1-1.0 2:31	black (coal) to 1.5m.				
		1.5-2.0	VB1-1.5 1:38	orange mottled clay from 1.5 to 1.8	No odour/s	L-M	D	0.0
			VB1-2.0 1:40	From 1.8 to 2.0m crumbly clayey				
				gravel with red brick fragments				

Hydrogeology borehole log

J. 7928

VB2

Date 17-8-21

Coordinates

Datum

RL

Inclination

Bearing

Drill type

Equipment

Drill fluid(s)

Hole started

Hole finished

Drilled by T. Geo.

Logged by C Parker

Checked by

Bit type/size	Lift	Water	Notes (Samples, tests; PID = photo-ionisation detector; mbg = metres below ground; mbtc = metres below top of casing)	Weather'g (Slight / Mod / High / Soil)	Metres RL / Depth	Graphic log	Materials (Soil/rock type, colour, plasticity or particle characteristics, secondary and minor components)	Groundwater quality: EC (µS/cm)	pH	ORP (mV)	DO mg/L	T (°C)	PID (ppm) NT	Completion details: Casing	Screen Sand	Gravel Bent	Cont. Concrete	Structure, geology and interpretation
							aggregate layer Stiff brown clay disturbed	fill										
			VB2-0.5 9:15		0.5		Stiff brown clay disturbed											
					1.0		aggregate, black stain, HC odour swarf, glass, mixed with yellow clay gravel						1.0					
			VB2-1.5 9:19		1.5													
			VB2-2.0m 9:35		2.0	W	Soft brown clay											
							gravelly sand with HC odour & black stain											Brick & rock.
					2.5													
					2.7		Stiff yellow clay mixed with bricks rock. to 2.7m						2.7					

Hydrogeology borehole log

J. 7928

VB3

Coordinates	Drill type	Hole started
Datum	Equipment	Hole finished
RL		Drilled by T. Geo
Inclination	Drill fluid(s)	Logged by C Parker
Bearing		Checked by

Notes (Samples, tests; PID = photo-ionisation detector; mbg = metres below ground; mbtc = metres below top of casing)	Metres (Depth)	Materials (Soil/rock type, colour, plasticity or particle characteristics, secondary and minor components)	Groundwater quality	Completion details	Structure, geology and interpretation
		Gravel (fresh)			
VB3-0.3 10:43		Soft brown clay with black stain - HC odour	tree roots. Fill		
	0.5	Gravel/rock brown clay			
	1.0	Brown clay			
VB3-1.3 10:45		Sandy gravel with black stain			
	1.5	Brown clay.			
		yellow clay with brick			
Strong solvent? odour to 2.7 Black stain.	2.0	rock/gravel/sand black stain			
	2.5	Clay/brick glass, black stain			
	2.7				

General VOC screen.

0-0.3 concrete
0.3-1.0 solid screen + Bentonite (wet).
1.0-2.7 slotted screen + coarse SAND.

Hydrogeology borehole log

J. 7928

VB4

Date - 17-08-2021

Coordinates
Datum
RL
Inclination
Bearing

Drill type
Equipment

Drill fluid(s)

Hole started
Hole finished
Drilled by
Logged by C Parker.
Checked by

Bit type/size	Lift	Water	Notes (Samples, tests; PID = photo-ionisation detector; mbg = metres below ground; mbtc = metres below top of casing)	Weather'g (Slight, Mod, High, Soil)	Metres RL	Depth	Graphic log	Materials (Bedrock type, colour, plasticity or particle characteristics, secondary and minor components)	Groundwater quality: EC (µS/cm)	pH	ORP (mV)	DO mg/L	T (°C)	PID (ppm)	Completion details (Casing, Screen, Gravel, Bent, Seal)	Structure, geology and interpretation
								aggregate + fine clay (brown)	fill						Bent, Concrete	
					0.5											
			VB4-1.0		1.0			aggregate, smurf rock, gravel brick.								
			VB4-1.5 VB4-1.6 12:05		1.5			black stain glass HC odour (slight) 1 to 1.5								
					2.0			Brick mixed with clay glass, coal? black staining lots of brick								
					2.5											
					2.7			stiff yellow clay from 2.5 to 2.7 (natural)								

Hydrogeology borehole log

J. 7928

MW1

Date 16-8-21

Coordinates

Datum

RL

Inclination

Bearing

Drill type

Equipment

Drill fluid(s)

~~Hole started~~ 16-8-21

~~Hole finished~~

Drilled by T. Geo

Logged by

Checked by

Bit type/size	Lift	Water	Notes (Samples, tests; PID = photo-ionisation detector; m bg = metres below ground; mbtc = metres below top of casing)	Weather'g (Slight, Mod, High, Soil)	Metres RL	Metres Depth	Graphic log	Materials (Soil/rock type, colour, plasticity or particle characteristics, secondary and minor components)	Groundwater quality: EC (µS/cm)	pH	ORP (mV)	DO mg/L	T (°C)	PID (ppm)	Completion details: Casing	Screen	Gravel	Seal	Structure, geology and interpretation
								Recent fill Clear gravel Compacted											Well; concrete
						0.6		yellow clay mixed with brick, pebbles											
						1.0													
			MW1-1.5 11:38; MW1-1.5B 11:38			1.5		Crushed brick crumbly sand (yellow) mixed with coal, pebbles, fine powdered sand (historic fill) to 5.3m											solid screen to 6m
						2.0													
			MW1-2.5 11:41; MW1-2.7 11:49; " 2.8 11:49; MW1-3.0 11:50			3.0													
						4.0													
			MW1-4.5 11:56																
						5.0													
			MW1-5.9 12:08					Natural from 5.3 5.3m - 6.3 - orange.											
			MW1-6.3 12:10			6.0		Orange HD Clay then grey stiff Clay from 6.3 to 8.0m - grey											slotted screen 6-8m
						7.0													
			dry at base			8.0													
						~~9.0~~													

Hydrogeology borehole log

J. 7928

VB2

Date 17-8-21

Coordinates
Datum
RL
Inclination
Bearing

Drill type
Equipment
Drill fluid(s)

Hole started
Hole finished
Drilled by T. Geo.
Logged by C Parker
Checked by

Notes	Metres (Depth)	Graphic log	Materials	Groundwater quality	PID (ppm)	Structure, geology and interpretation
			aggregate over Stiff brown clay disturbed			
VB2-0.5 9:15	0.5		Stiff brown clay disturbed			
	1.0		aggregate, black stain, HC odour swarf, glass, mixed with yellow clay gravel	fill	1.0	
VB2-1.5 9:19	1.5					
VB2-2.0m 9:35	2.0	W	Soft brown clay gravelly sand with HC odour & black stain			Brick & rock.
	2.5					
	2.7		Stiff yellow clay mixed with bricks. rock. to 2.7m		2.7	

Completion details: Casing, Screen/Sand, Gravel, Bent, Concrete

Hydrogeology borehole log

J. 7928

VB3

Coordinates	Drill type	Hole started
Datum	Equipment	Hole finished
RL		Drilled by T. Geo
Inclination	Drill fluid(s)	Logged by C Parker
Bearing		Checked by

Bit type/size	Lift	Water	Notes (Samples, tests; PID = photo-ionisation detector; mbg = metres below ground; mbtoc = metres below top of casing)	Weather'g (Slight / Mod / High / Soil)	Metres RL	Depth	Graphic log	Materials (Soil/rock type, colour, plasticity or particle characteristics, secondary and minor components)	Groundwater quality EC (µS/cm)	pH	ORP (mV)	DO mg/L	T (°C)	PID (ppm)	Completion details (Casing / Screen / Gravel Bent / Seal Conc)	Structure, geology and interpretation
								Gravel (fresh)	Fill							
			VB3-0.3 10:53		0.5			soft brown clay with black stain – HC odour	tree roots.							
								Gravel/rock brown clay								
					1.0			Brown clay								
			VB3-1.3 10:45					Sandy gravel with black stain.								
					1.5			Brown clay.								
								yellow clay with brick								
			Strong solvent? odour to 2.7 Black stain..		2.0			rock/gravel/sand black stain								
					2.5			Clay/brick glass, black stain								
					2.7											

General VOC Screen.

0–0.3 concrete
0.3–1.0 solid screen + Bentonite (wet).
1.0–2.7 slotted screen + coarse SAND.

Hydrogeology borehole log

J 7928

VB4

Date - 17-08-2021

Coordinates

Datum

RL

Inclination

Bearing

Drill type

Equipment

Drill fluid(s)

Hole started

Hole finished

Drilled by

Logged by C Parker.

Checked by

Notes (Samples, tests; PID = photo-ionisation detector; mbg = metres below ground; mbtc = metres below top of casing)	Metres Depth	Materials (Soil/rock type, colour, plasticity or particle characteristics, secondary and minor components)	Groundwater quality	Completion details
		aggregate from clay (brown)		
	0.5			Bent
VB4-1.0	1.0	aggregate, smart rock gravel brick. black stain glass HC odour (slight) 1 to 1.5	fill	
VB4-1.5 VB4-1.6 12:05	1.5			
	2.0	Brick mixed with clay glass, coal? black staining lots of brick		
	2.5			
	2.7	stiff yellow clay from 2.5 to 2.7 (natural)		

Bit type/size | Lift | Water | Weather'g (Slight, Mod, High, Soil) | RL | Graphic log | EC (µS/cm) | pH | ORP (mV) | DO mg/L | T (°C) | PID (ppm) | Casing | Screen | Gravel | Seal | Structure, geology and interpretation

Hydrogeology borehole log

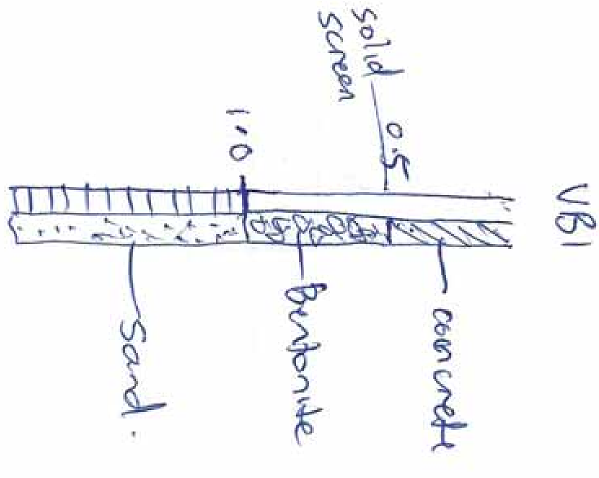
J. 7928

MW1

Date 16-8-21

Coordinates		Drill type	
Datum		Equipment	
RL			
Inclination		Drill fluid(s)	
Bearing			
~~Hole started~~	16-8-21		
~~Hole finished~~			
Drilled by	T. Geo		
Logged by			
Checked by			

Bit type/size	Lift	Water	Notes (Samples, tests; PID = photo-ionisation detector; m(bg = metres below ground; mbtoc = metres below top of casing)	Weather'g (Slight, Mod, High, Soil)	Metres (RL, Depth)	Graphic log	Materials (Soil/rock type, colour, plasticity or particle characteristics, secondary and minor components)	Groundwater quality (EC (µS/cm), pH, ORP (mV), DO mg/L, T (°C), PID (ppm))	Completion details (Casing, Screen, Gravel, Seal)	Structure, geology and interpretation
							Recent fill Clear gravel compacted			Well; concrete
					0.6		yellow clay mixed with brick, pebbles			
					1.0					
			MW1-1.5 11:36 MW1-1.5B 11:36		1.5		Crushed brick crumbly sand (yellow) mixed with coal, pebbles, fine powdered sand (historic fill) to 5.3 m			solid screen to 6m
					2.0					
			MW1-2.5 11:41 MW1-2.7 11:49 " 2.8 11:49 MW1-3.0 11:50		3.0					
					4.0					
			MW1-4.5 11:56							
					5.0					
			MW1-5.9 12:08				Natural from 5.3m - 6.3 - orange. Orange HD Clay then grey stiff Clay from 6.3 to 8.0m - grey			
			MW1-6.3 12:10		6.0					slotted screen 6-8m
					7.0					
			dry at base		8.0					
					~~9.0~~					



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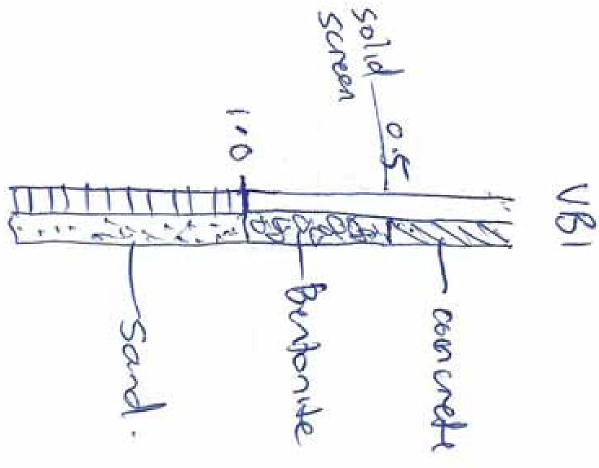

VB1
solid screen
0.5
1.0
concrete
Bentonite
sand.

Soil Gas Sampling Field Sheet - Outdoor Vapour Bore

Project Number: 7928 Sampling Date: 22-09-21

Site Address: 9 Rose Lane Vapour ~~Pin~~ Bore ID: MW1 Sampler: C Parker

Weather Conditions for Past 4 days Prior to Sampling			
	Temp °C	Barometric Pressure hPa	Rainfall mm
Date: 22-09-21	2.1 to 20.2	1019.0	0.0MM
Date: 21-09-21	2.3 to 13.6	1018.3	0.0 mm
Date: 20-09-21	5.3 to 13.5	1000.3	4.4 mm
Date: 19-09-21	4.2 to 14.3	1005.2	3.0 mm.
Surface Seal Test (Pin Seal)			
Method Bore		Pass / Fail	Pump Test.
Pre- Sample Shut In Test (Sampling Lines)			
Train Lines	T1	T2	T3
Start Pressure (cm Hg)	-17	-17	-17
End Pressure (cm Hg)	-17	-17	-17
Pressure Test Duration	30 sec	30 sec	30 sec
Ambient Air – Gas Concentrations			
VOC 0.0	CO2 Not Taken	O2 Not Taken	LEL (CH4) Not Taken.
Pre Sample - Gas in Vapour Bore			
ppm. VOC 2.9 increasing.	CO2 Not Taken	O2 Not Taken	LEL (CH4) Not Taken.
Purge of Sample Line Purge of Bore			
Method (circle) Syringe or Pump	Vol removed in ml 2000mL (2L)	Flow Rate ml/min 200mL/min.	Purge Time sec/min 10min
Leak Test /Tracer Gas – Isobutylene in Sample			
Sample Equipment Serial Numbers			
	Canister Serial No	Flow Controller Serial No	
Primary MW1	869	245	
Duplicate MW1-B	832	245	
Sampling Time and Pressure			
Start Time 1:55		Finish Time 4:45	
Start Pressure (cm Hg) -30		Finish Pressure (cm Hg) -10	
Flow Rate 12mL/min		Volume Collected	
Post Sample - Shut In Test (Sampling Lines)			
Train Lines	T1	T2	T3
Start Pressure (cm Hg)	-17	-17	-17
End Pressure (cm Hg)	-17	-17	-17
Pressure Test Duration	sec 30	30 sec	30 sec
Post Sample - Gas in Pin Line			
VOC 1.5ppm	CO2 NA	O2 NA	LEL (CH4) NA.
NOTES			

V3 – June 2021

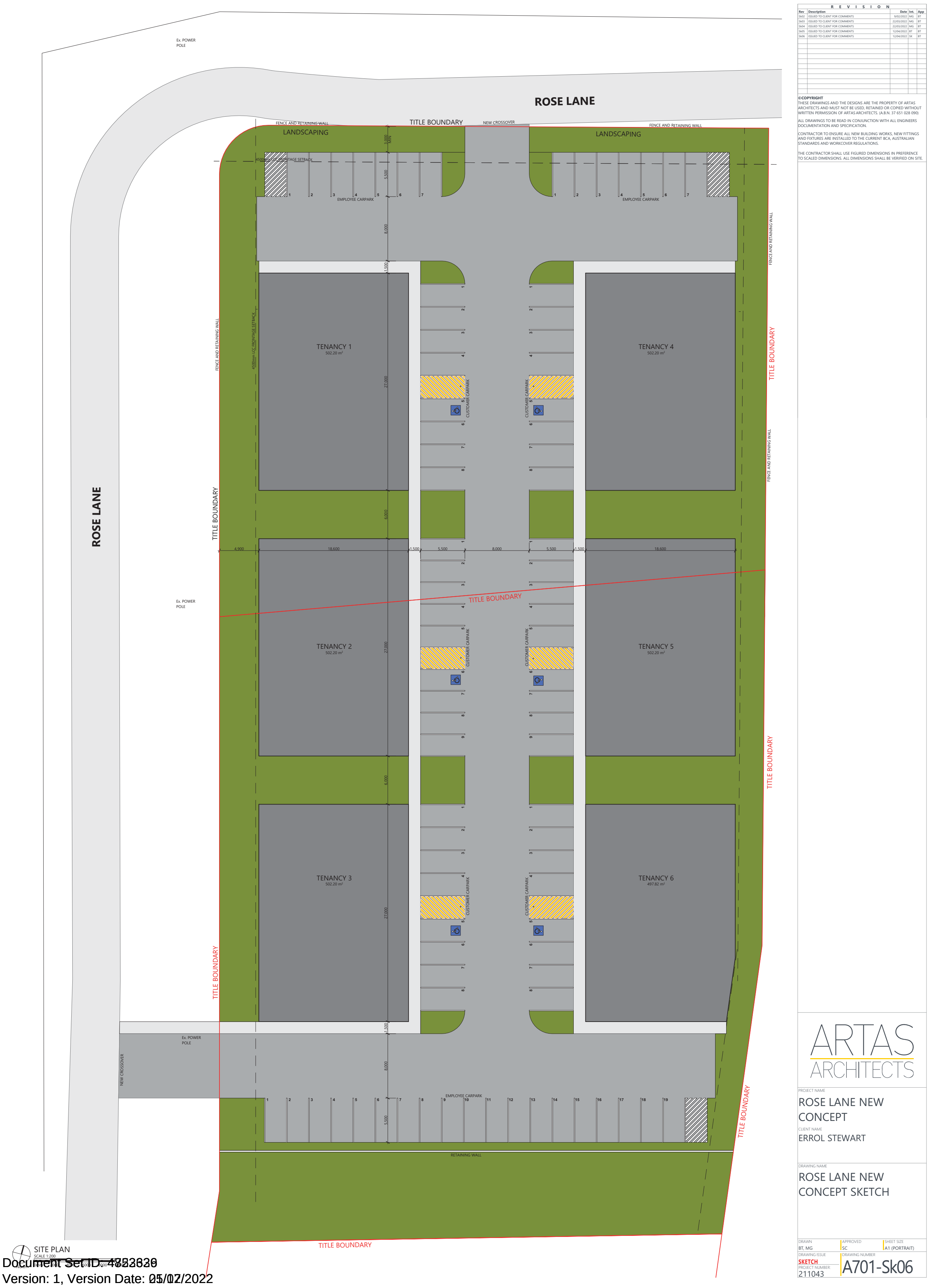
Soil Gas Sampling Field Sheet Outdoor Vapour Bore

Project Number: 7928 Sampling Date: 23-09-21

Site Address: 9 Rose Lane Vapour ~~Pin~~ Bore ID: VB3 Sampler: C Parker

Weather Conditions for Past 4 days Prior to Sampling			
	Temp °C	Barometric Pressure hPa	Rainfall mm
Date: 23	8.2 to 15.5	1008.3	0.0
Date: 22	2.1 to 20.2	1019.0	0.0
Date: 21	2.3 to 13.6	1018.3	0.0
Date: 20	5.3 to 13.5	1000.3	4.4
Surface Seal Test (Pin Seal)			
Method		Pass / Fail Pump Test	
Pre- Sample Shut In Test (Sampling Lines)			
Train Lines	T1	T2	T3
Start Pressure (cm Hg)	-17	-17	-17
End Pressure (cm Hg)	-17	-17	-17
Pressure Test Duration	30 sec	30 sec	30 sec
Ambient Air – Gas Concentrations			
VOC ~~4~~ 0.0	CO2 —	O2 —	LEL (CH4) —
Pre Sample - Gas in Pin Line			
VOC 1.4	CO2 —	O2 —	LEL (CH4) —
Purge of Sample Line			
Method (circle) Syringe or Pump	Vol removed in ml ~~24~~ 1,000mL	Flow Rate ml/min 200mL/min	Purge Time sec/min 5 min.
Leak Test /Tracer Gas – Isobutylene in Sample			
Sample Equipment Serial Numbers			
	Canister Serial No	Flow Controller Serial No	
Primary	1020	034	
Duplicate	NA	NA	
Sampling Time and Pressure			
Start Time 10:21		Finish Time 12:13	
Start Pressure (cm Hg) -30		Finish Pressure (cm Hg) -4	
Flow Rate 12mL/min.		Volume Collected	
Post Sample - Shut In Test (Sampling Lines)			
Train Lines	T1	T2	T3
Start Pressure (cm Hg)	-17	-17	-17
End Pressure (cm Hg)	-17	-17	-17
Pressure Test Duration	sec 30	30 sec	30 sec
Post Sample - Gas in Pin Line			
VOC 0.6	CO2 —	O2 —	LEL (CH4) —
NOTES			

V3 – June 2021


ROSE LANE
ROSE LANE
TITLE BOUNDARY
LANDSCAPING
LANDSCAPING
EMPLOYEE CARPARK
EMPLOYEE CARPARK
TENANCY 1
TENANCY 2
TENANCY 3
TENANCY 4
TENANCY 5
TENANCY 6
CUSTOMER CARPARK
TITLE BOUNDARY
EMPLOYEE CARPARK
RETAINING WALL
TITLE BOUNDARY
SITE PLAN
SCALE 1:200
ARTAS
ARCHITECTS
ROSE LANE NEW
CONCEPT
ERROL STEWART
ROSE LANE NEW
CONCEPT SKETCH
SKETCH
211043
A701-Sk06

9 Rose Lane

Traffic Impact Assessment

Old Launceston Seaport P/L

20 June 2022

The Power of Commitment

GHD

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Project number	12558709

Document status

Status Code	Revision	Author	Reviewer		Approved for issue		
			Name	Signature	Name	Signature	Date
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S4	1	Y. Chen	M. Petrusma	On file	M. Petrusma	On file	10/09/21
S4	2	Y. Chen	M. Petrusma	On file	M. Petrusma	On file	30/09/21
S4	3	Y. Chen	M. Petrusma		M. Petrusma		20/06/22

The Power of Commitment

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Appendices

1. Introduction

1.1 Background

GHD was engaged by Old Launceston Seaport P/L to prepare a Traffic Impact Assessment for a proposed commercial development at 9 Rose Lane, South Launceston.

1.2 Purpose of this report

The purpose of this report is to document the transport impacts of the development, to assess the impacts against the relevant sections of the Planning Scheme and to identify any impact mitigation treatments that may be required.

1.3 Scope and limitations

This report: has been prepared by GHD for Old Launceston Seaport P/L and may only be used and relied on by Old Launceston Seaport P/L for the purpose agreed between GHD and Old Launceston Seaport P/L as set out in this report.

GHD otherwise disclaims responsibility to any person other than Old Launceston Seaport P/L arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report. GHD disclaims liability arising from any of the assumptions being incorrect.

GHD has prepared this report on the basis of information provided by Old Launceston Seaport P/L and others who provided information to GHD (including Government authorities), which GHD has not independently verified or checked beyond the agreed scope of work. GHD does not accept liability in connection with such unverified information, including errors and omissions in the report which were caused by errors or omissions in that information.

