

**GLENORCHY PLANNING AUTHORITY
ATTACHMENTS
WEDNESDAY, 13 DECEMBER 2023**



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PLANNING

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Applicant's proposed planning scheme amendment

Reference Number	GLE-9.1
Site Reference	8-10 Main Road, Claremont
Folio of the Register	64165/1, 213250/1 and 136272/1
Description (modification, substitution or addition)	Additional Discretionary Use Classes for this site are: (a) Service Industry if for motor repairs; and (b) Vehicle Fuel Sales and Service; and (c) <i>Food Services (take away food premises with a drive-through facility).</i> An additional Applicable Zone for eleven (11) Blade Sign Types for this site – Inner Residential Zone. An additional Applicable Zone for one (1) Horizontal Projecting Wall Sign Type for this site – Inner Residential Zone. An additional Applicable Zone for two (2) Pole / Pylon Sign Types for this site – Inner Residential Zone. An additional Applicable Zone for nine (9) Wall Sign Types for this site – Inner Residential Zone.
Relevant Clauses in State Planning Provisions	Inner Residential Zone – Clause 9.2 Use Table (Qualification) Signs Code – Clause C1.6 Sign Standards

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Planning, Transport, Urban Design & Waste Management.

10 November 2023

Ms. Lyndal Byrne
Coordinator, Strategic Planning
Glenorchy City Council
374 Main Road
GLENORCHY TAS 7010

Submitted via email

**Combined Planning Scheme Amendment Request & Planning Permit Application
Permit Application No. PLAM-23/03 – RFI Response
8-10 Main Road, Claremont**

Dear Ms. Byrne,

We act for McDonald's Australia Limited, the proponent and permit applicant in this matter. We advise that Ratio Consultants is to be the nominated contact in this application going forward.

Reference is made to Council's correspondence dated 20 June 2023 requesting further information pursuant to Section 40U of the *Land Use Planning and Approvals Act 1993*.

In response to this request, we enclose the following:

- Updated Architectural Plans prepared by Timmins + Whyte Architects and dated 27 October 2023;
- Updated Landscape Plans prepared by Taylors and dated 3 November 2023.
- Updated Planning Report (planning scheme amendment and development application) prepared by Ratio Consultants and dated 10 November 2023;
- Updated Traffic Report prepared by Ratio Consultants and dated 13 October 2023;
- Updated Acoustic Assessment report prepared by Clarity Acoustics and dated 21 September 2023 and Memo outlining responses to council RFI items.
- A Light Spill Assessment report, including a proposed Lighting Plan, prepared by Rubidium Light and dated 10 November 2023;
- An Odour Impact report prepared by ES&D Consulting and dated 18 October 2023; and
- A Stormwater Concept Plan and Stormwater Management Report prepared by JMG and dated October 2023.

The following sections of this covering letter will outline changes made to the application in response to Council's concerns and will also address and respond to each concern and informational requirement.

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19354P_Cover Letter_8-10 Main Road Claremont_RFI Response P1

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1. Application Changes

Our client has instructed us to make the following amendments to the proposal:

- Proposed hours of operation reduced from 24/7 to:
 - 6:00 am to 11:00 pm, Sunday to Thursday
 - 6:00 am to midnight, Friday, and Saturday
- Deletion of Sign P1 (12m high Pylon sign), replaced with a 3.6 metre high blade sign (Sign B1).
- Access to the Lady Clarke Avenue vehicle crossing to be restricted to between 7am and 8pm (no access at other times). Access is to be physically restricted via a boomgate.
- Provision of 1 additional car space along the site's western boundary, resulting in a total of 22 car spaces provided on site.
- Provision of 2 additional bicycle spaces in front of the restaurant (total of 6 spaces).
- Construction of a 1.5 metre wide footpath connecting the Lady Clark Avenue car parking spaces to the Main Road footpath.
 - As these works are within Council's land (PID 076623), further consent from Council's General Manager is sought in accordance with the *Land Use Planning and Approvals Act 1993*. We have also included correspondence from TasNetwork regarding this pathway.
- Construction of a low height, transparent fence on the northern title boundary, adjacent to the drive-through.

In totality, these changes will reduce the intensity of the proposed restaurant so that the potential amenity impacts on the adjoining and surrounding residential uses are further mitigated (above and beyond the mitigation measures included as part of the application as originally lodged).

In particular, we note that the reduced operating hours and restriction of access to Lady Clark Avenue during nighttime and early mornings presents a substantial reduction to the scope of the proposed activities on the site, which will in turn reduce the impact of the proposal on adjoining and surrounding residential uses by way of noise, light spill, odour and any other emissions. The potential impacts of the proposal on traffic outcomes for Lady Clark Avenue will also be mitigated as a result of the above listed changes, noting in particular that vehicular traffic utilising this street during night and early morning hours will be eliminated.

It is submitted that these changes represent substantial concessions by our client which will make a meaningful difference to the adjoining and surrounding residential properties whilst also facilitating increased economic activity on the site which has an established history of non-residential uses.

We also advise our client considered a number of local sites within the Claremont area that may have been suitable for this proposal. These sites were not deemed to be appropriate for Food Services with a Drive-through component based on their location and planning context. The subject site, however, is seen as being appropriate site for this application for the reasons that are outlined in this letter and the Planning Report.



2. Responses to Amendment Concerns

In the letter dated 20 June 2023 Council has identified a number of concerns with the proposed planning scheme amendment. The proposal seeks to amend the Glenorchy Local Provisions Schedule by including a Site Specific Qualification for 8-10 Main Road that will include Food Services with a takeaway drive through facility as a discretionary use.

We have prepared an updated Planning Report which addresses the proposed planning scheme amendment and in particular responds to Council's concerns. The updated report assesses both the Planning Scheme Amendment and the Planning Permit Application (S37 and 40T). These responses are summarised in the below table.

Council concern	Response
<i>It is considered that the proposal does not meet S.32(4) of the LUPAA, the land is not considered to have any particular environmental, economic, social or spatial qualities to justify the proposed Site Specific Qualifications (SSQ), nor does the use or development to which the SSQ relates, appear to have any significant social, economic or environmental benefits to the State, region or municipal area.</i> <i>It should be noted that the draft SSQ will not permit some of the proposed signage on the site. That is, while the SSQ seeks to provide an Acceptable Solution for pole sign for example, as it does not meet the proposed Acceptable Solution due to the height, it must be assessed under the Performance Criteria. However due to the zone, the sign would not meet C1.6.1 P1.1 (a) [noting that the standard specifies an 'applicable zone'; the historical use of the site is irrelevant].</i>	Please refer to the Subsection (2)(b) response in Table 3.3 within Section 3.2 of the revised Planning Report, which outlines how the proposed SSQs are in accordance with the requirements of Section 32 of the <i>Land Use Planning and Approvals Act 1993</i>. Regarding signs, we have clarified our application to specify the Inner Residential Zone as an additional Applicable Zone for the proposed signs which would ordinarily be prohibited. We have further updated the signage code assessment within our report to reflect the proposed SSQs and the change to sign P1.
<i>Acknowledging a Food Service use is Discretionary within an</i>	Whilst we acknowledge Council's assessment, we submit that the inclusion of a drive-through facility

<i>Inner Residential Zone, the State Planning Provisions clearly prohibit drive through facilities and the proposed signage, given their negative amenity impacts on adjacent residential uses. It is considered that the amendment is unlikely to further the Schedule 1 objectives of LUPAA, particularly Part 1 (b) and (d) and Part 2 (a), (c) and (i).</i>	and additional signs does not in and of itself result in unacceptable amenity impacts on the adjoining and surrounding residential uses. As established above, our submission is that the subject site exhibits physical and economic attributes which make it uniquely suited to the proposal as opposed to other land in the area within the Inner Residential Zone. We note that a Food Services use on its own is a discretionary use and if it can be demonstrated that it meets the use standards, then such a use can be supported. In our view, it does not follow that the addition of a drive-through and signage does not in and of itself fail to meet those requirements. The proposal to introduce a SSQ that allows for the drive-through and the signage do not exempt these uses from a rigorous assessment. The first part of the Section 40T application seeks to include these aspects of the proposal as SSQs, the second component makes an assessment of whether or not they meet the standards set out in the Inner Residential Zone and Signs Code. A combined amendment provides an opportunity for Council to not only consider the amendment itself, but to also specifically consider the merit of what is to be allowed by the SSQ and whether the proposal has the ability to meet the requirements. In this application it is demonstrated that with the inclusion of signage and a drive-through facility, the proposal is consistent with Clause 9.1.3 (b) of the IRZ in that it is for a non-residential use which will not cause an unreasonable loss of amenity to the surrounds. This is clearly detailed in the various technical report submitted as part of the application, which demonstrate that the proposal will not result in unreasonable amenity impacts with respect to traffic, noise, lighting or odour. The site's unique physical and economic attributes described above are what make this possible, along with the site responsive layout and design that seeks to minimise any adverse impacts. It therefore follows in our view that the proposed amendment does further the Schedule 1 objectives of the LUPAA, for the reasons outlined within Section 3.3 of the revised Planning Report.
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<i>The strategic justification for the planning controls applied to the land over time has been to enable the continued operation of the 1950's service station / motor repairs activity on the land while the planning schemes have changed, rather than limiting the activity to non-conforming use rights. That there is currently a SSQ applying to the land is not an adequate justification to allow for a new use or development to operate under the SSQ and is not considered to further the Schedule 1 objectives of LUPAA, particularly Part 1 (b) and Part 2 (i).</i>	This proposal does not hinge solely on the historic non-residential use of the property though we note that this is a quality of the site which makes it suitable for the proposed SSQ. As discussed in our revised planning submission and summarised above, we submit that the proposal is consistent with the Schedule 1 objectives of LUPAA.
<i>Officers are also concerned with the impacts of the proposed use and development with respect to noise, odour, traffic safety, traffic volume, parking shortfalls, traffic light spill and lighting.</i>	As outlined in Section 1, a number of changes to the development are proposed in response to Council's initial concerns. Further, please refer to Section 3 of this letter for a detailed overview of how the potential amenity impacts of the proposed use and development will be mitigated.

3. Additional Information Provided

- We confirm that the Draft amendment in the revised Planning report is to reflect 64165/1, along with 213250/1 and 136272/1.
- An assessment against Section 32(4) of the LUPAA [to satisfy 34(2)(b)] is provided in Table 3.3 within Section 3.2 of the revised Planning report.
- An assessment against the *Glenorchy Strategic Plan 2023-2032* to satisfy Section 34(2)(f) is provided at Section 3.6 of the revised Planning report.

With respect to the other information requirements and concerns relating to Noise, Lighting, Odour, Signage and Traffic raised in Council's letter we provide the following response, noting that the information requested by Council has been included in the relevant consultant reports / documentation.

Information required	Response
<u>Noise</u> <i>In reference to the Planning Application - Acoustics Assessment Report, by Clarity Acoustics, dated 27 March 2023, further information is required:</i> <i>The adopted criteria for noise emissions associated with the proposed development are as follows:</i> <i>“LAeq, 15 minute ≤ the existing background noise level (LA90, 15 minute) + 5 dB.</i> <i>A sleep disturbance criterion of 60 dB LAmax</i> <i>A low frequency noise threshold of C-weighted noise level minus A-weighted ≤ 15 dB.”</i> <i>However, details regarding the sleep disturbance value of 60dB for the LAmax is required. Please detail how 60 dB LAmax is more appropriate than the criteria provided in the New South Wales Noise Policy for Industry (2017) as (LAeq,15min 40 dB(A) or the prevailing RBL plus 5 dB, whichever is the greater, and/or LAFmax 52 dB(A) or the prevailing RBL plus 15 dB, whichever is the greater).</i> <i>The assessment must cover the maximum noise level, the extent to which the maximum noise level exceeds the rating background noise level, and the number of times this happens during the night-time period.</i> <i>The cumulative noise (Table 6-8) must include vehicle and patron noise levels.</i> <i>Detail the method / calculations / mitigation factors relating to how the vehicle noise values listed in Table 12 are mitigated to achieve the noise levels provided in Table 10.</i> <i>Provide what is the estimated noise attenuation value from the acoustic walls?</i> <i>Provide the background data collected over the entire data collection period. It is noted the monitoring period occurred from 14th of December to the 28th of December which incorporates the Christmas period. The associated background impacts of undertaking</i>	<u>Information satisfied.</u> An updates Acoustic Report has been submitted and a response to the concerns raised.

<i>background monitoring during this time period are unknown without reviewing that data collected.</i> <i>6. Detail the associated times for 'day', 'evening' and 'night'.</i> <i>7. Detail how many times are the estimated Lamax markers expected to be hit per night as per Table 10.</i> <i>8. The sensitive receiver located at 13 Main Road, Claremont TAS 7011 has not been accounted for. 12 Main Road, Claremont TAS 7011 is required to be considered in the calculations.</i> <i>9. Confirm the delivery times as it is stated as 7am – 10pm 7 days a week on page 5 and contradicted on page 11.</i> <i>10. Background monitoring occurred in a single location and was not undertaken at any of the sensitive receivers' locations. Background noise levels currently experienced at the sensitive receivers is required.</i> <i>11. Detail the means in ensuring 'refrigeration condensers associated with delivery vehicles must be switched off during deliveries (i.e., prior to entering the site)' and the impacts if this does not occur (page 11).</i> <i>12. The loading zone requires delivery vehicles to reverse into the loading bay. Detail the impacts associated with reverse warning systems inclusive of sensitive receiver predicted noise readings. The entry and exit path identified in the traffic management plan occurs in close proximity to the residential receivers and needs to be accounted for</i> <i>13. What are the mitigatory values associated with the residential dwelling and what material standard is that based on? (i.e. current construction methods i.e. double glazing, or other methods)</i> <i>14. How has the noise modelling and adopted noise criteria considered noise character, with respect to tonality? In the Vic. Guidelines when the noise is tonal in character then an adjustment is made:</i>	
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• when the tonal character of the noise is just detectable then $A_{tone} = +2$ dB; • when the tonal character of the noise is prominent then $A_{tone} = +5$ dB.	
<u>Lighting</u> <i>In reference to the McDonald's Claremont Light Spill Assessment, by SLR dated 29 March 2023, further information is required:</i> 1. <i>In accordance with the report, the lighting plan is yet to be finalised therefore the SLR made general assumptions about the location and types of lights to be used – the report needs to consider the finalised plan and make calculations based of the proposed actual light types and location.</i> 2. <i>It is stated “due to the site currently being used for commercial purposes it is SLR’s opinion that environmental Zone A4 would be appropriate. This zone definition covers commercial areas abutting residential areas.” (page 14). The appropriateness of the site as being Zone A4 due to the current commercial use of the site is considered unsuitable. “Zone A4 - “High District Brightness”, eg town and city centres and other commercial areas; residential areas abutting commercial areas” does not fit with the location and residential zoning of the site. The report requires amending to better represent the site zoning.</i> 3. <i>The report requires predicted light technical parameters be included within as to determine the pre-curfew and curfew lighting values.</i> 4. <i>Section 5.2 of the report makes reference to Westbury Road – this is required to be amended.</i> 5. <i>Section 6.1.2 identifies that the acoustic fence will provide shielding from light overspill.</i>	<u>Information satisfied.</u> We note that an additional lighting assessment has been prepared by Rubidium Lighting which will supersede the previous report. In response to the comments raised: - The lighting scheme shown on the drawing set are developed to include all emitters. - The report is based on AS/NZS4282 Environmental Zone A3. - The acoustic fence will not be constructed of perspex. - Section 8.3.1 of the TPS relates to the General Residential Zone, however an assessment has been provided in Section 6.1 of the planning report regarding potential emissions (assessment against 9.3 Use Standards). Compliance with the relevant Australian Standards demonstrates that the proposal does not

<i>However, the noise report talks about the acoustic fence being able to be constructed of perspex or other translucent material which would not protect the properties from light overspill.</i> 6. <i>The report does not make an assessment against the Planning Scheme. The Planning Report defers assessment of Performance Criteria P4 to the lighting assessment however the assessment criteria is not accounted for within the report. An assessment of the proposed lighting needs to be undertaken in relation to Performance Criteria P4 of 8.3.1 Discretionary uses.</i> 7. <i>“There will however be a general brightening of the area that could be noticeable for residents from rooms facing the site” (page 3). Lighting emissions must not cause an unreasonable loss of amenity to adjacent sensitive uses. How ‘noticeable’ and what impacts are associated with the 24/7 increased lighting to those sensitive receivers?</i> 8. <i>Additionally, it is recommended to consider the possibility of ground lighting rather than pole lighting.</i>	result in an unreasonable loss of amenity to adjacent sensitive uses. - Ground lighting is not proposed as it would not achieve compliant levels with AS/NZS1158.
<u>Odour (other emissions)</u> <i>Please provide a report by a suitable qualified professional in relation to odour emissions generated from the site and how they will be mitigated as to not cause an impact on residential amenity in reference to P1 & P4 8.3.1.</i>	<u>Information satisfied</u> An Odour Report has been provided and demonstrates that there will be no unreasonable amenity impacts on the nearby properties.
<u>Signage</u> <i>The impact of the signs, whether illuminated or not, needs to be assessed by a suitable qualified traffic engineer to determine the impact on the safe and efficient movement of vehicles and pedestrians under</i>	<u>Information satisfied</u> The signage package has been amended and an assessment has been provided in the planning report. The Lighting

<i>C1.6.1 P1.1 and the safety, appearance, or efficiency of a road under C1.6.2 P1, of the Signage Code.</i>	assessment submitted also includes an assessment of the illuminated signage and demonstrates that the signage complies with the relevant Australia Standards.
<u>Traffic and vehicle movement</u> C2.0 Parking and Sustainable Transport Code <i>Within the TIA, please address the following items and update any other relevant reports or plans as required.</i> C2.5.1 – Car Parking Numbers (P1.1) • Compare the parking required in the RTA Guide to Traffic Generation Developments and justify if different, also refer to RTA Trip Generation and Parking Demand Survey of Fast-Food Outlets Analysis Report 2016. • Justify the 20 parking spaces proposed based on another 22 convenience restaurants, with information on dates, times, and locations; and the comparing this site the other sites including such things as location, GFA, employees, opening times, drive-thru, service booths, driveways, road network, surrounding land use. • The planning report, March 2023, states in section 6 that at any one time, there will be approximately 20 staff working in the restaurant. Based on this, detail if there is adequate parking for the site. • Detail if there is adequate parking for the site if the car park off Lady Clark Avenue is removed. • Detail if the requirement for 6 queueing spaces within the drive-through is provided in accordance with scheme and assess under the RTA guide. • Outline if the site will have any outdoor dining areas and if this is included in the building gross floor area of 453m², used to calculate the number of parking spaces required from the planning scheme. • Provide information on the exact number of seats (including stools) to be provided, indoors	<u>Information satisfied</u> The Traffic Report prepared by Ratio Consultants has been updated and includes the information requested.

and outdoors used to estimate the parking required. • Explain the correlation between car parking spaces per patron and dining seats. • Detail if the parking numbers based on patrons / seats, accounts for staff parking. • Clarify if the average peak car parking of 0.27 spaces per patron / dining seat, equates to 4 people in a car and justify. • Outline if there is on-street parking available in Lady Clarke Avenue due to the increase in traffic and how pedestrians will access the proposed site from Lady Clark Ave as there is no footpath on the development side. • On the plans, show that the redundant driveway crossovers on Main Road will be reinstated to K&C as mentioned in the TIA, thus allowing these spaces to be used for on-street parking. • Specifically address the performance criteria P1.1. C2.5.2 Bicycle Parking Numbers (P1) • Due to proximity of the Intercity Cycleway and the proposed reduction in parking to the scheme, justify the reduction in bicycle parking from the required six to four. C2.6.1 Construction of Parking Areas (A1/P1) • Undertake an assessment against the acceptable solution, otherwise address the performance criteria. - Please provide a stormwater concept plan showing the capture and disposal of stormwater run-off from the proposed driveway, parking and any new hardstand areas to Council's approved outlet. A concept stormwater plan in accordance with the Stormwater policy is required. - According to the scheme the parking and driveway areas must be constructed to a paved surface where surface runoff can be drained to the stormwater system. Please demonstrate compliance to the requirement. C2.6.2 Design and Layout of Parking Areas (A1.1 and A1.2)	
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- Undertake an assessment in accordance with AS2890.1 to determine if vehicle and pedestrian sight lines are met for the proposed driveways.
- Further justify the narrow carriageway on Lady Clark Avenue in which an outbound vehicle needs to prop in the site access while an entering vehicle makes its turn.
- Detail if pedestrian sight lines are met at the pedestrian crossings within the car park and justify if not, such as at the loading zone.
- Show the left turning movements in and out of the Main Road driveway for HVR.
- Show the right turning movements into the Main Road driveway for a B99 vehicle.
- Show the left turning movement for a vehicle to enter the drive-thru bay to the west of the site for a B99 vehicle.
- Show the right and left turning movements out of the Lady Clark Avenue driveway for a B99 vehicle.
- On sheet 6 of 9, show the B85 swept path for left turn movement to another drive-thru lane otherwise demonstrate appropriate signage.
- Demonstrate traffic management at conflict point before the drive-thru lanes; appropriate signage or line-marking may be required.
- Provide plan demonstrating the crossfall over the footpath at the access does not exceed the maximum allowance of 2% under the LGAT standard and GCC requirement.
- Layout of driveway and parking areas must be in accordance with the AS2890.1:2004 and the Scheme requirements. Please clearly show on the parking plan details of the proposed driveway, access and parking areas including gradients, parking area, spot levels, maneuvering area, materials, finishing surface and drainage details must be submitted to demonstrate compliance and shall comply with the followings:
 - The maximum parking grades is 5% or 1 in 20, please confirm and notate on the plan.

C2.6.5 Pedestrian Access (P1 and A1.2)

• Detail if a pedestrian footpath is required alongside the western parking spaces and address the acceptable solution or performance criteria. • Clarify if there are more than one speed hump to be provided as shown on the plans. C2.6.6 Loading Bays (A1 and A2/P2) • Detail what category of vehicle in AS2890 is the 14-pallet delivery truck (ie Heavy Rigid Vehicle) • Outline how service vehicles will be prevented from using Lady Clark Avenue. • Detail if the acceptable solution is met for A2, otherwise address the performance criteria P2. C2.6.6 Siting of Parking and Turning Areas (A1/P1) • Undertake an assessment against the acceptable solution, otherwise address the performance criteria. C3.0 Road and Railway Asset Code C3.5.1 Traffic Generation at a Vehicle Crossing, Level Crossing or New Junction Within the TIA, please address the following items and update any other relevant reports and plans as required. Lady Clark Avenue Due to the increase in traffic and pedestrians on this road designed for residential use: • Outline how vehicles will be encouraged not to use the private road which continues from the road reservation that ends fronting 8-10 Main Road. • Justify if vehicles will be required to turn at the end of the road reservations and if so, detail how this will occur. • Detail the road widths on Lady Clarke Avenue and if this is width enough to enable two-way traffic, with reference to the Tasmanian Standard Drawings LGAT TSD-R06-v3 with a minimum of 6.9m or wider required. • Outline if parking is required to be prohibited in Lady Clarke Avenue to allow vehicles to be able	
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<i>to turn in and out of the proposed driveway and to travel along the road safely.</i> <i>Justify that a footpath is not required on the development side of Lady Clarke Avenue.</i> <i>Detail in accordance with the standards and Austroads Guides, that the current car park on Lady</i> <i>Clark Avenue is safe and complies, with vehicles reversing directly onto the road, otherwise amend.</i> Traffic Data <i>Compare the traffic generation required in the RTA Guide to Traffic Generation Developments and justify if different, also refer to RTA Trip Generation and Parking Demand Survey of Fast-Food Outlets Analysis Report 2016.</i> <i>Justify the 170 vehicles per hour proposed for this site, detailing the reference to the surveys undertaken of several existing McDonald with dates, times and locations and comparing the survey sites to this site including such things as location, GFA, employees, opening times, drivethru, service booths, driveways, road network, surrounding land use.</i> <i>Assess the peak hour time AM and PM for Lady Clark Ave and Main Road and outline if this overlaps the peak times for the development. If the road network peak times do not overlap, then assess the impact of these peak times on the road network with the proposed development. Advise: traffic count data can be obtained from Council and from State Growth at traffic lights.</i> <i>Outline the impact on amenity due to the increase in traffic on Lady Clarke Avenue and Main Road, as outlined in section 4.3 RTA Guide to Traffic Generation Developments.</i> <i>Outline the difference in traffic generated from that of the drive thru to the restaurant, to enable comparison with parking numbers.</i> <i>Outline the vehicle movements per day at the intersection of Main Road and Lady Clark Avenue, for current and proposed, along with the total volumes on these roads.</i>	
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• Outline the AM and PM Friday peak times and the Saturday peak times for the development site and detail the SIDRA analysis for the AM peak, existing and proposed. Sight Lines • Detail the sight lines required and that obtained, at the driveway on Main Road which should include safe intersection sight distance, approach sight distance and stopping sight distance for vehicles leaving and entering due the volume of traffic at this driveway, in accordance with Austroads Guide to Road Design. • Detail the sight lines required and that obtained, at the intersection of Lady Clark Avenue and Main Road which should include safe intersection sight distance, approach sight distance and stopping sight distance for vehicles leaving and entering, in accordance with Austroads Guide to Road Design. Pedestrians • Explain how pedestrians who park or wish to access the site via Lady Clarke Avenue, will access the site as there is no footpath on the development side of the road. • Detail how pedestrians will safely access the building from the western car parking area and if a footpath is provided, consider linking it to the footpath on Lady Clark Avenue. • Within the site show that pedestrian sight lines are met at the pedestrian ramps, particularly alongside the loading zone in accordance with Austroads Guide to Road Design. Other • Please undertake a site inspection to fully assess the location. • In the crash analysis outline the roads and extent, in which crashes were reviewed. • The posted speed limit on Main Road at the development site is 50km/h, update report. • Detail if the parking for the drive-thru, is in line with the RTA Guide recommends that the drive through capacity should be 10 car lengths and 12	
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<i>car lengths without unreasonable disrupting car parking. Otherwise, justify.</i> <i>Outline if there are any safety issues associated with service vehicles reversing out of the load bay both for vehicles and pedestrians.</i> <i>Detail if there are any impacts on vehicles entering and leaving the driveway to 11 Main Road which is opposite the main driveway to this development if there are justify.</i> <i>Outline the effect of the increase in traffic on the external road network such as at Box Hill Road/ Main Road intersection and Claremont Road / Main Road intersection.</i> <i>This information is needed to enable the Planning Authority to fully assess your application and to demonstrate compliance with the Tasmanian Planning Scheme - Glenorchy and LUPAA.</i> <i>Once this additional information is received to the Planning Authority's satisfaction, your request will be assessed and considered by the Glenorchy Planning Authority.</i> <i>Under LUPAA, the Planning Authority has 42 days to decide whether to prepare your amendment request (excluding the period from the date of this requirement until the information is received to the Planning Authority's satisfaction).</i>	
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We now trust the information as provided reasonably meets with your requirements and look forward to advertising of the application at your earliest convenience. However, should Council require additional details, we hereby request an extension to the lapse date by which information must be provided and ask for this to be confirmed in writing.

If you have any further queries, please do not hesitate to contact me either by telephone or by email at blanchem@ratio.com.au or on 03 9429 3111.

Yours sincerely,



Blanche Manuel
Senior Associate: Planning
Ratio Consultants Pty Ltd

ratio:

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Client
McDonald's Australia Limited

Date
10 November 2023

Planning

Transport

Urban Design

Waste Management

Section 37 & 40T Application

8-10 Main Road, Claremont
Combined Planning Scheme
Amendment and Permit Application

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Project
8-10 Main Road, Claremont Combined
Planning Scheme Amendment and Permit
Application

Prepared for
McDonald's Australia Limited

Our reference
19354P

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Version	Date	Issue	Prepared by	Checked by
A	01/03/23	Draft	JS, ML	AM
B	29/03/23	Final	JS	AM
C	10/11/2023	RFI_Final	JS	BM

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1. Introduction

1.1. Instruction

Ratio Consultants has been engaged by McDonald's Australia Limited, the permit applicant, to prepare a town planning report with respect to an application under Section 37 and Section 40(T) of the *Land Use Planning and Approvals Act 1993* for:

The application of site specific qualifications of 'Food services with a takeaway drive-through facility' and additional applicable zones for associated business identification signage.

The use and development of the land for a convenience restaurant.

1.2. Investigation and research

In the course of preparing this report, we have:

- Reviewed and responded to the relevant Objectives of Schedule 1 of the *Land Use Planning and Approvals Act 1993*;
- Assessed the proposed amendment against the Local Provisions Schedule criteria of Section 34 of the *Land Use Planning and Approvals Act 1993*;
- Reviewed and responded to the State Policies and National Environmental Protection Measures as designated under the *State Policies and Projects Act 1993*;
- Reviewed and responded to the *Southern Tasmania Regional Land Use Strategy 2010-2035 (STRLUS)*;
- Reviewed and responded to the *Glenorchy Strategic Plan 2023-2032*;
- Assessed the proposed use and development against the relevant controls and policies contained within the Tasmanian Planning Scheme and the Glenorchy Local Provisions Schedule;
- Virtually inspected the subject site and surrounds;
- Reviewed the architectural plans prepared by Timmins + Whyte, dated 27 October 2023;
- Reviewed the Traffic Impact Assessment prepared by Ratio Consultants, dated 13 October 2023;
- Reviewed the Acoustic Assessment Report prepared by Clarity Acoustics, dated 21 September 2023.
- Reviewed the Lighting Spill Assessment prepared by Rubidium Light and dated 10.11.2023,
- Reviewed the Stormwater Concept Plan and Stormwater Report prepared by JMG and dated October 2023.
- Reviewed the Environmental Site Assessment report prepared by Environmental Management & Consulting Pty Ltd, dated 10 August 2018; and
- Reviewed the Landscape plans prepared by Taylors, dated 3 November 2023.

1.3. Summary

In summary, it is submitted within this report that the proposal should be supported because:

- It is consistent with the relevant strategic directions of State Planning Provisions;
- The proposed planning scheme amendment is consistent with the relevant provisions of the *Land Use Planning and Approvals Act 1993*;
- The convenience restaurant use and the proposed buildings and works and signs represent an appropriate outcome for the site having regard to the zoning and physical context;
- The proposal will not have unreasonable amenity impacts on surrounding properties; and
- Traffic, car parking and access for service/delivery vehicles is well considered and designed to minimise disruption to the local road network.

2. Site Analysis

2.1. Subject site

The subject site, No. 8-10 Main Road, is located on the southern side of the intersection of Main Road and Lady Clark Avenue, Claremont. The site is generally rectangular but has an irregular alignment to Main Road and has a total area of 2,785 square metres.

The allotments are formally known as CT 64165/1 and 213250/1.

Figure 2.1: Cadastral map of the subject site and surrounds



Source: Extract from ListMap <https://maps.thelist.tas.gov.au/listmap/app/list/map>

The key features of the subject site are as follows:

- The land falls by approximately 4.8 to 5.2 metres from south-west (rear) to north-east.
- The site currently accommodates a single storey blockwork building which has previously been used for motor vehicle repairs. The building has a minimum setback to Main Road of 7.905 metres and features a canopy with hard paving in the front setback.
- Vehicular access to the site is currently obtained via two crossings on either side of the Main Road frontage.
- There are no easements, covenants or restrictions registered on the Certificate of Title.

We understand that the site was historically used a service station (until 2008) and that there are presently three fuel caps located along the north-western side of the existing building.

Photo 1: View of the subject site from Main Road, looking west



Photo 2: View of the subject site from the corner of Main Road and Lady Clark Avenue



Source: <https://www.google.com/streetview/>

2.2. Current planning controls

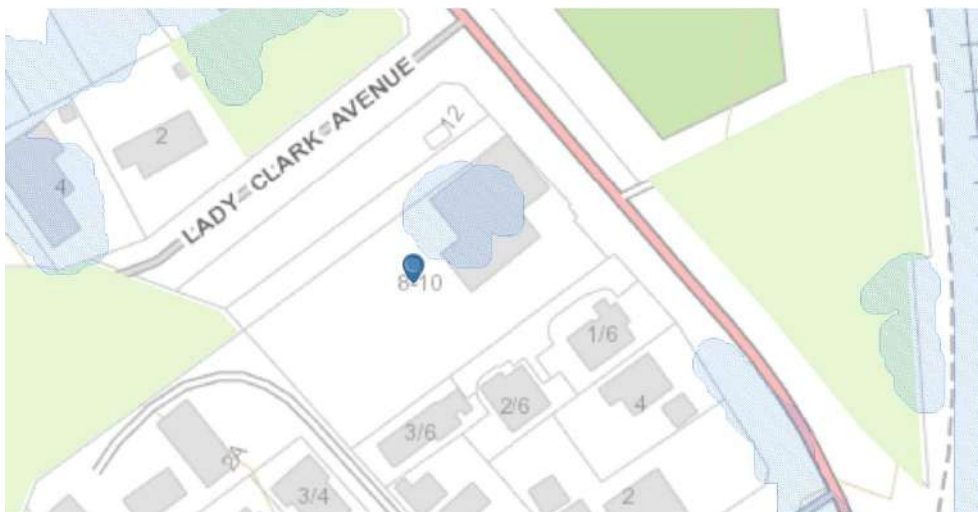
The site is currently zoned Inner Residential (see Figure 2.2) and is subject to site specific qualification GLE-9.1 under the Glenorchy Local Provisions which allows the use of the land for Service Industry (motor repairs) and Vehicle Fuel Sales and Service. A portion of the front of the site is also affected by the Flood-Prone Areas Code Overlay (refer to Figure 2.3).

Figure 2.2: Zoning Map



Source: Extract from PlanBuild Tasmania Property Report

Figure 2.3: Overlay Map



Source: Extract from ListMap <https://maps.thelist.tas.gov.au/listmap/app/list/map>

2.3. Historical planning controls

As noted, the subject site has historically been used as a service station.

The site was previously zoned Local Business under the *Glenorchy Interim Planning Scheme 2015* and was rezoned to Inner Residential with a site-specific qualification on 4 November 2023 following a Section 43A combined planning permit application and amendment request.

It is noted that the rationale for the rezoning of the land to Inner Residential was to achieve consistency with the Section 8A Guidelines issued by the Tasmanian Planning Commission which specify that single lots in a Local Business Zone (LBZ) should be included in the surrounding zone in the LPS. It was acknowledged at the time of rezoning that there was no intent from Council to change the use of the site to residential, and a SSQ allowing the use of the land for Vehicle Fuel Sales and Service was incorporated into the LPS to allow the existing use to continue. This was on the basis that the owners of the land have had an expectation that the land was appropriately zoned for the existing use.

2.4. Surrounding land

Adjoining properties

With respect to the immediately surrounding land:

NORTH-WEST

To the immediate north-west of the site is Lady Clark Avenue, a local road with a single lane of traffic in each direction. It features a wide reservation along the shared boundary with the site which is partially developed with a car parking area with 8 car spaces. There is also an electrical substation adjoining the site, addressed as 12 Main Road.

On the opposite side of Lady Clark Avenue is No. 14 Main Road which comprises a single storey brick building known as Claremont Hall. This property is in the Community Purpose Zone.

Also opposite the site to the north-west is No. 2 Lady Clark Avenue which comprises a single detached dwelling in the Inner Residential Zone.

Photo 3: Claremont Hall, Lady Clark Avenue and No. 12 Main Road (substation), viewed from Main Road looking south-west



Source: <https://www.google.com/streetview/>

NORTH-EAST

To the immediate north-east of the site is Main Road, a local road with a single lane of traffic in each direction and a median passing lane.

Main Road is a core public transport route in Greater Hobart¹ and accommodates a number of bus routes connecting the Hobart CBD and northern suburbs. The nearest bus stop to the subject site is Stop 37 which is approximately 85 metres north-west.

Further north and north-east is the Claremont Recreation Ground which is in the Recreation Zone.

Also opposite the site to the north-east are Nos. 11 and 13 Main Road, two residential properties in the Inner Residential Zone. No. 13 Main Road is arranged to front the street, whilst No. 11 Main Road is situated behind No. 13 in a “battle-axe” arrangement.

Photo 4: View of Main Road looking north-west with Claremont Reserve in foreground



Source: <https://www.google.com/streetview/>

SOUTH-EAST

Immediately adjoining the site to the south-east are Nos. 1, 2 and 3/6 Main Road which are a series of three single storey detached dwellings in the Inner Residential Zone.

These dwellings obtain vehicular access to Main Road via a shared accessway which runs adjacent to the boundary with the subject site.

The dwellings are setback from the shared boundary with the subject site by approximately 6 metres (No. 1/6), 5.3 metres (No. 2/6) and 2.4 metres (No. 3/6).

According to historical satellite imagery it appears that Nos. 2 and 3/6 Main Road were developed and subdivided around 2015.

¹ Transit Corridor Plan: Main Road from Glenorchy to Hobart CBD (including New Town Road and Elizabeth Street) Draft for Public Consultation, Tasmanian Government 2013

Photo 5: interface of the subject site with Nos. 1, 2 and 3/6 Main Road



SOUTH-WEST

Immediately adjoining the site to the south-west is No. 2A Pascoe Avenue, a large residential property in the Inner Residential Zone. The allotment is in a “battle-axe” arrangement whereby vehicular access to Pascoe Avenue is obtained by a long driveway which runs along the shared boundary with the subject site.

There are three detached buildings on the property, the nearest of which to the subject site is setback by approximately 20 metres.

Further south is 4 Pascoe Avenue, developed with three dwellings. Dwelling No. 3 is setback approximately 7 metres from the boundaries of the subject site.

Photo 6: Rear of the site, dwellings at Nos.2 & 3/4 and 2A Pascoe Avenue visible beyond



An aerial photograph of a suburban area with various buildings and green spaces. A red boundary outlines a large central plot labeled "8-10". To its left are several smaller plots labeled "2A", "3/4", "3/6", "2/6", and "1/6", each with "SPDS" written below them. Further left are more residential-style buildings, some labeled "2/4" and "2". To the right of the red-outlined area is a building labeled "Mechanics" and another labeled "Councille car park". A yellow-shaded rectangular area is labeled "Community facility". At the bottom center, near a road intersection, is a red star symbol and a circled number "1". Other circled numbers include "2" at the bottom right, "3" near the top center, and "4" in two locations. Roads shown include "Quinn Pl" running horizontally across the middle-right, "Mabrouk Rd" running diagonally from the bottom center towards the right, and "Parsloe Ave" at the bottom left. Blue arrows indicate directions along Quinn Pl and Mabrouk Rd. Yellow dashed lines follow the edges of the main plots. A blue dotted line runs parallel to the right side of the red-outlined area. A green dotted line runs along Mabrouk Rd. A black dashed line separates the community facility from the recreation ground. The "Glenent Recreation Ground" is a large green field at the bottom right.



8-10 Main Road, Claremont Combined Planning Scheme Amendment and Permit Application

Locational attributes

The broader locality includes a range of commercial, transport, community and recreational services, including (measured 'as the crow flies'):

- Claremont Reserve, directly opposite the site to the north and north-east as mentioned above.
- Claremont Hall, directly opposite the site to the north-west as mentioned above.
- Lady Clark Retirement Village, approximately 60 metres west.
- Foreshore Reserve, approximately 160 metres north-east.
- Claremont CBD, approximately 150 metres north-east (see Figure 2.4).
- Claremont Plaza Shopping Centre, approximately 150 metres north-east.
- Claremont College, approximately 240 metres south-west.
- Brooker Highway, approximately 810 metres south-west.
- Mondelez Australia / Cadbury Factory, approximately 900 metres east.

Figure 2.5: Claremont CBD Precinct Plan



Source: Extract from Greater Glenorchy Plan, Glenorchy City Council 2021

The Greater Glenorchy Plan prepared in 2021 provides strategic directions and high-level precinct plans for each of the three activity centres within the municipality. The subject site is located at the fringe of the Claremont CBD precinct at an 'entry gateway' identified in the context plan. Claremont is identified as a neighbourhood centre. The precinct plan actions to achieve its 2040 vision include upgrading Main Road with streetscape improvements, create a new garden parkland, consider new bus stops to service the centre, and anticipating the future transit hub location.

Figure 2.6: Aerial photograph of the subject site and adjoining properties



ratio: 8-10 Main Road, Claremont Combined Planning Scheme Amendment and Permit Application

Figure 2.7: Aerial photograph of the greater locality



Source: <https://www.heatmap.com/au/en>

ratio:

8-10 Main Road, Claremont Combined Planning Scheme Amendment and Permit Application

3. Proposed Planning Scheme Amendment

3.1. Purpose of and rationale for the proposed Amendment

As outlined in Section 1.1 of this report, it is proposed to amend the planning scheme to apply a site-specific qualification to the subject site allowing the use of the land for Food services with a takeaway drive-through facility and to allow associated business identification signs.

The proposed amendments are required in order to facilitate the proposal to use and develop the land as a convenience restaurant (Food services) with a drive-through facility, as well as to allow all proposed signs that are prohibited in the Inner Residential Zone.

Rather than seek to amend the zoning of the site, it is considered that seeking the proposed site specific qualifications will appropriately facilitate the proposal without also creating an isolated parcel of land in the Commercial, Local Business or General Business zones.

Table 3.1 below sets out the proposed amended Local Provision Schedule (Glenorchy) Site-Specific Qualification:

Table 3.1: Proposed amended Local Provision Schedule

Reference Number	GLE-9.1
Site Reference	8-10 Main Road, Claremont
Folio of the Register	64165/1, 213250/1 and 136272/1
Description (modification, substitution or addition)	Additional Discretionary Use Classes for this site are: (a) Service Industry if for motor repairs; and (b) Vehicle Fuel Sales and Service; and (c) <i>Food Services (take away food premises with a drive-through facility).</i> An additional Applicable Zone for eleven (11) Blade Sign Types for this site – Inner Residential Zone. An additional Applicable Zone for one (1) Horizontal Projecting Wall Sign Type for this site – Inner Residential Zone. An additional Applicable Zone for two (2) Pole / Pylon Sign Types for this site – Inner Residential Zone. An additional Applicable Zone for nine (9) Wall Sign Types for this site – Inner Residential Zone.
Relevant Clauses in State Planning Provisions	Inner Residential Zone – Clause 9.2 Use Table (Qualification) Signs Code – Clause C1.6 Sign Standards

In our view, the proposed SSQs represent an appropriate planning outcome for the subject site and the surrounding properties, having regard to:

- The historical use and zoning of the land for non-residential purposes, which in our view is particularly relevant because it is an economic quality of the site that differentiates it from others in the area within the Inner Residential Zone.
- The physical characteristics of the site which make it uniquely suited to a convenience restaurant use with a dedicated drive-through facility. These characteristics include its location on a main road and with corner access to a secondary street, its proximity to the Claremont CBD and its size which facilitates a considered design response that appropriately mitigates potential amenity impacts on adjoining and surrounding residential uses.
- The economic benefits of the proposed convenience restaurant with a drive-through facility. We have had regard to the impact of a drive-through facility on the store's ability to employ local workers, as well as the current social and economic context of the area where general unemployment, and youth unemployment particularly, presents a challenge for the community.

3.2. Land Use Planning and Approvals Act 1993

Section 37 – Request for amendment of LPS

This application seeks to amend the application pursuant to Section 37 of the *Land Use Planning Approvals Act 1993* as outlined below.

Provision	Response
Subsection (1) <i>A person may request a planning authority to amend an LPS that applies to the municipal area of the planning authority.</i>	Complies It is hereby requested that Council considers this request to amend the LPS by including site specific qualifications to allow the drive-through facility and associated signage. This is to occur at the same time the permit application, pursuant to Section 40T (discussed below).
Subsection (2) <i>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.</i>	Complies This request can be approved in the required form.
Subsection (3) <i>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 –</i>	Complies The written consent of the landowner/s has been provided.

(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.	
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Section 40(T) – Permit application that requires amendment of LPS

This application for a planning scheme amendment and permit application is made pursuant to Section 40T of the *Land Use Planning and Approvals Act 1993*. The application is consistent with the relevant requirements of Section 40T as outlined in Table 3.2 below.

Table 3.2: Section 40T assessment

Provision	Response
Subsection (1) <i>A person who requests a planning authority under section 37 to amend an LPS may also, under this subsection –</i> (a) <i>make an application to the planning authority for a permit, which permit could not be issued unless the LPS were amended as requested; and</i> (b) <i>request the planning authority to consider the request to amend the LPS and the application for a permit at the same time.</i>	Complies This is a combined planning scheme amendment and permit application, whereby the proposed food services use with a take-away drive-through facility is prohibited due to the zoning of the land. It is hereby requested that Council considers this request to amend the LPS by including site specific qualifications to allow the drive-through facility and associated signage at the same time as considering the permit application to use and develop the subject site for Food Services.
Subsection (2) <i>An application for a permit under subsection (1) is to be in a form, if any, approved by the Commission.</i>	Complies This application for a permit is accompanied by a Council planning permit application form.
Subsection (3) <i>A planning authority must not refuse to accept a valid application for a permit, unless the application does not include a declaration that the applicant has –</i> (a) <i>notified the owner of the intention to make the application; or</i> (b) <i>obtained the written permission of the owner under subsection (6).</i>	Complies The written consent of the landowner/s has been obtained.

Subsection (4) <i>For the purposes of subsection (3), a valid application is an application that contains all relevant information required by the planning scheme applying to the land that is the subject of the application.</i>	Complies This application contains all relevant information required by the planning scheme applying to the subject site.
Subsection (5) <i>If –</i> <i>(c) an undertaking is in respect of a combination of uses or developments or of one or more uses and one or more developments; and</i> <i>(d) under a planning scheme any of those uses or developments requires a permit to be granted –</i> <i>a person may, in the one application under subsection (1), apply to the planning authority for a permit with respect to the undertaking.</i>	Not applicable This application is for one use and development only.
Subsection (6) <i>An application for a permit 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 and the relevant planning scheme does not provide otherwise –</i> <i>(a) be signed by each owner of the land; or</i> <i>(b) be accompanied by the written permission of each owner of the land to the making of the request.</i>	Complies This application is accompanied by the written consent of the landowner / signed consent form.
Subsection (7) <i>Subsection (6) does not apply to an application for a permit to carry out mining operations, within the meaning of the Mineral Resources Development Act 1995, if a mining lease or a production licence which authorises those operations has been issued under that Act.</i>	Not applicable This is not an application for a permit to carry out mining operations.

Section 34 – LPS criteria

Section 34(2) of the *Land Use Planning and Approvals Act 1993* contains the assessment criteria to be met by a draft amendment of the LPS. The compliance of this application with the relevant Section 34(2) criteria is set out in Table 3.3 below.