1.4 Assumptions

This Traffic Impact Assessment was developed based on the following assumptions as well as other assumptions documented in this report:

- The commercial development consists of 3 x private medical-use tenancies and 3 x professional office buildings.
- The type of delivery vehicle expected to access the development site is limited to small vans.
- Waste collection will occur on-street (directly on Rose Lane), and rubbish trucks will not access the development site.
- The Planning Scheme means the *Launceston Interim Planning Scheme 2015*.

1.5 References

The following documents and materials have been referred to for the purposes of this Traffic Impact Assessment:

- Dwg no. 211043-A701-Sk07 *Rose Lane New Concept Sketch*, Artas Architects (30^{th} May 2022).
- Launceston Interim Planning Scheme 2015.

– Roads and Traffic Authority (RTA) Guide to Traffic Generating Developments, Version 2.2, October 2002.
– Roads and Maritime Services (RMS) Guide to Traffic Generating Developments – updated traffic surveys, August 2013.
– ITE Trip Generation Manual, 6th Edition.
– Five-year crash history in the road network sourced from the Department of State Growth.
– SCATS data at Site 9238 for the period between 5th August 2021 to 12th August 2021, sourced from the Department of State Growth.
– Turning movement counts at Westbury Road and Wellington Street intersection, collected August 2017, sourced from City of Launceston.
– LGAT Standard Drawings.
– *Austroads Guide to Road Design Part 3: Geometric Design*
– AS2890.1 *Parking facilities, Part 1: Off-street car parking.*

1.6 Subject site

The subject site is a currently vacant parcel of land at 9 Rose Lane, South Launceston. The site and its surrounds are shown in Figure 1.

Figure 1 Subject site

Base imagery obtained from TheLIST @State of Tasmania (accessed August 2021)

2. Existing Conditions

2.1 Transport network

For the purposes of this Traffic Impact Assessment, the transport network is considered to consist of the following roads:

– Rose Lane,
– Westbury Road,
– Wellington Street, and
– Peel Street.

These roads are discussed further in the following sections.

2.1.1 Rose Lane

Rose Lane is a local access road providing direct access to residential land and the subject site. It is a two-way, undivided road with formal and informal on-street parking permitted in sections. It connects Wellington Street to the north and Peel Street to the south and intersects with Westbury Road. The intersections of Rose Lane with Wellington Street and Westbury Road are give-way controlled.

The default speed limit on Rose Lane is 50 km/h.

2.1.1.1 Traffic Volume Estimation

No traffic data could be sourced for Rose Lane. As a result, traffic volumes on Rose Lane have been estimated based on trip generation rates from the *RTA Guide to Traffic Generating Developments* (RTA Guide) (October 2002) and the *RMS Guide to Traffic Generating Developments* (RMS Guide) (August 2013).

Land uses, shown in Figure 2, have been assumed to consist of the following:

– Industry (all assumed to be factories to utilise higher trip generation rates)
– Residential (all assumed to be single dwellings to utilise higher trip generation rates), and
– Place of worship.

It is noted that the subject site (9 Rose Lane) is vacant and currently zoned for General Residential within the northern allotment on the corner of Rose Lane, and zoned for Recreation for the southern allotments. All parking demand relating to Glen Dhu Primary School and Watts Oval is assumed to be serviced by Pottery Crescent and not Rose Lane.

The trip generation rates for the above lands uses from the RTA and RMS guides supplemented by the *ITE Trip Generation Manual* are summarised in Table 1. Weekday trip generation rates have been used to align with higher traffic volumes in the network during weekday peak periods.

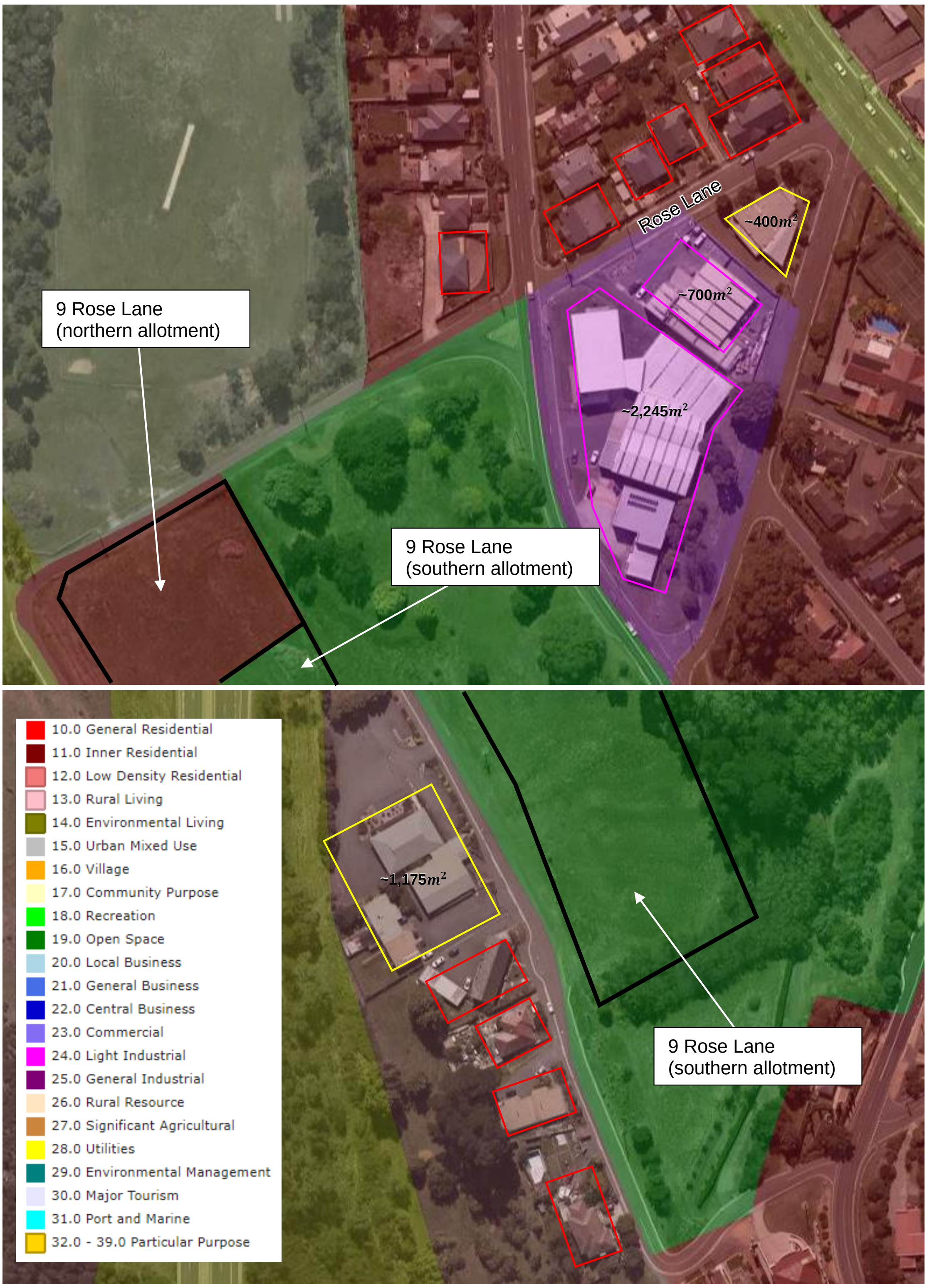


Figure 2 *Land uses accessed from Rose Lane*

Table 1 Weekday trip generation rates

Land use	Trip generation rate		Quantities	Number of vehicle trips	
	Peak hour	Daily		Peak hour	Daily
Rose Lane between Wellington Street and Westbury Road					
Residential	0.85 vehicle trips per dwelling	9 vehicle trips per dwelling	6 x dwellings	~5 vehicle trips	54 vehicle trips
Industry	1 vehicle trips per 100 m^2 of GFA	10 vehicle trip per 100 m^2 of GFA	2,945 m^2 of GFA (total)	~29 vehicle trips	~295 vehicle trips
Place of worship	1.34 vehicle trips per 1,000 m^2 of GFA*	9.57 vehicle trips per 1,000 m^2 of GFA	400 m^2 of GFA	~1 vehicle trips	~4 vehicle trips
			Total	**~35 vehicle trips**	**~352 vehicle trips**
Rose Lane between Westbury Road and Peel Street					
Residential	0.85 vehicle trips per dwelling	9 vehicle trips per dwelling	5 x dwellings	~4 vehicle trips	45 vehicle trips
Place of worship	1.34 vehicle trips per 1,000 m^2 of GFA*	9.57 vehicle trips per 1,000 m^2 of GFA	1,175 m^2 of GFA	~2 vehicle trips	~11 vehicle trips
			Total	**~6 vehicle trips**	**~56 vehicle trips**

*Calculated from a daily trip generation rate of 13.4 person trips/day (14% occurs during peak hour) with a vehicle occupancy of 1.4

Based on the trip generation rates and gross floor area estimates of the different lots on Rose Lane, the weekday peak hour traffic volume on Rose Lane is up to approximately 45 vehicles/hr (two-way).

The two-way daily weekday traffic volume on Rose Lane is approximately up to 450 vehicles/day.

It is noted that these values are conservative as there are two existing access points to Rose Lane.

2.1.2 Westbury Road

Westbury Road is an arterial road connecting Wellington Street in South Launceston to the north, and Prospect and Prospect Vale to the south, eventually joining Bass Highway. The three-legged intersection of Westbury Road and Wellington Street is signalised at an acute angle with right-in and left-out only access permitted from Westbury Road. In general, Westbury Road is a two-lane, two-way, undivided road with on-street parking and indented bus bays at intervals. South of Rose Lane intersection, Westbury Road has an auxiliary southbound traffic lane.

Based on data from a turning movement survey (August 2017) supplied by Launceston City Council, the peak hour traffic volumes on Westbury Road are as follows:

- AM peak hour 484 vehicles/hr (northbound), 359 vehicles/hr (southbound)
- PM peak hour 378 vehicles/hr (northbound), 553 vehicles/hr (southbound)

A check against SCATS data (August 2021) obtained from the Department of State Growth showed that the 2017 traffic data set is still relevant.

Route 160, 161 and 162 buses operate along Westbury Road in the vicinity of the subject site. The general posted speed limit on Westbury Road is 60 km/h but reduces to 40 km/h during school peak periods within the school zone near Wellington Street intersection.

2.1.3 Wellington Street

Wellington Street is an arterial road connecting the Midland Highway to the north and Hobart Road to the south. In the vicinity of the subject site, Wellington Street intersects with Westbury Road, Rose Lane and Peel Street.

Wellington Street is a two-way, two-lane road divided by a delineated centre median. Several bus routes operate along Wellington Street.

Based on data from a turning movement survey (August 2017) supplied by Launceston City Council, the peak hour traffic volumes on Wellington Street north of Westbury Road are as follows:

– AM peak hour 886 vehicles/hr (northbound), 814 vehicles/hr (southbound)
– PM peak hour 786 vehicles/hr (northbound), 1170 vehicles/hr (southbound)

A check against SCATS data (August 2021) obtained from the Department of State Growth showed that the 2017 traffic data set is still relevant.

The general posted speed limit on Wellington Street is 60 km/h but reduces to 40 km/h during school peak periods within the school zone near Westbury Road intersection.

2.1.4 Peel Street

Peel Street is a local collector road connecting Rose Lane to the west and Wellington Street to the east. It intersects with Westbury Road at crossroads and provides access to residential land uses and local access roads.

The default speed limit on Peel Street is 50 km/h.

2.2 Bus network

Metro Tasmania and Tassielink buses operate on Wellington Street and Westbury Road in the vicinity of the subject site. An excerpt of the bus network is shown in Figure 3. The closest bus stops to the subject site are located on Westbury Road approximately 50 metres north of Rose Lane intersection and approximately 50 metres south of Rose Lane intersection. The bus stop south of Rose Lane is not connected to the sealed footpath network.

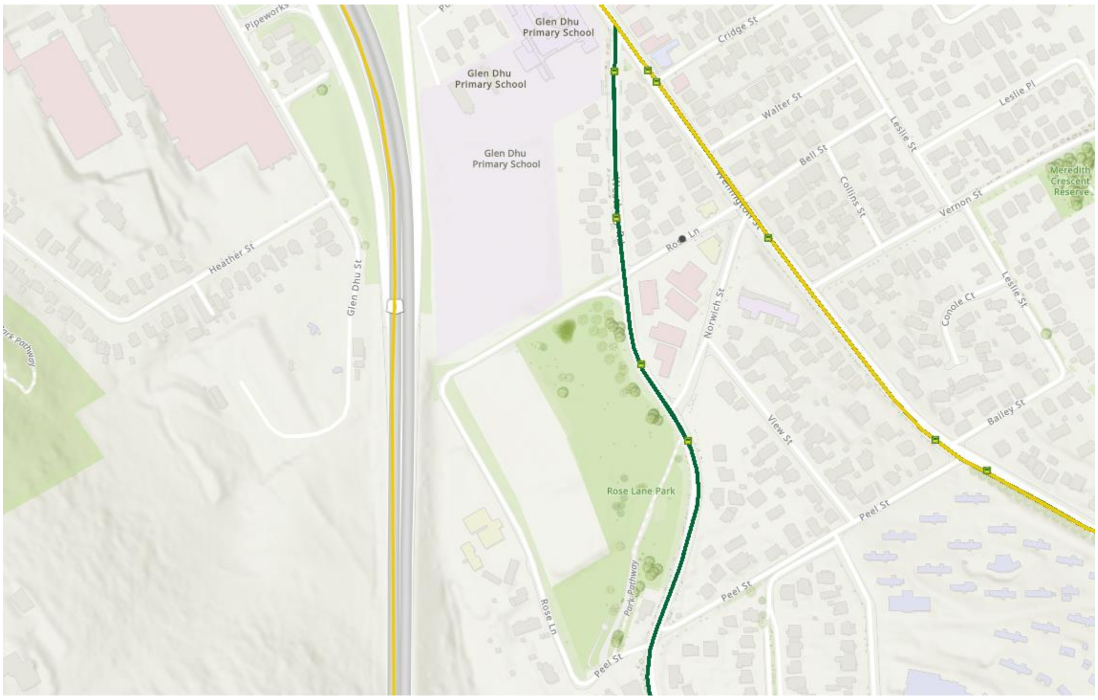


Figure 3 ***Excerpt of the bus network in the vicinity of the subject site***

Base map obtained from TheLIST @State of Tasmania (accessed August 2021)

2.3 Cycling network

There is a northbound cycling lane on Wellington Street south of Peel Street intersection, and a delineated parking lane along the same section on the southbound side that cyclists can ride within. The remainder of the cycling network in the vicinity of the subject site is largely informal with cyclists able to ride within traffic on Rose Lane, Westbury Road and Wellington Street. This is a generally safe environment on Rose Lane where the typical daily volume of traffic is relatively low. However, the higher traffic volumes on Westbury Road are generally not conducive to cycling.

2.4 Pedestrian network

The pedestrian network in the vicinity of the subject site is summarised in Table 2.

Table 2 Summary of the pedestrian network in the vicinity of the subject site

Road	Pedestrian network breakdown
Rose Lane	– Continuous sealed footpaths on either side of the road between Westbury Road and Wellington Street. – Limited sealed footpath network between Peel Street and Westbury Road, northbound side only.
Westbury Road	– Pedestrian overpass across Westbury Road south of Wellington Street. – Continuous sealed footpaths on either side of the road between Rose Lane and Wellington Street. Footpath on Westbury Road northbound side is discontinuous and low-grade in sections.
Wellington Street	– Signalised pedestrian crossings at Westbury Road and Wellington Street intersection. – Pedestrian overpass across Wellington Street between Westbury Road and Cridge Street. – Unsignalised pedestrian crossing with refuge adjacent to Peel Street intersection. – Continuous footpaths on either side of the road north of Peel Street intersection. Footpath on Wellington Street northbound side stops at pedestrian refuge crossing.
Peel Street	– Continuous sealed footpath on Peel Street westbound side only.

2.5 Crash history

The road crash history in the vicinity of the subject site has been assessed for the five-year period, between 1 August 2016 to 31 July 2021. The summarised crash data sourced from the DSG is presented in Table 3 and Figure 4.

Table 3 Summarised crash data

Location	Number of crashes			Major crash type(s)
	Fatal	Serious	Other	
Mid-block				
Westbury Road	0	0	6	Other on path (2)
Wellington Street	0	0	19	Vehicles in same lane/rear end/left rear (6), parked/leaving parking (4), emerging (2), other on path (2), U-turn (2)
Intersection				
Rose Lane / Westbury Road	0	0	3	Cross-traffic (3)
Wellington Street / Westbury Road	0	0	6	Vehicles in same lane/rear end (4)
Walter Street / Wellington Street	0	0	1	Right near (1)
Norwich Street / Wellington Street	0	0	1	Vehicles in same lane/right rear (1)
Vernon Street / Wellington Street	0	0	2	Right near (2)
Bailey Street / Wellington Street	0	0	1	Overtaking (1)
Total	***0***	***0***	***39***	

In total, 39 crashes were recorded in the vicinity of the subject site. There were no serious-injury or fatal-injury crashes. No crashes were recorded along mid-blocks of Rose Lane and Peel Street.

The majority of recorded crashes occurred along Wellington Street which experiences queuing and congestion during peak periods. In particular, there was a trend in rear-end type crashes along mid-blocks and at the north and south approaches of Westbury Road intersection. During peak period, there are a high number of right-turn movements from Wellington Street into Westbury Road which conflict with the high number of northbound through movements on Wellington Street.

Six crashes were recorded along mid-blocks of Westbury Road and included other-path, near-side, out-of-control and lane side-swipe type crashes. There were no noticeable trends to these crashes.

Three cross-traffic type crashes were recorded at the intersection of Westbury Road and Rose Lane indicating possible deficiencies with regards to traffic management and visibility at the Rose Lane approaches or unsafe gap selection whilst entering high volume traffic on Westbury Road.

Figure 4 ***Five-year crash history in the vicinity of the subject site***

Base imagery obtained from Google Earth Pro (accessed August 2021)

3. Proposed Conditions

3.1 Overview

The proposed development comprises of a new Local Business/Commercial block within a total site area of approximately 10,000 m^2 as shown in Appendix A. Vehicular access to the development site is proposed via the following three new crossovers:

– Main two-way access on the north-west property boundary at Rose Lane,
– Secondary two-way access on the west property boundary at Rose Lane, and
– Two-way (overflow car park) access on the west property boundary at Rose Lane.

The proposed development consists of six standalone buildings, each comprising of a single level. It is assumed that half (3) of these buildings would be allocated to medical uses (1x veterinary clinic, 1x medical centre, 1x dental clinic) and the other half (3) would be allocated to professional office uses (e.g., accountancy firm, law firm etc.). Tenancies 1 to 5 each have a Gross Floor Area (GFA) of 502.2$m^2$and Tenancy 6 has a GFA of 495.26m^2. It is assumed that Tenancy 6 would be used as a professional office building.

Surrounding these buildings are 123 off-street car parking spaces located within a main car park and an overflow (southern) car park. Six of these car parking spaces are accessible parking spaces designed in accordance with AS 2890.6.

3.2 Trip generation and distribution

The development site is assumed to consist of three medical-use tenancies and three professional office tenancies. The opening hours of each tenancy are assumed to be approximately between 9:00 AM – 5:00 PM Monday to Friday.

3.2.1 Trip generation

Trip generation rates were sourced from the RMS Guide to traffic generating developments – updated traffic surveys (August 2013) or derived from first principles.

Medical

The vehicle trip generation for each medical-use tenancy has been derived from first principles as detailed below.

The AM and PM peak hour trip generation rate is estimated to be up to 12 vehicle trips per hour per medical-use tenancy. This is based on the following assumptions:

– Staff arrivals in the morning occur before AM peak hour, and staff departures in the evening occur after PM peak hour. Peak hour trip generation is therefore made up of client trips.
– On average, up to four treatment rooms in each tenancy are in use during peak hour. Each of these treatment rooms accommodate one medical practitioner and one client at a time.
– The medical practitioner in each treatment room may see up to two clients per hour. This is assumed to equate to three vehicle trips per hour per treatment room. During AM peak hour, these three vehicle trips are composed of the first client's arrival trip, the second client's arrival trip and the first client's departure trip. During PM peak hour, these three vehicle trips are composed of the second client's arrival trip, the first client's departure trip, and the second client's departure trip.
– The proposed medical centre will likely have a higher trip generating potential that will be balanced out by the proposed dental clinic and veterinary clinic that will likely have lower trip generating potentials.

The daily trip generation rate is estimated to be up to 125 vehicle trips per day per medical-use tenancy. This is based on the following assumptions:

– The average number of staff for each tenancy is six medical practitioners and six support staff. At least two vehicle trips (arrival and departure) are generated by each staff member daily, and at least 50% of all staff generate an additional arrival and departure trip during lunchtime.

- Up to 12 vehicle trips are generated by clients each hour between 9:00 AM – 5:00 PM, except during the midday lunchtime period.
- On average, two service or delivery vehicle trips (1 x inbound trip, 1 x outbound trip) are generated by each medical tenancy daily and outside of peak period.

Based on the above, the adopted traffic generation for a single medical-use tenancy is as follows:

- Daily vehicle trips 125 vehicle trips per day
- AM peak hour trips 12 vehicle trips per hour
- PM peak hour trips 12 vehicle trips per hour

Given there are three proposed medical-use tenancies, the combined traffic generation for the medical-use tenancies are as follows:

- Daily vehicle trips 375 vehicle trips per day (two-way)
- AM peak hour trips 36 vehicle trips per hour (two-way)
- PM peak hour trips 36 vehicle trips per hour (two-way)

Professional offices

For professional offices, the RMS Guide recommends the following trip generation rates:

- Daily vehicle trips 11 vehicle trips per 100m^2 GFA per day
- AM peak hour trips 1.6 vehicle trips per 100m^2 GFA per hour
- PM peak hour trips 1.2 vehicle trips per 100m^2 GFA per hour

Based on the proposed combined GFA of 1502m^2discussed in Section 3.1, the combined trip generation for the proposed professional office tenancies is calculated to be as follows:

- Daily vehicle trips 165 vehicle trips per day
- AM peak hour trips 24 vehicle trips per hour
- PM peak hour trips 18 vehicle trips per hour

Summary

The total trip generation of the proposed development including both the medical-use tenancies and the professional office tenancies is estimated as follows:

- Daily vehicle trips 540 vehicle trips per day
- AM peak hour trips 60 vehicle trips per hour
- PM peak hour trips 54 vehicle trips per hour

3.2.2 Trip distribution

The following distribution of inbound and outbound vehicle trips to the development site have been assumed:

- During AM peak hour, 80% of vehicle trips are inbound and 20% are outbound
- During PM peak hour, 20% of vehicle trips are inbound and 80% are outbound

Based on the above assumption, the calculated number of inbound and outbound trips to and from the development site is summarised in Table 4.

Table 4 Inbound and outbound trips generated by the development site

Time of day	Inbound trips (to 9 Rose Lane)	Outbound trips
AM peak hour	48 vehicle trips	12 vehicle trips
PM peak hour	12 vehicle trips	42 vehicle trips

Launceston, Kings Meadows and Prospect/Prospect Vale are considered to be the key origins and destinations for inbound and outbound trips generated by the subject site. Primary and secondary routes to these origins and destinations are shown in Figure ***5*** whereby primary routes indicate the more likely routes to be taken.

Based on turning movement counts from a traffic survey undertaken in August 2017 at Westbury Road and Wellington Street intersection, the AM peak split of outbound trips is estimated as follows:

- To Launceston 52% (portion of Wellington St north departure volumes at intersection)
- To Kings Meadows 27% (portion of Wellington St south departure volumes at intersection)
- To Prospect/ Vale 21% (portion of Westbury Rd south-west departure volumes at intersection)

Assuming that all vehicles return to the subject site by retracing their outbound trip, the above percentages apply to both inbound and outbound trips during AM and PM peaks.