Table 3.3: LPS criteria assessment

Provision	Response
Subsection (2)(a) <i>contains all the provisions that the SPPs specify must be contained in an LPS; and</i>	Complies The proposal seeks to include additional site specific qualifications for the site within the Glenorchy LPS and does not proposed to override existing provisions in the SPPs.
Subsection (2)(b) <i>is in accordance with section 32; and</i>	Complies As above, the proposal will rely on the zone and code provisions in the SPPs. Section 32(4) of the <i>Land Use Planning and Approvals Act 1993</i> states that a Local Provision Schedule may only have a provision referred to in subsection (3) (a site specific qualification in this instance) if: a) <i>A use or development to which the provision relates is of significant social, economic or environmental benefit to the State, a region or a municipal area; or</i> b) <i>the area of land has particular environmental, economic, social or spatial qualities that require provisions, that are unique to the area of land, to apply to the land in substitution for, or in addition to, or modification of, the provisions of the SPPs.</i> We observe that a subsection (3) provision, such as an SSQ, can be included in the LPS if it meets either of the (a) or (b) requirements listed above, meaning that an application need only demonstrate consistency with one or the other. This proposal satisfies both (a) and (b) of S32(4) as follows: – The proposed use and development to which the SSQ will apply is of significant economic benefit to the Glenorchy municipal area. • The main economic contribution of the proposal is employment, and our client anticipates that if approved, this store would employ between 125-175 people

	(based on crew sizes of other existing Tasmanian stores), of which up to 55% of crew would be under 18 years old, and up to 75% under 21 years old. • This is significant because the Glenorchy LGA has a higher unemployment rate than the national average (7.2% vs 5.1% at the 2021 Census)², and the second highest youth unemployment rate in Hobart and southern Tasmania. • Noting that on average, drive-throughs account for 57% of total monthly sales across McDonald's existing Tasmanian stores, the SSQ sought in this application would translate to approximately 71 to 99 jobs being provided in the community, with a substantial proportion of those jobs being for people aged under 21 years. • In the context of the current unemployment challenge faced by the region and state, this proposal represents a significant opportunity to generate local jobs which would otherwise not be supported in a store without a drive-through facility. • We further note that McDonald's provides professional and business development opportunities to staff, including paid Certificate II and III in Retail Management, which directly addresses Prioritised Economic Opportunity 5.7 of the Glenorchy Socio-Economic Profile & Opportunity Assessment 2019 (GSPOA). The GSPOA identified that increased education aspirations for youth presents an opportunity to the region in terms of its economic development. If approved, the revenue generated by the drive-through will enable the proposed McDonald's store to offer the above mentioned further education opportunities to its crew. It is important to note that courses such as Certificate II and III in Retail Management provide opportunities for crew members beyond their employment with McDonald's, and accordingly we say this would be of net benefit to the community. – Similarly, the subject site at 8-10 Main Road has particular economic and spatial qualities
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² Australian Bureau of Statistics, Census of Population and Housing 2016 and 2021

	that in our view require the proposed SSQ provision over a modification to the SPPs: • The planning history of this site is relevant to its relationship with the local area. Acknowledging that it was previously zoned Local Business, and that it has been used as a mechanic/service centre since the 1950s, it is clear that there is a historical association with employment generating activity on the land, despite being mostly surrounding by land used and developed for residential purposes. • The site was rezoned to Inner Residential (IRZ) as part of Glenorchy's transition to the new format LPS planning scheme in 2019. This was done in accordance with the Section 8A Guidelines issued by the Tasmanian Planning Commission which specify that single lots in a Local Business Zone (LBZ) should be included in the surrounding zone in the LPS. It was acknowledged at the time of rezoning that there was no intent from Council to change the use of the site to residential, and a SSQ allowing the use of the land for Vehicle Fuel Sales and Service was incorporated into the LPS to allow the existing use to continue. This was on the basis that the owners of the land have had an expectation that the land was appropriately zoned for the existing use. • It follows, in our opinion, that the process undertaken during Glenorchy's LPS transition acknowledged that the subject site is a commercial property where there are reasonable expectations that it will continue to be used for commercial/business purposes. We submit that this is a particular economic quality of the site which is unique compared to the adjoining and surrounding properties in the IRZ. Given that the IRZ restricts the operation of Food Services on the land to an extent that the LBZ does not (i.e. that a drive-through facility is prohibited), we say that the proposal to include an SSQ that allows a drive-through is reasonable. • Moreover, the site is physically capable of accommodating the proposed convenience restaurant with drive through facility in a manner in which the potential amenity impacts on adjoining and surrounding residential uses are appropriately mitigated. This is due to the size of the allotment which
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	allows a drive-through to be situated away from the directly adjoining properties. The corner allotment arrangement also limits the number of directly adjoining sensitive interfaces and facilitates an efficient site layout for vehicular circulation, an important quality for a car based retail facility. The site's location on a main arterial road where it is not likely to be the sole generator of vehicular traffic also makes it suitable in this regard. These physical qualities (the allotment size, corner location, arterial road frontage) make the subject site uniquely suited within Claremont for food services use with a drive-through facility. There are no other individual parcels of land within the IRZ in the adjoining and surrounding area that have these same characteristics which would be suitable for a drive-through
Subsection (2)(c) <i>further the objectives set out in Schedule 1; and</i>	Complies An assessment of the proposal against the Objectives of Schedule 1 to the <i>Land Use Planning and Approvals Act 1993</i> is provided below at Section 3.3 of this report.
Subsection (2)(d) <i>is consistent with each State policy; and</i>	Complies An assessment against the 3 State Policies currently operational in Tasmania is provided below at Section 3.4 of this report.
Subsection (2)(da) <i>satisfies the relevant criteria in relation to the TPPs; and</i>	Not applicable There are no current TPPs.
Subsection (2)(e) <i>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</i>	Complies An assessment of the proposal against the Southern Tasmania Regional Land Use Strategy 2010-2035 (STRLUS) is provided below at Section 3.5 of this report.
Subsection (2)(f) <i>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</i>	Complies An assessment of the proposal against the Glenorchy Strategic Plan 2023-2032 is provided below at Section 3.6 of this report.

Subsection (2)(g) <i>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</i>	Not applicable The subject site affected by this proposal is not located adjacent to another municipal area.
Subsection (2)(h) <i>has regard to the safety requirements set out in the standards prescribed under the Gas Safety Act 2019.</i>	Not applicable The subject site is not located inside or close to a declared gas pipeline corridor.

3.3. Objectives of Schedule 1 to the Land Use Planning and Approvals Act 1993

The proposal is consistent with the relevant Objectives of Schedule 1 to the *Land Use Planning and Approvals Act 1993* as set out below:

Part 1 – Objectives of the Resource Management and Planning System of Tasmania

(a) to promote the sustainable development of natural and physical resources and the maintenance of ecological processes and genetic diversity; and

The proposal will not inhibit any identified natural or physical resources, ecological process, or genetic diversity. The proposal relates to a parcel of land within an urbanised area that is set aside for urban use and development purposes.

(b) to provide for the fair, orderly and sustainable use and development of air, land and water; and

Allowing a take away food premises with a drive through facility and associated signage at the subject site is consistent with the fair, orderly and sustainable planning of the area. The proposal is located at a site with an extensively established history of non-residential uses as reflected by its historical inclusion in the Local Business Zone. The site also exhibits special qualities which make it capable of accommodating a drive through facility without unreasonably detracting from residential amenity.

In the absence of any strategic policy or declared intention from Council for the site to be used for residential purposes, it is fair and reasonable to consider alternative non-residential uses which would otherwise be prohibited. In particular, we note that when the property was rezoned to the IRZ as part of Glenorchy's LPS transition there was no material exhibited to the public which declared a specific intention for the land to be used and developed for residential purposes in the future.

(c) to encourage public involvement in resource management and planning; and

This application is subject to the legislated public exhibition requirements of the *Land Use Planning and Approvals Act 1993* at Division 3 (Amendment of LPSs), Subdivision 2 (Public exhibition) and Section 40Z.

(d) to facilitate economic development in accordance with the objectives set out in paragraphs (a), (b) and (c); and

This proposal will clearly facilitate economic development on the land, noting again that a drive-through facility can be expected to generate around 57% of the store's revenue, facilitating a larger crew size and therefore resulting in more local job creation.

Part 1 (d) of the Schedule 1 objectives of the LUPAA seeks to facilitate economic development in accordance with the objectives set out in paragraphs (a), (b) and (c). Those objectives promote the sustainable development of natural and physical resources, the maintenance of ecological processes and genetic diversity, fair and orderly planning (as discussed above) and public involvement in natural resource management in planning.

Noting that the site has no identified ecological significance, and that this application is being made pursuant to Division 4 of Part 3B of the LUPAA which involves a public exhibition and review process, we say that the proposal is consistent with Part 1 (d). We also note that we served written notice of our intention to lodge this application to adjoining and nearby property owners prior to submission.

(e) to promote the sharing of responsibility for resource management and planning between the different spheres of Government, the community and industry in the State.

This proposal is made in accordance with the framework set out by the *Land Use Planning and Approvals Act 1993*, which provides clear direction and guidance as to the roles of government, the community and the private sector in resource management and planning.

Part 2 – Objectives of the Planning Process Established by this Act

(a) to require sound strategic planning and co-ordinated action by State and local government; and

The amendment advances sound strategic planning by facilitating employment generating activity on a site in the Inner Residential Zone which has historically been used for commercial purposes, is located on a main road and public transport corridor, is physically capable of accommodating mitigation techniques to protect the amenity of adjoining and surrounding nearby uses, and is situated at the periphery of the Claremont CBD.

(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; and

This proposal seeks to amend the Glenorchy Local Provisions Schedule to include additional SSQs that would apply only to the subject site.

(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; and

As outlined in the responses to Part 1 (a) and (b) above, the proposal will not cause unreasonable detriment to the environment through the loss of native vegetation, will facilitate fairer development outcomes with regards to residential amenity and will advance the economic development of currently underutilised commercial land which is in a residential zone.

(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; and

The proposal is not contrary to this objective, noting again that it relates only to the rezoning of land at No. 8-10 Main Road, Claremont and does not seek to alter any other aspect of the Glenorchy Local Provisions Schedule.

(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; and

The proposal achieves this objective by virtue of the established process for combined scheme amendment and permit applications set out by Section 40T of the *Land Use Planning and Approvals Act 1993*.

(f) to promote the health and wellbeing of all Tasmanians and visitors to Tasmania by ensuring a pleasant, efficient and safe environment for working, living and recreation; and

As mentioned throughout sections 2 and 3 of this report, the proposal will facilitate a convenience restaurant with a take away drive-through facility at the site in a way that minimises its impact on the adjoining and surrounding sensitive residential uses.

Further, as demonstrated in the supporting material to the planning application (application and landscape plans, traffic impact assessment, environmental noise assessment and contamination report), the development facilitated by this proposal will make efficient use of the site and result in an appropriate interface to adjoining and surrounding residential uses.

(g) to conserve those buildings, areas or other places which are of scientific, aesthetic, architectural or historical interest, or otherwise of special cultural value; and

The existing buildings and structures at the subject site are not identified as being of scientific, aesthetic, architectural or historical interest, or otherwise of special cultural value. Further, the site does not contain SSQs are therefore of no concern in this regard.

(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; and

This proposal will not compromise the orderly provision and coordination of public utilities and other communities. In particular, the traffic impact assessment prepared to support the planning application demonstrates that the proposal results in acceptable traffic outcomes.

(i) to provide a planning framework which fully considers land capability.

This proposal is consistent with the planning framework set out by the *Land Use Planning and Approvals Act 1993*. The approval of the proposed amendment would not diminish or detract from the capability of the land. The site would remain in the Inner Residential Zone and it would be capable of being developed for residential purposes in the future.

3.4. State Policies

There are currently three State Policies made by the Governor of Tasmania under the *State Policies and Projects Act 1993*.

Tasmanian State Coastal Policy 1996

The site affected by this proposal is located within 1km of the coastline and is therefore within the 'coastal zone' for the purposes of this policy.

It is submitted that the proposal is consistent with the *Tasmanian State Coastal Policy 1996* as follows:

SECTION 1.1: NATURAL RESOURCES AND ECOSYSTEMS

The proposed SSQs will facilitate a specific kind of use and development on the site, being a food services use with a drive-through facility. The development of the site for this purpose will not impact upon the ecological, geomorphological and geological coastal features and aquatic environments of conservation value. This is because the site to which the SSQs will apply is already developed and cleared.

SECTION 1.2: CULTURAL AND HISTORIC RECOURSES

There are no known Aboriginal sites or relics located at the subject land, and it is noted that the site has already been developed and is located within an established urban environment.

SECTION 1.3: CULTURAL HERITAGE

As above.

SECTION 1.4: COASTAL HAZARDS

Whilst the site is within the coastal zone, it is far enough from the coastline that it is not subject to risk from natural coastal processes and hazards.

Further, it is noted that the site is surrounded by land also in the coastal zone which used and developed for urban purposes. Accordingly, given that the proposed SSQs are to facilitate a specific kind of development already typical in the urban environment, their approval poses no concerns under this policy.

SECTION 2.1: COASTAL USES AND DEVELOPMENT

The use and development of the land allowed by the proposed SSQs will be undertaken in a sustainable manner, as follows:

As noted above, the site is within an established urban area where land has been developed.

No mining, timber harvesting or other extracting of resources is proposed.

No agriculture is proposed.

Stormwater discharged from the proposed development will enter the existing public stormwater system. The development has also been designed in accordance with Glenorchy Council's Stormwater Management Policy. A Report prepared by JMG has been submitted as part of the material.

SECTION 2.2: MARINE FARMING

Not applicable.

SECTION 2.3: TOURISM

Not applicable.

SECTION 2.4: URBAN AND RESIDENTIAL DEVELOPMENT

As noted, the subject is already within an existing urban settlement, so the approval of the proposed SSQs will not result in the expansion of the urban area.

State Policy on Water Quality Management 1997

This policy seeks to implement water quality management principles to maintain and enhance water quality by mitigating pollution discharged to waterways, monitoring polluters and promoting integrated catchment management.

The site is partially affected by the Flood Prone Areas Hazard Code, as shown in Figure 2.3, It is noted that there is not an existing flooding issue associated with the overlay and that it is not an identified overland flow path. The FFLs proposed are above the nominated flood depth and accordingly there is no need for a flood hazard report in this instance.

It is therefore submitted that the development of the land to be facilitated by the proposed amendment can be appropriately managed through the existing regulatory approvals framework to ensure that stormwater discharged from hard surfaces at the site without causing degradation of water quality or erosion.

State Policy on Protection of Agricultural Land 2009

The proposal is not affected by this policy.

3.5. Southern Tasmania Regional Land Use Strategy 2010-2035

The subject site sits within the Glenorchy City Council municipal boundaries which is subject to the Southern Tasmania Regional Land Use Strategy 2010-2030 (STRLUS).

The vision of the STRLUS is:

a vibrant, growing, liveable and attractive region, providing a sustainable lifestyle and development opportunities that build upon our unique natural and heritage assets and our advantages as Australia's southern most region.

The achievement of the vision is guided by the following 10 strategic directions:

1. *Adopting a more Integrated Approach to Planning and Infrastructure*
2. *Holistically managing residential growth*
3. *Creating a network of vibrant and attractive activity centres*
4. *Improving our economic infrastructure*
5. *Supporting our productive resources*
6. *Increasing responsiveness to our natural environment*
7. *Improving management of our water resources*
8. *Supporting strong and healthy communities*
9. *Making the region nationally and internationally competitive*
10. *Creating liveable communities*

Building on the vision and strategic directions are the Regional Policies, which each set out a number of objectives, policies and strategies for land use and planning outcomes. Regional Policies are split into the following themes:

- Biodiversity and Geodiversity
- Water Resources
- The Coast
- Managing Risks and Hazards
- Cultural Values
- Recreation & Open Space

- Social Infrastructure
- Physical Infrastructure
- Land Use and Transport Integration
- Tourism
- Strategic Economic Opportunities
- Productive Resources
- Industrial Activity
- Activity Centres
- Settlement and Residential Development

Noting that this particular application seeks the inclusion of additional SSQs allowing a drive-through facility and associated signage with a food services use, many of the Policy themes in the STRLUS are not relevant in this matter. We have provided responses to relevant Policy themes below.

WATER RESOURCES

As discussed in Section 3.4, the proposal is consistent with the State Policy on Water Management.

THE COAST

There will be no clearing of coastal native vegetation as a result of this proposal.

Whilst the land is within the 'coastal zone' for the purposes of the *Tasmanian State Coastal Policy 1996*, it is not undeveloped.

MANAGING RISK AND HAZARDS

Given that the proposal is an established urban area on a developed site, there will be no increased risk of bushfire.

The residual risk associated with the small portion of the site that is designated a flood prone area will be suitably mitigated through the development application process whereby flooding impacts will be assessed.

LAND USE AND TRANSPORT INTEGRATION

Whilst the development facilitated by this proposal would not be considered a 'major trip generating activity', its location at the subject site which is on a main road that is a designated public transport corridor and is on the periphery of an activity centre make it consistent with this Regional Policy.

ACTIVITY CENTRES

Again, it is noted that the subject site is located on the periphery of the Claremont CBD which is nominated as a 'Minor or Neighbourhood Centre' under this policy.

The role of these centres is to serve the daily needs of the community and provide a focus for day-to-day life within a community. Accordingly, it is expected to be developed with a mix of small-scale retail and office uses as well as localised community uses. The proposal to allow a food services use with a take-away drive through facility is consistent with the role that the Claremont CBD plays in the region.

Noting the site's extensive history of non-residential use and development, it is considered that the proposal will not result in 'out-of-centre' development which would compromise the functionality of the Claremont CBD.

3.6. Glenorchy Strategic Plan 2023-2032

The overarching vision of Glenorchy City Council's Strategic Plan 206-2025 is:

We are a proud city; a city of arts; of opportunity; of partnerships; a city that makes exciting things happen.

The vision is to be achieved through the delivery of the following four goals and corresponding objectives:

Making Lives Better

- *Know our communities and what they value.*
- *Support our communities to pursue and achieve their goals.*
- *Facilitate and/or deliver services to our communities.*

Open for Business

- *Stimulate a prosperous economy.*
- *Identify and support priority growth sectors.*

Valuing our Environment

- *Create a liveable and desirable City.*
- *Manage our natural environments now and for the future.*

Leading our Community

- *Govern in the best interests of our communities.*
- *Prioritise resources to achieve our communities' goals.*
- *Build strong relationships to deliver our communities' goals.*

It is submitted that the proposed planning scheme amendment to include additional SSQs applicable to the subject land to facilitate the development of a convenience restaurant with a take-away drive-through facility is not at odds with the vision and goals of Council's strategic plan.

In particular, the approval of the proposed Amendment will directly contribute to the 'Open for Business' Goal by facilitating economic activity on the land. It is noted that performance under these objectives and strategies will be measured by gross regional product and local employment figures.

3.7. Other Strategic documents

We have also reviewed the following policy documents relating to economic development opportunities and challenges in the Glenorchy LGA to assist in identifying the potential economic benefits of the proposed Amendment. Our review of this material has identified that the proposal has a significant role to play in contributing to the development of the area.

Glenorchy Economic Development Strategy 2020-2025

The goal of this policy document is:

We will create a strong economy and jobs for the future. We will encourage business diversity, innovation and new technologies to stimulate jobs, creativity and collaboration. We will be a place where business can establish, continue and flourish.

We think it is clearly apparent that the proposed use and development facilitated by this Amendment will directly contribute to the achievement of this goal, and we note that the strategy has been prepared with the intent of facilitating the establishment of new businesses, and consequently local job creation, where possible.

We submit that this application therefore provides an opportunity for Council to fulfill the purpose of the *Glenorchy Economic Development Strategy 2020-2025*, noting that the potential off-site amenity impacts associated with the drive-through and signage components of the application will be appropriately mitigated.

We further note that the convenience restaurant that will be enabled through the proposed Amendment will also contribute to the achievement of the following 'Learning' goal of the strategy:

Facilitate hospitality education and training in Glenorchy. Support growing demand in tourism, accommodation and hospitality by providing vocational education and training for these sectors in Glenorchy.

It will do so via the professional and business development opportunities offered to staff of the restaurant, including paid Certificate II and III in Retail Management.

Greater Glenorchy Plan February 2021

The *Greater Glenorchy Plan February 2021* is a strategic document prepared by Council with the purpose of contributing to a coordinated strategic planning effort across four of the metropolitan councils across Greater Hobart.

In particular, the plan addresses the strategic objectives, urban design principles and high level precinct planning of the three activity centres within the municipality.

Given the proximity of the site to the Claremont CBD, we consider that there are aspects of this Plan that have relevance to this matter. In particular, we note that the Plan makes the observation that job growth within the Glenorchy LGA is not clustering in central locations, suggesting that the activity centres in the LGA are still evolving and are not yet sufficiently mature to be considered distinct areas. This is certainly the case for Claremont in our view, and this means that the proposal will not create a distortion of the activity centre hierarchy.

Glenorchy Socio-Economic Profile & Opportunity Assessment 2019

This document was prepared in order to provide Council with economic data and analysis to establish a consistent set of baseline data which can then inform strategic decision making at a local and regional level.

Some key observations of the profile which in our view have relevance to this matter include:

- Glenorchy is the third most populous municipality in Hobart and also the second youngest, meaning that there is a higher proportion of younger people compared to other municipal areas.
- Glenorchy households generally record below average household incomes and high school completion rates, however, the population is relatively skilled with a large proportion of the population having a certificate qualification suggesting many are trade qualified. This is potentially related to the prominence of construction and manufacturing employment in Glenorchy.

- Identifies an opportunity to work with partners to highlight education pathways for youth to increase education aspirations and outcomes, as follows:
 - *Educational attainment levels are low in Greater Hobart, on a national comparison and indicators show this factor is intergenerational and typically results in low familial expectations and, potentially, lower levels of youth educational aspirations. Whilst delivery of education is a state function, local Councils can play a role in advocating for the development of education pathways for students, in line with local industry requirements where skills shortages may be identified. Linking business, industry, local schools, tertiary and vocational education is an important activity that all levels of government can participate in.*
- The above opportunity is enshrined within 'Prioritised Economic Opportunities – 5.7 Work with partners to highlight education pathways for youth to increase education aspirations and outcomes'.

4. Proposed Use and Development

4.1. Overview

It is proposed to demolish all existing buildings, structures and paving on site and construct a convenience restaurant (Food Services) operated by McDonald's, with associated vehicle accessways, car parking, landscaping and business identification signage.

Key features and details of the proposal are summarised below.

Figure 3.1: Perspective image of the proposal



4.2. Buildings and works, car parking and vehicle access

- Construction of a single storey convenience restaurant building with a gross floor area of 453sqm:
 - Minimum setback to Main Road of 10.24 metres.
 - Minimum setback to Lady Clark Avenue of 6.76 metres.
 - Minimum setback to the south-eastern boundary of 16.24 metres.
 - Minimum setback to the south-western boundary of 29.365 metres.
 - Maximum height of 7.2 metres occurring at the south-eastern corner of the building ('playland').
 - Pedestrian entrance located on the south-eastern side of the building, covered by a canopy which also wraps around the building's north-east and north-west interfaces.
- Materials and finishes include:
 - Timber-look cladding applied to parapets and 'playland' walls.
 - Charcoal grey applied finish to external walls.

- Red applied finish to external walls (drive-through windows) and sides of the playland.
- White applied finish to fascias/canopies.
- Vehicular access to be obtained via one crossover to Main Road (southern end) and one crossover to Lady Clark Avenue (western end).
 - Access via the Lady Clark Avenue crossover will be restricted to between 7am and 8pm (no access at other times). Access is to be physically restricted via a boomgate.
- 22 on-site car spaces provided in two areas – 8 spaces adjacent to the building on its south-east and 14 spaces adjacent to the rear (south-west) boundary.
- 4 bicycle spaces.
- A drive-through with two lanes for ordering wraps around the south-western, north-west and north-eastern sides of the building. Each bay is provided with a canopy at the point of order.
- Construction of a 1.5 metre wide footpath connecting the Lady Clark Avenue car parking spaces to the Main Road footpath.
 - As these works are within Council's land (PID 076623), further consent from Council's General Manager is sought in accordance with the *Land Use Planning and Approvals Act 1993*.
- Construction of a low height, transparent fence on the northern title boundary, adjacent to the drive-through.
- A dedicated loading bay is provided adjacent to the south-west of the building and is to be screened with a 2.5 metre acoustic screen on its north-western end.
- Landscaping provided within the front and rear setbacks, along the side boundaries and surrounding the building generally.
- Acoustic fencing above a retaining wall is to be provided to the entire length of the south-east and south-west boundaries (residential interfaces). The height of the fencing ranges between 2 and 2.7 metres due to the slope of the land.
- A 2 metre high acoustic fence is also provided for a length of 18.25 metres along the north-western boundary (Lady Clark Avenue), opposite the drive-through ordering bays.
- Rooftop plant and mechanical services will include air conditioner units, exhaust fans, FSB condenser unit and refrigerator unit.

Refer to the submitted architectural plans prepared by Timmins & Whyte and the Landscape plan prepared by Taylors.

4.3. Operational details

Proposed hours operation:

- 6:00 am to 11:00 pm, Sunday to Thursday.
- 6:00 am to midnight, Friday and Saturday

Maximum 75 patrons in the building on site at any one time.

4.4. Signs

The proposed McDonald's restaurant includes an array of business identification signs, as summarised in Table 4.1 below.

Table 4.1: Description of proposed signs

Reference	Type of sign ³	Description
B1	Blade sign	Illuminated blade sign (only the 'M' logo) with a display area of approximately 3.5sqm, located in the front setback to Main Road, to the north-west of the proposed accessway and footpath. The sign and structure combined have an overall height of 3.6 metres and overall width of 1.2 metres.
S2A & S2B	Wall signs	1.66sqm illuminated wall signs ('PlayPlace'), located on the north-eastern and south-eastern 'playland' walls.
S3 (A-E)	Wall signs	A total of five 1.63sqm illuminated wall signs ('M' logo), located on the north-east, south-east (x2), south-west and north-west elevations.
S4	Awning fascia sign	0.4sqm illuminated awning fascia sign ('McDonald's'), located on the canopy above the pedestrian entrance.
S5A	Wall sign	1.13sqm illuminated wall sign ('McCafe') located on the north-eastern elevation.
S5B	Wall sign	1.22sqm illuminated wall sign ('McCafe') located on the south-eastern elevation.
S6	Horizontal projecting wall sign	0.16sqm horizontal projecting wall sign ('McDelivery Collection Area') located on the north-eastern elevation. It has a horizontal dimension of 500mm and is contained within the title boundaries of the site.
S7A & S7B	Blade signs	Illuminated blade signs (digital menu boards) with display area of approximately 0.69sqm and overall height of 1.855 metres, located at the entrance to each drive through bay.

³ In accordance with C1.3.1 and Table 1.3 under the Signs Code.

S7C & S7D	Blade signs	Illuminated blade signs (digital menu boards) with display area of approximately 1.305sqm and overall height of 1.855 metres, located at the point of service/order of each drive through bay.
S8A	Blade sign	1.61sqm double-sided blade sign (directional - 'welcome') located south-east of the accessway to Main Road.
S8B	Blade sign	1.61sqm single-sided blade sign (directional - 'drive thru' & 'any lane, any time') located at the drive-through entrance.
S8C, 8D & 8H	Blade signs	1.61sqm double-sided blade sign (directional - 'thankyou' & 'no entry') located at the drive-through exit (both sides) and to the south-west of the accessway to Lady Clark Avenue.
S8E	Blade sign	1.61sqm double-sided blade sign (directional - 'drive thru') located adjacent to the south-eastern boundary, opposite the drive-through entrance.
S8G	Blade sign	1.61sqm single-sided blade sign (directional - 'welcome') located north-west of the accessway to Lady Clark Avenue.
S9A & S9B	Pole/gantry sign	3.5 metre high pole / gantry sign (drive-through height clearance) located at the drive through entrance.
S10A & S10B	Pole/gantry sign	Pole / gantry sign ('Order here') attached to the drive-through canopies.
S11A-N	Directional signage	Directional signage described in Sheet A807.
S12	Flags	2 x 8.5 metre flags (Australia and 'McDonald's'), connected by a 3.24sqm horizontal banner sign, located in the front setback to Main Road.
S13A-C	Window sign	1 x 0.28sqm and 2 x 0.21sqm wall signs (drive through payment and collection points) located along the north-western elevation.

Refer to Sheets A802, A803, A806, A807, A808 & P805 of the architectural plans.

5. Planning Controls

The State Planning Provisions and Local Provisions Schedule policies which apply to this application are outlined in Table 5.1 below.

Table 5.1: Applicable Planning Policies

Statutory Planning Controls – Glenorchy Planning Scheme	
State Planning Provisions	
Clause 6.2 - Categorising Use or Development	Pursuant to Table 6.2 (Use Classes) of Clause 6.2, the proposed use is defined as follows: <i>Food Services: Use of land for selling food or drink, which may be prepared on the premises, for consumption on or off the premises. Examples include a cafe, restaurant and take away food premises.</i>
Clause 9.0 - Inner Residential Zone	The purpose of the Inner Residential Zone is: <i>9.1.1 To provide for a variety of residential use or development that accommodates a range of dwelling types at higher densities.</i> <i>9.1.2 To provide for the efficient utilisation of available social, transport and other service infrastructure.</i> <i>9.1.3 To provide for non-residential use that:</i> <i>primarily serves the local community; and</i> <i>does not cause an unreasonable loss of amenity, through scale, intensity, noise, activity outside of business hours, traffic generation and movement, or other off-site impacts.</i> <i>9.1.4 To provide for Visitor Accommodation that is compatible with residential character.</i> Pursuant to 9.2 (Use Table), a planning permit is required for “Food Services” which is a discretionary use within the zone subject to meeting the relevant qualification. Subject to the proposed amendment, the subject site would have a relevant site specific qualification under the Glenorchy Local Planning Schedule allowing take away food premises with a drive through facility. Clause 9.3.1 sets out the applicable Use Standards and Clause 9.5.1 the applicable Development Standards for non-dwelling development in the Inner Residential Zone.

Codes	The following Codes are applicable to the proposal: • 1.0 Signs Code • 2.0 Parking and Sustainable Transport Code • 3.0 Road and Railway Assets Code • 12.0 Flood Prone Areas Hazard Code • 14.0 Potentially Contaminated Land Code
Glenorchy Local Provisions Schedule	
There is currently a site specific qualification for the subject site at GLE-9.1 allowing additional discretionary uses (Service Industry and Vehicle Fuel Sales & Service). The proposed amendment would also introduce site specific qualification to allow take away food premises and drive through components at the subject site.	

6. Planning Scheme Assessment

6.1. Inner Residential Zone

The proposal to use and develop the site for Food Services (convenience restaurant with a drive-through facility) is generally consistent with the relevant purposes of the Inner Residential Zone. Importantly, the proposal demonstrates a high level of compliance with the applicable acceptable solutions within Clause 9.3 as detailed below. Where compliance with an applicable acceptable solution is not achieved, the development satisfies the relevant performance criteria.

Clause 9.1 – Zone purpose

The proposed use of the land for Food Services is consistent with the purpose of the Inner Residential Zone as a non-residential use which will serve the local community by providing local employment opportunities. The use will also efficiently utilise the site's locational attributes, noting that it benefits from good access to public transport and is on the fringe of the Claremont CBD. We note that Food Service uses are generally compatible with residential locations, particularly on corner sites which provide opportunities to situate vehicular accessways away from sensitive interfaces. In this instance, the proposed drive-through facility is primarily located adjacent to the north-western boundary of the site, which is the interface to Lady Clarke Avenue, and where it is furthest away from the adjoining dwellings to the south-west and south-east.

Further, the proposed use will not cause an unreasonable loss of amenity on the adjoining and surrounding residential properties (this is discussed in more detail within Tables 5.1 and 5.2 below).

Clause 9.3 – Use standards

As flagged in Section 4 of this report, Food Services is a discretionary use in the Inner Residential Zone. An assessment of the proposal against the relevant use standards of Clause 9.3.1 is provided in Table 6.1 below.

Table 6.1: Clause 9.3 Use standards assessment

9.3.1 – Discretionary uses	
Objective: <i>That Discretionary uses do not cause an unreasonable loss of amenity to adjacent sensitive uses.</i>	
Acceptable Solution A1 <i>Hours of operation of a use listed as Discretionary, excluding Emergency Services, must be within the hours of:</i>	Performance Criteria P1 <i>Hours of operation of a use listed as Discretionary, excluding Emergency Services, must not cause an unreasonable</i>

(a) 7.00am to 7.00pm Monday to Friday; and (b) 8.00am to 6.00pm Saturday and Sunday.	loss of amenity to adjacent sensitive uses, having regard to: (a) the timing, duration or extent of vehicle movements; and (b) noise, lighting or other emissions.
Assessment – Complies with P1 The proposal must demonstrate that it does not cause an unreasonable loss of amenity to adjacent sensitive uses. The ability of the site to accommodate the proposed hours of operation is partially determined by the site attributes, the location of sensitive uses, the proposed layout and design, the nature and magnitude of the noise and light emissions and the mitigation measures proposed. This written response should be read in conjunction with the Acoustic Assessment Report prepared by Clarity Acoustic dated 21 September 2023, the Lighting Report prepared by Rubidium Lighting, dated 10.11.2023 and the Traffic Report prepared by Ratio Consultants dated 13 October 2023. SITE ATTRIBUTES – Whilst the site is within a residential zone, it is a corner site with only two adjacent sensitive interfaces namely the properties to the southeast and southwest. – Nearby sensitive uses also include properties to the north and east, however, these are separated from the site by Main Road and Lady Clark Avenue. – Adjoining properties to south-east and south-west are generally separated from the subject site by a common driveway with setbacks between 2.1 and 18 metres. – The existing levels of residential amenity differ from standard residential zones given that the site has been historically used as a commercial site, specifically service industry uses. PROPOSED LAYOUT – The main building is setback as far as practicable from the south-west and south-east interfaces whilst allowing sufficient setbacks to the street to accommodate parking and landscaping areas. – Likewise, the drive through lane is located to the north-west of the site and the customer order display points and loading bay are centrally located to minimise impacts to nearby sensitive uses. – The south-west boundary of the site accommodates car parking spaces and the south-east boundary accommodates a two-lane access driveway to the site. EMISSIONS – The emissions likely to be generated by the proposed use are mainly external lighting and noise generated by the operation of the mechanical service plant, goods delivered, customer order display, vehicles and patrons. – In the absence of noise measures guidelines within the relevant performance criteria, the authors of the acoustic report have adopted criteria with the assistance of EPA Tasmania which is generally consistent with the New South Wales EPA's Noise Policy for Industry and Victoria's EPA publication 1826.4. – As described in the acoustic report, the adopted criteria is consistent with and in some occasions more stringent than the criteria applied in other jurisdictions.	

- The acoustic report predicts noise emissions from the proposal and compares them with the adopted criteria at each of the six receivers identified. In all instances, the proposal meets the adopted criteria subject to a number of mitigation measures.
- Based on a number of odour surveys undertaken by ES & D consulting, and as outlined in their Odour Assessment, the risk of loss of amenity within the neighbouring residences as a result of odour is low.
- The lighting report demonstrates that the proposed complies with the relevant Australian Standards. The siting of the building and layout of the development means that the proposed lighting will not result in any unreasonable amenity impacts on the adjoining properties.

MITIGATION MEASURES

A number of physical and operational mitigation measures are proposed including:

- A perimeter acoustic fence to the south-western and south-eastern site boundaries and to part of the north-western side boundary with heights between 2 and 2.7 metres.
- An acoustic screen to the west and north-west of the loading bay.
- Waste collection hours restricted to the day i.e., 7 am to 6 pm.
- Sound power restriction limitations to the mechanical plant.
- Delivery trucks to switch off refrigeration condensers.
- In accordance with the recommendations of the acoustic report, the rooftop air conditioner units will operate at low speed at night (between 10pm and 7am) whilst the refrigerator unit will be provided with a 1.75m acoustic screen along the south-west and south-east interfaces. We note that the acoustic screen will be obscured by the parapet of the building and accordingly will not be visible.
- The proposed hours of operation are considered to meet P1 having regard to the context of the site, the site attributes, including its historical uses, the location of sensitive uses, the operational and physical mitigation measures and the supporting technical assessment contained in the acoustic, lighting and odour reports.
- The restriction of vehicle access to and from the site via the Lady Clark Avenue crossing to between the hours of 7am and 8pm will ensure that there will be no vehicular traffic associated with the proposed restaurant along Lady Clark Avenue during nighttime and early morning trading hours. This will ensure that the amenity of residential properties along Lady Clark Avenue is protected from noise and lighting emissions associated with vehicular traffic during sensitive nighttime and early morning time periods.

Acceptable Solution	Performance Criteria
A2 <i>External lighting for a use listed as Discretionary:</i> (a) <i>must not operate within the hours of 8.00pm to 6.00am, excluding any security lighting; and</i> (b) <i>security lighting must be baffled so that direct light does not extend into the adjoining property.</i>	P2 <i>External lighting for a use listed as Discretionary, must not cause an unreasonable loss of amenity to adjacent sensitive uses, having regard to:</i> (a) <i>the number of proposed light sources and their intensity;</i> (b) <i>the location of the proposed light sources;</i> (c) <i>the topography of the site; and</i> (d) <i>any existing light sources.</i>

Assessment – Complies with P2 We defer the assessment of external lighting impacts to the lighting assessment prepared by Rubidium Light, dated 10.11.2023 which demonstrates that the proposal will not cause any light spill above the relevant Australian Standard (AS4282-2019) requirements for surrounding residential dwellings. The assessment of this report has included design recommendations which been adopted in order to achieve compliance with this standard.	
Acceptable Solution A3 <i>Commercial vehicle movements and the unloading and loading of commercial vehicles for a use listed as Discretionary, excluding Emergency Services, must be within the hours of:</i> (a) 7:00am to 8:00pm Monday to Friday; (b) 9:00am to 12 noon Saturday; and (c) nil on Sunday and public holidays.	Performance Criteria P3 <i>Commercial vehicle movements and the unloading and loading of commercial vehicles for a use listed as Discretionary, excluding Emergency Services, must not cause an unreasonable loss of amenity to adjacent sensitive uses, having regard to:</i> (a) the extent and timing of traffic generation; (b) the dispatch of goods and materials; and (c) existing levels of amenity.
Assessment – Complies with A3 Commercial vehicles including waste collection and deliveries to the site will be limited to 7 am to 8 pm on weekdays and 9 am to noon on Saturday.	
Acceptable Solution A4 No Acceptable Solution.	Performance Criteria P4 <i>A use listed as Discretionary must not cause an unreasonable loss of amenity to adjacent sensitive uses, having regard to:</i> (a) the intensity and scale of the use; (b) the emissions generated by the use; (c) the type and intensity of traffic generated by the use; (d) the impact on the character of the area; and (e) the need for the use in that location.
Assessment – Complies with P4 The proposal does not cause unreasonable loss of amenity to adjoining sensitive uses having regard to items (a) to (e) as follows: (a) the intensity and scale of the use Food Service uses are generally more compatible with residential uses and are likely to be less detrimental to the amenity of the locality than Service Industry such as service stations and vehicle repair centres. Whilst the scale of the proposed use is generally modest with a maximum of 75 patrons in the building at any one time and having regard to the total area of the site and the locational attributes of the area, the intensity of the use is generally high given the proposed hours of operation.	

(b) the emissions generated by the use

The emissions likely to be generated by the proposed use are mainly external lighting and noise generated by the operation of the mechanical service plant, goods delivered, customer order display, vehicles and patrons. The above are considered and deemed acceptable subject to mitigation measures contained in the acoustic report as previously described.

Based on the assessment and surveys undertaken by ES & D consultants, Odour is also addresses through siting of the building and the nature of the missions. There risk of loss of amenity within the neighbourhood is low.

Lighting proposed complies with the relevant Australian Standards.

(c) the type and intensity of traffic generated by the use

The traffic demand generated by the proposal can be accommodated in the existing road network without significant impacts to its efficiency and safety.

Likewise, the noise impacts generated by vehicle movements including commercial vehicles have been addressed in the acoustic report and deemed acceptable.

(d) the impact on the character of the area

Contextually, the site is located at the fringe of the Claremont CBD precinct, one the main activity centres in the municipality, specifically the immediate area is identified as an entry gateway to the activity centre. Further, the subject site adjoins a local road which has been identified as a core public transport route in Greater Hobart. Lastly, the subject site has been historically used for service industry purposes, the built form of the existing development of the site reflects this. It is therefore considered that having regard to the design, layout and landscaping provision proposed, the redevelopment of the site for the purposes of a convenience restaurant is consistent with the existing and preferred character of the area.

(e) the need for the use in that location

The proposed use will form part of the array of services supporting the Claremont CBD precinct and will be a strong attractor for visitors in the area. The proposal does not interrupt the desired pedestrian connections identified in the Greater Glenorchy Plan. Further, the proposed landscaping scheme within the front boundaries of the site will be in line with the envisioned landscape improvements to Main Road identified in this strategic plan.

Clause 9.5 – Development standards for non-dwellings

An assessment of the proposal against the relevant development standards of Clause 9.5 is provided in Table 6.2 below.

Table 6.2: Clause 9.3 Development standards for non-dwellings assessment

9.5.1 – Non-dwelling development
Objective: <i>That all non-dwelling development:</i> a) <i>is compatible with the character, siting, apparent form, scale, bulk, massing and proportion of residential development; and</i> b) <i>does not cause an unreasonable loss of amenity on adjoining residential properties.</i>

Acceptable Solution	Performance Criteria
A1 <i>A building that is not a dwelling, excluding for General Retail and Hire, Food Services, garages, carports and protrusions that extend not more than 0.9m into the frontage setback, must have a setback from a frontage that is:</i> <i>(a) if the frontage is a primary frontage, not less than 3m, or if the setback from the primary frontage is less than 3.0m, not less than the setback, from the primary frontage, of any existing dwelling on the site;</i> <i>(b) if the frontage is not a primary frontage, not less than 2m, or if the setback from the primary frontage is less than 2.0m, not less than the setback, from the primary frontage, of any existing dwelling on the site; or</i> <i>(c) if for a vacant site and there are existing dwellings on adjoining properties on the same street, not more than the greater, or less than the lesser, setback for the equivalent frontage of the dwellings on the adjoining properties on the same street.</i>	P1 <i>A building that is not a dwelling, excluding for General Retail and Hire, or Food Services, must have a setback from a frontage that is compatible with the streetscape, having regard to any topographical constraints.</i>
Assessment – Not applicable The proposed building is to be used for Food Services.	
Acceptable Solution	Performance Criteria
A2 <i>A building that is not a dwelling, excluding outbuildings with a building height of not more than 2.4m and protrusions that extend not more than 0.9m horizontally beyond the building envelope, must:</i> <i>(a) be contained within a building envelope (refer to Figures 9.1, 9.2 and 9.3) determined by:</i> <i>i. a distance equal to the frontage setback of 3m, or, for an internal lot, a distance of 4.5m from the rear boundary of a property with an adjoining frontage; and</i> <i>ii. projecting a line at an angle of 45 degrees from the horizontal at a height of 3m above existing ground level at the side or rear boundaries to</i>	P2 <i>The siting and scale of a building must:</i> <i>(a) not cause an unreasonable loss of amenity having regard to:</i> <i>i. reduction in sunlight to a habitable room (other than a bedroom) of a dwelling on an adjoining property;</i> <i>ii. overshadowing the private open space of a dwelling on an adjoining property;</i> <i>iii. overshadowing of an adjoining vacant property; and</i> <i>iv. visual impacts caused by the apparent scale, bulk or proportions of the building when viewed from an adjoining property; and</i>

<i>a building height of not more than 9.5m above existing ground level; and</i> <i>(b) only have a setback within 1.5m of a side or rear boundary if the building:</i> <i>i. does not extend beyond an existing building built on or within 0.2m of the boundary of the adjoining property; or</i> <i>ii. does not exceed a total length of 9m or one third of the length of the side or rear boundary (whichever is lesser).</i>	<i>(b) provide separation between buildings on adjoining properties that is consistent with that existing on established properties in the area.</i>
Assessment – Complies with A2 The proposed building sits comfortably within the parameters of the building envelope of Figures 9.1 and 9.2 of this code, as demonstrated on Sheet A203 of the submitted architectural plans.	
Acceptable Solution A3 <i>A building that is not a dwelling, must have:</i> <i>(a) a site coverage of not more than 65% (excluding eaves up to 0.6m); and</i> <i>(b) a site area of which not less than 15% is free from impervious surfaces.</i>	Performance Criteria P3 <i>A building that is not a dwelling must have:</i> <i>(a) site coverage consistent with that on established properties in the area; and</i> <i>(b) a reasonable space for the planting of gardens and landscaping.</i>
Assessment – Complies with A3 The proposed development has a building site coverage of 16% (453sqm), and a total of 18% (519sqm) of the site is to be permeable.	
Acceptable Solution A4 No Acceptable Solution.	Performance Criteria P4 <i>A fence (including a freestanding wall) for a building that is not a dwelling within 4.5m of a frontage must:</i> <i>(a) provide for security and privacy, while allowing for passive surveillance of the road; and</i> <i>(b) be compatible with the height and transparency of fences in the street, having regard to:</i> <i>i. the topography of the site; and</i> <i>ii. traffic volumes on the adjoining road.</i>
Assessment – Complies with P4 Fences are proposed along the side and rear boundaries. No front fencing is proposed. However, a section of the south-eastern fence is located within 4.5 metres of the frontage and therefore the proposal must demonstrate compliance with P4. The proposed fences have	

heights between 2 and 2.7 metres. Whilst the predominant fencing character in the area is that of low fencing 1-1.5 metres with some exemptions, the site adjoins a main road with high traffic volumes which warrant the need for taller fencing. Further, the fences will provide privacy and noise attenuation to the adjoining residential properties.

Acceptable Solution

A5

Outdoor storage areas, for a building that is not a dwelling including waste storage must not:

- (a) be visible from any road or public open space adjoining the site; and*
- (b) encroach upon parking areas, driveways or landscaped areas.*

Performance Criteria

P5

Outdoor storage areas, for a building that is not a dwelling, must be located or screened to minimise their 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) the type of goods, materials or waste to be stored;*
- (c) the topography of the site; and*
- (d) any screening proposed.*

Assessment – Complies with A5

There are no proposed outdoor storage areas – all facilities, including waste storage, are contained within the proposed building.

Acceptable Solution

A6

Air extraction, pumping, refrigeration systems or compressors, for a building that is not a dwelling, must have a setback not less than 10m from a property containing a sensitive use.

Performance Criteria

P6

Air conditioning, air extraction, pumping, heating or refrigeration systems or compressors, for a building that is not a dwelling, within 10m of the boundary of a property containing a sensitive use must be designed, located, baffled or insulated to not cause an unreasonable loss of amenity, having regard to:

- (a) the characteristics and frequency of any emissions generated;*
- (b) the nature of the proposed use;*
- (c) the topography of the site and location of the sensitive use; and*
- (d) any mitigation measures proposed.*

Assessment – Complies with A6

All mechanical and building services, including air conditioning, refrigeration systems and compressors, are contained to the rooftop of the proposed building and are subsequently setback more than 10 metres from the adjoining residential properties to the south-east and south-west.

6.2. Signs Code

C1.1 – Purpose

As described in Section 4 of this report, the proposed service station provides for an array of business identification signage to suit the proposal.