Considering the split of vehicle trips across the highlighted primary routes, Westbury Road and Wellington intersection and Rose Lane and Westbury Road intersection will experience the most impact from proposed developments. Intersection modelling has therefore been undertaken to assess the performance of the two intersections in Section 4.

Figure 5 ***Inbound and outbound routes*** *Base imagery obtained from TheLIST @State of Tasmania (accessed August 2021)*

4. Traffic Assessment

4.1 Traffic data

Traffic data for Westbury Road and Wellington intersection and Rose Lane and Westbury Road intersection has been sourced as outlined in the below sections.

4.1.1 Westbury Road and Wellington Street intersection

A traffic survey was undertaken at Westbury Road and Wellington Street intersection in August 2017. It was determined that AM peak hour occurred between 8:15 AM to 9:15 AM and PM peak hour occurred between 4:15 PM to 5:15 PM. A comparison of the traffic volumes from this survey against SCATS data sourced in August 2021 indicated that there was no apparent traffic growth at the intersection between 2017 and 2021. The turning movements counts from this 2017 traffic survey were therefore used to represent existing condition volumes at the intersection.

4.1.2 Rose Lane and Westbury Road intersection

Turning movement counts at the Rose Lane and Westbury Road intersection could not be sourced and were therefore estimated based on:

– Turning movement counts at Westbury Road and Wellington Street intersection to determine traffic volumes on Westbury Road (refer to Section 4.1.1).
– Estimated traffic volumes on Rose Lane (refer to Section 2.1.1.1).

The approach taken to determine the split of turning movements at each approach of Rose Lane and Westbury Road intersection was to compare the two-way traffic volumes on each intersection leg being turned onto. An example to determine the turning movement splits at the north approach (Westbury Road) of the intersection during AM peak is shown as follows:

– Left turn movements 3.8% (portion of Rose Lane east volumes out of total volume)
– Through movements 95.6% (portion of Westbury Road volumes out of total volume)
– Right turn movements 0.6% (portion of Rose Lane west volumes out of total volume)

Note: Rose Lane east refers to the section of Rose Lane east of Westbury Road and Rose Lane west refers to the section of Rose Lane west of Westbury Road. Total volume refers to the sum of volumes on Rose Lane east, Rose Lane west and Westbury Road combined.

4.2 Intersection analysis

SIDRA Intersection modelling was undertaken for Westbury Road and Wellington intersection and Rose Lane and Westbury Road intersection. Four models were developed at each intersection as follows:

1. AM peak hour model – existing conditions
2. PM peak hour model – existing conditions
3. AM peak hour model – proposed conditions (10-year post development)
4. PM peak hour model – proposed conditions (10-year post development)

The key assumptions for traffic modelling are outlined as follows:

– Existing condition volumes are represented by the turning movement volumes outlined in Section 4.1.
– Proposed conditions include trips generated from the proposed development as outlined in Section 3.2.1 as well as 10-year background growth on Wellington Street at a rate of 1% per annum. All peak hour vehicle trips generated by the development site are light vehicle trips. The increase in turning movements at intersections due to the development incorporates the traffic distribution outlined in Section 3.2.2, as well as existing turning movement splits at intersection approaches.

– School zone speed limits are in place during the modelled peak hours.
– Bus volumes are included within heavy vehicle volumes from the survey outlined in Section 4.1.
– Left turning vehicles entering Rose Lane west from Westbury Road give way to right turn-in and through movements from Westbury Road and Rose Lane east due to slip lane arrangement.

Traffic volumes and model outputs are discussed for each intersection in the following sections.

4.2.1 Westbury Road and Wellington Street intersection

Based on the assumptions outlined in Section 4.2, traffic volumes at the Westbury Road and Wellington Street intersection under existing and proposed conditions were determined and presented in Table 12 and Table 13 in Appendix B. Outputs from the models are summarised in Table 5 and Table 6 for AM peak and PM peak respectively.

Table 5 Westbury Road and Wellington Street intersection performance under existing and proposed conditions – AM Peak

Intersection Approach	Movement	Existing Conditions				Proposed Conditions + 10 Years			
		Degree of Saturation	Level of Service	Average Delay [s]	95th% Back of Queue [m]	Degree of Saturation	Level of Service	Average Delay [s]	95th% Back of Queue [m]
Westbury Rd South Approach	Left	0.806	C	20.4	82.9	0.816	C	20.9	85.3
Wellington Street South-East Approach	Through	0.663	B	13.0	57.1	0.663	B	13.0	57.1
Wellington Street North-West Approach	Through	0.753	B	15.1	72.0	0.753	B	15.1	72.0
	Right	0.626	B	15.0	51.2	0.666	B	15.7	56.5
Intersection Overall Performance		**0.806**	**B**	**16.1**	**82.9**	**0.816**	**B**	**16.4**	**85.3**

Table 6 Westbury Road and Wellington Street intersection performance under existing and proposed conditions – PM Peak

Intersection Approach	Movement	Existing Conditions				Proposed Conditions + 10 Years			
		Degree of Saturation	Level of Service	Average Delay [s]	95th% Back of Queue [m]	Degree of Saturation	Level of Service	Average Delay [s]	95th% Back of Queue [m]
Westbury Rd South Approach	Left	0.585	B	17.4	58.2	0.655	B	19.0	65.7
Wellington Street South-East Approach	Through	0.568	B	12.9	60.6	0.595	B	12.4	66.3
Wellington Street North-West Approach	Through	0.848	C	21.8	129.1	0.889	C	25.7	157.8
	Right	0.851	C	25.8	116.2	0.911	C	33.8	137.9
Intersection Overall Performance		**0.851**	**C**	**20.2**	**129.1**	**0.911**	**C**	**23.7**	**157.8**

Based on the model outputs, the performance of the intersection is considered to perform similarly to existing conditions under proposed conditions during AM peak. The north-west approach on Wellington Street remains at LOS B during AM peak with minor increases in delay and queuing.

During PM peak, there are existing queues in both lanes at the north-west approach on Wellington Street which stretch past Melbourne Street but are contained within the mid-block between Pipeworks Road and Westbury Road. Under proposed conditions, the intersection approaches capacity but continues to perform satisfactorily (LOS C). 95th percentile queue lengths at the north-west approach of the intersection reach Pipeworks Road intersection, however, this is largely attributed to 10-year background growth volumes and not the proposed development as shown in Table 7..

Table 7 Westbury Road and Wellington Street PM peak intersection performance with 10-year background growth

Scenario	Approach	Degree of Saturation	Level of Service	Average Delay [s]	95th% Back of Queue [m]
10 Year Background Growth + No Development	Wellington Street North-West Approach	0.901	C	28.6	157.8
10 Year Background Growth + Proposed 9 Rose Lane Development		0.911	C	29.4	157.8

4.2.2 Rose Lane and Westbury Road intersection

Based on the assumptions outlined in Section 4.2, traffic volumes at the Westbury Road and Rose Lane intersection under existing and proposed conditions were determined and presented in Table 14 and Table 15 in Appendix B. Outputs from the models are summarised in Table 8 and Table 9 for the AM peak and PM peak respectively.

Based on the model outputs, the performance of the intersection is considered to perform similarly to existing conditions under proposed conditions for both peaks. The south-west approach on Rose Lane remains at LOS A/B during AM and PM peaks respectively with minor increases in delay and queuing that are slightly higher for right-turn and through movements. The north approach on Westbury Road remains at LOS A during AM and PM peaks respectively with minor increases in delay and queuing.

Table 8 Rose Lane and Westbury Road intersection performance under existing and proposed conditions – AM Peak

Intersection Approach	Movement	Existing Conditions				Proposed Conditions			
		Degree of Saturation	Level of Service	Average Delay [s]	95th% Back of Queue [m]	Degree of Saturation	Level of Service	Average Delay [s]	95th% Back of Queue [m]
Westbury Rd South Approach	Left	0.283	A	8.5	1.8	0.290	A	8.1	2.1
	Through	0.283	A	0.1	1.8	0.290	A	0.1	2.1
	Right	0.283	A	6.8	1.8	0.290	A	6.9	2.1
Westbury Rd North Approach	Left	0.215	A	6.9	0.3	0.240	A	8.7	3.0
	Through	0.215	A	0.0	0.3	0.240	A	0.3	3.0
	Right	0.215	A	7.1	0.3	0.240	A	7.2	3.0
Rose Ln South-West Approach	Left	0.012	A	6.3	0.3	0.036	A	6.4	0.8
	Through	0.012	A	9.5	0.3	0.036	B	10.1	0.8
	Right	0.012	B	13.4	0.3	0.036	B	14.4	0.8
Rose Ln North-East Approach	Left	0.077	A	5.8	1.8	0.113	A	5.8	2.6
	Through	0.077	A	9.8	1.8	0.113	B	10.5	2.6
	Right	0.077	B	13.7	1.8	0.113	B	14.5	2.6
Intersection Overall Performance		**0.283**	**NA**	**0.8**	**1.8**	**0.290**	**NA**	**1.5**	**3.0**

Table 9 *Rose Lane and Westbury Road intersection performance under existing and proposed conditions – PM Peak*

Intersection Approach	Movement	Existing Conditions				Proposed Conditions			
		Degree of Saturation	Level of Service	Average Delay [s]	95th% Back of Queue [m]	Degree of Saturation	Level of Service	Average Delay [s]	95th% Back of Queue [m]
Westbury Rd South Approach	Left	0.211	A	8.2	1.2	0.213	A	8.0	1.2
	Through	0.211	A	0.1	1.2	0.213	A	0.1	1.2
	Right	0.211	A	6.4	1.2	0.213	A	6.4	1.2
Westbury Rd North Approach	Left	0.214	A	6.8	0.2	0.219	A	7.2	0.8
	Through	0.214	A	0.0	0.2	0.219	A	0.1	0.8
	Right	0.214	A	6.2	0.2	0.219	A	6.2	0.8
Rose Ln South-West Approach	Left	0.011	A	5.7	0.3	0.079	A	5.8	1.9
	Through	0.011	A	7.8	0.3	0.079	A	8.3	1.9
	Right	0.011	B	11.3	0.3	0.079	B	12.0	1.9
Rose Ln North-East Approach	Left	0.056	A	5.8	0.2	0.065	A	5.9	1.6
	Through	0.056	A	8.0	0.2	0.065	A	8.2	1.6
	Right	0.056	B	11.4	0.2	0.065	B	12.0	1.6
Intersection Overall Performance		**0.214**	**NA**	**0.7**	**1.3**	**0.219**	**NA**	**1.2**	**1.9**

5. Parking Assessment

5.1 Parking spaces

The proposed development consists of a mix of medical-use tenancies and professional offices. By Table E6.1 of the Planning Scheme, the parking requirement for these uses is presented in Table 10.

Table 10 Table E6.1 requirements

Use	Car parking requirement	Bicycle parking requirement
Bank, office, real estate agency, travel agent	1 space per employee + 1 space per 50 m^2 of GFA.	1 space per 500m^2 of GFA
Doctors' surgery clinic, consulting room, veterinary surgery	4 spaces per registered practitioner	No requirement

The total GFA for the proposed offices is approximately 1502 m^2, and the total number of registered practitioners for the medical-use tenancies is assumed to be 18 practitioners (six practitioners per medical use tenancy). The *RTA Guide to Traffic Generating Developments* (October 2002) suggests a mean employee density of 4.75 employees per 100m^2 for office and commercial land uses, which equates to approximately 101 employees across the three proposed offices. Based on these quantities, the Table E6.1 parking requirements for the proposed development are calculated to be as follows:

– Car parking 173 parking spaces
– Bicycle parking 3 parking spaces

5.1.1 Car parking spaces

The proposed development includes 123 off-street car parking spaces, six of which are accessible parking spaces.

The Acceptable Solution of Clause E6.5.1-A1 of the Planning Scheme states that *"the number of car parking spaces must not be less than 90% of the requirements of Table E6.1"*. 90% of the car parking requirements within Table E6.1 equates to 156 car parking spaces. The proposed development therefore has a shortfall of 51 car parking spaces by the Acceptable Solution and must rely on the Performance Criteria – refer to Section 5.1.1.1.

The Acceptable Solution of Clause E6.5.1.-A2 of the Planning Scheme states that *"the number of accessible car parking spaces for use by persons with a disability for uses that require 6 or more parking space must be in accordance with Part D3 of the National Construction Code 2014, as amended from time to time"*. The development site requires more than six parking spaces and therefore must comply with the National Construction Code 2014. The proposed office buildings are classified as Class 5 buildings and the proposed medical-use tenancies are classified as Class 9a buildings. The accessible parking spaces requirements for these buildings are summarised as follows:

– Class 5 Building 1 space for every 100 car parking spaces or part thereof
– Class 9a Building 1 space for every 50 car parking spaces or part thereof

Approximately 40% of the proposed car parking supply is allocated to Class 9a Buildings and approximately 60% is allocated to Class 5 Buildings. Based on this allocation and 123 proposed car parking spaces, the required number of accessible parking spaces by the National Construction Code 2014 is two accessible parking spaces – this is satisfied by the proposed development which therefore complies with the Acceptable Solution of Clause E6.5.1-A1.

5.1.1.1 Parking demand

The Performance Criteria of Clause E6.5.1-P1.1 states that *"the number of car parking spaces for other than residential uses, must be provided to meet the reasonable needs of the use"*.

The peak parking demand generated by the proposed development is estimated to be up to approximately 120 parking spaces. The assumptions and method used to calculate this parking demand are outlined below in

Table 11. This parking demand is sufficiently met by the proposed on-site parking supply, and therefore the proposed development is considered to align with the Performance Criteria of Clause E6.5.1-P1.1.

The potential upgrade of Rose Lane, refer to Section 6.1.1, will also provide opportunity for on-street parking spaces to be implemented which will increase the available parking supply for the proposed development.

Table 11 ***Parking demand***

Use	Assumptions	Car parking demand
Medical-use tenancies	– Car parking spaces are provided for clients and staff. – Two car parking spaces per treatment room are allocated to clients. On average, up to four treatment rooms per tenancy will be in use at any given time. – Up to 10 staff (out of a total 12 daily) per tenancy will be on-site at any one-time. Approximately 80% of all staff will drive to work and park on-site. This is a higher percentage to the 68.9% mode split given in the Launceston Census 2016, used to account for the development site's location outside of Launceston CBD. – There are three medical-use tenancies.	2 x 4 treatment rooms = 8 parking spaces per tenancy (for clients) 80% x 10 staff = 8 parking spaces per tenancy (for staff) Total = (8+8) x 3 tenancies = 48 parking spaces
Professional offices	– Car parking spaces are provided for employees. – Based on GFA, there are approximately 101 employees across the three proposed offices (see Section 5.1). All employees will work the same hours although work may be undertaken either off-site or on-site. – On any given day, at least 10% of employees will work from home (off-site) due to hybrid working arrangements. – 80% of all staff who work in the office will drive to work and park on-site. This is a higher percentage to the 68.9% mode split given in the Launceston Census 2016, used to account for the development site's location outside of Launceston CBD.	101 employees x 90% work on-site x 80% travel by car to site = 72 parking spaces
Total		**48 + 72 = 120 parking spaces**

5.1.2 Bicycle parking spaces

The proposed development does not include bicycle parking provisions.

The Acceptable Solution of Clause E6.5.2-A1 of the Planning Scheme states that *"the number of bicycle parking spaces must be provided on either the site or within 50 m of the site in accordance with the requirements of Table E6.1"*.

The required number of bicycle parking spaces by Table E6.1 is three parking spaces. It is recommended that these parking spaces be provided to encourage active transport travel and to reduce car parking demand. The proposed development is considered to align with the Acceptable Solution of Clause E6.5.2-A1 subject to the consideration of this recommendation.

5.1.3 Taxi parking spaces

The proposed development does not include taxi spaces.

The Acceptable Solution of Clause E6.5.3-A1 of the Planning Scheme states that "*except for dwellings in the General Residential zone, uses that require greater than 50 car parking spaces by Table E6.1 must provide one parking space for a taxi on site with one additional taxi parking space onsite for each additional 50 car parking spaces required"*.

The required number of taxi parking spaces by the Planning Scheme is therefore three parking spaces. It is recommended that taxi parking be considered on-site to improve rideshare vehicle access, particularly to/from the medical-use tenancies. Subject to the allocation of three on-site parking spaces to dedicated taxi parking, the Acceptable Solution is met.

5.1.4 Motorcycle parking spaces

The proposed development does not include motorcycle parking provisions.

The Acceptable Solution of Clause E6.5.4-A1 of the Planning Scheme states that *"except for dwellings in the General Residential zone, uses that require greater than 20 car parking spaces by Table E6.1 must provide one motorcycle parking space on site with one additional motorcycle parking space onsite for each additional 20 car parking spaces required"*.

The required number of motorcycle parking spaces by the Planning Scheme is therefore eight parking spaces. It is recommended that motorcycle parking be considered to reduce car parking demand.

5.2 Parking areas

5.2.1 Construction of parking areas

The Acceptable Solution of Clause E6.6.1-A1 of the Planning Scheme states that *"all parking, access ways, manoeuvring and circulation spaces must:*

a) Have a gradient of 10% or less;

b) Be formed and paved;

c) Be drained to the public stormwater system, or contain stormwater on the site;

d) Be provided within an impervious all-weather seal; and

e) Be line marked or provided with other clear physical means to delineate parking spaces."

5.2.2 Design and layout of parking areas

The Acceptable Solution of Clause E6.6.2-A1.1 of the Planning Scheme states that *"car parking, access ways, manoeuvring and circulation spaces must:*

a) Provide for vehicles to enter and exit the site in a forward direction

b) Have a width of vehicular access no less than the requirements in Table E6.2, and no more than 10% greater than the requirements in Table E6.2

c) Have parking dimensions in accordance with Table E6.3

d) Have a combined access and manoeuvring width adjacent to parking spaces not less than the requirements Table E6.3".

e) Have a vertical clearance of not less than 2.1 metres above the parking level

The internal access way width requirement in Table E6.2 of the Planning Scheme range between 4.2 metres to 5.5 metres depending on the number of parking spaces served. The maximum combined access and manoeuvring width (adjacent to parking spaces) requirement in Table E6.3 of the Planning Scheme is 6.4 metres for 90-degree angled parking spaces.

The proposed car parking areas have the following known dimensions:

– Proposed width of accesses	8.0 metres
– Car park accessway width	8.0 metres
– General car park spaces	2.75 metres wide and 5.5 metres long

Accesses and accessways are designed to be two-way; allowing vehicles to enter and exit in a forward direction.

The proposed accessway widths exceed the requirement noted in the Acceptable Solution of Clause E6.6.2-A1.1(b); therefore, the proposed development relies on the Performance Criteria that states, *"car parking, access ways, manoeuvring and circulation spaces must be convenient, safe and efficient to use"*.

Clause E6.6.2-P1 of the Planning Scheme is considered to be satisfied based on the following:

- Existing traffic volumes on Rose Lane are low and there are limited external driveways and access points in the vicinity of the proposed accesses to the development site. Access movements from the proposed development will therefore have limited impact on existing traffic and accesses.
- There are no existing pedestrian footpaths alongside the public road. Existing pedestrian volumes along Rose Lane are very low such that there is no increased risk to pedestrians due to a wider accessway.
- Wider accessways allow passage for delivery and service vehicles.

Based on the above assessment, the proposed access design is consistent with the Performance Criteria.

5.3 Pedestrian access

The proposed development provides an internal network of connected footpaths and priority crossings which provide safe passage for pedestrians to and from car parking spaces. A 1.5-metre-wide footpath is proposed on Rose Lane for the section east of the main site access but does not continue through the access itself. A footpath connection is, however, provided to and from Rose Lane alongside the secondary site access.

As the closest access to Westbury Road and Wellington Street and the bus stops in the surrounding network, the main site access is anticipated to be used by the majority of pedestrians. It is, therefore, recommended that additional pedestrian connections, shown below in Figure 6, be provided to comply with the Acceptable Solution of Clause E6.6.3-A1.1 of the Planning Scheme which states that *"uses that require 10 or more parking spaces must:*

a) *Have a 1.0-metre-wide footpath that is separated from the accessways or parking aisles, except where crossing access ways or parking aisles.*

b) *Be signed and line marked at points where pedestrians cross access ways or parking aisles".*

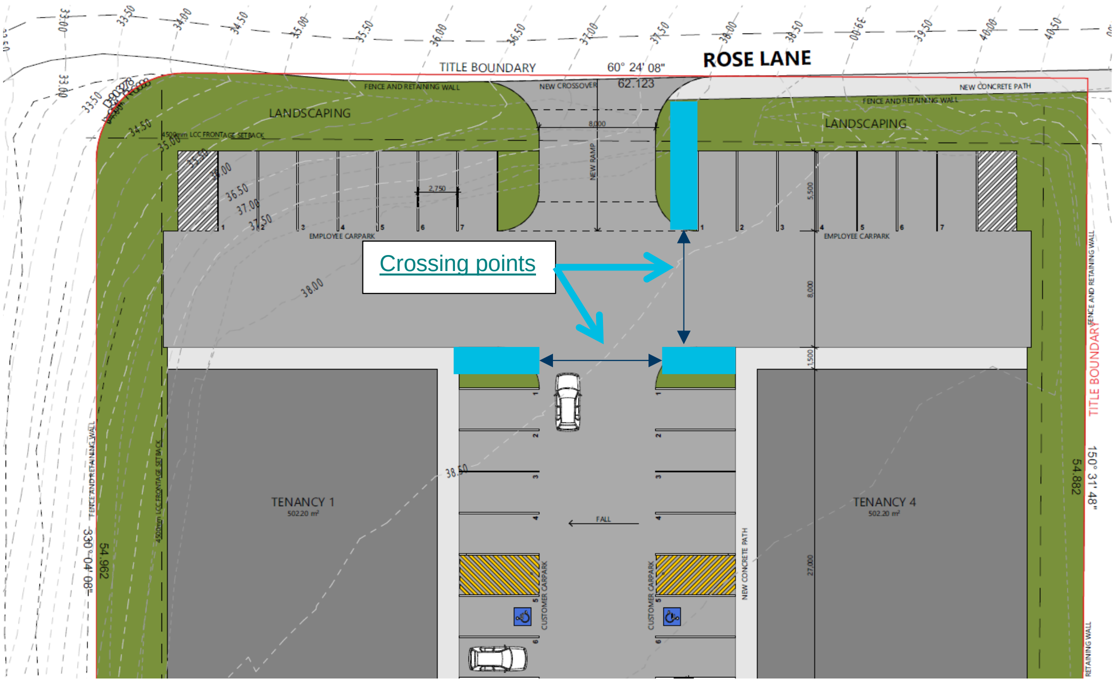


Figure 6 **Recommended footpath extension and crossing points adjacent to main site access**

Drawing sourced from Artas Architects, dwg no. 211043-A701-Sk07*Rose Lane New Concept Sketch, 30.05.2022.*

5.4 Waste collection

It is anticipated that rubbish generated by the proposed buildings would be stored in communal waste collection points and collected by a contractor on a weekly basis. This may generate up to six vehicle movements per week (three collections) by a front or rear loading garbage truck. There is space through any one of the proposed accesses on Rose Lane to accommodate truck manoeuvring, however, it is currently unknown where the waste collection point(s) will be located. The likely arrangement will be roadside collection on Rose Lane.

5.5 Loading area

The proposed development does not include any formal loading areas/bays and is not required to provide one by the Acceptable Solution of Clause E6.5.5-A1 of the Planning Scheme which states that *"a loading bay must be provided for uses within a gross floor area greater than 1000*m^2 *in a single occupancy"*.

Delivery vehicles will comprise of light vehicles (e.g. courier vans) that will be able to park within a standard car parking space. It is anticipated that each tenancy will generate up to two delivery vehicle movements per day (one delivery).

6. Impacts Assessment

6.1 Access arrangements

6.1.1 Geometry of Rose Lane

Rose Lane is the primary access road to the development site and has an existing sealed road width of approximately 5.8-5.9 metres. With reference to theLISTMap © Tasmania, the reservation width of Rose Lane (east-west alignment) is approximately 12 metres wide, and the reservation width of Rose Lane (north-south alignment) is approximately 20 metres wide.

A minimum road width of 8.9 metres is required by LGAT Standard Drawing dwg. no. TSD-R06-v1 *Urban Roads Typical Section and Pavement Widths* for an urban local through road. The current road width of Rose Lane therefore does not comply with the LGAT road requirements. As such, it would be unsuitable to significantly increase the amount of traffic on Rose Lane (particularly non-residential traffic) without road upgrade.

The proposed development generates up to an additional 540 vehicle trips per day on Rose Lane, and this is mostly concentrated between the proposed main site access and Westbury Road. In comparison, trip generation along Rose Lane is anticipated to be less concentrated between the proposed overflow car park access and the proposed main site access as most vehicle trips will access the development site via Rose Lane and Westbury Road intersection and the main site access on Rose Lane. The secondary site accesses will likely be used more for outbound trips due to the placement of car parking spaces but may attract inbound staff/employee vehicles to avoid parking congestion in the proposed main car park. It is assumed that up to approximately 30% of inbound vehicle trips will utilise one of the secondary site accesses, and approximately up to 50% of outbound vehicle trips will utilise one of the secondary site accesses. This equates to a peak increase in approximately 20-25 vehicle trips per hour along Rose Lane between the proposed main site access and the proposed secondary site accesses.

Considering the above, it is recommended that Rose Lane be widened to a minimum width of 8.9 metres to improve access to and from the proposed development. The extent of road widening should at least span the section between the proposed main site access and Westbury Road (see Figure 8). On-street parking could be formally implemented along the widened section of road, and this can be configured to be either on only one side of Rose Lane or staggered across both sides of Rose Lane as shown in Figure 7. On-street parking provisions could include a loading area(s) alongside the boundary of the development site on Rose Lane to improve delivery vehicle access – there are no formal loading bays/areas proposed within the development site.

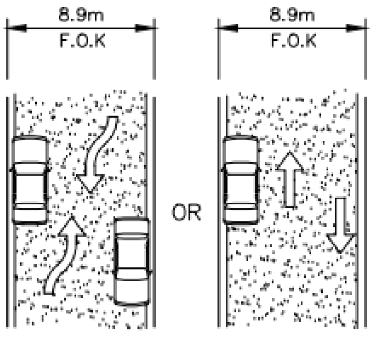


Figure 7 ***Potential on-street parking arrangements***

Source: Dwg. no. TSD-R06-v1 *Urban Roads Typical Section and Pavement Widths,* LGAT Standard Drawings.

It is recommended that the following upgrades be considered for Rose Lane:

– Minimum width of 8.9 metres between the Westbury Road and the site access point
– New kerb and channel on the south-eastern side of Rose Lane

– New footpath along Rose Lane and connecting to existing footpath on Westbury Road

The above road upgrades are shown in Figure 8.

Figure 8 ***Recommended Rose Lane upgrades***

"Road Narrowing" warning sign(s) should be considered in conjunction with any localised road widening, particularly in the westbound direction on Rose Lane (east-west aligned section) approaching the curve in the road. Due to the increase in non-residential traffic on Rose Lane and limited roadside street lighting, "Curve" warning signs could also be considered on either approach of the curve located west of the proposed main site access on Rose Lane.

6.1.2 Number of accesses

Clause E4.6.2-A2 of the Planning Scheme states that *"no more than one access providing both entry and exit…to roads in an area subject to a speed limit of 60 km/h"*. Three accesses to the subject site providing both entry and exit is proposed on Rose Lane. All other access points to the wider network are existing accesses. The development therefore relies on the performance criteria that states *"…accesses and junction must be safe and not unreasonably impact on the efficiency of the road*".

The Performance Criteria of Clause E.4.6.2-P2 are considered to be satisfied based on the following points:

– Existing traffic volume on Rose Lane is low at up to 6 vehicles/hr during peak periods.

– Proposed accesses on Rose Lane have sufficient sight distance in both directions to meet the requirements of AS 2890.1 (refer Section 6.1.3).

- Peak vehicle movements to/from the development site will occur during business hours on weekdays which does not align with peak vehicle movements to/from the adjacent Kingdom Hall of Jehovah's Witnesses accesses which occur on weekends or after hours on weekdays.
- There is sufficient distance between the two secondary site accesses on Rose Lane to allow for short queues from left turn and right-turn in movements into the site.

6.1.3 Sight distances at proposed new accesses

The Acceptable Solution of Clause 4.6.4-A1 of the Planning Scheme states that the sight distances at new accesses must comply with a Safe Intersection Sight Distance (SISD) of 80 metres for a road with a vehicle speed of 50 km/h. Rose Lane has a default speed limit of 50 km/h.

The proposed development has an available sight distance of approximately 55 metres (considering maximum sight angle of 110 degrees, see Figure 9) at the west approach of the main site access and therefore relies on the Performance Criteria of Clause 4.6.4-P1 of the Planning Scheme which states that "*the design, layout and location of an access, junction…must provide adequate sight distances to ensure the safe movement of vehicles"*.

The Performance Criteria of Clause 4.6.4-P1 of the Planning Scheme are considered to be satisfied based on the following points:

- Drivers are likely to reduce their speed whilst navigating the bend on Rose Lane. With reference to the *Austroads Guide to Road Design Part 3: Geometric Design*, the operating speed around the horizontal curve on Rose Lane is approximately 25 km/h.
- Vehicles are likely to reduce their speed whilst navigating the slope on Rose Lane. Rose Lane has a positive incline in the eastbound direction along its east-west aligned section.
- The available sight distance at the east approach of the main site access exceeds 80 metres.
- The available sight distances at the proposed secondary site accesses on Rose Lane exceeds 80 metres in either direction.
- Existing traffic volume on Rose Lane is low at up to 6 vehicles/hr during peak periods.
- Figure 3.2 of AS2890.1 *Parking facilities, Part 1: Off-street car parking* recommends a sight distance of 45 metres for non-domestic property access on roads with a speed limit of 50 km/h.

Figure 9 *Line of sight at proposed main access on Rose Lane with maximum sight angle – west approach*

Drawing sourced from Artas Architects, dwg no. 211043-A701-Sk07*Rose Lane New Concept Sketch, 30.05.2022.*

6.2 Traffic and transport impacts

6.2.1 Traffic efficiency

The Acceptable Solution of Clause E4.5.1-A3 of the Planning Scheme states that *"the annual average daily traffic (AADT) of vehicle movements, to and from a site, using an existing access or junction, in an area subject to a speed limit of 60 km/h or less must not increase by more than 20% or 40 vehicle movements per day, whichever is the greater".*

Two-way traffic volumes on Rose Lane are expected to increase by up to 60 vehicles/hr (during peak periods) or 540 vehicles/day due to the proposed development. The majority of this increase is concentrated in the section between the proposed main site access and Westbury Road. Given that this section of Rose Lane has an estimated existing traffic volume of 6 vehicles/hr or 56 vehicles/day based on existing land uses, the Performance Criteria of Clause E4.5.1-P3 of the Planning Scheme must be satisfied. Clause E4.5.1-P3 states that *"any increase in vehicle traffic at an existing access at junction in an area subject to a speed limit of 60 km/h or less, must be safe and not unreasonably impact the efficiency of the road*".

Given the low existing traffic volumes on Rose Lane, the proposed increase in traffic by up to 60 vehicle trips per hour is considered able to be accommodated within the environmental capacity of a local street (200-300 veh/hr) according to the RTA Guide.

Two-way traffic volume on Westbury Road north of Rose Lane and Wellington Street north of Westbury Road will increase by up to 31 vehicles/hr or 280 vehicles/day. As the existing two-way peak hour traffic volumes on

Wellington Street and Westbury Road are approximately 1978 vehicles/hr and 931 vehicles/hr respectively, the increase in daily traffic volume is greater than 20% on Westbury Road and less than 20% on Wellington Street. SIDRA analysis undertaken at the Westbury Road intersections with Rose Lane and Wellington Street (refer to Section 4.2) indicated that whilst minor increases in queuing and delays are expected due to the proposed development, the intersections are considered to continue to perform satisfactorily.

Based on the above, the Performance Criteria of Clause E4.5.1-P3 are considered to be satisfied. It should, however, be noted that Wellington Street and Westbury Road intersection currently already approaches capacity during PM peak and should be monitored for any noticeable increase in background growth in the road network over the next 10 years post-development.

6.2.2 Active transport

A connected network of footpaths and priority crossings are proposed within the development site. This provides pedestrians safe passage through the proposed car parking area.

The pedestrian network on Rose Lane consists of sealed footpaths in limited sections with pedestrians required to walk on the nature strip in large sections between Westbury Road and Peel Street. The footpath network on Westbury Road is limited with sections of discontinuity and noticeable gaps in linkages to public transport nodes.

The proposed footpath on Rose Lane should be extended (see Figure 8), to provide a sealed and continuous path for staff and clients to walk to/from Westbury Road. A new footpath connection should also be considered alongside the main site access to connect the proposed footpath on Rose Lane and the internal footpath network. Whilst the road environment on Rose Lane is currently not conducive to pedestrians, it is anticipated that the majority of pedestrians would enter and exit the development site via the main site access to/from Wellington Street and Westbury Road.

6.2.3 Road safety

With respect to the intersection of Westbury Road and Rose Lane, it is acknowledged that there have been three cross-traffic incidents recorded over the reviewed 5 year period. These may be due to a combination of factors including the gradient of Rose Lane, high traffic volumes on Westbury Road and potential visibility issues at the intersection. This development is unlikely to significantly increase the crash risk at this junction due to the following:

– It is expected that there would be an additional 16 vehicles per hour undertaking through movements at this junction during peak periods which equates to less than one vehicle every 3 minutes on average.
– The intersection performance would remain approximately at current levels, with no noticeable change in delays or queuing, such that there would be no increase in any risk-taking behaviour

To address the existing crash history at this location, Council may consider the provision of STOP control (to replace the existing Give-Way control) or alternatively other means to increase the visibility of the junction such as pavement markings, tactile pavement bars, threshold treatment or advance warning signage.

No significant detrimental road safety impacts are foreseen for the proposed development. This is based on the following:

– There is sufficient capacity in the road network generally to accommodate the proposed traffic volumes with no noticeable decrease in performance.
– There is adequate sight distance at the access point given the prevailing vehicle speeds; and
– The increase in traffic at the Rose Lane / Westbury Road intersection is predominantly right turns and left turns in and out of Rose Lane which are unlikely to significantly increase the crash risk at this junction.
– The consideration of warning signs on Rose Lane to assist non-residential traffic in navigating curves and potential changes in road width. Refer to Section 6.1.1.

6.3 Impacts to State Road network

Clause E4.6.1-A1.1 of the Planning Scheme states that *"Except as provided in A1.2, the following development must be located at least 50m from the rail network, or a category 1 road or category 2 road, in an area subject to a speed limit of more than 60km/h:*

(a) new buildings

(b) other road or earth works; and

(c) building envelopes on new lots."

In this case, parts of the proposed development (including car park works) may be within 50 metres of the southbound carriageway of the Southern Outlet (Midland Highway) in an area subject to a speed limit greater than 60 km/h. The proposal would rely on Performance Criteria which states: *"The location of development, from the rail network, or a category 1 road or category 2 road in an area subject to a speed limit of more than 60km/h, must be safe and not unreasonably impact on the efficiency of the road or amenity of sensitive uses…"*

The Performance Criteria are considered to be met on the following basis:

– Rose Lane does not connect directly to Midland Highway such that traffic activity on Rose Lane would have no direct impact on the operation of the major road.

– The proposed building at 9 Rose Lane is not located in direct line of sight of drivers using Midland Highway due to the alignment of the road.

– There is a row of vegetation which partially blocks the view from Midland Highway to any potential development at Rose Lane.

– Midland Highway is located at a significantly higher level than Rose Lane, and the southbound carriageway is on an up-grade, which limits visibility of the site from the major road.

– It is likely that the only portion of the site that would be visible from Midland Highway is the upper floors of the apartment building, which is located outside of 50 metres from the carriageway.

7. Conclusion

This Traffic Impact Assessment report has investigated the potential traffic and transport related impacts associated with the proposed development and rezoning of 9 Rose Lane, South Launceston to a commercial block consisting of three medical-use tenancies and three office buildings.

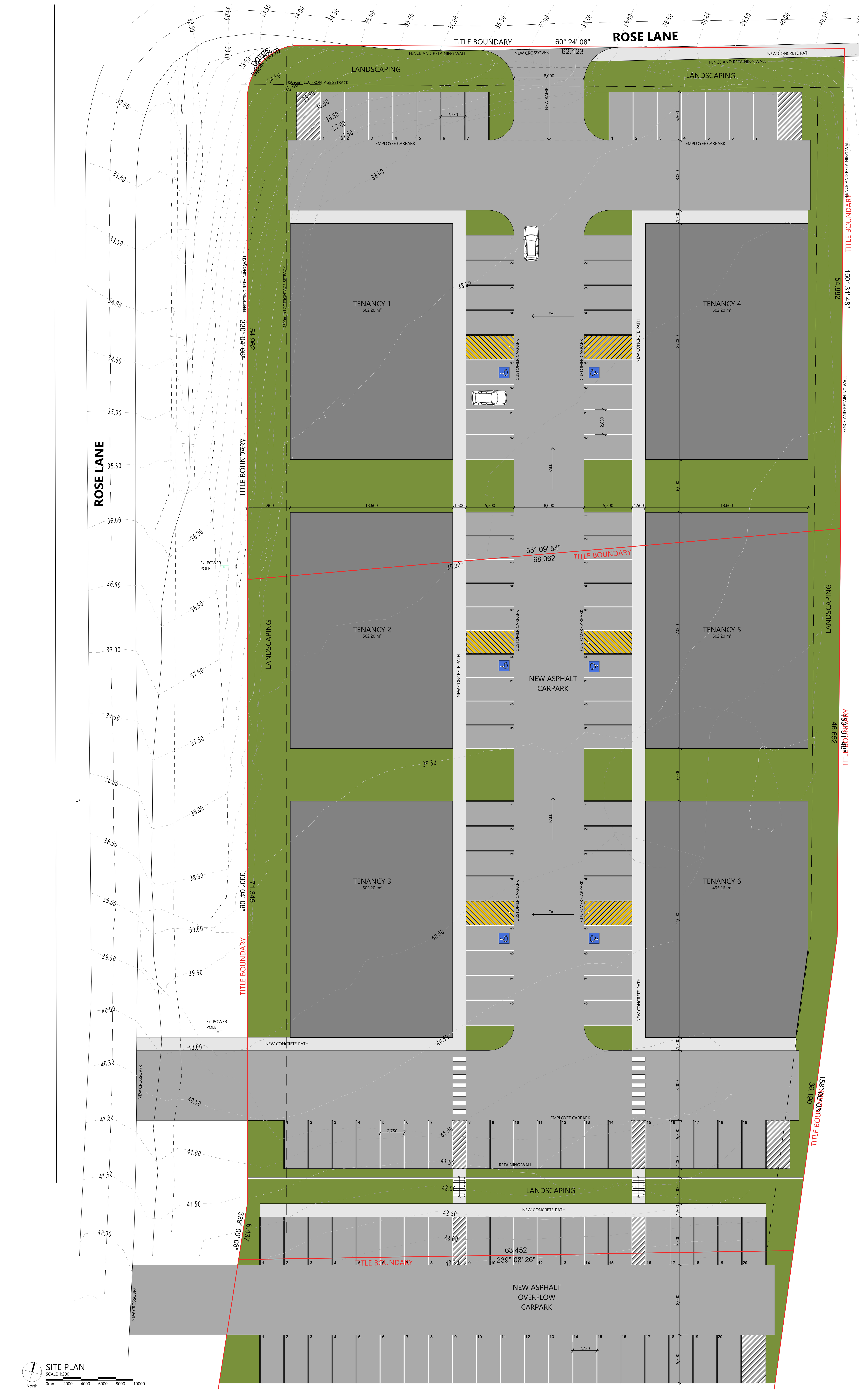
The key findings are as follows:

- The proposed development is anticipated to generate up to 540 additional vehicle trips per day. This includes 60 vehicles trips in the AM peak and 54 vehicle trips in the PM peak.
- The estimated increase in traffic on Rose Lane, Westbury Road and Wellington Street from the proposed development is considered to be within the capacity of these roads given existing traffic volumes.
- SIDRA analysis of the Westbury Road intersections with Rose Lane and Wellington Street indicated that the intersections would perform satisfactorily under proposed conditions.
- Sufficient sight distance is provided at the proposed accesses on Rose Lane given the prevailing vehicle speed on the frontage road.
- 123 car parking spaces are proposed within the development site. Six of these parking spaces are accessible parking spaces. The proposed parking supply is alignment with the combined parking demand generated by the tenancies.
- Crash trends in the vicinity of development site are not expected to be exacerbated by the proposed development.
- The site is not expected to cause impact to the operation of the Midland Highway, which is a category 1 road.
- The proposed development complies with the *Launceston Interim Planning Scheme 2015* subject to the following recommendations:
  - Consider widening Rose Lane to a minimum width of 8.9 metres for the section between the proposed main site access and Westbury Road to comply with *LGAT Standard Drawings* and to provide on-street parking/loading zone(s) and footpaths. Refer to Section 6.1.1.
  - Consider warning signs on Rose Lane to assist non-residential traffic with navigating changes in the alignment and geometry of Rose Lane. Refer to Section 6.1.1.
  - Provide footpath connection alongside main site access to comply with the Acceptable Solution of Clause E6.6.3-A1.1.
  - Provide three bicycle parking spaces to comply with the Acceptable Solution of Clause E6.5.2-A1.
  - Provide three taxi parking spaces to comply with the Acceptable Solution of Clause E6.5.3-A1.
  - Provide eight motorcycle parking spaces to comply with the Acceptable Solution of Clause E6.5.4-A1.
  - Parking areas to be constructed in alignment with the Acceptable Solution of Clause E6.6.1-A1. Refer to Section 5.2.1.

Based on the findings of this report, and subject to the recommendations outlined above, the proposed development is supported on traffic grounds.

Appendix A

Proposed development



Document Set ID: 4732828
Version: 1, Version Date: 25/02/2022

R E V I S I O N				
Rev	Description	Date	Int.	App
Sk02	ISSUED TO CLIENT FOR COMMENTS	9/02/2022	MG	BT
Sk03	ISSUED TO CLIENT FOR COMMENTS	22/03/2022	MG	BT
Sk04	ISSUED TO CLIENT FOR COMMENTS	22/03/2022	MG	BT
Sk05	ISSUED TO CLIENT FOR COMMENTS	12/04/2022	BT	BT
Sk06	ISSUED TO CLIENT FOR COMMENTS	12/04/2022	SK	BT
Sk07	ISSUED TO CLIENT FOR COMMENTS	30/05/2022	BT	BT

ALL DRAWINGS TO BE READ IN CONJUNCTION WITH ALL ENGINEERS DOCUMENTATION AND SPECIFICATION.

CONTRACTOR TO ENSURE ALL NEW BUILDING WORKS, NEW FITTINGS AND FIXTURES ARE INSTALLED TO THE CURRENT BCA, AUSTRALIAN STANDARDS AND WORKCOVER REGULATIONS.

THE CONTRACTOR SHALL USE FIGURED DIMENSIONS IN PREFERENCE TO SCALED DIMENSIONS. ALL DIMENSIONS SHALL BE VERIFIED ON SITE.

ARTAS ARCHITECTS

PROJECT NAME
ROSE LANE NEW CONCEPT

CLIENT NAME
ERROL STEWART

DRAWING NAME
ROSE LANE NEW CONCEPT SKETCH

DRAWN	APPROVED	SHEET SIZE
BT, MG	SC	A1 (PORTRAIT)