The array of signs proposed are consistent with the purpose of the Signs Code for the following reasons:

- Proposed signage proliferation is appropriate for the locality, having regard to the prominence of the site and its existing conditions, being a corner site with an extensive history of non-residential uses and on the fringe of the Claremont CBD.
- The proposed signs are compatible with the visual amenity of the area and will not unreasonably disrupt the amenity of the adjoining residential area.
- The proposed signs, including the illuminated signs, will not disrupt or compromise the safety and efficiency of vehicular and pedestrian movements.

C1.3 – Definition of Terms

This application proposes the following signage types, as defined in C1.3.1 and Table C1.3:

- 4 x Pylon/Pole Signs (includes 1 that is illuminated). A pole sign is defined as ‘a sign supported by one or more vertical supports, independent of any building or other structure’ (Signs 9A, 9B, 10A & 10B).
- 12 x Wall Signs (includes 9 that are illuminated). A wall sign is defined as ‘a sign attached to a wall of a building’ (Signs 2A, 2B, 3A, 3B, 3C, 3D, 3E, 5A, 5B, 13A, 13B & 13C).
- 1 x Illuminated Awning Fascia Sign. An awning fascia sign is defined as ‘a sign attached to the face of an awning’ (Sign 4A).
- 1 x Horizontal Projecting Wall Sign. A horizontal projecting wall sign is defined as ‘a sign that projects from the street façade of a building and where the horizontal dimension is greater than the vertical dimension’ (Sign 6).
- 12 x Blade Signs (includes 4 that are illuminated). A blade sign is defined as ‘a sign that projects vertically from the ground by a single form in which the supports/structure of the sign are concealed’ (Signs B1, 7A, 7B, 7C, 7D, 8A, 8B, 8C, 8D, 8E, 8G & 8H).
- 2 x Flags. A flag is defined as ‘a piece of cloth or similar material, typically rectangular or square and attached by one edge to a pole or rope’ (Sign 12).
- 1 x Horizontal Banner Sign. A horizontal banner sign is defined as ‘a sign constructed of light weight non-rigid material, such as cloth, canvas or similar fabric, and where the horizontal dimension is greater than the vertical dimension’ (Sign 12).
- An Illuminated Sign is defined as ‘a sign that uses a light source or sources to display or highlight the content. This includes internally illuminated signs such as neon signs, light boxes and LED (light emitting diode) screens or panels and signs lit by an external source such as a light bulb or floodlight’.

C1.4.2 – Exempt Signs

Pursuant to C1.4.2:

A sign within a building or site that cannot be, or is not intended to be, seen from outside of the building or site is exempt from requiring a permit.

Therefore, the signage addressing the internal parking areas, drive-through areas and directional signage, are exempt from the requirements of this code.

Whilst the flags proposed within the front setback (S12) are intended to be seen from the main street, they are exempt from the signs code in accordance with Table C1.4 because:

- they are limited to no more than two flags per site;
- have a minimum clearance above ground level well over 2.4 metres (7.3 metres); and
- do not exceed a maximum area of 2 square metres (each).

We also note that the majority of the signs described in A807 required for directional purposes are also 'regulatory signs' and therefore, exempt from the requirements of this code in accordance with Table C1.4.

C1.6 – Development Standards for Buildings and Works

An assessment of the proposal against the relevant development standards of C1.6 is provided in Table 6.3 below.

Table 6.3: Signs code development standards assessment

C1.6.1 – Design and Siting of Signs	
Objective: <i>That:</i> a) <i>Signage is well designed and sited; and</i> b) <i>Signs do not contribute to visual clutter or cause an unreasonable loss of visual amenity to the surrounding area.</i>	
Acceptable Solution A1 <i>A sign must:</i> (a) <i>Be located within the applicable zone for the relevant sign type set out in Table C1.6;and</i> (b) <i>Meet the sign standards for the relevant sign type set out in Table C1.6,</i> <i>excluding for the following sign types, for which there is no Acceptable Solution:</i> i. <i>Roof sign;</i> ii. <i>Sky sign; and</i> iii. <i>Billboard.</i>	Performance Criteria P1.1 <i>A sign must:</i> (a) <i>Be located within an applicable zone for the relevant sign type as set out in Table C1.6;and</i> (b) <i>Be compatible with the streetscape or landscape, having regard to:</i> i. <i>The size and dimensions of the sign;</i> ii. <i>The size and scale of the building upon which the sign is proposed;</i> iii. <i>The amenity of surrounding properties;</i> iv. <i>The repetition of messages or information;</i> v. <i>The number and density of signs on the site and on adjacent properties; and</i> vi. <i>The impact on the safe and efficient movement of vehicles and pedestrians.</i> P1.2

	<i>If a roof sign, sky sign or billboard, the sign must:</i> <i>(a) Be located within the applicable zone for the relevant sign type set out in Table C1.6;</i> <i>(b) Meet the sign standards for the relevant sign type in Table C1.6; and</i> <i>(c) Not contribute to visual clutter or cause unreasonable loss of amenity to the surrounding area, having regard to:</i> <i>i. The size and dimensions of the sign;</i> <i>ii. The size and scale of the building upon which the sign is proposed;</i> <i>iii. The amenity of surrounding properties;</i> <i>iv. The repetition of messages or information;</i> <i>v. The number and density of signs on the site and on adjacent properties; and</i> <i>vi. The impact on the safe and efficient movement of vehicles and pedestrians.</i>
Assessment – Complies with P1.1 The proposed signs are consistent with the requirements of P1.1, having regard to the following: (a) Be located within an applicable zone for the relevant sign type as set out in Table C1.6; A site-specific qualification is sought to facilitate the proposed array of business identification signs within the Inner Residential Zone. We note that there is an established history of non-residential uses at the site which has included various business identification signs which would otherwise be prohibited in the Inner Residential Zone. In this way, the proposal is consistent with the existing and historical conditions at the site, and it follows that a site-specific qualification to allow the proposed signs is appropriate in this instance. (b) Be compatible with the streetscape or landscape, having regard to: i. The size and dimensions of the sign; ii. The size and scale of the building upon which the sign is proposed; iii. The amenity of surrounding properties; iv. The repetition of messages or information; v. The number and density of signs on the site and on adjacent properties; and vi. The impact on the safe and efficient movement of vehicles and pedestrians. The proposed signs are compatible with the streetscape, having regard to sizes and dimensions, scale, amenity, visual clutter and safety and the existing site conditions and suite of signage which currently occupies the commercial developed site.	

The following proposed signs do not meet the Table C1.6 Sign Standards but are appropriate having regard to the requirements of item (b) of P1.1:

- Signs 7B and 7C (illuminated blade signs) have a maximum horizontal dimension of 1.305 metres in lieu of 1.2 metres. These are digital menu boards which are associated with the drive-through facility and will not be visible from any vantage outside of the site, noting that they are of a lower height (max. 1.835m) than the proposed fencing along the south-eastern and south-western boundaries and the acoustic screen along the Lady Clark Avenue interface.

The remaining signs are consistent with the relevant sign standards of Table C1.6.

P1.2 – Not Applicable

There are no roof signs, sky signs or billboards proposed.

Acceptable Solution	Performance Criteria
A2 <i>A sign must be not less than 2m from the boundary of any lot in the General Residential Zone, Inner Residential Zone, Low Density Residential Zone, Rural Living Zone or Landscape Conservation Zone.</i>	P2 <i>A sign must not cause an unreasonable loss of amenity to adjoining residential properties, having regard to:</i> <i>(a) The topography of the site and the surrounding area;</i> <i>(b) The relative location of buildings, habitable rooms of dwellings and private open space;</i> <i>(c) Any overshadowing; and</i> <i>(d) The nature and type of the sign.</i>

Assessment – Complies with P2

The following signs are located less than 2m from the boundary of lots in the Inner Residential Zone:

- Sign 8A: Double sided blade ‘welcome’ sign with a maximum height of 2.3 metres, located adjacent to the shared boundary with No. 6 Main Road in the front setback. The proposed location of this sign is considered appropriate, noting that it is approximately 8 metres away from the nearest habitable room window of the adjoining dwelling, and will largely be screened by the proposed acoustic fence. Further, as it is a non-illuminated sign, its visual impact on the adjoining property will be minimal.
- Sign 8E: Double sided blade ‘drive-thru’ sign with a maximum height of 2.3 metres, located adjacent to the shared boundary with No. 6 Main Road, in the middle of the site opposite the drive-through. As above, the proposed location of this sign is considered appropriate, noting that it is approximately 2.8 metres away from the nearest habitable room window of the adjoining dwelling, and will largely be screened by the proposed acoustic fence. Further, as it is a non-illuminated sign, its visual impact on the adjoining property will be minimal.
- Sign 11A: A directional sign (‘shared zone’ and ‘speed sign 10km/h’) which will be affixed to a 1.5 metre pole, located adjacent to the shared boundary with No. 6 Main Road and setback approximately 13.6 metres from the frontage. This sign will not be visible from the adjoining property as it is lower than the proposed fence line.

Acceptable Solution A3 <i>The number of signs for each business or tenancy on a road frontage of a building must be no more than:</i> (a) 1 of each sign type, unless otherwise stated in Table C1.6; (b) 1 window sign for each window; (c) 3 if the street frontage is less than 20m in length; and (d) if the street frontage is 20m or more, excluding the following sign types, for which there is no limit: i. Name plate; and ii. Temporary sign.	Performance Criteria P3 <i>The number of signs for each business or tenancy on a street frontage must:</i> (a) Not unreasonably increase in the existing level of visual clutter in the streetscape, and where possible, reduce any existing visual clutter in the streetscape by replacing existing signs with fewer, more effective signs; and (b) Not involve the repetition of messages or information.
Assessment – Complies with P3 The proposal does not meet the acceptable solution as there are more than 1 of each sign type (wall signs, pole/pylon signs and blade signs) facing a road. Notwithstanding, proposed signage has been sensitively designed as an integral design feature, creating visual interest and appropriately identifying the function and purpose of the development. As stated above, the proliferation of signs proposed is consistent with the existing signage provision at the site and is also consistent with the character of this area.	
C1.6.2 – Illuminated Signs	
Objective: <i>That:</i> a) Illuminated signs are compatible with the streetscape; b) The cumulative impact of illuminated signs on the character of the area is managed, including the need to avoid visual disorder or clutter of signs; and c) Any potential negative impacts of illuminated signs on road safety and pedestrian movement are minimised.	
Acceptable Solution A1 No Acceptable Solution	Performance Criteria P1 <i>An illuminated sign must not cause an unreasonable loss of amenity to adjacent properties or have an unreasonable effect on the safety, appearance or efficiency of a road, and must be compatible with the streetscape, having regard to:</i> (a) The location of the sign; (b) The size of the sign; (c) The intensity of the lighting;

	(d) <i>The hours of operation of the sign;</i> (e) <i>The purpose of the sign;</i> (f) <i>The sensitivity of the area in terms of view corridors, the natural environment and adjacent residential amenity;</i> (g) <i>The intended purpose of the changing message of the sign;</i> (h) <i>The percentage of the sign that is illuminated with changing messages;</i> (i) <i>Proposed dwell time; and</i> (j) <i>Whether the sign is visible from the road and if so the proximity to and impact on an electronic traffic control device.</i>
Assessment - Complies with P1 The proposed illuminated signs comply with Performance Criteria 1 as follows: — The 15 proposed illuminated signs are all located appropriately so as not to conflict with one another and cause visual clutter. — The illuminated wall signs are modestly sized, of a suitable scale and are consistent with modern facilities. — The intensity of lighting will be at a level suitable to the site's location, having regard to its surrounding context and its physical relationship to the intersection of Main Road and Lady Clark Avenue. The lighting report prepared by Rubidium Light demonstrates that the signs will comply with the relevant Australian Standard. — The illuminated signs will operate during the nominated opening hours in accordance with the convenience restaurant operations. — The signs' purposes are to better identify the building during night hours. — The sensitivity of the area is limited, and importantly, none of the illuminated signs are oriented to directly face any nearby residential properties. — The signs will be visible from the intersection, but importantly, they are sufficiently setback within the site to ensure that they do not cause distraction or conflict to road users. It is also important to note that the intersection of Main Road and Lady Clark Avenue is not signalised.	
Acceptable Solution A2 <i>An illuminated sign visible from public places in adjacent roads must not create the effect of flashing, animation or movement, unless it is providing direction or safety information.</i>	Performance Criteria P2 No Performance Criterion.
Assessment - Complies with A2 None of the illuminated signs will feature flashing, movement or animation.	

6.3. Parking and Sustainable Transport Code

We defer to the Traffic Impact Assessment prepared by Ratio Consultants with respect to all matters relating to parking and sustainable transport.

We note that the proposal generates a requirement for 30 on-site car spaces, however, the independent car parking demand assessment has found that the provision of 20 x on-site car spaces will be sufficient for the likely demand generated by the use.

The submitted traffic report confirms that the proposal provides appropriate vehicular access and parking and will not result in unreasonable impacts on the surrounding road network.

6.4. Road and Railway Assets Code

As above, we defer to the Traffic Impact Assessment prepared by Ratio Consultants with respect to the impact of the proposed development on the local traffic network.

The submitted Traffic Impact Assessment finds that the additional traffic generated by the proposed development is not expected to compromise the safety and function of the surrounding road network, and thus the proposal is consistent with the purpose and relevant standards of Code 3.0.

6.5. Flood-Prone Areas Hazard Code

C12.1 – Code Purpose

The Flood-Prone Areas Hazard Code Overlay applies to a small portion of the front half of the subject site, as shown in Figure 2.3.

It is considered that this proposal is consistent with the purposes of the Flood Prone Areas Hazard Code as it will not unreasonably affect flood flow, be affected by permanent or periodic flood and is appropriately located and managed with respect to risk to people, land and infrastructure.

C12.5 – Use Standards

This proposal seeks to use the land for Food Services, which is not a critical, hazardous or vulnerable use as identified in C12.3. Further, there are no habitable buildings included in the proposal. As such, we consider that the use standards of C12.5 are not applicable to the proposal and the risk level will not be increased.

C12.6 – Development Standards for Buildings and Works

An assessment of the proposal against the relevant development standards of C12.6 is provided in Table 6.4 below.

Table 6.4: Development standards for buildings and works in the Flood-Prone Areas Hazard Code overlay assessment

C12.6.1 – Buildings and Works within a Flood-Prone Hazard Area
Objective: <i>That:</i> (a) <i>Building and works within a flood-prone hazard area can achieve and maintain a tolerable risk from flood; and</i> (b) <i>Buildings and works do not increase the risk from flood to adjacent land and public infrastructure.</i>

Acceptable Solution	Performance Criteria
A1 No Acceptable Solution	P1.1 <i>Buildings and works within a flood-prone hazard area must achieve and maintain a tolerable risk from a flood, having regard to:</i> <i>(a) The type, form, scale and intended duration of the development;</i> <i>(b) Whether any increase in the level of risk from flood requires any specific hazard reduction or protection measures;</i> <i>(c) Any advice from a State authority, regulated entity or a council; and</i> <i>(d) The advice contained in a flood hazard report.</i> P1.2 <i>A flood hazard report also demonstrates that the building and works:</i> <i>(a) Do not cause or contribute to flood on the site, on adjacent land or public infrastructure; and</i> <i>(b) Can achieve and maintain a tolerable risk from a 1% annual exceedance probability flood event for the intended life of the use without requiring any flood protection measures</i>
Assessment – Complies with P1 Due to the nature of the proposed works it is considered that the proposal will achieve and maintain a tolerable risk from flood having regard to the type, form and scale of the building. In particular, we note that there is not an existing flooding issue associated with the overlay and that it is not an identified overland flow path. The FFLs proposed are above the nominated flood depth and accordingly there is no need for a flood hazard report in this instance.⁴	

6.6. Potentially Contaminated Land Code

The purpose of the Potentially Contaminated Land Code is to ensure that use or development of potentially contaminated land does not adversely impact on human health or the environment.

We defer the assessment of this code to the Environmental Site Assessment prepared by Simon Chislett of EM&C, a Certified Environmental Practitioner (CEnvP). The report concludes that the site is suitable for on-going 'commercial/industrial' use without an unacceptable level or risk. Whilst the report does not consider the proposed development and associated works, we kindly request Council to address the relevant development standards under this code via conditions to a permit requiring a construction management plan to be prepared by a suitably qualified person.

⁴ As advised by Glenorchy City Council's Infrastructure, Engineering and Design Department.

7. Conclusion

This application represents an appropriate outcome having regard to the provisions of the Glenorchy Planning Scheme and the *Land Use Planning and Approvals Act 1993*.

The inclusion of a Site Specific Qualification relating to the inclusion of a drive-through and signage, will enable the economic potential of the site to be realised. The proposed amendment and accompanying development application make use of a site that exhibits particular characteristics that enable it to make a contribution to the local economy, in particular with respect to employment. It does this while meeting the requirements of the Glenorchy Planning Scheme.

The proposal represents a well-considered design that will deliver an improvement to the existing commercial conditions on the site, particularly through the introduction of landscaping and the consolidation of built form.

The proposed signage is appropriate to the scale of the building and will not contribute to unreasonable visual clutter in the area.

In our opinion, the proposal substantially satisfies the various relevant Zone and Overlay Code standards. The proposal also strikes an appropriate balance between achieving economic uplift for the existing area and introduction of a new service retail-related land use whilst being sensitively designed to mitigate external amenity impacts as much as reasonably required and possible.

It follows that we believe that the proposal should be supported.

MCDONALD'S CLAREMONT

PROPOSED CONVENIENCE RESTAURANT
8-10 MAIN ROAD
CLAREMONT TAS 7011

**GLENORCHY CITY COUNCIL
PLANNING SERVICES**
APPLICATION No PLAM-23/03
DATE RECEIVED 13 November 2023

STAGE:

DAISSUE
BUILDING & WORKS PACKAGE

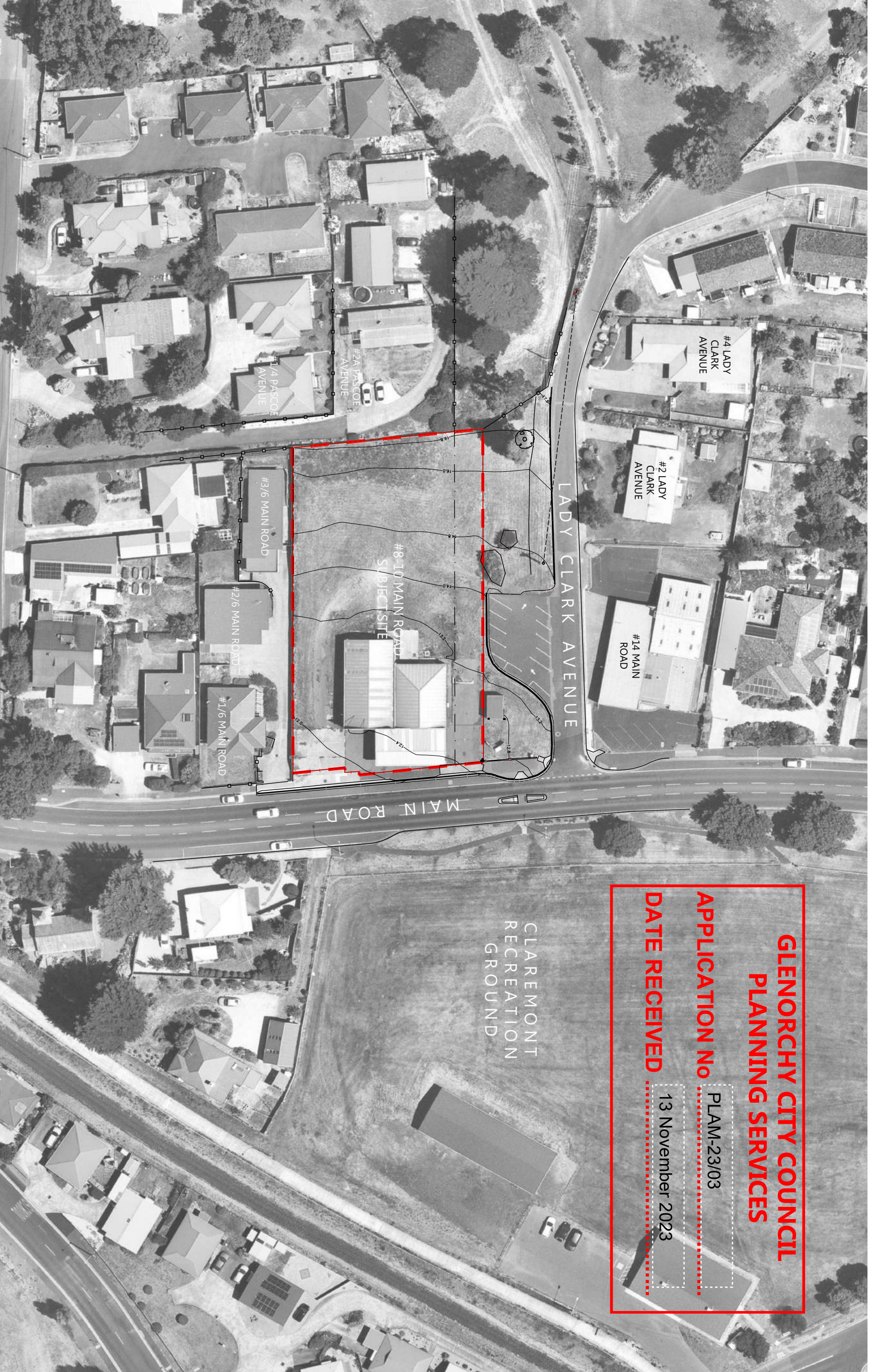
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preliminary
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OVERALL SITE PLAN - EXISTING

Revisions	General Notes	Drawing Notes
Issue Description	Date	Chk. Hnt
Do not scale this drawing. The drawing shows design intent only. All dimensions to be checked on site prior to construction or production. Construction details to be generated by hand. Do not amend by hand. Figure dimensions are to be used. Contact architect for clarification if dimensions are not clear. All dimensions are in millimeters. All descriptions and dimensions on site must be checked and confirmed by the architect prior to construction work.		

preliminary

issued for review 27.10.2023

North

Client

McDonald's Australia Limited
Unit 43, 408-418 928
PO Box 10 5225

Architect

TIMMINS + WHYTE
ARCHITECTURE + DESIGN
Unit 13, 9417 2711 info@timminswhyte.com.au
Level 1, 11 Smith St, Collingwood, 3068 VIC

Project

PROPOSED NEW CONVENIENCE RESTAURANT
McDONALD'S CLAREMONT

Location

8-10 MAIN ROAD
CLAREMONT TAS 7011

Scale

1:750 @ A3

Series

MOCD60

Drawing

OVERALL SITE PLAN (EXISTING)

Project Number

0319

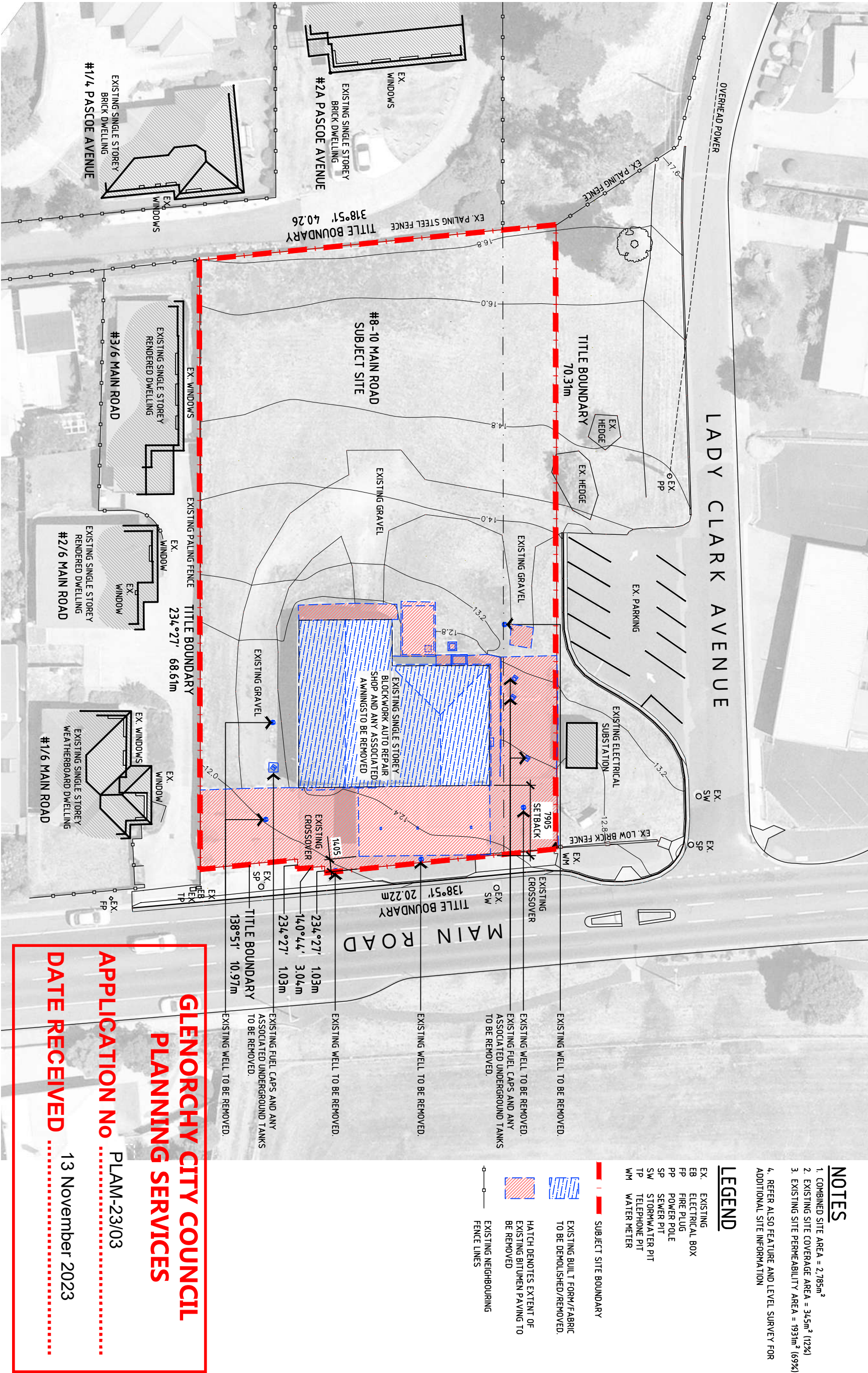
Drawing Number

A041

Issue

-

BUILDING & WORKS
NOT TO BE USED DURING CONSTRUCTION



Revisions

General Notes

Drawing Notes

Base Description

Date

Chk. Int.