DRAWING ISSUE
SKETCH
PROJECT NUMBER:
211043

DRAWING NUMBER
A701-Sk07

Appendix B

Intersection volumes

Turning movement diagrams

Table 12 Westbury Rd and Wellington Street intersection – AM Peak

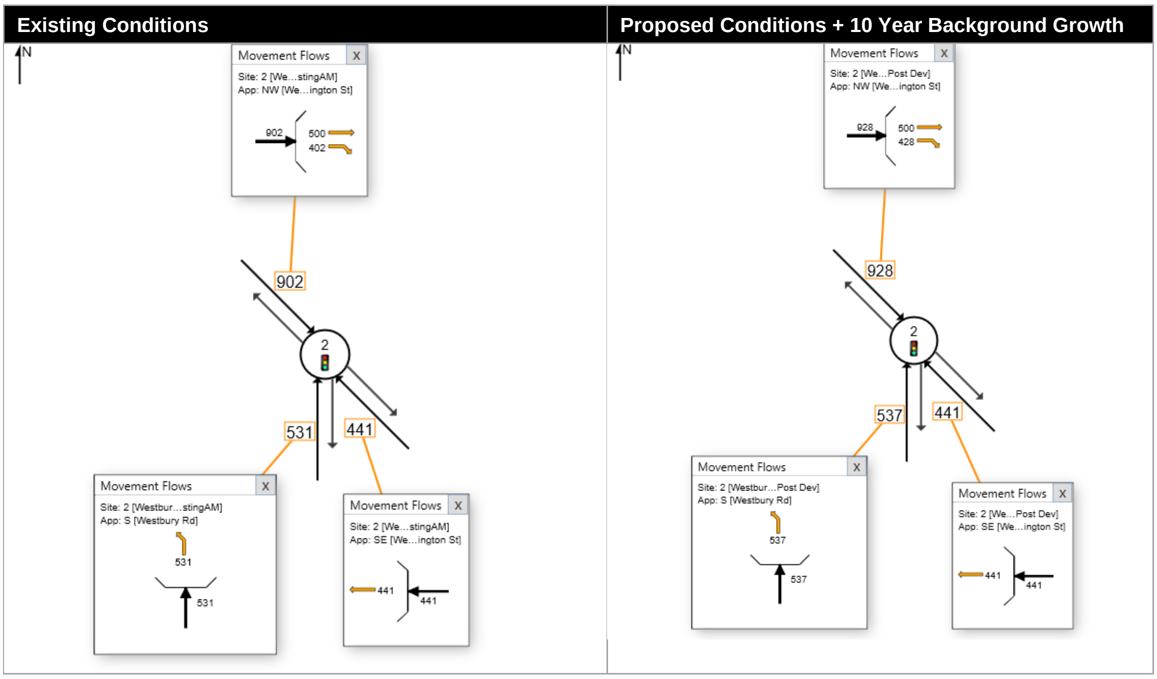


Table 13 Westbury Rd and Wellington Street intersection – PM Peak

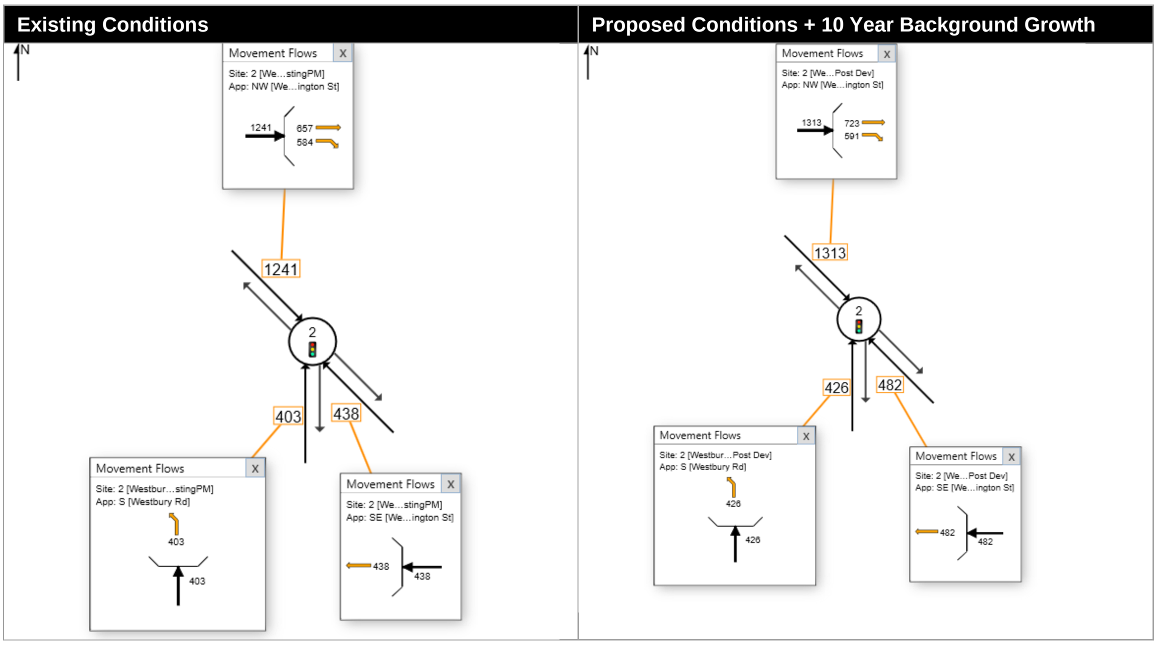


Table 14 Rose Lane and Westbury Road intersection – AM Peak

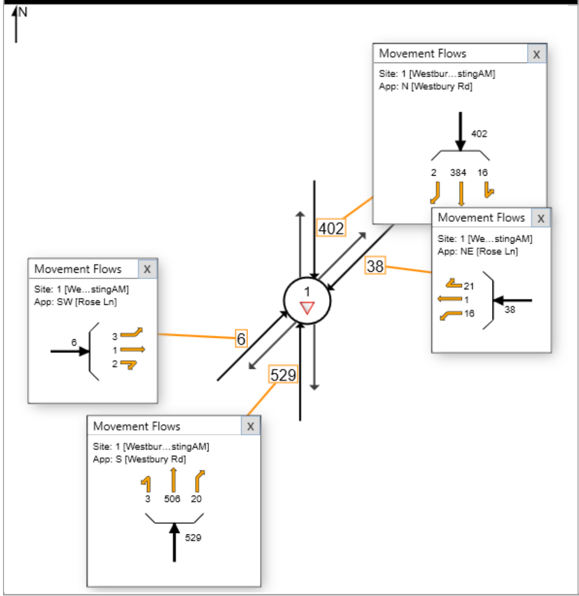
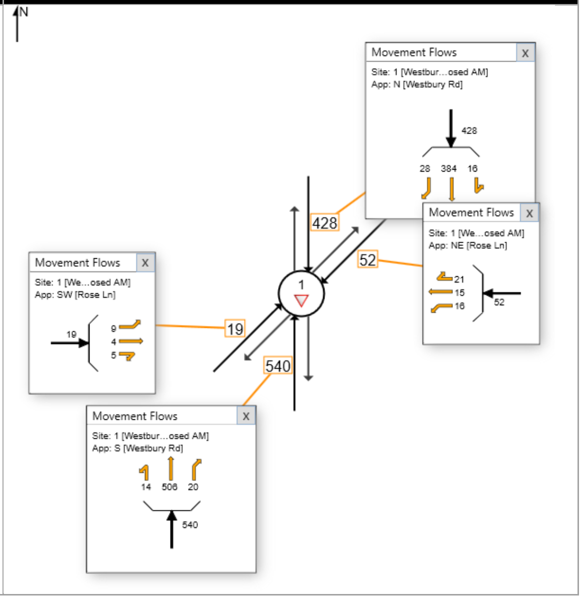
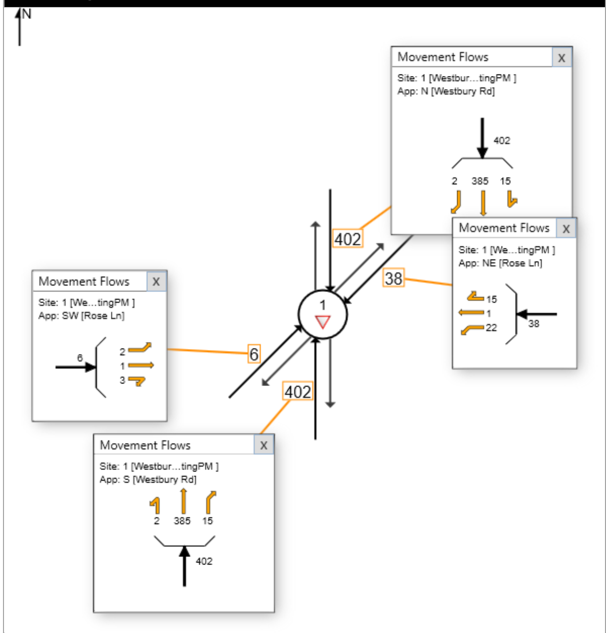
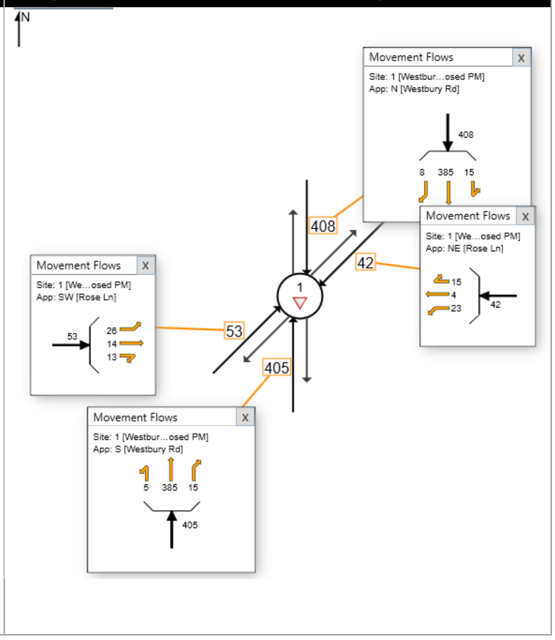
Existing Conditions	Proposed Conditions + 10 Year Background Growth
	

Table 15 Rose Lane and Westbury Road intersection – PM Peak

Existing Conditions	Proposed Conditions + 10 Year Background Growth
	

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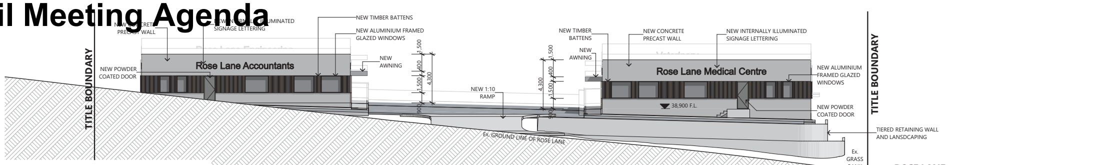
ROSE LANE
MIDLAND HIGHWAY
WESTBURY ROAD
NORWICH STREET
TENANCY 1
MEDICAL CENTRE
TENANCY 2
DENTAL CLINIC
TENANCY 3
VETERINARY CLINIC
TENANCY 4
ACCOUNTANTS
TENANCY 5
LEGAL SERVICE
TENANCY 6
ENGINEERING
TITLE BOUNDARY
GRASSED AREA
Ex. TREES
NEW CONCRETE PATH
RECOMMENDED WIDENING OF Ex. ROAD TO 8.9m AS PER TRAFFIC IMACT ASSESSMENT.
RECOMMENDED PATH AS PER TRAFFIC IMPACT ASSESSMENT.
Ex. TREES TO BE REMOVED SHOWN OUTLINED
LOCATION PLAN
ROSE LANE OFFICES
ERROL STEWART
APPROVAL
211043
A001-DA01
ARTAS
ARCHITECTS

Document Set ID: 4752837
Version: 1, Version Date: 05/12/2022

R E V I S I O N				
Rev	Description	Date	Int.	App
DA01	ISSUED FOR DEVELOPMENT APPLICATION	5/07/2022	BT	BT



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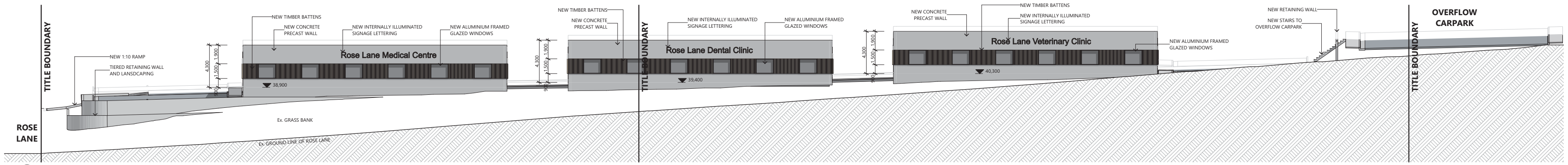
SCALE 1:200



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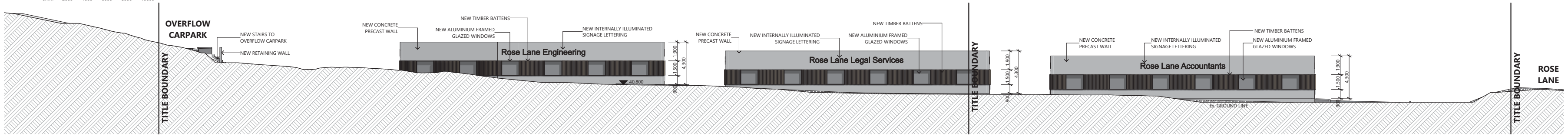

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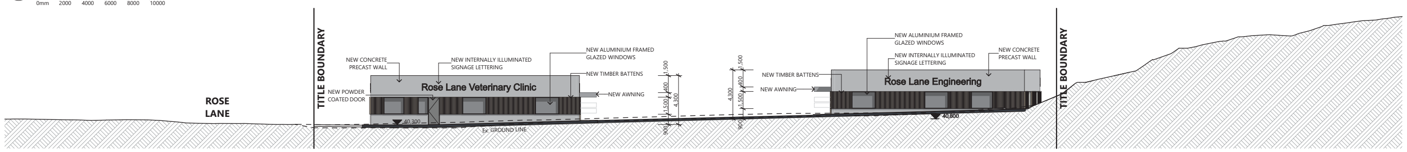

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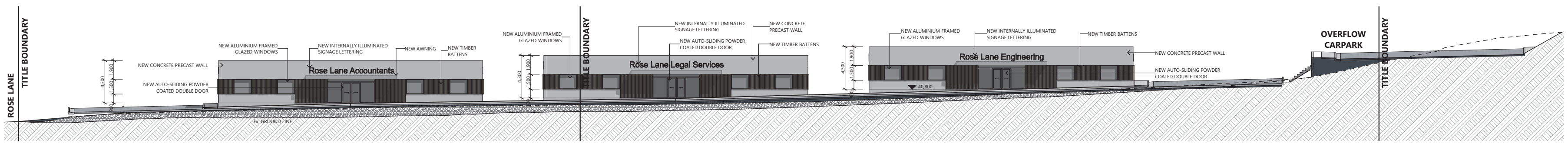

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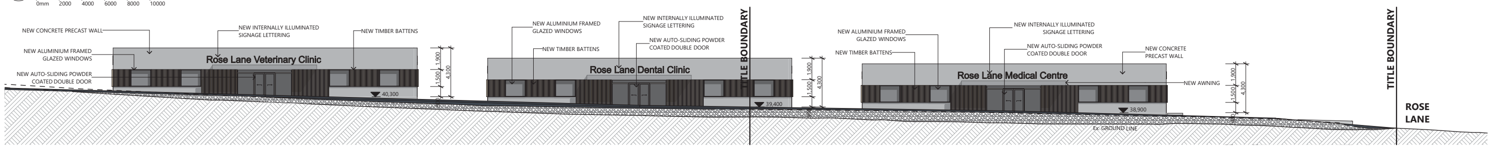


SE06 A002 OVERALL INTERNAL EAST ELEVATION
SCALE 1:200

ROSE LANE OFFICES

ERROL STEWART

ARTAS ARCHITECTS

APPROVAL
211043
SHEET SIZE: A1 (LANDSCAPE)
A003-DA01


Rose Lane Medical Centre

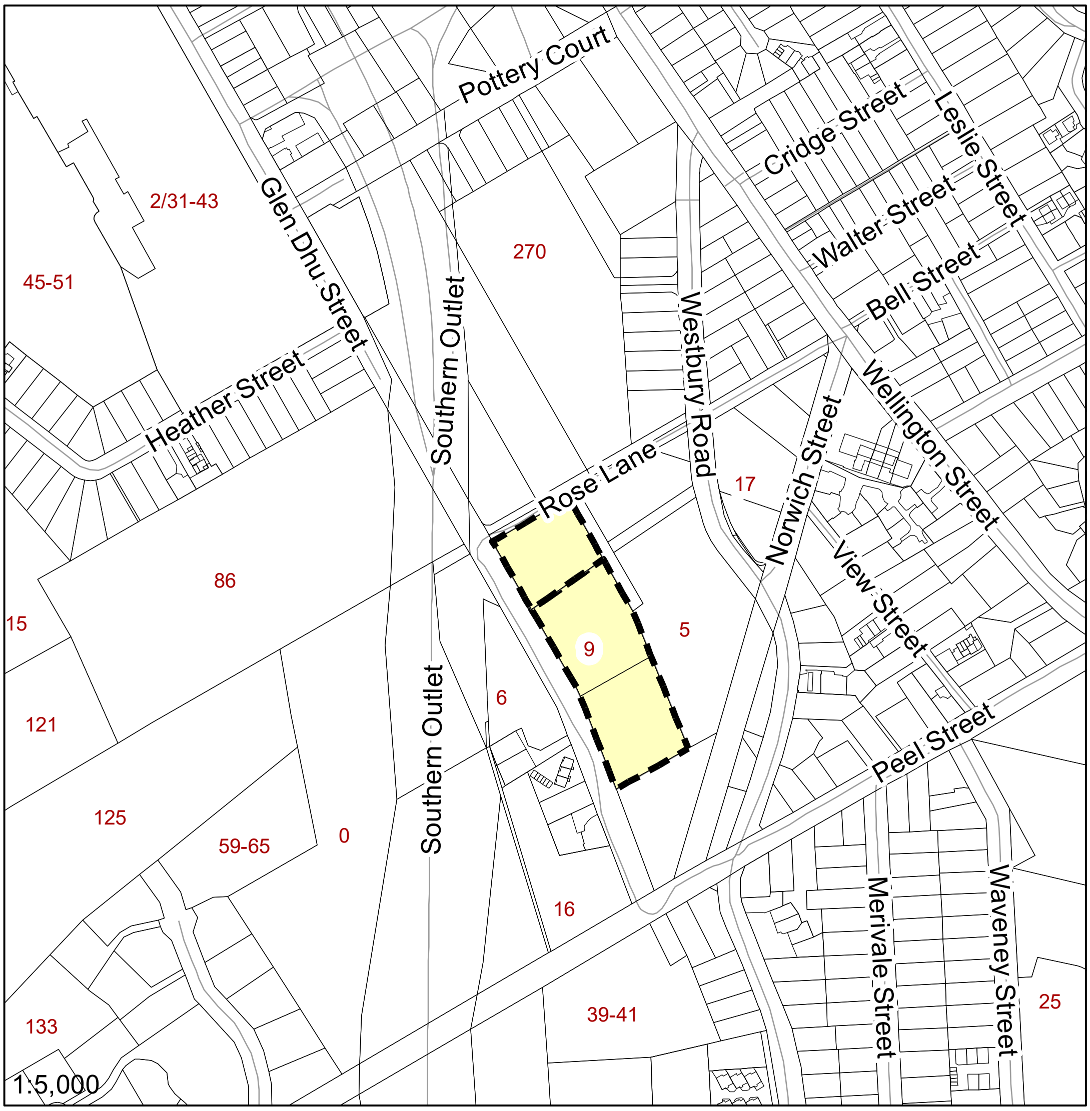

Rose Lane Medical Centre
Rose Lane Medical Centre
Rose Lane Legal Service
Rose Lane Accountancy

TASMANIAN PLANNING SCHEME - LAUNCESTON

Amendment PSA-LLP002

Rezoning 9 Rose Lane, South Launceston (described as CT159336/1 and CT217855/1) from General Residential Zone to Community Purpose Zone; and rezoning 9 Rose Lane, South Launceston (described as CT247578/2 and CT200709/1) from Open Space Zone to Community Purpose Zone

Amend the Tasmanian planning scheme maps as below:



Zoning — Community Purpose Zone

THE COMMON SEAL of the City of Launceston was hereunto affixed in the presences of: -

Michael Stretton
Chief Executive Officer

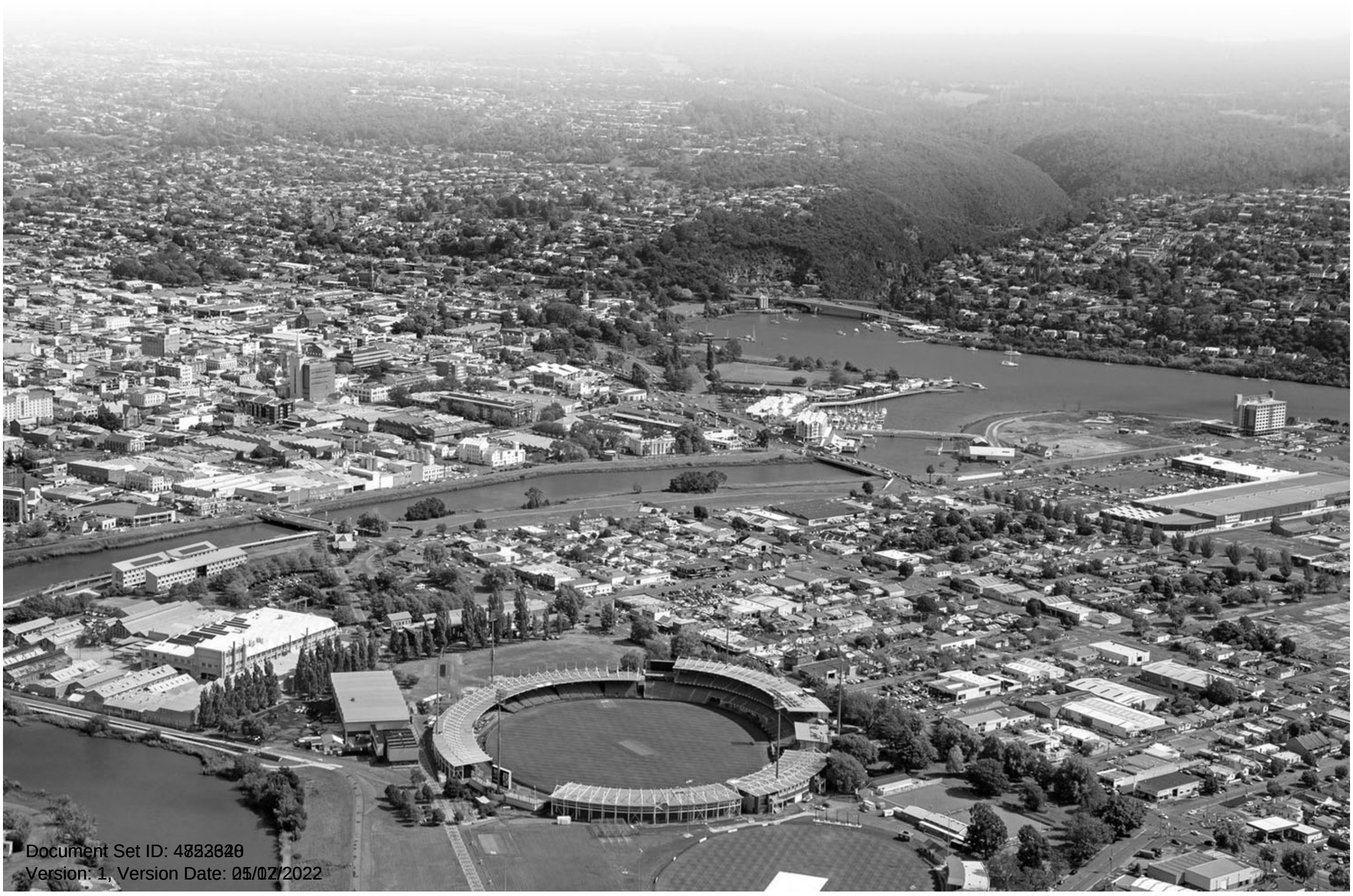
Date

9 Rose Lane, South Launceston

Section 40T Application

Supporting Planning Report

18 July 2022



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ABN 67 141 991 004

Job Number: 1819-070

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Document Status

Document Version	Date	Author	Reviewer
DRAFT_V1	7 July 2022	Mark O'Brien	Emma Riley
FINAL_V1	18 July 2022	Mark O'Brien	Patrick Carroll

Contents

1 Introduction

1.1 Purpose of the report

ERA planning and Environment (ERA) have been engaged to request an amendment to the *Tasmanian Planning Scheme – Launceston* (the planning scheme) pursuant to Sections 37 and 40T of the *Land Use Planning and Approvals Act 1993* (the Act). The proposal relates to land at 9 Rose Lane, South Launceston and the adjacent Rose Lane road reservation.

This report forms the basis of the application and has been prepared considering the provisions of the planning scheme, the requirements of the Act, and other relevant strategic documents.

Enquiries relating to this request can be directed to:

Mark O'Brien, Senior Planner
ERA Planning Pty Ltd
L1, 125a Elizabeth Street
HOBART TAS 7000
M: 0415 407 294
E: mark@eraplanning.com.au

1.2 Proposal

The proposal includes a planning scheme amendment for rezoning and a planning permit application for development of the site.

The planning scheme amendment seeks to rezone the site to the community purpose zone. No changes to the applicable zone and code requirements are being sought. The rezoning proposal is discussed further in section 3.

Rezoning enables development of the site for a variety of business and professional services, including a medical centre, veterinary clinic and office space. The proposed development is for six detached, single storey buildings, each approximately 500 m^2 gross floor area and arranged around a central access and parking area. The development proposal is discussed further in section 4.

1.3 Title information

The proposal relates to land detailed in Table 1 below. Title documents are available at *Appendix A*. Land owner's consent is available at *Appendix B*.

Table 1: Title information

Address	Land owner	Title reference	Additional detail(s)
9 Rose Lane	OLSP Pty Ltd	159336/1	0.4 ha of vacant land in general residential zone
9 Rose Lane	OLSP Pty Ltd	247578/2	0.5 ha of vacant land in recreation zone
9 Rose Lane	OLSP Pty Ltd	200709/1	0.5 ha of vacant land in recreation zone
5 Rose Lane	City of Launceston	226165/2	Rose Lane Park

Rose Lane	City of Launceston	NA	Rose Lane road reservation. Includes several land parcels that have no title documentation, including 23/842)
Rose Lane	City of Launceston	217855/1	Rose Lane road reservation
Rose Lane	City of Launceston	210081/1	Rose Lane road reservation

2 Site and surrounds

2.1 Site

The site for the purposes of this application is at 9 Rose Lane, South Launceston, made up of three titles, being CT159336/1 (northern title) and CT247578/2 (central title) and CT200709/1 (southern title). The combined site area is roughly 1.4 ha. The land is predominantly vacant, excluding small stands of non-native trees in the east and south of the site, and is roughly sloping at a grade of around 6% from east to west. Some land filling has occurred in the northern part which has levelled out the site.

The site is in the general residential and recreation zones, and is in a bushfire-prone area, landslide hazard area and priority vegetation area, as defined by the planning scheme. This site context is depicted in Figure 1 and Figure 2. Site photos are available at Section 2.3.

Figure 1: Aerial image of site (source: LISTmap, accessed 1 June 2022)

2.1.1.1 Servicing

The site is in an area serviced by reticulated sewer and water, with existing mains located on Rose Lane. Stormwater is disposed of via the sewerage system.

2.1.1.2 Access

Road frontage to Rose Lane exists along the entire length of the sites northern and western boundaries, which provides sufficient opportunity for suitable site access points.

2.1.1.3 Natural values

The site is predominantly cleared of any vegetation, excluding small stands of introduced trees in the east and south which are not of conservation significance. No native vegetation prevails on the site. Despite this, the planning scheme identifies a priority vegetation area occurring on the site, as indicatively shown in Figure 2 below.

2.1.1.4 Land hazards

The site is partly located on a former landfill and is identified as potentially contaminated land. The site is also in a landslip hazard area that includes a section of medium-active landslip hazard, as indicatively shown in Figure 2 below.

2.1.1.5 Heritage

The site has not been identified as containing any Aboriginal or European heritage values. Part of Rose Lane Park, which adjoins the site, is a heritage listed Convict Cemetery, as indicatively shown in Figure 2 below.

2.1.1.6 Zoning and overlays

The site is zoned general residential and recreation under the planning scheme, as shown in Figure 2. The site is impacted by several overlays including bushfire-prone area, safeguarding of airports, landslip hazard and priority vegetation area. The general residential zoned land on the site is inside the Southern Gateway Specific Area Plan.

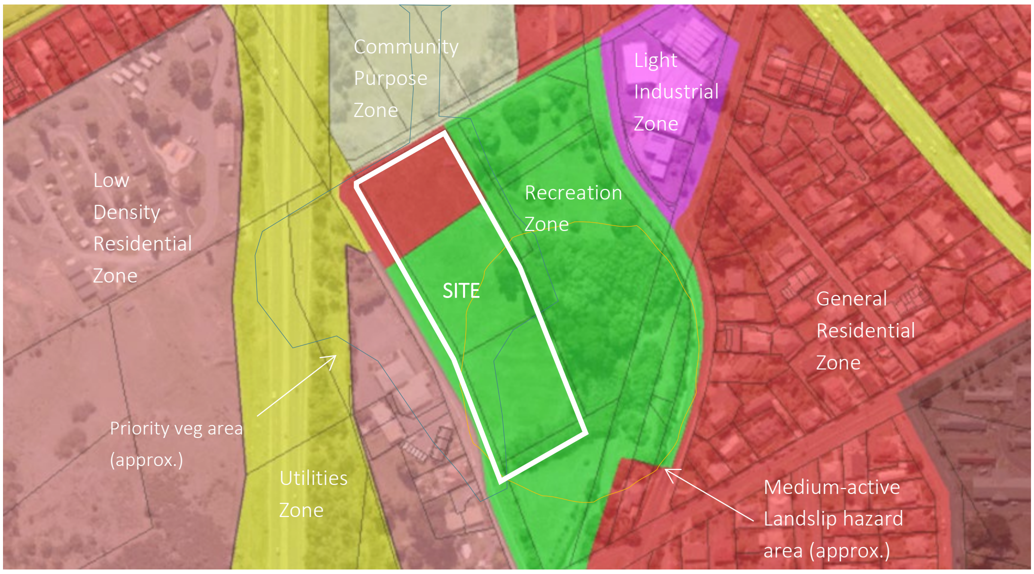


Figure 2: Zoning of site (source: LISTmap, accessed 5 July 2022)

2.2 Surrounding area

The site is located in South Launceston on the fringe of a mixed use corridor that broadly extends along Wellington Street. Land less than 200m from the site includes a mix of zones and uses including education (Glen Dhu Primary School, recreation (Rose Lane Park), business and professional services (Iron Mountain), manufacturing (Roberts), community meeting (Jehovah's Witnesses congregation), visitor accommodation (Big Four Launceston Caravan Park), residential and utilities (Midland Highway). This surrounding context is depicted in Figure 2.

Figure 3: Aerial image of area surrounding site (source: LISTmap, accessed 1 June 2022)

2.3 Site photos

Photo 1: View of site from Rose Lane looking south (source: ERA, taken September 2021)

Photo 2: View towards site from Rose Lane looking north (source: ERA, taken September 2021)

Photo 3: View overlooking site from Rose Lane Park looking northwest (source: ERA, taken September 2021)

Photo 4: View overlooking site from former convict cemetery looking north (source: ERA, taken September 2021)

Photo 5: View towards site from corner of Rose Lane and Westbury Road looking southwest (source: ERA, taken September 2021)

3 Assessment of planning scheme amendment

3.1 Description of proposal

The proposal seeks to rezone the 1.4 ha site at 9 Rose Lane, South Launceston, and the adjacent Rose Lane road reservation, from general residential and recreation to community purpose. As shown in Figure 4, the proposed rezoning also seeks to tidy up the otherwise leftover portions of general residential and recreation zoning in the Rose Lane road reservation. No changes to the applicable zone and code requirements are being sought.

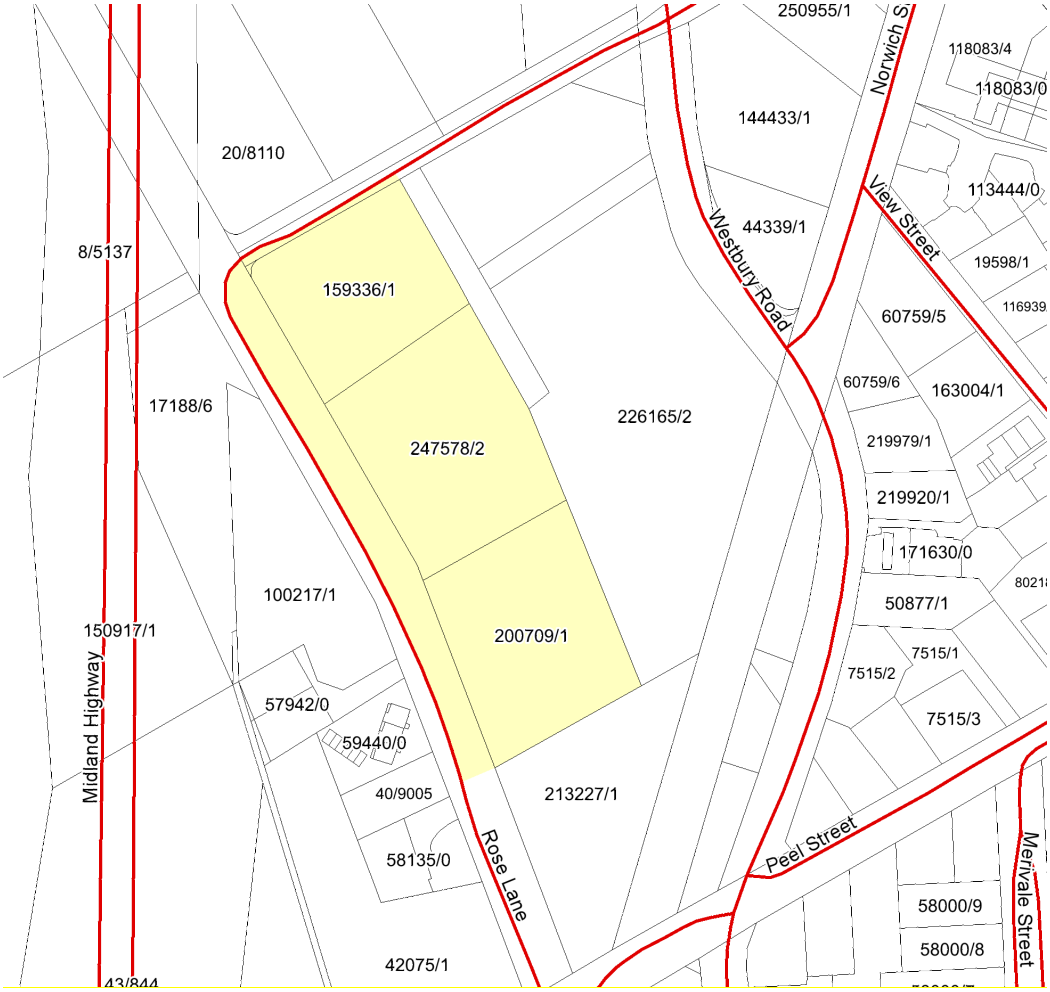


Figure 4: Area of land to be rezoned to the community purpose zone (source: InsightGIS)

3.1.1 Background to rezoning approach

Analysis has been undertaken to understand the most appropriate zoning and development for the site that meets planning requirements but also achieves commercial interests of the landowner. This has included an exploration of rezoning to general residential, urban mixed use, local business, light industrial, particular purpose, and community purpose. The results of this exploration are summarised as follows:

- Residential – there is known demand for residential development in the area. However, contamination assessments have revealed that the sites former use as a landfill presents an unacceptable risk to sensitive use on the site. Whist there is potential for vapour mitigation measures to be employed, investigations have revealed these to be cost prohibitive for sensitive use to occur on the site.
- Urban mixed use, local business and light industrial – the landowner's internal commercial/market analysis has identified a development opportunity for this site where demand exists for business and professional services. Although these zones would enable this, they also potentially enable several development outcomes that are arguably not appropriate for the site and are not compatible with the surrounding area. For example, bulky goods that are likely to require a large format built form with use reliant on heavy vehicles. To resolve these matters, a specific area plan would be required to accompany the rezoning proposal.
- Particular purpose – the landowner's internal commercial/market analysis has identified a development opportunity for this site where demand exists for business and professional services. The particular purpose zone allows a tailored planning approach that controls the use and development outcomes of the site without the need for a specific area plan. This bespoke approach addresses some unique site opportunities/constraints and allows for future development flexibility. However, given that other existing zones enable business and professional services without the need for a tailored approach, it is questionable whether this approach is warranted.
- Community purpose - the landowner's internal commercial/market analysis has identified a development opportunity for this site where demand exists for business and professional services. The community purpose zone allows for this use and development via a discretionary permit pathway without the need to alter the underlying zone provisions. The use and development opportunities for the site under the community purpose zone are appropriate for the area and this approach provides a seamless expansion of the existing community purpose zone adjoining the site. Potential contamination impacts of non-sensitive use on the site are can also be more easily mitigated relative to sensitive use.

Given the above, the community purpose zone is considered the most appropriate rezoning approach given the opportunities and constraints of the site.

3.2 Requirements of the Act

This planning scheme amendment application is made under Section 37 of the *Land Use Planning and Approvals Act 1993* (the Act). It requires:

1) *A person may request a planning authority to amend an LPS that applies to the municipal area of the planning authority.*
2) *A request under subsection (1) is to be in a form approved by the planning authority or, if a form has been approved by the Commission, is to be in that form.*

3) *A request under subsection (1) by a person to a planning authority to amend the zoning or use or development of one or more parcels of land specified in an LPS must, if the person is not the owner, or the sole owner, of the land –*

   (a) be signed by each owner of the land; or

   (b) be accompanied by the written permission of each owner of the land to the making of the request.

Consent of the landowners has been provided in accordance with the requirements of the Act and is available at Appendix B.

Section 34(2) of the Act is relevant for a planning scheme amendment as it stipulates the assessment criteria to be met. The criteria are that the proposal:

(a) contains all the provisions that the SPPs specify must be contained in an LPS; and

(b) is in accordance with section 32; and

(c) furthers the objectives set out in Schedule 1; and

(d) is consistent with each State policy; and

(da) satisfies the relevant criteria in relation to the TPPs; and

(e) as far as practicable, is consistent with the regional land use strategy, if any, for the regional area in which is situated the land to which the relevant planning instrument relates; and

(f) has regard to the strategic plan, prepared under section 66 of the Local Government Act 1993, that applies in relation to the land to which the relevant planning instrument relates; and

(g) as far as practicable, is consistent with and co-ordinated with any LPSs that apply to municipal areas that are adjacent to the municipal area to which the relevant planning instrument relates; and

(h) has regard to the safety requirements set out in the standards prescribed under the Gas Pipelines Act 2000.

The following sections address the matters that are covered by the above-mentioned legislative requirements.

3.3 Assessment against Section 34(2)(a)

Section 34(2)(a) requires that the amendment result in a planning scheme instrument which contains all the provisions that the SPPs specify must be contained in an LPS. The proposal will not override existing provisions and will rely on the zone and code provisions in the SPPs. This criterion is met.

3.4 Assessment against Section 34(2)(b)

Section 34(2)(b) requires that the amendment is in accordance with Section 32, which prescribes the content requirements for local provisions schedules. The proposal meets these requirements given the proposal will not override the existing provisions and will rely on the zone and code provisions in the SPPs.

3.5 Assessment against Section 34(2)(c)

Section 34(2)(c) requires that the amendment furthers the objectives of the resource management and planning system set out in Schedule 1 of the Act. An assessment of the proposal against these objectives is provided in Table 2 below.

Table 2: Assessment against objectives of Schedule 1 of the Act

Part 1 Objective	Response
(a) to promote the sustainable development of natural and physical resources and the maintenance of ecological processes and genetic diversity	With respect to genetic diversity, desktop review has identified that no threatened species or threatened vegetation communities have been identified on the site. The site does not contain any native vegetation and is predominantly cleared of all vegetation. It is acknowledged that the site is in the priority vegetation area overlay. However, given that subsequent development of the site would not involve clearance of native vegetation, all code requirements relating to biodiversity protection would be exempt. With respect to ecological processes, the site has the ability to be connected to reticulated services and stormwater will be disposed of via the sewerage system.
(b) to provide for the fair, orderly and sustainable use and development of air, land and water	The land is part of the consolidation area in the urban growth area of greater Launceston. Rezoning the site as proposed provides an orderly development opportunity that maximises the sustainable use of existing land allowing more efficient use of infrastructure and resources.
(c) to encourage public involvement in resource management and planning	The draft amendment will be placed on public exhibition for a formal comment period. Representors will be provided the opportunity to provide additional input during a public hearing process. Any subsequent development of the site similarly will be placed on public exhibition.
(d) to facilitate economic development in accordance with the objectives set out in paragraphs (a), (b) an (c)	Rezoning will facilitate potential uses on the site including a medical centre, veterinary centre, vocational training, and offices. Taking into account the responses provided to (a), (b) and (c) above, development to enable such uses can occur in sustainable manner that does not involve impact on natural values and contributes positively towards social and economic development in the Launceston urban growth area.
(e) to promote the sharing of responsibility for resource management and planning between the	The proposed amendment represents a process of shared responsibility between State government, local government, the land development industry

different spheres of Government, the community and industry in the State	and the community. All relevant bodies will be consulted as part of the planning approval process.
Part 2 Objective	Response
(a) to require sound strategic planning and co-ordinated action by State and local government	The amendment implements sound strategic planning that has been undertaken for the region and municipality. This strategic planning has been coordinated through the *Northern Tasmania Regional Land Use Strategy* (NTRLUS) and Greater Launceston Plan (GLP). The site is inside the consolidation area of the urban growth area defined by the NTRLUS and GLP. Furthermore, the rezoning will enable use that contributes positively to an established need in the region, being medical and health facilities to support an aging population.
(b) to establish a system of planning instruments to be the principal way of setting objectives, policies and controls for the use, development and protection of land	The proposed amendment does not affect the established system of planning instruments; it will allow for the future development of the land to be considered against the provisions of the planning scheme.
(c) to ensure that the effects on the environment are considered and provide for explicit consideration of social and economic effects when decisions are made about the use and development of land	As demonstrated within this report, the environmental considerations relevant to the subject land have been considered. The site contains no identifiable natural values. The existing provisions of the planning scheme provide adequate safeguards regarding natural hazards. No further provisions are considered necessary.
(d) to require land use and development planning and policy to be easily integrated with environmental, social, economic, conservation and resource management policies at State, regional and municipal levels	The proposed amendment does not affect the attainment of this objective.
(e) to provide for the consolidation of approvals for land use or development and related matters, and to co-ordinate planning approvals with related approvals	The section 40T process ensures there is a consolidated approval process.

(f) to secure a pleasant, efficient and safe working, living and recreational environment for all Tasmanians and visitors to Tasmania	The proposed amendment will present opportunities for residents in the area to work and/or access additional essential services in proximity to their homes, potentially improving employment self-sufficiency and transport efficiencies in South Launceston. The amendment will not hinder the ability to secure a safe environment for future employees and residents in the area. Given that no changes to the underlying landslip and contamination codes are proposed, sufficient safety measures are in place to protect against unsuitable development proposals.
(g) to conserve those buildings, areas or other places which are of scientific, aesthetic, architectural or historical interest, or otherwise of special cultural value	The subject land has not been identified as having heritage values.
(h) to protect public infrastructure and other assets and enable the orderly provision and co-ordination of public utilities and other facilities for the benefit of the community.	The proposed amendment will support the orderly provision of and coordination of public utilities and other facilities. A traffic assessment undertaken to assess potential impacts of future development identifies that the proposed amendment would not adversely impact on public infrastructure and other assets. Subject to the scale and intensity of future development, minor road infrastructure upgrades may be recommended to improve the efficiency of the network. Such upgrades would be subject to approval from Council as landowner and infrastructure provider to ensure the orderly provision and coordination of utilities. Overall, there are adequate safeguards through the planning, building and plumbing permit application processes to protect public infrastructure in proximity to the site.
(i) to provide a planning framework which fully considers land capability.	The proposed amendment does not affect the attainment of this objective.

3.6 Assessment against Section 34(2)(d)

Section 34(2)(d) requires that the amendment be consistent with each State policy. There are currently three state policies operational in Tasmania that articulate the government's strategic policy direction.

The relevance of these policies to the proposed scheme amendment is addressed below.

3.6.1 State Policy on the Protection of Agricultural Land 2009

Assessment against the *State Policy on the Protection of Agricultural Land 2009* has not been provided. The site is already zoned for non-agricultural purposes (general residential zone and recreation zone) and is not in proximity to agricultural land.

3.6.2 State Policy on Water Quality Management 1997

The *State Policy on Water Quality Management 1997* is applicable as any future development will require stormwater runoff to be managed. Council's building and plumbing permit processes will manage stormwater flows in accordance with the *Urban Drainage Act 2013* and relevant Council policies. It is considered that these existing provisions are adequate to ensure future works are compliant with the *State Policy on Water Quality Management 1997*.

3.6.3 State Coastal Policy 1996

The site is more than one kilometre from the coast. Therefore, the proposal does not require assessment against the *State Coastal Policy 1996*.

3.6.4 National environmental protection measures

National Environmental Protection Measures (NEPMs) are developed under the *National Environment Protection Council (Tasmania) Act 1995* and outline objectives and protections for aspects of the environment. Section 12A of the *State Policies and Projects Act 1993* provides NEPMs with the status of a State Policy.

Seven NEPMs have been made to date that deal with:

- Ambient air quality;
- Air Toxins;
- Assessment of Site Contamination;
- Diesel Vehicle Emissions;
- Movement of Controlled Waste Between States and Territories;
- National Pollutant Inventory; and
- Used Packaging Materials.

The site is identified as potentially contaminated land under the planning scheme due to its former use as landfill. Therefore, the NEPM for assessment of site contamination is relevant to the proposal. The purpose of this NEPM relates to the establishment of a nationally consistent approach to the assessment of site contamination.

An Environmental Site Assessment has been prepared for the site in accordance with the NEPM and Environment Protection Authority Tasmania (EPA) standards. The ESA is available at ***Appendix C***.

3.7 Assessment against Section 34(2)(da)

Section 34(2)(da) requires the amendment to satisfy the relevant criteria of the Tasmanian Planning Policies (TPPs). There are no TPPs currently in effect. Therefore, this section of the Act is not applicable to the proposal.

3.8 Assessment against Section 34(2)(e)

Section 34(2)(e) requires the amendment, as far as practicable, to be consistent with the regional land use strategy that applies to the area, being the *Northern Tasmania Regional Land Use Strategy* (NTRLUS). The NTRLUS sets out the policy basis to facilitate and manage change, growth and development to 2032. A suite of goals, strategic directions and regional policies provide a framework to achieve this.

The Greater Launceston Plan (GLP) is a community vision and evidence-based framework for the sustainable development of Launceston. It is given effect through the City of Launceston Strategic Plan 2014-2024. The GLP has informed the current version of the NTRLUS. Therefore, the GLP is of relevance to the assessment test against Section 34(2)(e) and is drawn upon where necessary.

An assessment of the proposed amendment against the relevant regional policies in the NTRLUS is provided below:

3.8.1 Regional settlement network

RSN-P1 Urban settlements are contained within identified Urban Growth Areas. No new discrete settlements are allowed and opportunities for expansion will be restricted to locations where there is a demonstrated housing need, particularly where spare infrastructure capacity exists (particularly water supply and sewerage).

The site is in the urban growth area of greater Launceston, specifically on the border between the priority consolidation area and supporting consolidation area. Infrastructure capacity exists in the area, subject to appropriately managing stormwater at the permit application stage. Land contamination constraints prevent the site from being a viable residential development option. Therefore, rezoning provides the flexibility necessary to restructure this otherwise underutilised land.

3.8.2 Regional activity centre network

RAC-P1 Maintain and consolidate the Regional Activity Centres Network so future urban development consolidates and reinforces the spatial hierarchy of existing centres.

This will be achieved through the reuse and redevelopment of existing buildings and land to integrate a mix of land uses including the coordinated provision of residential development, retail, commercial, business, administration, social and community facilities, public and active transport provision and associated infrastructure.

RAC-P9 Discourage 'out-of-centre' development and provide for new development that supports the Regional Activity Centres Network and the integrated transport system.

Development applications that are 'out of centre' will only be considered if all of the following criteria are adequately addressed:

- Community need;
- No adverse impact on existing activity centres; and
- Synergy with existing employment hubs (i.e. health, education, research).

Overall, community benefit must be demonstrated through a social and economic impact assessment to reflect the strategic directions and policies of the RLUS.

RAC-P10 Provide for a range of land uses to be incorporated into activity centres appropriate to their role and function within the Activity Centres Hierarchy

The site is in the settlement area of greater Launceston, broadly forming part of an existing mixed use corridor between the Launceston principal activity centre and the Kings Meadows major activity centre, which contains the Launceston General Hospital. This is recognised as a 'high access' corridor in the Launceston Retail Audit and Activity Centre Strategy (the retail audit) which underpins the formulation of the NTRLUS. Furthermore, the retail audit calculated 20% of the region's office activities (including professional and business services, government offices, medial and healthcare services) are located in these areas outside the Launceston central area, predominantly in South Launceston. Given this context, and considering the modest scale of future development permissible on the site, the proposal is not characteristic of a typical out of centre development. Rather, the proposal provides for a synergy with an existing employment hub.

Given the location, scale, and type of use likely to occur on the site following rezoning, the proposal is considered to contribute positively towards the needs of the local community, without compromising the prevailing activity centre hierarchy. That is, the role of the Launceston principal activity centre as the primary hub of northern Tasmania for business, government administration, leisure and entertainment, and the role of Kings Meadows major activity centre to provide wide ranging services for the subregion with a strong focus on retail and commercial, will be maintained.

3.8.3 Regional infrastructure network

RIN-P3 Direct new development towards settlement areas that have been identified as having spare infrastructure capacity.

RIN-P7 Facilitate an efficient and convenient public transport system through land use planning.

The site is in an established settlement area identified for growth and supported by existing infrastructure with sufficient capacity. Rezoning would improve the mix of non-residential land uses in a corridor well serviced by public transport and in proximity to the local residential population it is largely intended to serve. Therefore, the proposal will contribute positively to the regional infrastructure network by improving land use and transport integration.