To commencing work

Client

Architect

Project

Location

Scale

Series

North

Project Manager

Architect

Location

Scale

Series

preliminary

issued for review 27.10.2023

BUILDING & WORKS

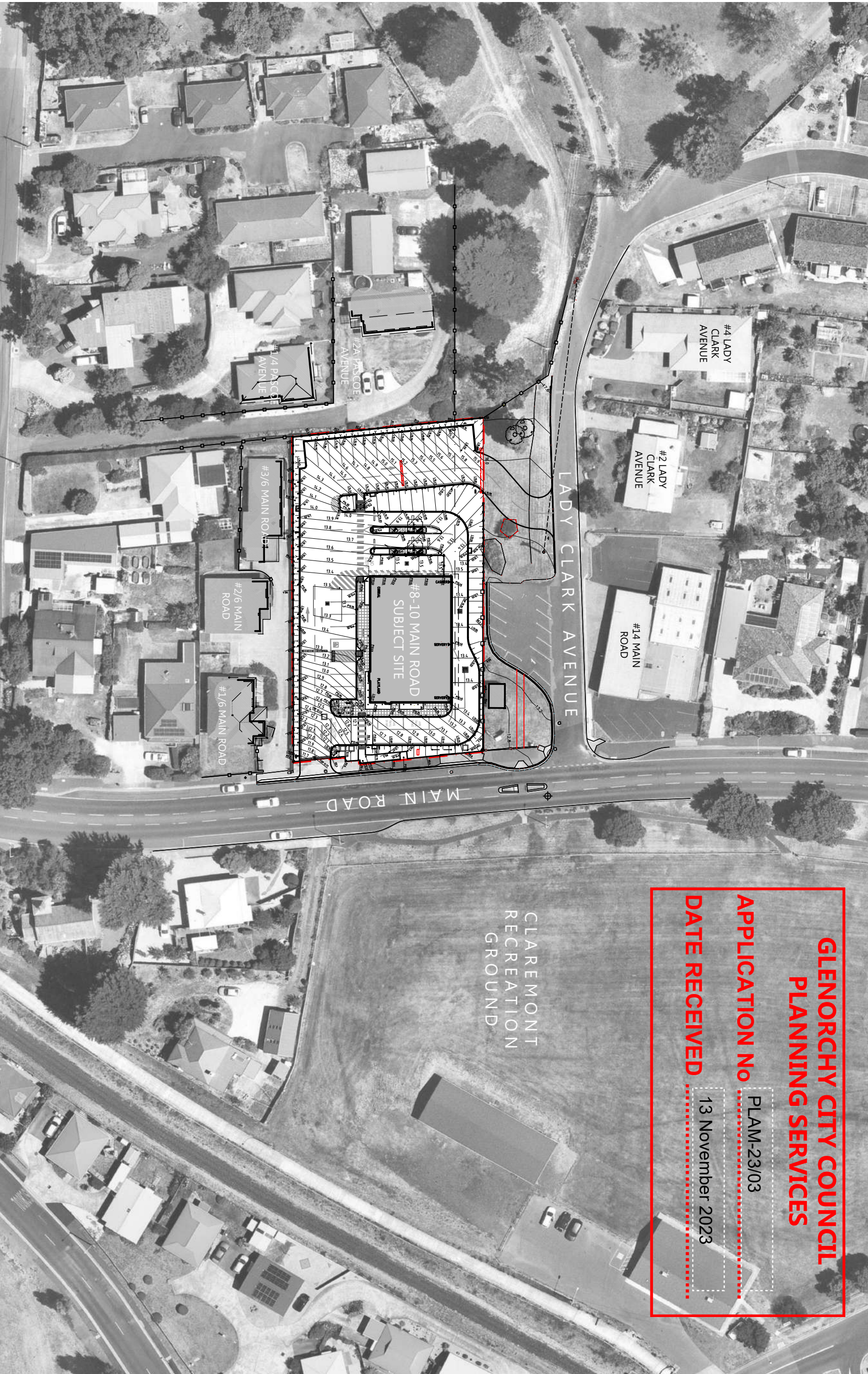
NOT TO BE USED DURING CONSTRUCTION

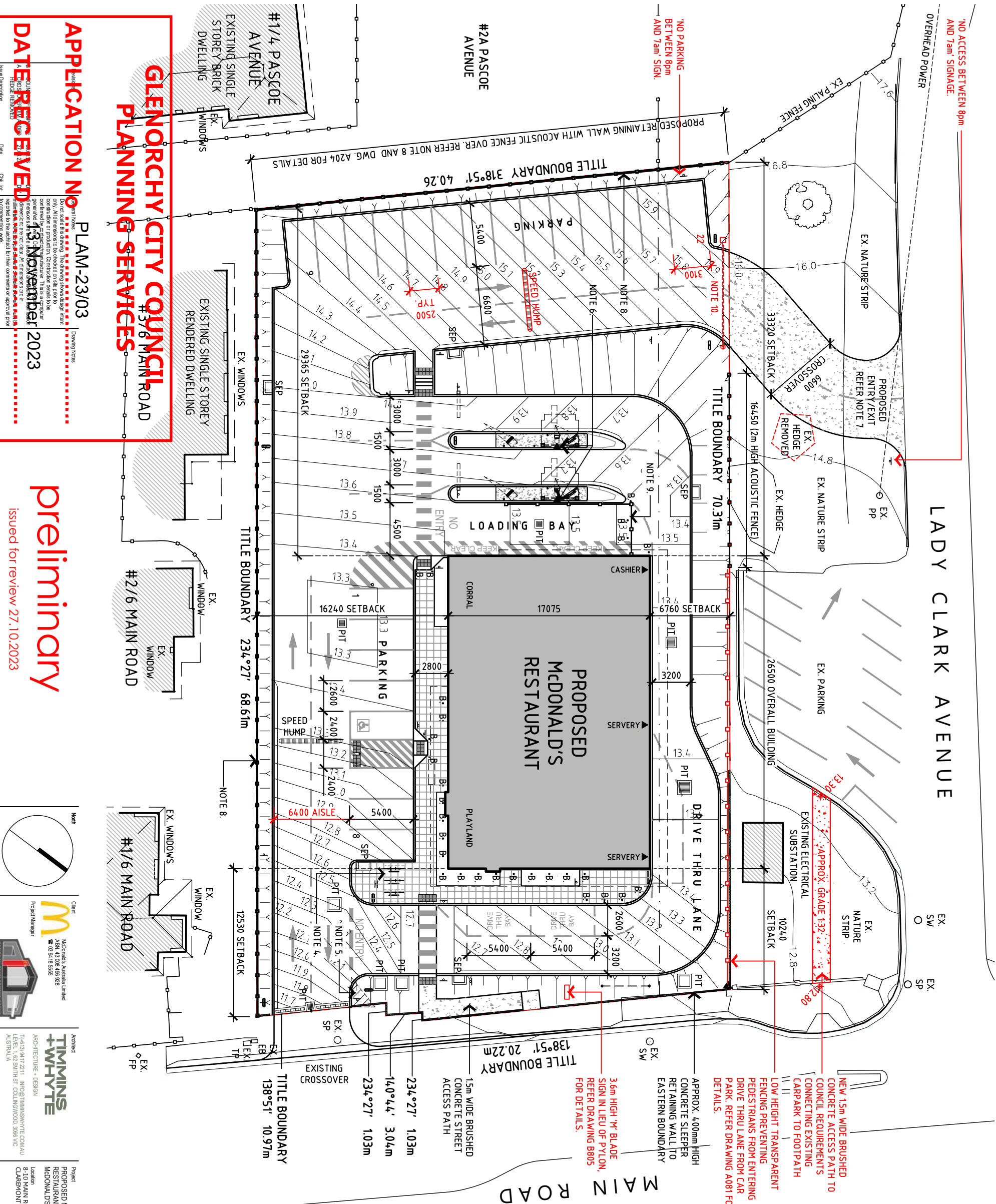
0319

A042

-

PHILIP DINE & MICHELLE





NOTES

- 1. SITE AREA = APPROX. 2,785m²
BUILDING GFA = 453m²
- 2. DINING ROOM SEATING CAPACITY = 75 SEATS.
- 3. PARKING:
 - 7 X 2600 X 5400 CAR SPACES.
 - 14 X 2500 X 5400 CAR SPACES.
 - 1 X 2400 X 5400 ACCESSIBLE SPACES WITH 1 X 2400 X 5400 CLEAR ADJACENT SPACE.
 - 2 X 2600 X 5400 WAITING BAYS.
 - 1 X LOADING BAY.
- 4. BIKE HOOPS IN ACCORDANCE WITH AUSTRALIAN STANDARDS PART 3 BICYCLE PARKING AS2890.3:2015 TO ACCOMMODATE 6 X BICYCLES.
- 5. HATCHED AREAS DENOTE PEDESTRIAN SIGHT LINES IN ACCORDANCE WITH AS2890.1 CLAUSE 32.4, AND CLAUSE 52.06-9 OF THE PLANNING SCHEME.
- 6. DRIVE THRU LANE CUSTOMER ORDER DISPLAY AND ASSOCIATED CANOPY, REFER DRAWINGS A082, A807 AND A808 FOR DETAILS.
- 7. CAR PARK ENTRY AND EXITS SHALL BE DESIGNED IN ACCORDANCE WITH LOCAL AUTHORITY REQUIREMENTS AND AS2890.1.
- 8. EXISTING BOUNDARY FENCING REMOVED AND REPLACED WITH PROPOSED RETAINING WALL WITH ACOUSTIC FENCE OVER TO ENTIRE LENGTH OF SOUTHERN AND WESTERN BOUNDARIES. REFER DRAWINGS A204, AND A066 FOR DETAILS.
- 9. 2.5m HIGH ACOUSTIC SCREEN TO LOADING BAY WITH MINIMUM SURFACE DENSITY OF 12kg/m²
- 10. 800M GATE RESTRICTING ACCESS TO/FROM LADY CLARK AVENUE BETWEEN THE HOURS OF 8:00pm AND 7:00am.

LEGEND

- TITLE BOUNDARY
- PROPOSED ACOUSTIC FENCE, REFER DRAWING A066 FOR DETAILS
- PROPOSED LANDSCAPED AREAS, REFER LANDSCAPE PLANS FOR DETAILS
- B BOLLARD
- EX EXISTING
- EB ELECTRICAL BOX
- FP FIRE PLUG
- PP POWER POLE
- SEP SIDE ENTRY PIT
- SP SEWER PIT
- SW STORMWATER PIT
- TP TELEPHONE PIT
- WM WATER METER
- VEHICLE DETECTOR LOOP

REFERENCES

FOR SITE SIGNAGE PLAN
(REFER DWG A800)

AREA SCHEDULE

PROPOSED SITE COVERAGE AREA = 453m² (16%)
PROPOSED PERMEABILITY AREA = 483m² (17%)

BUILDING & WORKS

NOT TO BE USED DURING CONSTRUCTION

Project	Scale	Series
PROPOSED NEW CONVENIENCE RESTAURANT MCDONALD'S CLAREMONT	1:300 @ A3	B10MCD-450
Drawing		
PROPOSED SITE PLAN		
Project Number	Drawing Number	Issue
0319	A062	B

APPLICATION NO. PLAM-23/03

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GLENORCHY CITY COUNCIL

PLANNING SERVICES

Do not scale this drawing. The drawing shows design intent only. All dimensions to be checked on site prior to construction or production. Consultation details to be generated by the applicant and checked against the relevant planning scheme and local laws. All dimensions are to be checked against the relevant planning scheme and local laws. All dimensions are to be checked against the relevant planning scheme and local laws.

Base Description Date Ck. Hnt To commencing work

preliminary
issued for review 27.10.2023

North

Client
McDonald's Australia Limited
1300 654 654
1300 654 654

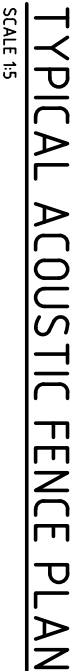
Architect
TIMMINS +WHYTE
ARCHITECTURE + DESIGN
114/13/14/17/21/1 INFO@TIMMINSWHYTE.COM.AU
114/13/14/17/21/1 INFO@TIMMINSWHYTE.COM.AU

APPLICATION NO. PLAN-23/03

PLAM-23/03

13 November 2023

DATE RECEIVED 13 NOVEMBER 2023



NOTE

**ADJOINING
PROPERTY**

**SUBJECT
SITE**

preliminary

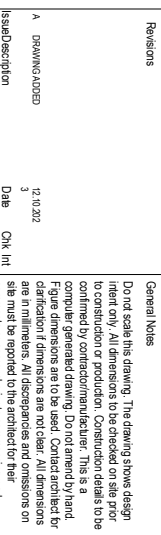
issued for review 27.10.2023

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BUILDING & WORKS
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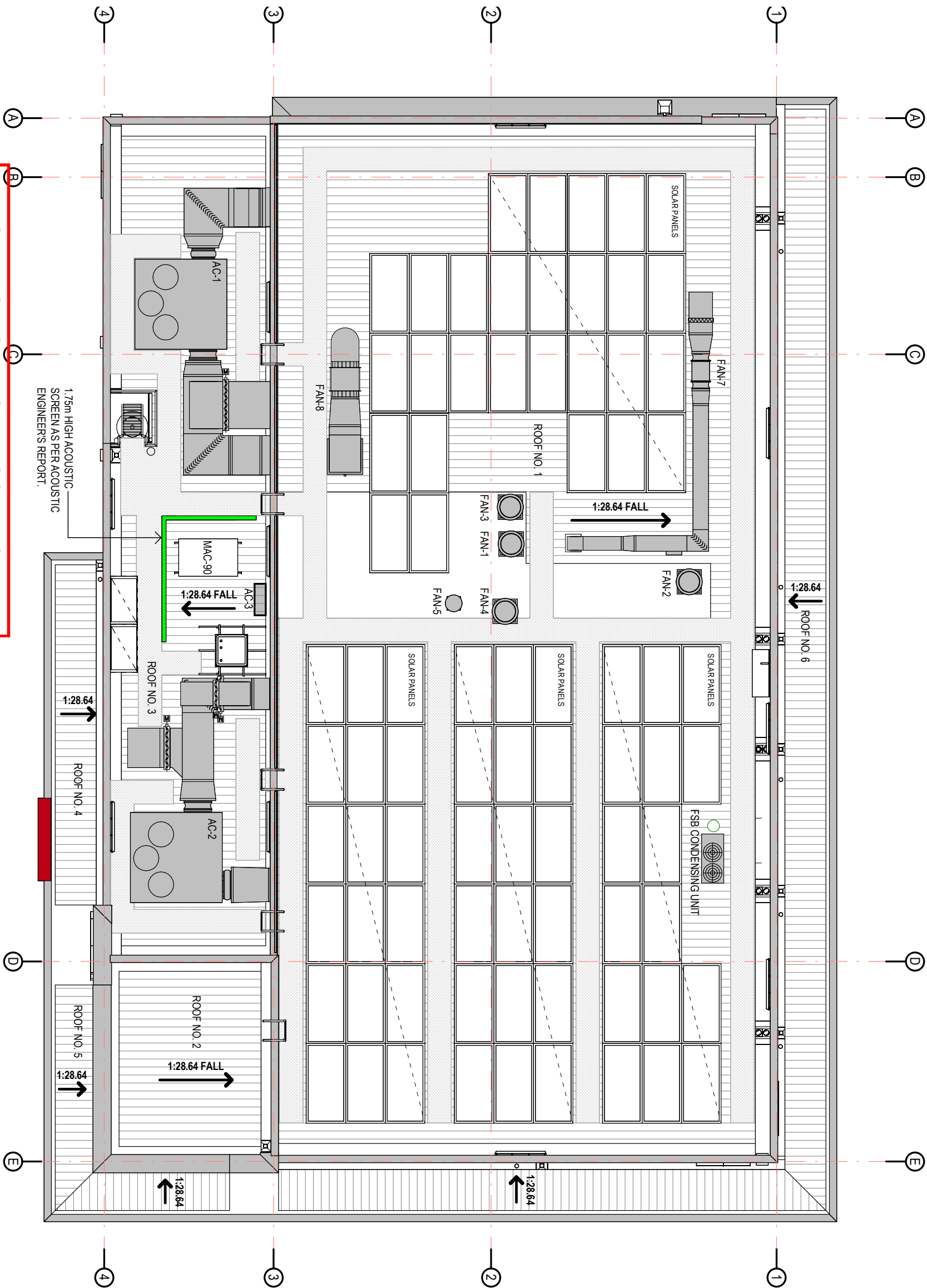


PLANNING SERVICES

BUILDING & WORKS
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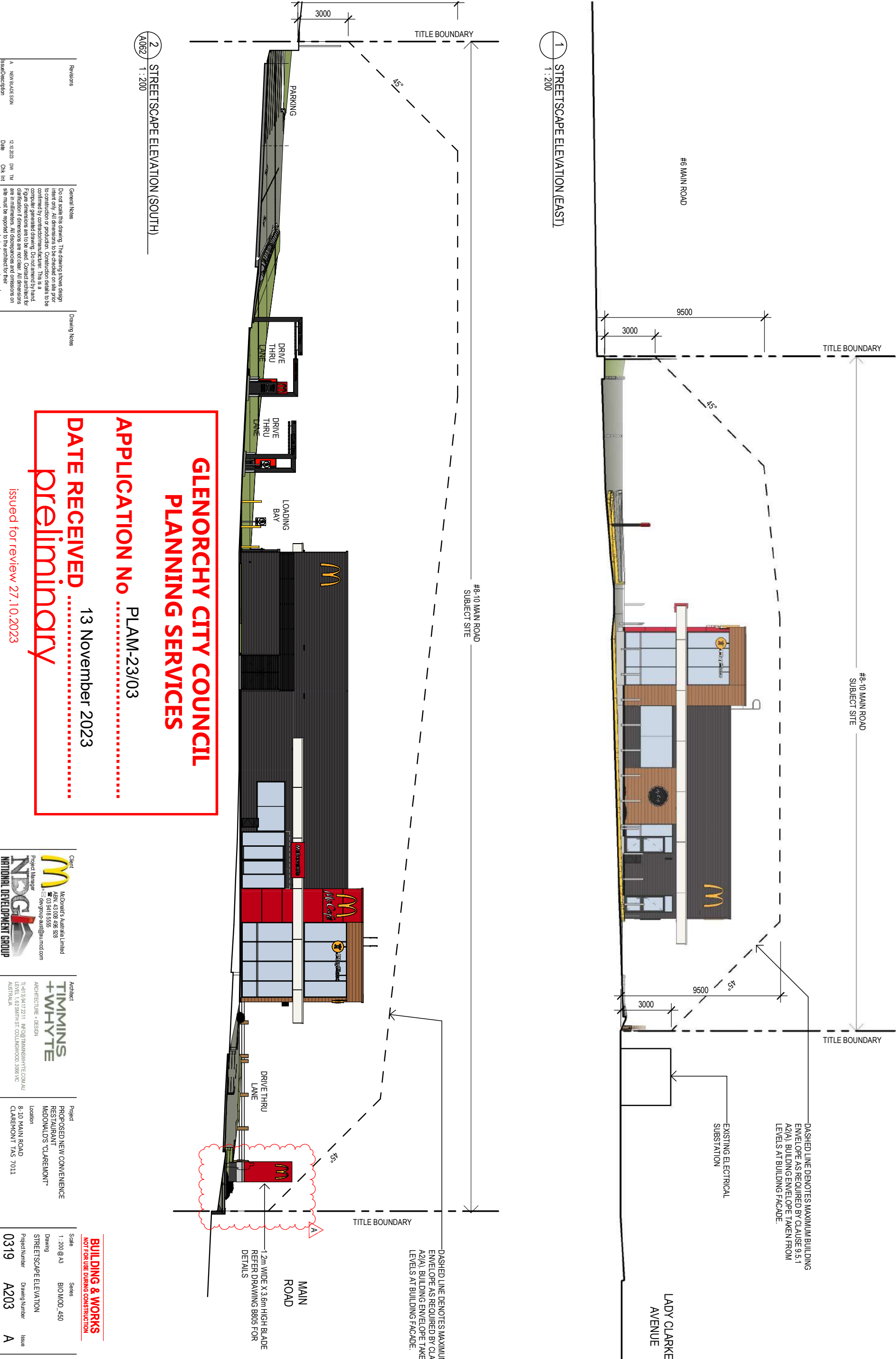
13 November 2023