3.8.4 Regional economic development

ED-P4 Provide suitable training and education opportunities in response to identified regional challenges, including those concerned with:

- *An ageing population;*
- *Out-migration of younger generations;*
- *Low literacy/education/skilled workers;*
- *Lack of diversity in the economy;*
- *Lack of support and training facilities; and*
- *Affordability of affordable housing.*

The NTRLUS regional profile highlights challenges surrounding an ageing population and decreasing workforce, recognising that investment in education, medical and health facilities will be critical to retaining and attracting population in the region. The proposal provides for this by rezoning the site to enable such use.

3.8.5 Social infrastructure and community

SI-P1 Coordinate planning for social infrastructure with residential development.

SI-P2 Provide social infrastructure that is accessible and well-located to residential development, public transport services, employment and educational opportunities.

Rezoning allows for the future development of social infrastructure on the site, including health and education. This would be well located in proximity to nearby residential development and public transport, providing logical and coordinated land use planning. The implementation of such use would, however, be subject to market forces identifying which needs exist in the area.

3.8.6 Regional environment

OSR-P1 To provide for an integrated open space and recreation system that contributes to social inclusion, community health and well-being, amenity, environmental sustainability and the economy.

Rezoning will convert around 1.4 ha of land from the existing recreation zone to the community purpose zone. Although the site adjoins Rose Lane Park, the land is in private ownership. The site is not used for recreation, and is not identified as forming part of the open space network in the City of Launceston's Draft Open Space Strategy. The recreation zone forming the broader Rose Lane Park, including the heritage listed former convict cemetery, will remain over 3 ha in area.

NH-P1 Future land use and urban development is to minimise risk to people and property resulting from land instability by adopting a risk-managed based approach, consistent with Practice Note Guidelines for Landslide Risk Management 2007 and AGS (2007a) Guideline for Landslide Susceptibility, Hazard and Risk Zoning for Land Use Planning; AGS (2007e) Australian GeoGuides for Slope Management and Maintenance.

NH-P4 Where avoidance of hazards is not possible or the level of risk is deemed acceptable, best practice construction and design techniques and management practices are to be implemented.

Regarding both NH-P1 and NH-P4, the site is located on former landfill on sloping land that is part of a landslip hazard area. Geotechnical and contamination assessments have been completed to determine the suitability of development on the site given these hazards.

The geotechnical assessment concluded that development of the site presents zero risk to life and property. Any subsequent development in a landslip hazard area will be subject to the requirements of the Landslip Hazard Code of the planning scheme. The geotechnical assessment is available at *Appendix D*.

Several contamination assessments have occurred to investigate the risk associated to use and development on the site resulting from its former use as a landfill. The initial contamination assessments were completed for a former proposal concept investigating residential potential for the site. These concluded that sensitive use on the site would only present an acceptable risk if significant vapour mitigation strategies were to be employed. Subsequent investigations revealed that potential vapour mitigation would be time and cost prohibitive and present a high level of risk to development viability. However, development viability and risk is highly improved for non-sensitive use.

Any subsequent development on the site will be subject to the requirements of the Potentially Contaminated Land Code of the planning scheme. The contamination assessments are available at Appendix C.

LSA-P1 Consider the value of protecting the scenic and landscape amenity of key regional tourism routes having regard to the routes identified in Map E3 and local circumstances, as well as the:

• Importance of scenic landscapes as viewed from major roads and tourist routes/destinations as contributing to economic basis of the tourism industry as well as local visual amenity;

• Importance of natural/native vegetation in contributing to scenic values of rural and coastal areas generally, with particular emphasis on prominent topographical features; and

• Need to protect skylines and prominent hillsides from obtrusive development/works.

The site is partly inside the Southern Gateway Specific Area Plan (SAP), which seeks to protect the scenic and landscape amenity of the southern approach into Launceston. The site is at a low point in the surrounding topography and below/behind a vegetation buffer that traverses the edge of the Midland Highway. Given this context, rezoning and subsequent development would have no discernible impact on the scenic and landscape amenity of the southern approach. Any subsequent development in the SAP area will also be subject to the relevant requirements of the SAP.

3.9 Assessment against Section 34(2)(f)

Section 34(2)(f) requires the amendment to have regard to the *City of Launceston Strategic Plan 2014-2024* (the strategic plan). It is also worth noting that the strategic plan has been formulated to align with high level goals and outcomes sought under the Greater Launceston Plan, and is informed by detailed strategies such as the City of Launceston Economic Development Strategy.

The strategic plan outlines seven strategic priorities for the municipality. The relevance of each to the proposed amended is detailed below.

Strategic priority 1: We connect with our community and our region through meaningful engagement, cooperation and representation.

The scheme amendment process is relevant to this priority, where the draft amendment is made available for public comment and representors are invited to attend a public hearing process.

Strategic priority 2: We facilitate prosperity by seeking out and responding to opportunities for growth and renewal of our regional economy.

The proposed amendment will facilitate potential use on the site including, education, health and community services. The City of Launceston's Economic Development Strategy recognises such use as key enablers of economic development and prosperity. The landowner's internal market appraisal has also identified demand for such uses in the area. Therefore, the proposal directly contributes to the attainment of this strategic priority.

Strategic priority 3: We are a progressive leader that is accountable to our governance obligations and responsive to our community.

The scheme amendment process is relevant to this priority, where the draft amendment will follow established assessment procedures.

Strategic priority 4: We value our City's unique identity by celebrating our special heritage and culture, and building on our competitive advantages to be a place where people choose to live, work and visit.

Although not listed under any state or local heritage registers, part of the site is in the Southern Gateway Specific Area Plan (SAP). The application of the SAP recognises the amenity value that the Southern approach to Launceston contributes towards the identity and character of the municipality. The amendment proposal does not seek to change the provisions applicable to the site. Therefore, the requirements of the SAP will remain applicable to future development.

Strategic priority 5: We serve and care for our community by providing equitable and efficient services that reflects needs and expectations of our community.

The proposed amendment will facilitate potential use on the site including education, health and community services. The landowner's internal market appraisal has also identified demand for such uses in the area. The provision of these services will help to support health and wellbeing outcomes for the municipality. Therefore, the proposal directly contributes to the attainment of this strategic priority.

Strategic priority 6: We protect our environment by caring for our unique natural assets and amenity, and sensitively managing future development opportunities.

Although not containing any natural values of conservation significance, part of the site is in the Southern Gateway Specific Area Plan (SAP). The application of the SAP recognises the amenity value that the Southern approach to Launceston contributes towards the identity and character of the municipality. The amendment proposal does not seek to change or rescind the SAP provisions applicable to the site. Therefore, the requirements of the SAP will remain applicable to future development.

Strategic priority 7: We are a City planning for our future by ensuring our approach to strategic land use, development and infrastructure investment is coordinated, progressive, and sustainable.

Strategic infrastructure and land use planning for greater Launceston is detailed in the NTRLUS and the Greater Launceston Plan (GLP). The proposal will reinforce broader strategic planning for the site to form part of the consolidation area in the urban growth area, integrating established land use, transport and infrastructure investments in the area.

Broadly speaking, the site is part of the fringe of a mixed-use corridor that extends along Wellington Street. This presents a context where numerous land uses exist in the area and there is a prevailing variability. The proposed rezoning to community purpose use would theoretically enable several permitted land uses on the site, including recreation, community meeting and entertainment, crematoria and cemeteries, educational and occasional care, emergency services, hospital services, and utilities. Many of these uses are already directly adjoining the site. Additional uses that could potentially occur subject to Council's discretion include business and professional services, food services, general retail and hire if for a market, residential if for aged care, and tourist operation. Almost all of these uses already exist within an 800 m catchment of the site. In addition, the underlying zone provisions require discretionary planning approval to be sought from Council for any of these uses that have the potential to generate conflicts at certain scales.

Given the above context, the potential for land use conflict is minimal and rezoning to community purpose would not introduce land use that is out of character with the surrounding area.

3.10 Assessment against Section 34(2)(g)

At the time of writing this report, two adjoining municipalities have an LPS that is in effect, being Meander Valley and West Tamar. The proposed amendment seeks to amend the current zoning to the Community Purpose Zone, which will have no impact on the operation of an LPS in effect in an adjoining municipal area.

3.11 Assessment against Section 34(2)(h)

Section 34(2)(h) requires the amendment to have regard to the safety requirements set out in the standards prescribed under the *Gas Safety Act 2019*. The amendment has no impact on the ability to achieve these safety requirements. The site is also not in proximity to a gas pipeline. Therefore, the requirements of the *Gas Pipelines Act 2000* are not applicable.

4 Assessment of development

4.1 Description of proposal

The proposed development is for six detached, single storey office buildings, each approximately 500 m^2 gross floor area, arranged around a central access and parking area, and curtailed by landscaping. The office buildings will be leased to tenants operating the following uses on the site:

- Medical centre (business and professional services)
- Veterinary centre (business and professional services)
- Legal services (business and professional services)
- Accounting services (business and professional services)
- Office space (business and professional services)
- Dental clinic (business and professional services)

In addition to the internal driveway and parking servicing the office buildings, the proposal involves new pedestrian footpaths and road pavement widening on parts of Rose Lane and Rose Lane Park. As recommended in the traffic impact assessment provided in support of the proposal, these works will provide for improved access to the site from Westbury Road.

The proposal also includes a grassed dog exercise area in the south of the site that is to be available to the public but also utilised by the veterinary centre.

Proposal plans are available at ***Appendix E***, which include indicative signage details and a suite if architectural renders that are for illustrative purposes only.

4.2 Statutory controls

The assessment of the development component of this Section 40T application is undertaken on the basis that the proposed amendment has been approved and the site is zoned community purpose.

The planning permit application is subject to the provisions of the *Tasmanian Planning Scheme - Launceston* (the planning scheme).

Development on the site is potentially subject to the following provisions of the planning scheme.

- Community purpose zone - use status
- Community purpose zone - zone purpose statements
- Community purpose zone - zone use standards
- Community purpose zone - zone development standards
- Community purpose zone - zone subdivision standards
- Parking and Sustainable Transport Code
- Road and Railway Assets Code
- Natural Assets Code

- Bushfire-prone areas code
- Potentially contaminated land code
- Landslip Hazard code
- Safeguarding of Airports Code
- Southern Gateway Specific Area Plan

It is important to note that some of provisions listed above may not be applicable to the proposal, or may be exempt from requiring assessment. Nevertheless, assessment discussion has been presented below to provide clarify.

4.2.1 Use status

The proposal seeks to develop the site for business and professional services use.

Business and professional services use is defined as:

> *use of land for administration, clerical, technical, professional or similar activities. Examples include a bank, call centre, consulting room, funeral parlour, medical centre, office, post office, real estate agency, travel agency and veterinary centre.*

The proposed medical centre is a permitted use in the community purpose zone pursuant to clause 27.2 use table. All other proposed tenancies are discretionary.

4.2.2 Zone purpose

The proposal seeks to develop the site for permitted and discretionary use. Therefore, the proposal has been assessed against the zone purpose for the community purpose zone. The zone purpose in clause 27.1 of the planning scheme is as follows:

> *27.1.1 To provide for key community facilities and services including health, educational, government, cultural and social facilities.*
>
> *27.1.2 To encourage multi-purpose, flexible and adaptable social infrastructure..*

The proposed development contributes to the provision of essential, local scale health facilities for the area. As such, the proposal meets the zone purpose.

4.2.3 Zone use standards

The proposal has been assessed against the use standards in the community purpose zone. Table 3 details the assessment.

Table 3: Assessment against zone use standards

PLANNING SCHEME REQUIREMENT	
Acceptable solutions	Performance criteria
Clause 27.3.1 Non-residential use	
A1 *Hours of operation of a use, excluding Emergency Services, Hospital Services, Natural and Cultural Values Management, Passive Recreation or Utilities, within 50m of a General Residential Zone, Inner Residential Zone or Low Density Residential Zone, must be within the hours of:* *(a) 8.00am to 8.00pm Monday to Friday;* *(b) 9.00am to 6.00pm Saturday; and* *(c) 10.00am to 5.00pm Sunday and public holidays.*	*P1* *Hours of operation of a use, excluding Emergency Services, Hospital Services, Natural and Cultural Values Management, Passive Recreation or Utilities, within 50m of a General Residential Zone, Inner Residential Zone or Low Density Residential Zone, must not cause an unreasonable loss of amenity to an adjacent residential use having regard to:* *(a) the timing, duration or extent of vehicle movements; and* *(b) noise, lighting or other emissions.*
<u>Planner response</u> The proposal seeks to apply for the permitted hours under the acceptable solution. To ensure compliance, it is suggested that a condition be placed on any planning permit granted, limiting hours of operation to those permitted. Subject to suitable condition(s), the proposal meets the acceptable solution A1.	
A2 *External lighting for a use, excluding Natural and Cultural Values Management, Passive Recreation and Utilities and flood lighting of Sports and Recreation facilities, on a site within 50m of a General Residential Zone, Inner Residential Zone, or Low Density Residential Zone, must:* *(a) not operate between 9:00pm and 6:00am, excluding any security lighting; and* *(b) if for security lighting, must be baffled so that direct light does not extend into the adjoining property.*	*P2* *External lighting for a use, excluding Natural and Cultural Values Management, Passive Recreation and Utilities and flood lighting of Sports and Recreation facilities, within 50m of a General Residential Zone, Inner Residential Zone, and Low Density Residential Zone, must not cause an unreasonable loss of amenity to the residential zones, having regard to:* *(a) the level of illumination and duration of lighting; and* *(b) distance to habitable rooms of an adjacent dwelling.*
<u>Planner response</u> The proposal does not include external lighting other than that necessary for security purposes. It is suggested that a condition be placed on any permit granted to ensure that security lighting is baffled to not direct light towards adjoining properties.	

<table>
<tr><td colspan="2">Subject to suitable condition(s), the proposal meets the acceptable solution A2.</td></tr>
<tr><td>A3

Flood lighting of Sports and Recreation facilities on a site within 50m of a General Residential Zone, Inner Residential Zone or Low Density Residential Zone, must not operate between 9.00pm and 6.00am.</td><td>P3

Flood lighting of Sports and Recreation facilities on a site within 50m of a General Residential Zone, Inner Residential Zone or Low Density Residential Zone, must not cause an unreasonable loss of amenity to the residential zone, having regard to:

(a) the necessity of floodlighting for the Sports and Recreation use;

(b) the frequency of the Sports and Recreation event;

(c) whether the event is of a special nature;

(d) the duration of the event; and

(e) any lighting required to set up and pack up for the event.</td></tr>
<tr><td colspan="2"><u>Planner response</u>

The proposal does not include flood lighting for a sports and recreation facility. Therefore, this clause is not applicable.</td></tr>
<tr><td>A4

Commercial vehicle movements and the unloading and loading of commercial vehicles for a use, excluding Emergency Services or Hospital Services, within 50m of a General Residential Zone, Inner Residential Zone or Low Density Residential Zone, must be within the hours of:

(a) 7.00am to 6.00pm Monday to Friday; and

(b) 9.00am to 5.00pm Saturday, Sunday and public holidays.</td><td>P4

Commercial vehicle movements and the unloading and loading of commercial vehicles for a use, excluding Emergency Services or Hospital Services, within 50m of a General Residential Zone, Inner Residential Zone or Low Density Residential Zone, must not cause an unreasonable loss of amenity to the residential zone having regard to:

(a) the time and duration of commercial vehicle movements;

(b) the number and frequency of commercial vehicle movements;

(c) the size of commercial vehicles involved;

(d) manoeuvring by the commercial vehicles, including the amount of reversing and associated warning noise;

(e) any noise mitigation measures between the vehicle movement areas and the residential zone; and

(f) the existing levels of amenity.</td></tr>
</table>

Planner response The proposal seeks to apply for commercial vehicle movements limited to the permitted hours under the acceptable solution. It is suggested that a condition be placed on any planning permit granted to ensure compliance. Subject to suitable condition(s), the proposal meets the acceptable solution A4.	
Clause 17.3.2 External storage of goods	
A1 *Storage of goods and materials, other than for retail sale, or waste must not be visible from any road or public open space adjoining the site.*	*P1* *Storage of goods and materials, other than for retail sale, or waste must be located or screened to minimise its impact on views into the site from any roads or public open space adjoining the site, having regard to:* *(a) the nature of the use;* *(b) type of goods, materials or waste proposed to be stored;* *(c) the topography of the site;* *(d) the landscaping of the site; and* *(e) any screening proposed.*
Planner response The proposal does not involve the external storage of goods. Therefore, this clause is not applicable.	
Clause 17.3.1 Commercial vehicle parking	
A1 *Commercial vehicles must be parked within the boundary of the site.*	*P1* *Parking of commercial vehicles must not detract from the amenity of the area, having regard to:* *(a) the number and type of vehicles;* *(b) the frequency and length of stay;* *(c) the location of offsite parking; and* *(d) the availability of offsite parking in the area.*
Planner response Commercial vehicles servicing the site will be light vehicles (e.g., courier vans) that will be able to park in a standard car parking space, including the taxi loading bays. Other commercial vehicles that service the site, such as garbage collection vehicles, generally will not park at the site. The proposal meets the acceptable solution A1.	

4.2.4 Zone development standards

The proposal has been assessed against the development standards in the community purpose zone. Table 4 details the assessment.

Table 4: Assessment against zone development standards

PLANNING SCHEME REQUIREMENT	
Acceptable solutions	Performance criteria
Clause 27.4.1 Building height	
A1 *Building height must be not more than 10m.*	*P1* *Building height must be compatible with the streetscape and character of development existing on established properties in the area, having regard to:* *(a) the topography of the site;* *(b) the height, bulk and form of existing buildings on the site and adjacent properties;* *(c) the bulk and form of proposed buildings;* *(d) the apparent height when viewed from the road and public places;* *(e) any overshadowing of adjoining properties or public places; and* *(f) the need to locate the building on the site.*
<u>Planner response</u> Building heights are less than 10m above natural ground level. The proposal meets the acceptable solution at A1.	
Clause 27.4.2 Setback	
A1 *Buildings must have a setback from a frontage of:* *(a) not less than 5m; or* *(b) not more or less than the maximum and minimum setbacks of the buildings on adjoining properties,* *whichever is the lesser.*	*P1* *Buildings must have a setback from a frontage that is compatible with the streetscape, having regard to:* *(a) the topography of the site;* *(b) the setbacks of buildings on adjacent properties;* *(c) the height, bulk and form of existing and proposed buildings; and* *(d) the safety of road users.*

Planner response The office buildings are setback less than 5m from the secondary frontage to Rose Lane and there are no buildings on adjoining lots. Therefore, the proposal does not meet the acceptable solution and requires assessment against the performance criterion. The streetscape of Rose Lane features both vacant land and buildings with frontage setbacks that range between 2 m and 5 m. The proposal provides a minimum frontage setback of 4.9m to Rose Lane, which is inside the range of setbacks prevailing in the streetscape. The proposal meets the performance criterion P1.	
A2 *Buildings must have a setback from side and rear boundaries adjoining a General Residential Zone, Inner Residential Zone or Low Density Residential Zone not less than:* *(a) 3m; or* *(b) half the wall height of the building,* *whichever is the greater.*	*P2* *Buildings must be sited to not cause an unreasonable loss of amenity to adjoining properties within a General Residential Zone, Inner Residential Zone or Low Density Residential Zone, having regard to:* *(a) overshadowing and reduction in sunlight to habitable rooms and private open space of dwellings;* *(b) overlooking and reduction of privacy to adjoining properties; or* *(c) visual impacts caused by the apparent scale, bulk or proportions of the building when viewed from the adjoining property.*
Planner response The proposal does not include any side or rear boundaries adjoining a general residential zone, inner residential zone or low density residential zone. Therefore, this clause is not applicable.	
A3 *Air extraction, pumping, refrigeration systems, compressors or generators must be separated a distance of not less than 10m from a General Residential Zone, Inner Residential Zone, or Low Density Residential Zone.* *(Exemption also applies pursuant to clause 4.6)*	*P3* *Air conditioning, air extraction, pumping, heating or refrigeration systems, compressors or generators within 10m of a General Residential Zone, Inner Residential Zone, or Low Density Residential Zone, must be designed, located, baffled or insulated to not cause an unreasonable loss of amenity to sensitive uses, having regard to:* *(a) the characteristics and frequency of emissions generated;* *(b) the nature of the proposed use;* *(c) the topography of the site and location of adjoining sensitive uses; and* *(d) any proposed mitigation measures.*

<table>
<tr><td colspan="2"><u>Planner response</u>

It is likely that plant would be located on the rooftops of each office buildings. Regardless, the title boundary of 9 Rose Lane is more than 10m from the nearest general residential zone, inner residential zone, or low density residential zone. Therefore, the proposal meets the acceptable solution A3.</td></tr>
<tr><td colspan="2">Clause 27.4.3 Fencing</td></tr>
<tr><td>A1

No Acceptable Solution.

(Exemption also applies pursuant to clause 4.6)</td><td>P1

A fence (including a free-standing wall) within 4.5m of a frontage must:

(a) provide for security and privacy while allowing for passive surveillance of the road; and

(b) be compatible with the streetscape, having regard to:

(i) its height, design, location and extent;

(ii) the topography of the site; and

(iii) traffic volumes on the adjoining road.</td></tr>
<tr><td colspan="2"><u>Planner response</u>

The proposal does not include fencing. It is possible that safety balustrades may be included where level differences require this (subject to detailed design), however, this is capable of meeting the exemption under clause 4.6. Therefore, this clause is not applicable.</td></tr>
<tr><td colspan="2">Clause 27.4.4 Outdoor storage</td></tr>
<tr><td>A1

Outdoor storage areas, excluding for the display of goods for sale, must not be visible from any road or public open space adjoining the site.</td><td>P1

Outdoor storage areas, excluding for the display of goods for sale, must be located, treated or screened to not cause an unreasonable loss of visual amenity.</td></tr>
<tr><td colspan="2"><u>Planner response</u>

The proposal does not involve any external storage areas. Therefore, this clause is not applicable.</td></tr>
</table>

4.2.5 Parking and sustainable transport code

The Parking and Sustainable Transport Code applies to all use and development. The proposal includes onsite parking for residents and visitors to the site and does not rely on street parking. A Traffic Impact Assessment by GHD dated June 2022 is provided in *Appendix F* which addresses the relevant code requirements.

Due to the increase in vehicle trips to and from the site, the TIA recommends minor pavement and footpath upgrades to a section of Rose Lane between the main site access and Westbury Road. Concept design details depicting these road upgrades are provided in the proposal plans at *Appendix E*.

4.2.6 Road and railway assets code

The Road and Railway Assets Code is applicable to development involving a new vehicle crossover. The proposal includes three new vehicle crossovers, each on a separate title. A Traffic Impact Assessment by GHD dated June 2022 is provided in *Appendix F* which addresses the relevant code requirements.

Due to the increase in vehicle trips to and from the site, the TIA recommends minor pavement and footpath upgrades to a section of Rose Lane between the main site access and Westbury Road. Concept design details depicting these road upgrades are provided in the proposal plans at *Appendix E*.

4.2.7 Natural Asset Code

The site identified on planning scheme overlays as containing a priority vegetation area. However, the mapping appears to be based on outdated data as the site is predominantly vacant compacted gravel and managed lawn with no native vegetation. The definition of priority vegetation at clause C7.3.1 specifically refers to native vegetation. Therefore, the disturbance of non-native vegetation resulting from this proposal is not applicable to assessment against the natural assets code.

4.2.8 Bushfire-prone areas code

This proposal is not seeking approval for the storage of hazardous chemicals or explosives on the site above manifest quantities. Therefore, although the site is identified as being bushfire-prone, the requirements of the Bushfire-Prone Areas Code are not applicable to the proposed development which does not involve subdivision or a use that is hazardous or vulnerable. If subsequent tenancy/lease arrangement reveal the need for medical facilities to store above manifest quantities of hazardous chemicals or explosives, it is understood that additional permits will be required. Specifically, this includes bushfire hazard requirements under the *Building Act 2016* pursuant to the Director's Determination – Bushfire Hazard Areas.