REQUIRED SOUND POWER LEVEL OF MECHANICAL PLANT IN ACCORDANCE WITH CLARITY ACOUTICS' REPORT, dB LAW	
DESCRIPTION	MAX. PERMISSIBLE SOUND LEVEL
AC-1	82
AC-2	81
AC-3	62
FAN-1 (TOLLET EXHAUST)	66
FAN-2 (FRY STATION EXHAUST)	73
FAN-3 (FLEET STATION EXHAUST)	73
FAN-4 (GRILL STATION EXHAUST)	70
FAN-5 (WASHUP EXHAUST)	57
FAN-7 (MAKE UP AIR)	64
FAN-8 (RELIEF AIR)	70
FSB BLOWING UNIT	68
MAC-30 REFRIGERATION UNIT	84

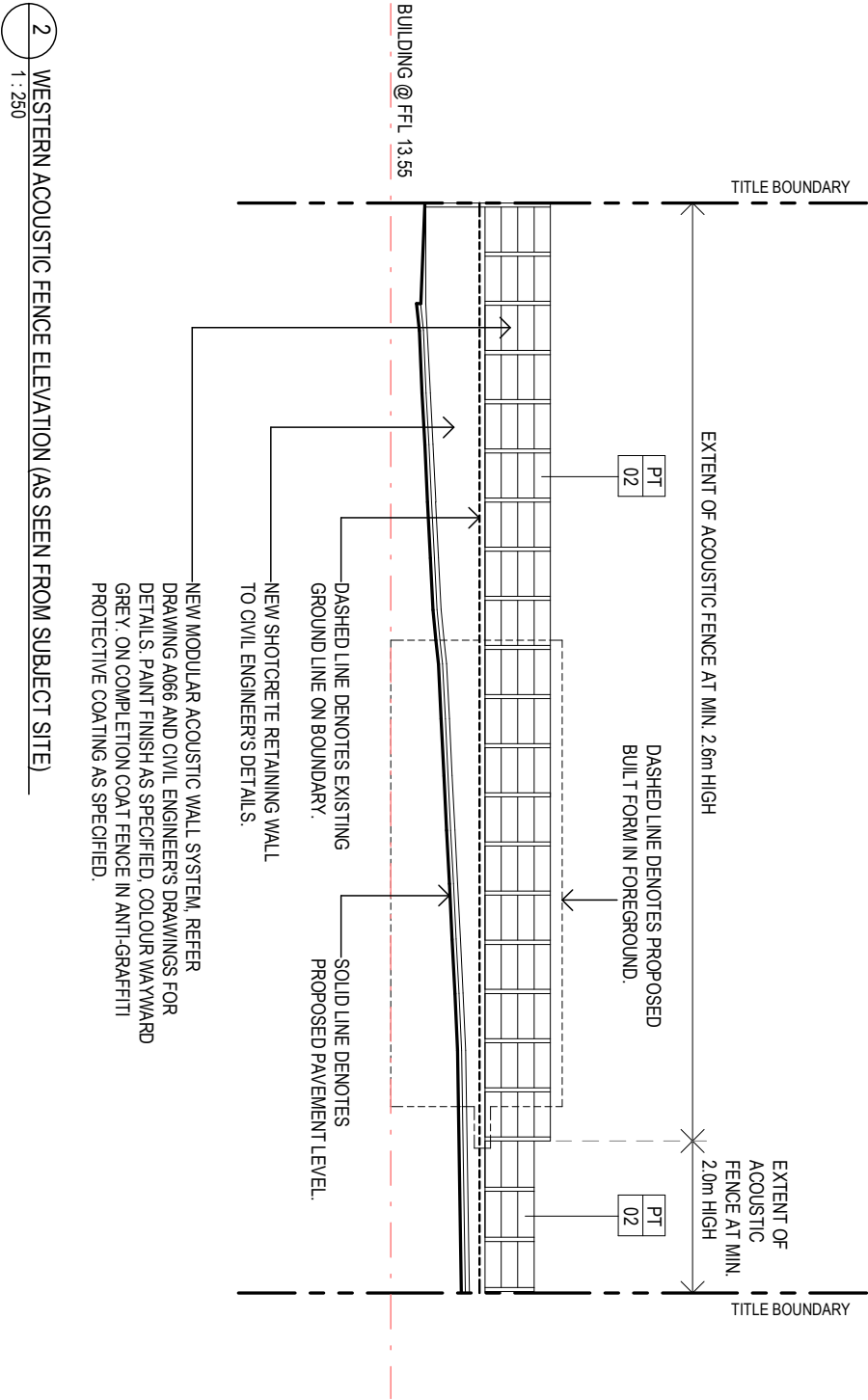
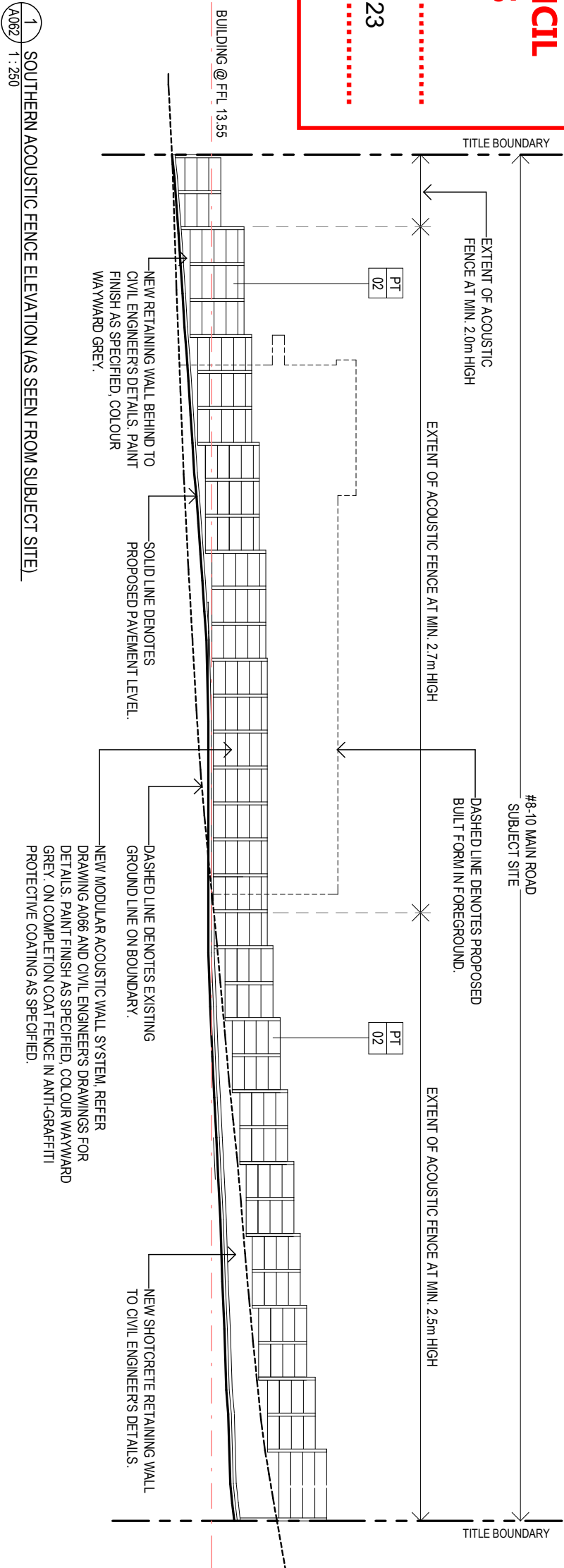






GLENORCHY CITY COUNCIL
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APPLICATION NO PLAM-23/03
13 November 2023
LATE RECEIVED

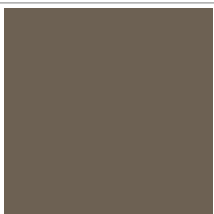
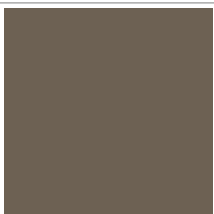
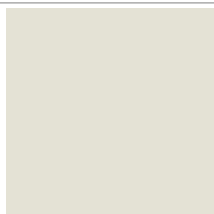
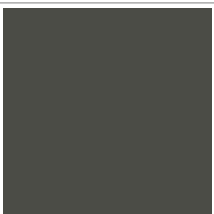
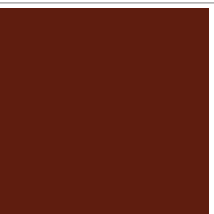
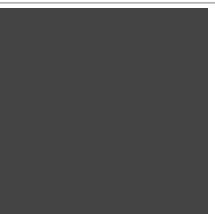


Revisions	General Notes
	Do not scale this drawing. The drawing shows design intent only. All dimensions to be checked on site prior to construction or production. Construction details to be confirmed by contract documents. This is a preliminary drawing and is not to be used for construction. Figure dimensions are to be used. Contract architect for clarification if dimensions are not clear. All dimensions are in millimeters. All discrepancies and omissions on site must be reported to the architect for their
Issued/Description	Drawing Notes
Date	Chk. Int.

preliminary
issued for review 27.10.2023

Client  McDonald's Australia Limited ABN 43 008 498 928 150 Sturt Street Adelaide SA 5000 adelaide@mc.com.au	Architect TIMMINS +WHYTE ARCHITECTURE + DESIGN T: +61 8 9441 2211 F: +61 8 9441 2212 L: 150 Sturt Street, COLLINGWOOD, VIC 3060 AUSTRALIA	Project PROPOSED NEW CONVENIENCE RESTAURANT MCDONALD'S CLAREMONT Location 8-10 MAIN ROAD CLAREMONT TAS 7011	Scale 1 : 250 @ A3	Series BIO MOD_450
Project Number 0319			Drawing Number A204	Issue

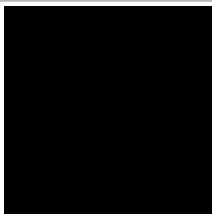
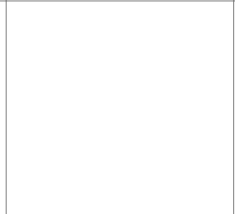
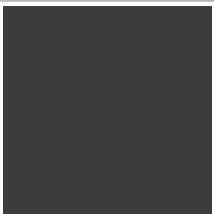
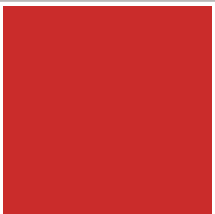
BUILDING & WORKS
NOT FOR USE DURING CONSTRUCTION

EXTERNAL FINISHES SCHEDULE						
CODE	No.	AREA	DESCRIPTION	MANUFACTURER	COLOUR	IMAGE
MC	01	PARAPET CAPPING - ADJACENT TIMBER LOOK CLADDING (PLAYLAND)	PREFINISHED METAL CAPPING / FLASHING	COLORBOND	JASPER	
MC	02	PARAPET CAPPING - AWNINGS	PREFINISHED METAL CAPPING / FLASHING	COLORBOND	SURFMIST	
MC	03	PARAPET CAPPING - MAIN BUILDING WALLS	PREFINISHED METAL CAPPING / FLASHING	COLORBOND	WOODLAND GREY	
MC	04	PARAPET CAPPING	PREFINISHED METAL CAPPING / FLASHING	COLORBOND	MANOR RED	
MMC	01	PLAYPLACE & PARAPETS	TIMBER LOOK ALUMINIUM CLADDING SYSTEM USING KNOTWOOD 200mm CLADDING PROFILE	KNOTWOOD	LIGHT OAK	
MMC	02	ROOF WELL (INTERNAL PARAPET LINING)	CUSTOM ORB CORRUGATED STEEL RIVET FIXED VERTICALLY TO FRAMES	LVSAGHT	ZINCALUME	
PC	01	CORRAL BATTENS & ROOF ACCESS, ELEC. ROOM DOORS	POWDERCOAT FINISH	<varies>	MONUMENT SATIN (COLORBOND)	

Revisions	General Notes
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Drawing Notes
1. FOR BUILDING ELEVATIONS REFER A201-A203

preliminary
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EXTERNAL FINISHES SCHEDULE						
CODE	No.	AREA	DESCRIPTION	MANUFACTURER	COLOUR	IMAGE
PC	02	ALUMINIUM WINDOWS & DOOR FRAMES. REFER NOTE 1.	POWDERCOAT FINISH	DULUX DURATEC ZEUS	LUNAR ECLIPSE SATIN (BLACK)	
PT	01	FASCIAS (RIBBON)	PAINT FINISH. REFER SPECIFICATION FOR DETAILS ON PAINT TYPE & APPLICATION	DULUX	VIVID WHITE PW1119	
PT	02	MAIN BUILDING WALLS AND ACOUSTIC FENCING	PAINT FINISH. REFER SPECIFICATION FOR DETAILS ON PAINT TYPE & APPLICATION	DULUX	WAYWARD GREY PG168	
PT	05	BLADE WALL & DRIVE/THRU WINDOWS	PAINT FINISH. REFER SPECIFICATION FOR DETAILS ON PAINT TYPE & APPLICATION	DULUX	DULUX HIOT LIPS PB11F2	
STN	01	DRIVE/THRU WINDOW SILL & SURROUND	RECONSTITUTED STONE. REFER TO DECOR DOCUMENTS	REFER DECOR	REFER DECOR	

GLENORCHY CITY COUNCIL

PLANNING SERVICES

APPLICATION NO

PLAM-23/03

DATE RECEIVED

13 November 2023

Client McDonald's Australia Limited GRN 43 008 498 928 08 9416 5554 designplan.au@mcu.mcd.com Project Manager NBCG1 NATIONAL DEVELOPMENT GROUP	Architect TIMMINS +WHYTE 11-613/41/2711 116-08/TIMMINSWHYTE.COM.AU L11/613/41/2711/ST COLLINGWOOD,3086 VIC, AUSTRALIA	Project PROPOSED NEW CONVENIENCE RESTAURANT MCDONALD'S 'CLAREMONT' Location 8-10 MAIN ROAD CLAREMONT TAS 7011	Scale NTS Drawing FINISHES SCHEDULE Project Number 0319 Drawing Number A205 Issue
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BUILDING & WORKS
NOT FOR USE DURING CONSTRUCTION





GLENORCHY CITY COUNCIL
PLANNING SERVICES
APPLICATION No PLAM-23/03
DATE RECEIVED 13 November 2023

ARTIST'S IMPRESSION 03

Revisions	General Notes	Drawing Notes
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Issued/Description	Date	Chk. Int.

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issued for review 27.10.2023

Client McDonald's Australia Limited URN 43 008 498 928 08 9418 5554 design@au.mcd.com	Architect TIMMINS +WHYTE ARCHITECTURE + DESIGN t+@34412711 m+@TIMMINSWHYTE.COM.AU 110/111 SMITH ST, COLLINGWOOD, 3066 VIC AUSTRALIA	Project PROPOSED NEW CONVENIENCE RESTAURANT "McDONALD'S CLAREMONT" Location 8-10 MAIN ROAD CLAREMONT TAS 7011	Scale @ A3 Series BIO MOD_460 Drawing ARTIST'S IMPRESSION Project Number 0319 Drawing Number A213 Issue
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BUILDING & WORKS
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APPLICATION NO PLAM-23/03

PLAM-23/03

DATE RECEIVED 13 November 2023



ARTIST'S IMPRESSION 04

Revisions	General Notes	CK: Init	Date	Issue/Description
	Do not scale this drawing. The drawing shows design intent only. All dimensions (to be checked on site and confirmed by the contractor) are in millimeters. This is a computer generated drawing. Do not amend by hand. Figure dimensions are to be used. Contact architect for clarification if dimensions are not clear. All dimensions are in millimeters. All discrepancies and omissions on site must be reported to the architect for their			

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issued for review 27.10.2023

 McDonald's Australia Limited ABN 43 008 436 928 ☎ 03 918 5555 mygroup.asia@mc.com	 Project Manager NATIONAL DEVELOPMENT GROUP	Architect TIMMINS +WHYTE ARCHITECTURE - DESIGN T: 61 8 917 2211 INFO@TIMMINSWHYTE.COM.AU LEVEL 16, SMITH ST COLLINGWOOD, 3066 VIC AUSTRALIA	Project PROPOSED NEW CONVENIENCE RESTAURANT "MC DONALD'S CLAREMONT"	Scale @ A3	Series BIO.MOD.450
Location 8-10 MAIN ROAD CLAREMONT TAS 7011		Drawing ARTISTS IMPRESSION		Project Number 0319	Drawing Number A214
Issue					



GLENORCHY CITY COUNCIL
PLANNING SERVICES
APPLICATION No PLAM-23/03
DATE RECEIVED 13 November 2023

ARTIST'S IMPRESSION 05

Revisions	General Notes	Drawing Notes
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Issued/Description	Date	Chk. Int.

Client McDonald's Australia Limited MGR: 431 008 498 928 08 9410 5554 dsgroup.aus@au.mcd.com	Architect TIMMINS +WHYTE ARCHITECTURE + DESIGN T: 61 3 9417 2711 M: 08 9410 5554 TIMMINS@TIMMINSWHYTE.COM.AU 115/117 SMITH ST, COLLINGWOOD, VIC 3068 AUSTRALIA
---	---

Project PROPOSED NEW CONVENIENCE RESTAURANT "McDONALD'S CLAREMONT"	Location 8-10 MAIN ROAD CLAREMONT TAS 7011
--	--

Scale @ A3	Series BIO MOD_450
Drawing ARTIST'S IMPRESSION	Project Number 0319
	Drawing Number A215
	Issue

BUILDING & WORKS
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MCDONALD'S CLAREMONT

8-10 MAIN ROAD
CLAREMONT TAS 7011

**GLENORCHY CITY COUNCIL
PLANNING SERVICES**
APPLICATION No PLAM-23/03
DATE RECEIVED 13 November 2023

STAGE:

DAISSUE
BLADE SIGNAGE PACKAGE

AMENDMENT:
RFI RESPONSE OCTOBER 2023



McDonald's Australia Limited
ABN: 43 008 496 928
☎ 03 9418 5555
✉ devgroup-aust@au.mcd.com

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Revisions

General Notes

Drawing Notes

Base Description

Date

Chk. Int.

To commencing work

Do not scale this drawing. The drawing shows design intent only. All dimensions to be checked on site prior to construction or production. Construction details to be generated by the contractor. Do not amend by hand. Figure dimensions are to be used. Contact architect for clarification if dimensions are not clear. All dimensions are in millimetres. All dimensions are to be measured to the centre of the line. All dimensions are to be measured to the centre of the line. All dimensions are to be measured to the centre of the line.

Scale

Series

1:400 @ A3

MOD60

Project

Location

PROPOSED NEW CONVENIENCE RESTAURANT

McDONALD'S CLAREMONT

Client

Project Manager

McDonald's Australia Limited

NSW 43 006 498 928

02 94 19 5255

Architect

ARCHITECTURE + DESIGN

TIMMINS + WHYTE

11413 9417 2711

INFO@TIMMINSWHYTE.COM.AU

11413 9417 2711

11413 9417 2711

11413 9417 2711

Project Number

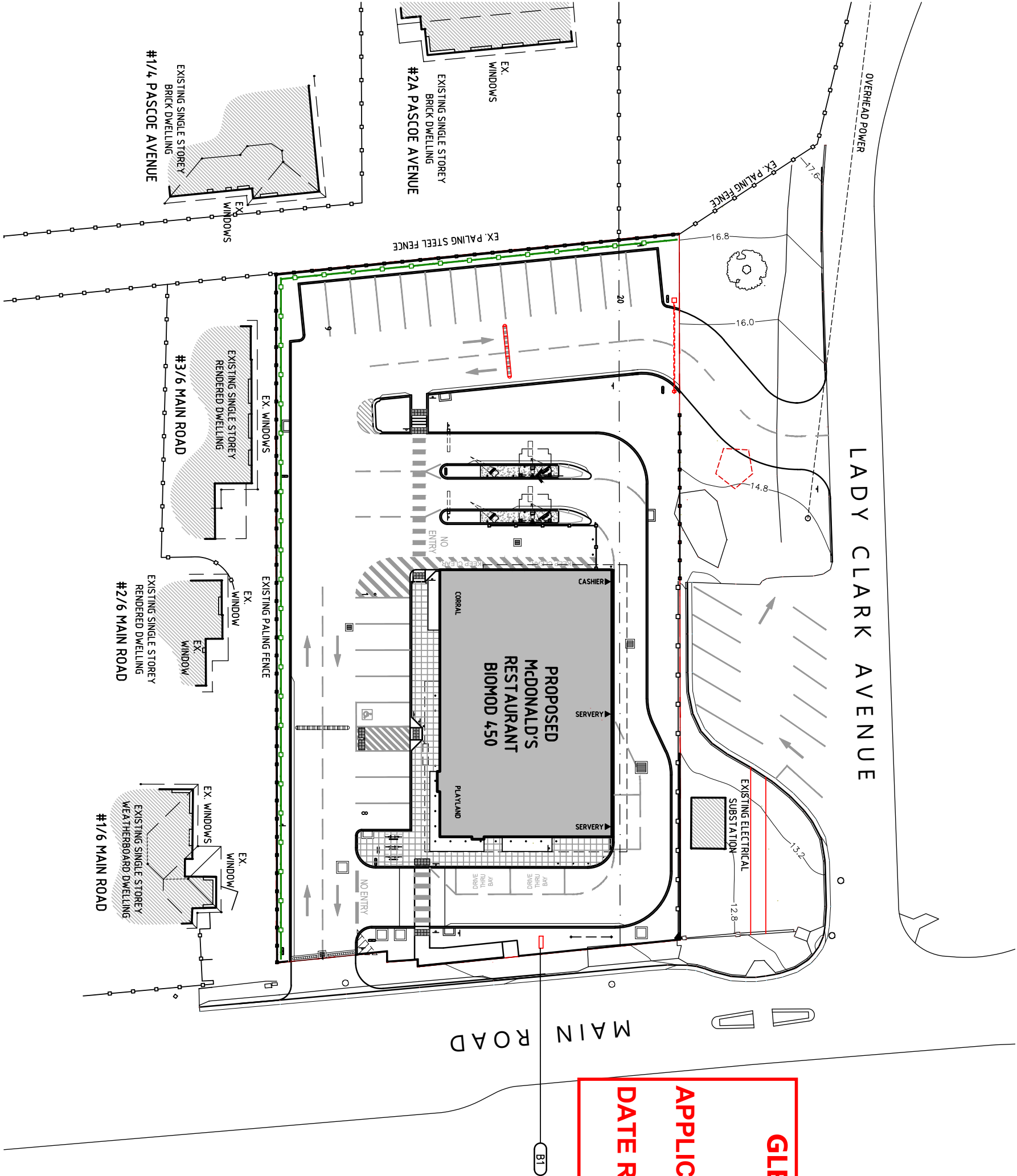
Drawing Number

0319

B801

Issue

A



GLENORCHY CITY COUNCIL
PLANNING SERVICES
APPLICATION NO PLAM-23/03
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SIGNAGE SCHEDULE		ILLUMINATION
TAG	DESCRIPTION	YES
B1	BLADE SIGN 1.2m WIDE x 3.6m O/A HEIGHT	YES

REFERENCES
FOR BLADE DETAILS
(REFER DWG P805)