4.2.9 Potentially contaminated land code

The site has been identified as potentially contaminated land due to the potential presence of landfill. An Environmental Site Assessment (ESA) by Environmental Service and Design (ES&D) dated June 2022 is provided in *Appendix D* which addresses the relevant code requirements. The ESA concludes that the site is suitable for the proposed office development and recommends vapour mitigation design be employed.

A vapour mitigation design consultant has been engaged to advise on treatments to be employed during detailed design and construction. For example, the consultant has recommended a vapour protection mat that is to be placed over the concrete slabs of buildings. It is recommended that a condition be placed on any permit granted ensuring that appropriate vapour mitigation design is endorsed by a suitably qualified person to the satisfaction of Council.

4.2.10 Landslip Hazard Code

Part of 9 Rose Lane is in the landslide hazard area overlay, as shown in Figure 2 above. Although no use or development is proposed in the landslide hazard area, a series of geotechnical assessments have been undertaken by Scherzic Ground Investigations for various proposals over the site. The assessments conclude that risk to life and risk to property at the site is virtually impossible and zero respectively. The geotechnical assessments are available at *Appendix C*.

4.2.11 Safeguarding of Airports Code

The site is in the 320 m AHD obstacle limitation area of the Launceston Airport. The site and development would reach a maximum height of less than 70 m AHD. Therefore, the proposal is exempt from assessment against the code pursuant to clause C16.4.1(a).

4.2.12 Southern Gateway Specific Area Plan

Part of the site, being the northern most title 159336/1, is in the Southern Gateway Specific Area Plan (SAP). It is plausible that minor glimpses of the development could be seen from Midland Highway on the southern approach into Launceston. Therefore, assessment against the SAP is provided in Table 5.

Table 5: Assessment against Southern Gateway SAP

PLANNING SCHEME REQUIREMENT	
Acceptable solutions	Performance criteria
Clause LAU-S14.7.1 Visual impact	
A1 *Development for an alteration or extension to an existing building must:* *(a) have a gross floor area of not more than 20% of that existing at the effective date;* *(b) have a building height of not more than the existing building;* *(c) have external building finishes:* *(iii) with a light reflectance value not more than 40%; and* *(iv) not in bold or bright colours.*	*P1* *Development must not be intrusive and must be compatible with the existing treed and rural character of the southern approach, having regard to:* *(a) the visual impact on skylines and vistas when viewed from a major road;* *(b) the proximity of development to a major road;* *(c) the bulk and form of buildings including materials and finishes;* *(d) the potential for current or proposed vegetation to provide screening;* *(e) the need to clear existing vegetation;* *(f) the location of development to facilitate the retention of existing vegetation;* *(g) the impact of any clearing required for hazard management or infrastructure; and* *(h) any earthworks for cut or fill*
Planner response The development involves new buildings. Therefore, the proposal does not meet the acceptable solution and requires assessment against the performance criterion. Part of the site, being the northern most title 159336/1, is in the SAP overlay. Due to topography, vegetation screening, and speed of approach, the development will largely not be seen from Midland Highway along the southern approach into Launceston. If visible, the development would only be partly seen through existing	

vegetation rather than above it. That is, the prevailing treed skyline and vistas along the southern approach will be maintained. This is compatible with the existing character of the southern approach, where built form can be partially seen below the skyline and among vegetation. The proposal meets the performance criterion P1.	
Clause LAU-S14.7.2 Vegetation	
A1 *Buildings and works must be separated from a prominent tree by a distance of not less than 4m.*	*P1* *Buildings and works must not detract from the existing landscape character, having regard to:* *(a) the potential impact on the life of the prominent tree;* *(b) the likely future need to remove the prominent tree;* *(c) the location of development to avoid the removal of prominent trees;* *(d) The physical characteristics of the site;* *(e) the requirements for any hazard management;* *(f) the specific requirements of the development; and* *(g) any earthworks for cut or fill.*
<u>Planner response</u> Development in the SAP overlay is separated from prominent trees by a distance greater than 4m. Although the proposal does include removal of four pine trees, these are outside the SAP overlay. The proposal meets the acceptable solution A1.	
A2 *Building and works must not result in the removal or destruction of screening vegetation or prominent trees.*	*P2* *Removal of screening vegetation or prominent trees must not detract from the existing treed and rural character of the southern approach, having regard to:* *(a) the visual impact on skylines and vistas when viewed from a major road;* *(b) the location of development to avoid the removal of screening vegetation or prominent trees;* *(c) the bulk and form of buildings including materials and finishes;* *(d) the need to clear existing vegetation;* *(e) the potential to provide replacement vegetation;* *(f) the requirements for any hazard management;*

	(g) the need for infrastructure services; *(h) the specific requirements of the development; and* *(i) any earthworks for cut or fill.*
Planner response Development does not result in the removal or destruction of screening vegetation or prominent trees in the SAP overlay. The proposal meets the acceptable solution A2.	
Clause LAU-S14.7.3 Signage	
A1 *There are no billboard, third party or illuminated signs proposed.*	*P1* *No Performance Criterion.*
Planner response The proposal includes indicative signage details but does not formally propose any signage. Therefore, this clause is not applicable.	

5 Conclusion

The site at 9 Rose Lane and adjacent Rose Lane road reservation, South Launceston, is in the urban growth area of greater Launceston, on the periphery of a mixed-use corridor that forms part of the priority consolidation area.

The proposal seeks the combined rezoning and development of the site pursuant to Section 40T of the former provisions of the *Land Use Planning and Approvals Act 1993*. Rezoning will convert the site from general residential and recreation, to community purpose. Development will involve six commercial buildings for business and professional services use including a medical centre, veterinary centre, dental clinic and professional offices.

The proposal has been assessed as meeting the relevant strategic and statutory planning requirements. The community purpose zone presents a logical conversion of land that is consistent with land use in the area, and does not introduce land use conflict. Moreover, the rezoning allows for the proposed development to address a specific strategic need for more medical facilities in greater Launceston. The use and development of the site as proposed is largely compliant with the acceptable solutions of the *Tasmanian Planning Scheme – Launceston.* Where discretionary assessment is triggered against the applicable performance criteria, this is largely related to code requirements. The application is supported by assessment reports, prepared by suitably qualified persons, that address the planning scheme requirements.

Based on the information provided in this report, it is submitted that there is sufficient justification to support the case for a combined rezoning and development as proposed.

Appendix A Title documents

Appendix B Owner's consent

Appendix C Contamination assessment

Appendix D Geotechnical assessment

Appendix E Proposal plans

Appendix F Traffic impact assessment

CITY OF LAUNCESTON

MEMORANDUM

FILE NO:	SF5547 / SF1945 HM:AD:eg	
DATE:	7 December 2022	
TO:	Michael Stretton	Chief Executive Officer
c.c.		Committee Clerks
FROM:	Hugh McKenzie Andrea Dawkins	Councillor
SUBJECT:	**Notice of Motion - Clean Air Strategy**	

In accordance with Clause 16 (5) of the *Local Government (Meeting Procedures) Regulations 2015* please accept this Notice of Motion for placement on the agenda of the Meeting of Council to be held on 15 December 2022.

Motion

That the Council:
That Launceston City Council develop a Clean Air Strategy which should not be limited to but will include:

1. Review of current State and Federal Government legislation to determine its effectiveness in supporting a clean air strategy and where there are improvements required develop a plan to lobby for change;
2. Review of the effectiveness of past Council programs to improve air quality outcomes, such as the Wood Heater buy-back program;
3. Compilation of baseline data to provide a base to measure improvements;
4. Engagement of Northern Councils to achieve shared actions where possible;
5. Education of industry and the broader community on better environmental practices.
6. Investigation of more effective enforcement processes.
7. Recommendations to Council regarding means to improve outcomes.

Report back to Council should occur in reasonable time outlining next steps and to enable progress to be achieved ahead of next winter.

Background
Launceston's Community Plan, the Greater Launceston Plan (GLP), sets a vision for the City that "Sustainable prosperity for greater Launceston will be achieved by consolidating and building nationally and internationally recognised strategic advantages for the region through a focus on creativity and innovation, maintaining exceptional environmental and liveability qualities and ensuring a diverse, connected and inclusive region"

Environmental sustainability is a major component of the recommended policy framework for the GLP. Within the greater Launceston area, the key environmental challenges include the need for ongoing education and public awareness programs to

CITY OF LAUNCESTON

MEMORANDUM

build understanding and support of the significance of environmental and biodiversity health as overarching issues for the overall sustainability, liveability and amenity of the region.

In support of the GLP, the Council's Corporate Strategic Plan includes the following Strategic Priority:

We protect our Environment by caring for our unique natural assets and amenity, and sensitively managing future development opportunities.

We strive to minimise the impact of our actions on the environment, while planning for, adapting to and managing the impact of climate change. We want to protect the special character and values of our city for future generations.

Our city has a 10-Year Goal to enhance the unique natural character, values, and amenity of our city by minimising the impacts of our organisations and our community's activities in the environment.

Air quality is a significant component to achieving this goal and this needs to be recognised through a commitment to genuine actions to improve our City's air quality.

Launceston is a city that has been plagued by air quality issues due largely to its topography and climate which leads to an inversion layer over the City, particularly during the winter months.

We are City that is striving to be a tourism hub through its culture and gastronomy and is currently thriving as a destination of choice for many interstate travellers.

We present a clean and green image to the world and an essential part of this message should include our air quality (and it is noted our Tourism Tasmania advertising actually uses our air as a focus of their messaging). We would argue that cleaner air is essential to our tourism story. This was further endorsed by our Premier the Honourable Jeremy Rockliff recently, where he commented to a room of investment managers on our clean air.

Whilst the statements are largely true in relation to Tasmania and even Launceston, but not so in the depths of winter for the reasons mentioned in our opening statement. Take a typical winter's day in Launceston, not one where you can see the brown haze of woodsmoke but a reasonably clear day Our air quality typically rates at a PM25 score of 57 (PM25 are very small particles usually found in smoke. They have a diameter of 2.5 micrometres (0.0025mm) or smaller.

This concentration (at times) is currently 3 times the WHO annual air quality guideline value and this measure is not one we should find acceptable for our clean air identity, nor the ongoing respiratory issues suffered by many of our residents, exacerbated by our air quality.

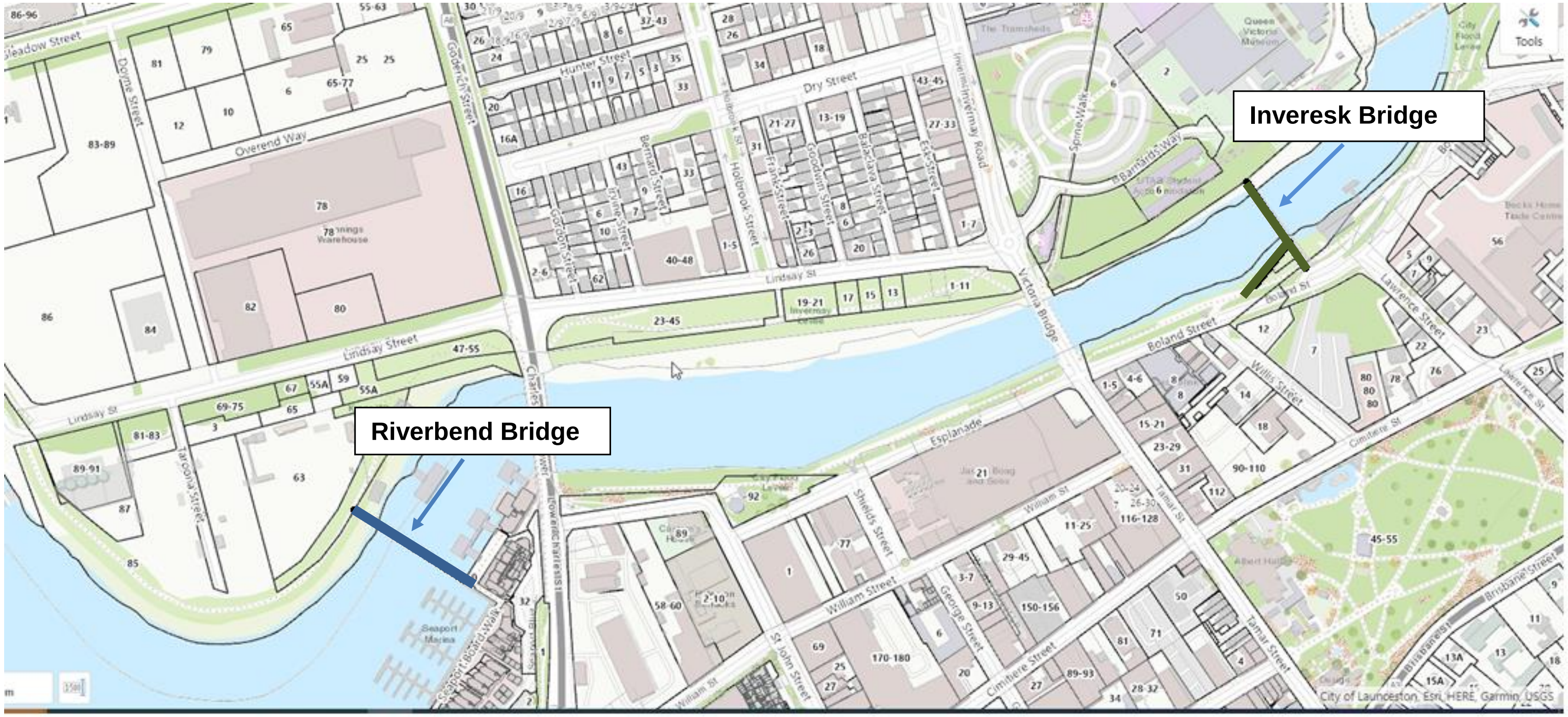
We believe our motion provides a logical series of steps to move toward a city that can be proud of its "clean air" on all measures.

CITY OF LAUNCESTON

MEMORANDUM

Attachments
N/A

Councillor Hugh McKenzie and Councillor Andrea Dawkins



Bridge A: approximate location shown in Green (including any extension)

Bridge B: approximate location shown in blue

CITY OF LAUNCESTON
Statement of Comprehensive Income
For Year to Date 30 September 2022

	2022/23 YTD $ Actual	2022/23 YTD $ Budget	Variance YTD $ Fav/(Unfav)
REVENUES FROM ORDINARY ACTIVITIES			
Rates	19,669,717	19,733,243	(63,525)
User Fees and Charges	5,901,655	5,818,216	83,439
Statutory Fees & Charges	1,846,007	1,483,146	362,861
Capital Grants	6,797,375	6,736,625	60,750
Financial Assistance Grants	395,327	395,327	-
Other Operational Grants	394,864	297,859	97,005
Interest	473,381	434,187	39,193
Interest Committed	-	-	-
Investment Revenue	681,000	681,000	-
Bequests	22,069	28,750	(6,681)
Other Income	1,102,765	503,978	598,787
	37,284,160	36,112,331	1,171,829
EXPENSES FROM ORDINARY ACTIVITIES			
Maintenance of Facilities and Provision of Services			
Employee Benefits	11,186,398	12,011,641	825,242
Materials and Services	11,938,004	11,786,625	(151,379)
Impairment of Debts	-	3,875	3,875
Finance Costs			-
Interest on Loans	5,923	5,923	-
Provision for Rehabilitation	12,500	12,500	-
Change in Rehabilitation Provision	-	-	-
Depreciation	6,758,147	6,260,803	(497,344)
State Government Levy	2,655,031	2,609,833	(45,197)
Rate Remissions and Abatements	262,412	262,178	(234)
Loss on Disposal of Fixed Assets	143,448	100,000	(43,448)
Write Down of Assets Held For Sale	-	-	-
	32,961,863	33,053,377	91,514
Comprehensive Result Surplus/(Deficit)	**4,322,297**	**3,058,954**	**1,263,343**
Loss on Disposal of Fixed Assets	(143,448)	(100,000)	(43,448)
Capital Grants	6,797,375	6,736,625	60,750
Infrastructure Take Up	-	-	-
Other Comprehensive Income	-	-	-
	6,653,927	6,636,625	17,302
Underlying Result Surplus/(Deficit)	**(2,331,630)**	**(3,577,671)**	**1,246,041**

Unaudited - Internal Use Only

CITY OF LAUNCESTON
STATEMENT OF FINANCIAL POSITION
As at 30 September 2022

	2022/23 YTD $	2021/22 YTD $	2020/21 YTD $
EQUITY			
Capital Reserves	241,794,778	222,424,143	216,781,254
Revenue Reserves	969,157,021	969,529,758	1,031,679,000
Asset Revaluation Reserves	886,685,961	765,657,870	686,351,864
Investment Reserves	(21,054,758)	(27,404,666)	(44,153,432)
Trusts and Bequests	2,548,018	2,318,197	2,362,739
Operating Surplus	4,322,297	(374,612)	(3,446,367)
TOTAL EQUITY	2,083,453,317	1,932,150,690	1,889,575,059
Represented by:-			
CURRENT ASSETS			
Cash and Cash Equivalents	59,268,066	87,548,833	1,025,822
Rates and Sundry Receivables	49,711,132	46,963,100	41,998,693
Less Rates not yet Recognised	(58,983,999)	(56,020,920)	(53,347,164)
Investments	39,132,984	10,009,100	78,078,478
Inventories	1,065,924	875,040	713,880
Assets Held for Sale	1,116,285	4,518,168	3,401,885
	91,310,392	93,893,321	71,871,593
NON-CURRENT ASSETS			
Deferred Receivables	257,556	257,556	257,556
Investments	232,052,353	225,702,446	208,956,687
Superannuation Surplus	2,864,000	2,025,000	-
Intangibles	4,014,998	4,293,789	5,055,450
Infrastructure and Other Assets	1,607,923,900	1,478,448,066	1,409,811,876
Right of Use Assets	187,937	223,175	258,413
Museum Collection	203,866,696	203,691,191	240,782,757
	2,051,167,439	1,914,641,222	1,865,122,736
TOTAL ASSETS	2,142,477,831	2,008,534,543	1,936,994,329
CURRENT LIABILITIES			
Deposits and Prepayments	2,758,765	2,430,972	467,589
Employee Provisions	7,533,124	7,685,006	7,683,503
Rehabilitation Provision	8,400,351	7,919,825	-
Interest-bearing Liabilities	-	9,000,000	-
Lease Liabilities	30,519	28,506	26,586
Contract Liabilities	-	1,296,155	-
Sundry Payables and Accruals	3,540,105	9,413,878	5,289,603
	22,262,863	37,774,341	13,467,281

NON-CURRENT LIABILITIES			
Employee Provisions Non Current	1,016,438	1,024,329	942,964
Superannuation Obligation	-	-	2,906,000
Interest-bearing Liabilities Non Current	26,000,000	26,000,000	15,000,000
Lease Liabilities	204,472	234,991	263,497
Rehabilitation Provision	9,540,741	11,350,191	14,839,528
	36,761,651	38,609,511	33,951,989
TOTAL LIABILITIES	59,024,514	76,383,852	47,419,270
NET ASSETS	2,083,453,317	1,932,150,690	1,889,575,059

Unaudited - Internal Use Only

Change in Accounting Treatment

A change in the accounting treatment for the 21/22 year discloses:

1. Term deposits maturing in 90 days or less when placed are now recognised as "Cash & Cash Equivalents". These term deposits were included under the heading of "Investments" in prior years.
2. Rates paid in advance as at 30 June is now recognised as a Current Liability in the 21/22 year (included under Deposits & Prepayments). Previously the value of prepaid rates as at 30 June was deducted from the value of the Rates & Sundry Receivables Current Asset.

Loan Balances

The loan balance as at 30 September 2022 is $26 million. The loan balance is interest free in accordance with the State Government's Accelerated Local Government Capital Program (ALGCP) and Local Government Loans Program.

City of Launceston - Capital Expenditure Report

Summary by Network

For the Period to : 30 September 2022

	Funds	Actual Expenditure				Projected Expenditure			Variance	
PROJECT DESCRIPTION	TOTAL ESTIMATE	W.I.P. JULY 1	ACCRUED ORDERS	YTD EXPEND.	TOTAL ACTUAL EXPEND.	COMMITTED COSTS	ACTUAL PLUS COMMITTED	PERCENT OF BUDGET	COMPLETED PROJECTS	POSSIBLE INCOMPLETE PROJECTS
	$	$	$	$	$	$	$	%	$	$
GRAND SUMMARY										
NETWORK										
Office of the Chief Executive	**-**	-	-	-	**-**	-	**-**	0%	**-**	**-**
Organisational Services	**2,343,294**	148,095	764	253,044	**401,903**	52,967	**454,870**	19%	**(1,364)**	**(1,364)**
Creative Arts & Cultural Services	**3,104,815**	893,091	15,093	91,400	**999,583**	177,688	**1,177,271**	38%	**(8,899)**	**(8,899)**
Community and Place	**3,106,037**	86,471	-	117,705	**204,176**	257,472	**461,648**	15%	**5,989**	**5,989**
Infrastructure and Assets	**67,240,071**	10,397,798	60,092	2,949,933	**13,407,823**	5,989,618	**19,397,442**	29%	**(100,340)**	**(100,340)**
Land Sales (see analysis below)	**6,000,000**	86,532	-	(29,192)	**57,340**	-	**57,340**	0%	**-**	**-**
GRAND TOTAL	**81,794,217**	**11,611,986**	**75,949**	**3,382,890**	**15,070,825**	**6,477,746**	**21,548,571**	**26%**	**(104,614)**	**(104,614)**
Analysis of Land Sales for 2022/2023										
Paterson Street (24127.0002)	**6,000,000**	86,532	-	2,632	**89,164**	-	**89,164**			
South Esk Drive, Trevallyn (24472.0000)	**-**	-	-	(31,824)	**(31,824)**	-	**(31,824)**			
Total Land Sales	**6,000,000**	**86,532**	**-**	**(29,192)**	**57,340**	**-**	**57,340**		**-**	

City of Launceston - Capital Expenditure Report

Summary by Network

For the Period to : 30 September 2022

A. Available Funds Summary		**B. Expenditure Summary**	
Set out below is a reconciliation of the available funds.		Total funds (includes grants pending)	81,794,217
Gross carryovers from 2021/2022	43,510,625	Expenditure	
Flood Levee funding brought to account	-	Work in Progress	11,611,986
Original capex 2022/2023	15,115,570	YTD expenditure	3,458,839
Budget night adjustments	-	Actual expenditure	**15,070,825**
Council adjustments & transfers YTD	(199,771)	Committed expenditure	6,477,746
External funds	23,367,793	Total actual & committed expenditure	**21,548,571**
Total Approved Budget	**81,794,217**		
External grant funds invoiced YTD	6,736,625	Total expenditure % of the total funds	26%
External grant funds pending YTD	16,631,168		
	23,367,793		
Gross carryover 30 June 2022	43,510,625		
Less work in progress 30 June 2022	11,611,986		
Net carryover 1 July 2022	31,898,639		

PLAN OF SUBDIVISION

PDA
SURVEYORS, ENGINEERS & PLANNERS
3/23 Brisbane Street, Launceston, Tasmania, 7250
PHONE: +61 03 6331 4099
FAX: +61 03 6334 3098
EMAIL: pdalton@pda.com.au
www.pda.com.au
Also at: Hobart, Burnie, Devonport & Kingston

Owners	Launceston City Council	Address	2 Invermay Road, Invermay
		Council	Launceston City Council
		Planning Scheme	Tasmanian Planning Scheme - Launceston
Title References	FR 180240/2	Zone & Overlay	31.0 Particular Purpose - Inveresk Site
Schedule Of Easements	As shown.		

This plan has been prepared only for the purpose of obtaining preliminary subdivision approval from the Council and the information shown hereon should be used for no other purpose. All measurements and areas are subject to final survey.

Scale	1:4000	Date	15 September 2021	PDA Reference	50149	Map reference		PID	358475	Point of Interest Coordinates	511667E, 5414155N