BLADE SIGNAGE
NOT TO BE USED DURING CONSTRUCTION

GLENORCHY CITY COUNCIL

PLANNING SERVICES

APPLICATION NO

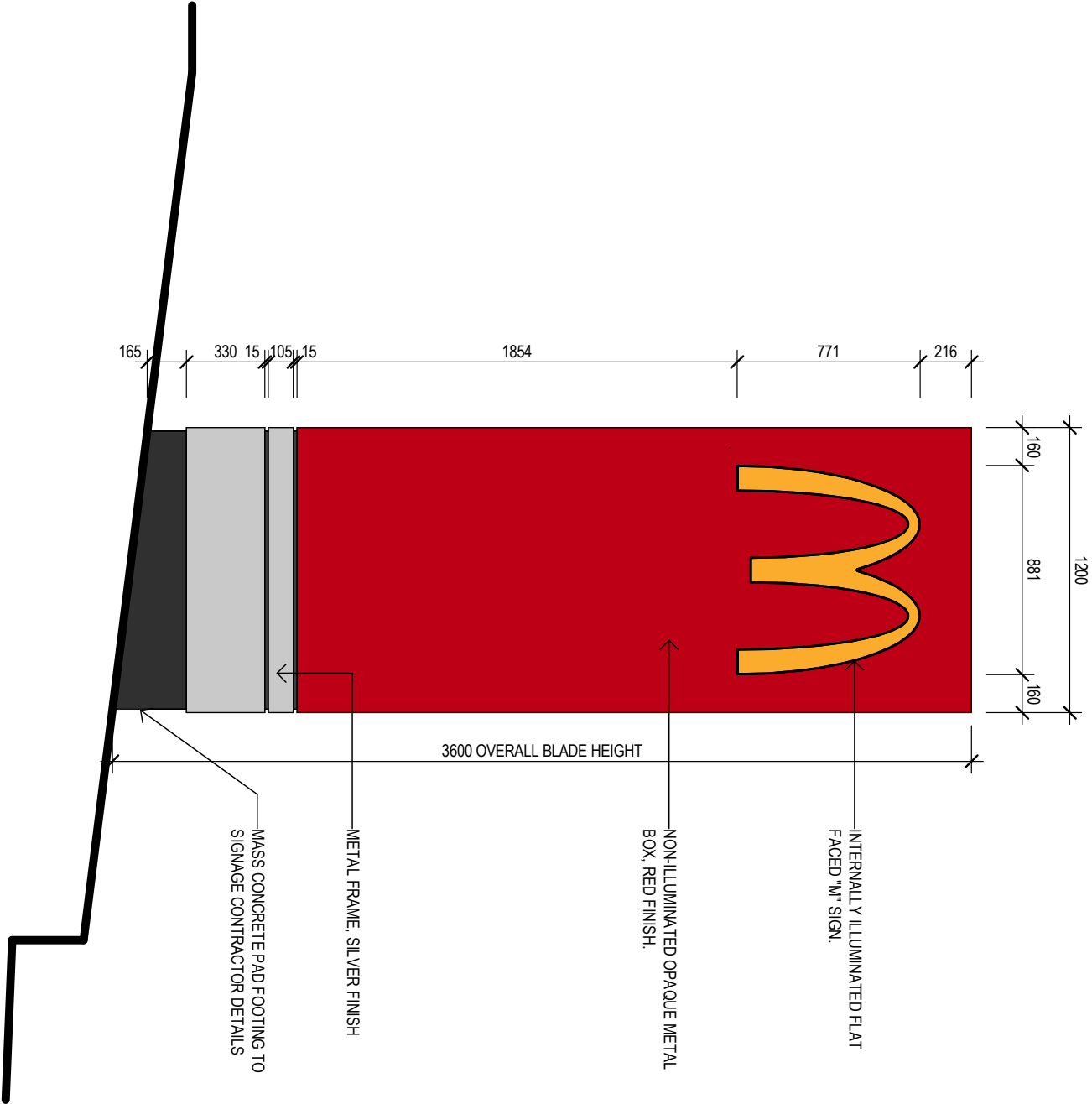
PLAM-23/03

DATE RECEIVED

13 November 2023

Revisions	General Notes	Drawing Notes
A. NEW BLADE SIGNAGE DETAILS	Do not scale this drawing. The drawing shows design intent only. All dimensions to be checked on site prior to construction or production. Construction details to be confirmed by contract administrator. This is a preliminary drawing and is not to be used for construction. Figure dimensions are to be used. Contract administrator to confirm if dimensions are not clear. All dimensions are in millimetres. All discrepancies and omissions on site must be reported to the architect for their	
Issue/Description	Date	Chk. Int.
	13.10.2023	3

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 McDonald's Australia Limited URN 43108 498 928 08 9418 5554 design@au.mcd.com	Client	 ARCHITECTURE + DESIGN T: 61 3 9417 2211 M: 08 9418 5554 L: 1201 SMITH ST, COLLINGWOOD, 3068 VIC AUSTRALIA	Architect	Project PROPOSED NEW CONVENIENCE RESTAURANT "McDONALD'S CLAREMONT" Location 8-10 MAIN ROAD CLAREMONT TAS 7011	Scale 1 : 25 @ A3	Series BIO MOD_450	Drawing BLADE SIGN DETAILS	Project Number 0319	Drawing Number B805	Issue A
							Project Manager NATIONAL DEVELOPMENT GROUP			

BLADE SIGNAGE
NOT FOR USE DURING CONSTRUCTION

MCDONALD'S CLAREMONT

8-10 MAIN ROAD
CLAREMONT TAS 7011

**GLENORCHY CITY COUNCIL
PLANNING SERVICES**
APPLICATION No PLAM-23/03
DATE RECEIVED 13 November 2023

STAGE:

DAISSUE
ANCILLARY SIGNAGE PACKAGE

AMENDMENT:
RFI RESPONSE OCTOBER 2023



McDonald's Australia Limited
ABN: 43 008 496 928
☎ 03 9418 5555
✉ devgroup-aust@au.mcd.com

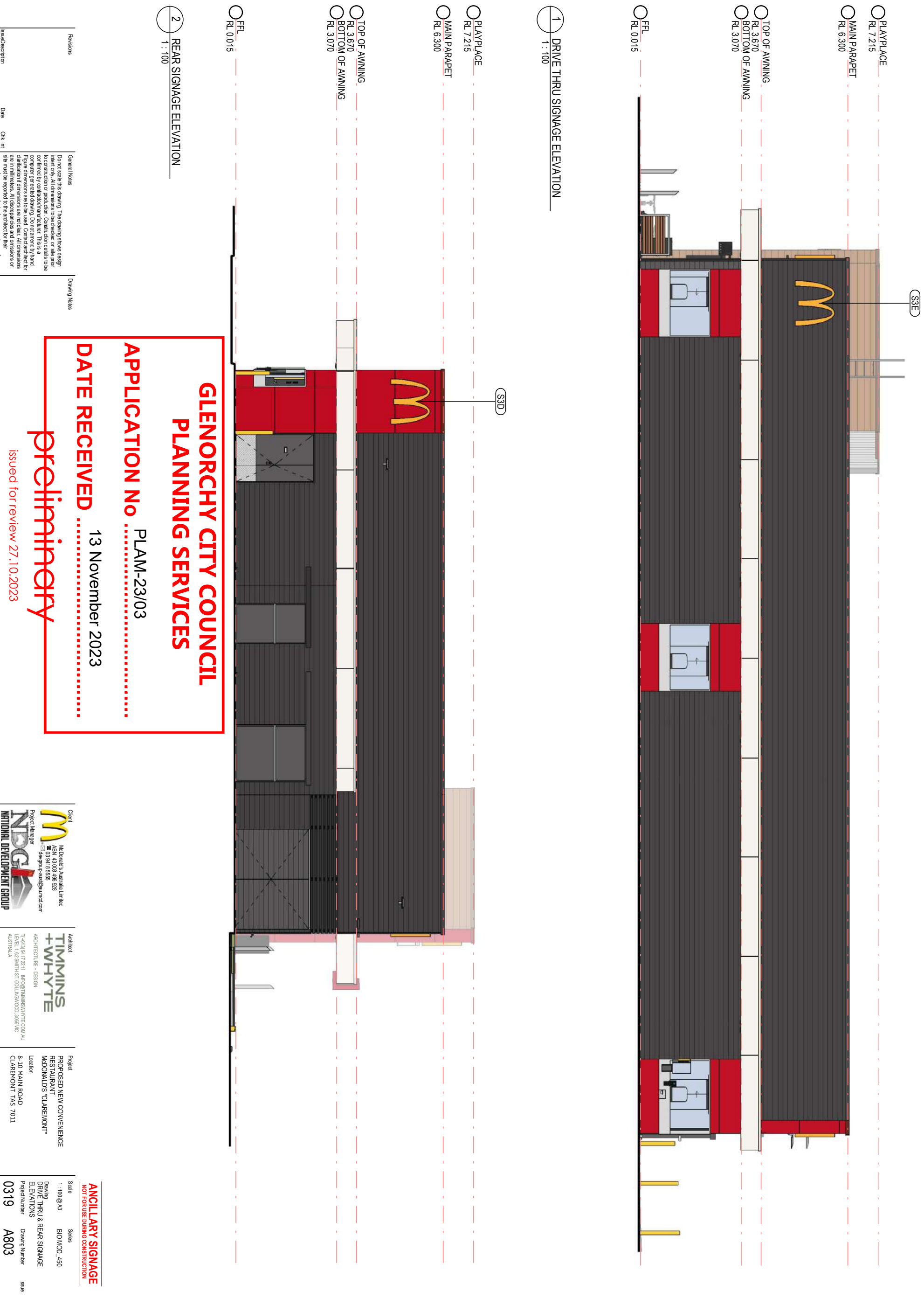
preliminary
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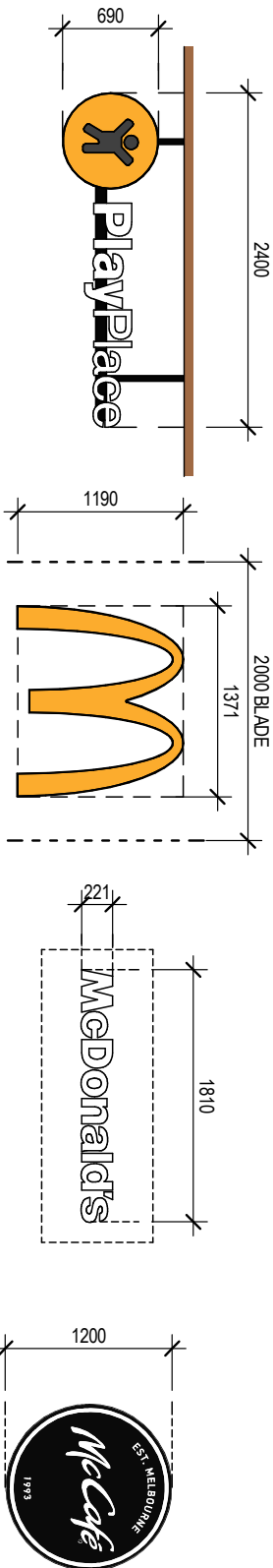
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GLENORCHY CITY COUNCIL
PLANNING SERVICES

APPLICATION No PLAM-23/03

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S2 PLAYPLACE
1 : 50

YELLOW LOGO WITH INDIVIDUAL
POLYCARBONATE LETTERING FIXED TO FRAME.
INTERNALLY ILLUMINATED. WHITE LETTERS.

S3 WALL SIGN
1 : 50

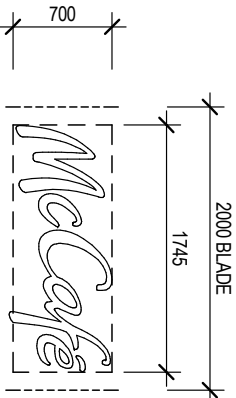
YELLOW FLAT FACE POLYCARBONATE
LOGO. INTERNALLY ILLUMINATED.
YELLOW LOGO

S4 CLIP SIGN
1 : 50

LED ILLUMINATED WORDMARK ONLY.
RED CLIP TO BE CONSTRUCTED BY
THE BUILDER..

S5 McCAFE WALL BUTTON SIGN
1 : 50

FABRICATED METAL BUTTON SIGN.
OPAL FACES WITH BLACK VINYL
GRAPHICS. LED ILLUMINATION.

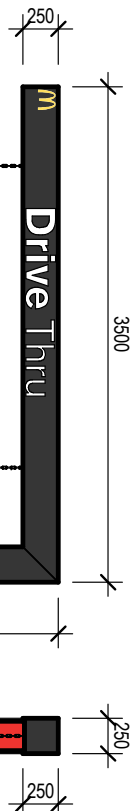
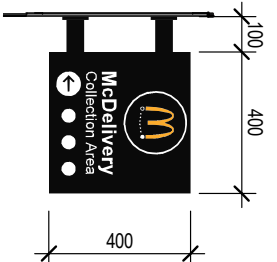


S5 WALL SIGN
1 : 50

INDIVIDUAL HALO ILLUMINATED
REVERSE PAN FABRICATED ALUMINIUM
CHANNEL LETTERS. BRUSHED
ALUMINIUM FINISH.

S6 McDELIVERY WALL SIGN
1 : 20

FABRICATED METAL SIGN.
OPAL FACES WITH BLACK VINYL
GRAPHICS. LED ILLUMINATION.



SIGNAGE CONTRACTOR TO CHECK
MINIMUM HEIGHT CLEARANCE ALONG THE
DRIVE THRU LANE, INCLUDING COD
AWNING AND BOOTH CANOPIES. SET THE
CLEARANCE BAR 100mm (NOM.) BELOW
THIS LEVEL AND CLEARANCE HEIGHT
LETTERING NOMINATED ACCORDINGLY.

S9 HEIGHT CLEARANCE GANTRY
1 : 50



SIDE

OCU FRONT OCU SIDE

S7 FRONT

S7 SIDE

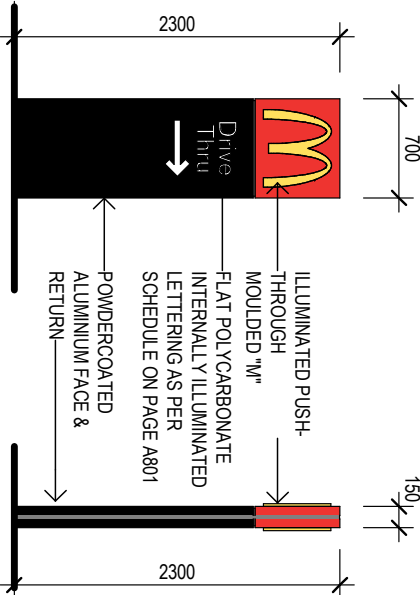
S7 FRONT DOUBLE

S7 SIDE DOUBLE

S8 DIRECTIONAL SIGNAGE
1 : 50

ALTERNATIVE
WORDING
(ALL IN TITLE CASE):

"NO ENTRY" "WELCOME" "THANK YOU" "ENTRY"
W/- ARROWS" W/- ARROWS" "EXIT" "NO
"DRIVE-THRU "DRIVE-THRU
ANY LANE, ANY TIME" W/- ARROWS" ENTRY"



FRONT

SIDE

preliminary
issued for review 27.10.2023

Client	McDonald's Australia Limited 180 43 008 498 928 180 59 018 558 design@au.mcd.com	Architect	TIMMINS +WHYTE ARCHITECTURE + DESIGN T: 61 3 941 2211 M: 08 91111111 L: 180 59 018 558 180 59 018 558	Project	PROPOSED NEW CONVENIENCE RESTAURANT "McDONALD'S CLAREMONT"	Scale	As indicated @ A3	Series	BIO MOD_450
Project Manager	Project Manager	Location	Location	Drawing	Drawing	Project Number	Project Number	Issue	Issue
NATIONAL DEVELOPMENT GROUP	NATIONAL DEVELOPMENT GROUP	CLAREMONT TAS 7011	CLAREMONT TAS 7011	SIGNAGE DETAILS	SIGNAGE DETAILS	0319	0319	A806	A806

ANCILLARY SIGNAGE
NOT FOR USE DURING CONSTRUCTION

GLENORCHY CITY COUNCIL

PLANNING SERVICES

APPLICATION No

PLAM-23/03

LATE RECEIVED

13 November 2023

S11 CARPARK METAL SIGNS
1 : 10

DEPENDENT ON LOCATION WITHIN SITE, S11 SIGNAGE SHOULD BE SET A MINIMUM OF 2m ABOVE TOP OF KERB TO PREVENT OBSTRUCTION TO OCCASIONAL PEDESTRIANS, OR TO REDUCE INTERFERENCE FROM PARKED VEHICLES. IF THIS DOESN'T APPLY, SIGNAGE HEIGHTS SHALL BE SET AS NOTED.



Revisions	General Notes	Drawing Notes
Issued/Description	Do not scale this drawing. The drawing shows design intent only. All dimensions to be checked on site prior to construction or production. Construction details to be confirmed by contract document/contract. This is a preliminary drawing and is not to be used for construction. Figure dimensions are to be used. Contract/contract for clarification if dimensions are not clear. All dimensions are in millimeters. All discrepancies and omissions on site must be reported to the architect for their	

Date

Chk. Int.

Site

Scale

Issue

Project

Location

Project Number

Drawing Number

Issue

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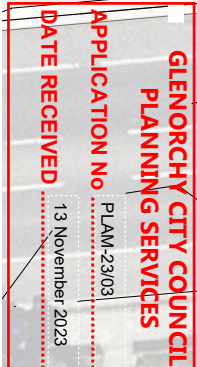
Issue

Project

Location

Project Number

Drawing Number



	<i>Acacia melanocoryn</i>		<i>Melia azadirach</i>		<i>Populus cathartica</i> 'Catali'		<i>Ulmus parvifolia</i> Bureley Select		<i>Ficus microcarpa</i> Hilli 'Taati'		<i>Banksia spinulosa</i>		<i>Cereus reliqua</i>		<i>Schinus molle</i> 'variusus'
	<i>Acacia rubicosa</i> Jarvis		<i>Westringia</i> 'Grey Box'		<i>Carex appressa</i>		<i>Dianella revoluta</i>		<i>Liriodendron</i> 'Evergreen'		<i>Lomandra longifolia</i> 'lanika'		<i>Lomandra longifolia</i> 'spray'		<i>Myoporum parvifolium</i>

INDICATIVE PLANTING PALETTE

Job No. 24209/LA | DETAILED LANDSCAPE PLAN | REV A

STRALIA LIMITED
Claremont, TAS 7011
Glenorchy City Council

TAILED LANDSCAPE PLAN

L01: Overall Layout

- | LEGEND | |
|--------|--|
| | Street Trees to be Retained
(Subject to Council / Responsible Authority Approval) |
| | Proposed Trees
(Refer to planting schedule) |
| | Proposed Shrubs
(Refer to planting schedule) |
| | Proposed Low Grasses
(Refer to planting schedule) |
| | Mulched Gardenbed
(Woodstock, Hoggard Bank or similar) |
| | Nature Strip
(Subject to future road widening, works by others) |
| | Pedestrian Access
(Tire Pavement) |
| | Road / Carpark
(Asphalt surface) |
| | Concrete
(Concrete surface) |
| | Footpath
(Concrete surface) |
| | Property Boundary |

LANDSCAPE NOTES:

If irrigation is to be installed, we recommend an automatic controller, such as Rainbird ESP or similar. Lateral lines should be PVC and HDPE combination, drip irrigation lines are to be Netafirm Techline® or similar, installed beneath mulch.

A qualified irrigation contractor should be engaged to design the system (including controller, valves and piping requirements) and to complete a irrigation works (trenching and conduit installation may be completed by the contractor).

Conduits to planters and garden beds are to be installed beneath paving; drainage outlet points are to be coordinated with the building storm water design.

Water and electrical connection points are to be coordinated with the building design and specified on the engineers' drawings. Upon completion, the system is to be tested and commissioned prior to hand-over, as-built drawings and manuals to be prepared and submitted.

DRAINAGE

Drainage for the development will be integrated and connected into the building stormwater design. Proposed topping areas to be graded/drainaged to prevent water discharge into neighbouring properties.

PLANTING

Driveway trees to have lower limbs uplifted to maintain clear site lines and be positioned to ensure trunk is offset min. 600mm from kerb. Trees adjacent to driveway should incorporate structural soil mix within 2.0m radius under pavement.

free from insects, diseases and weeds, the specified plant heights, and pot sizes are minimum values. If plant material is unavailable in these sizes, larger stock must be used. Plant substitution is not acceptable.

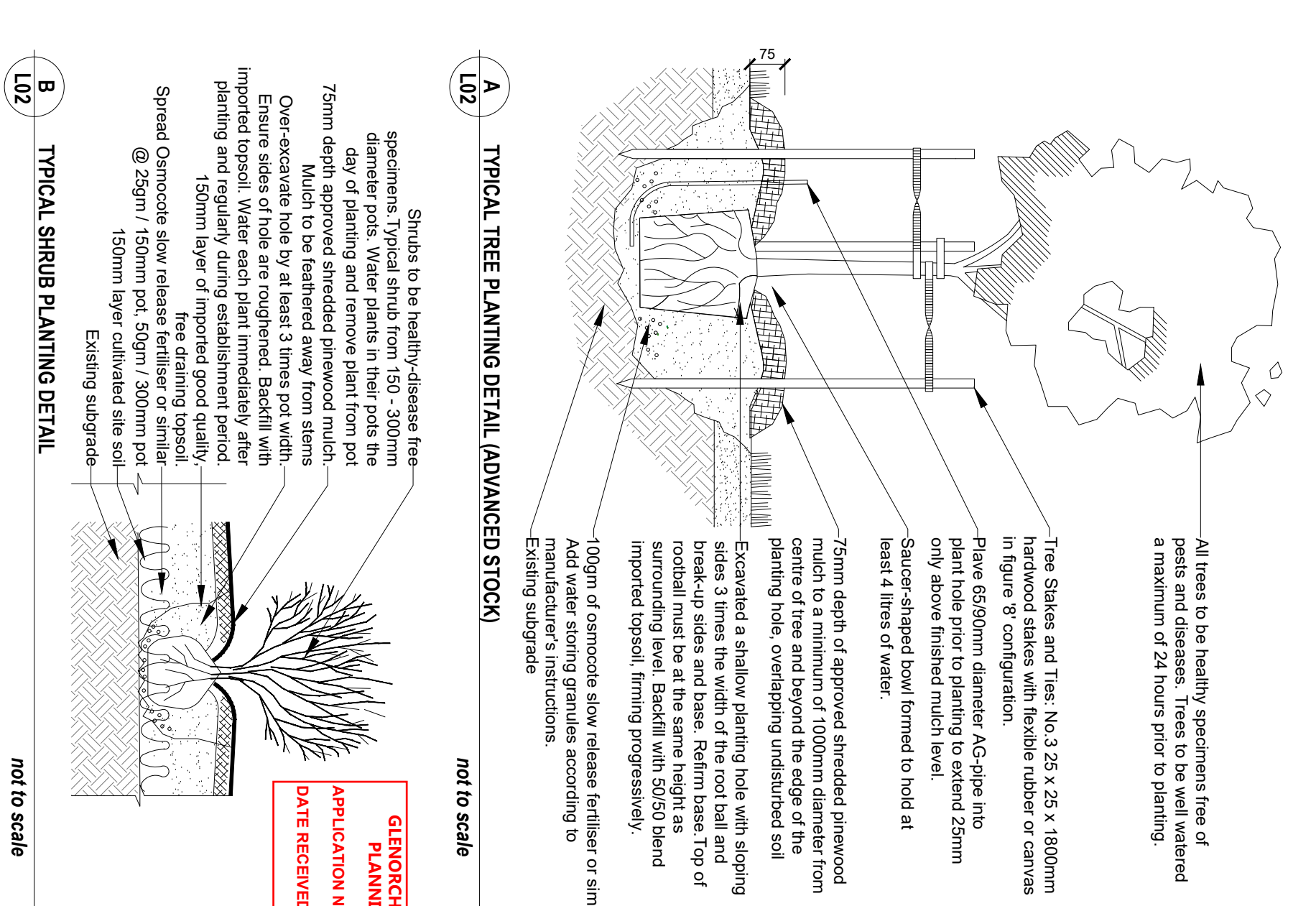
GENERAL NOTES

This drawing is for Town Planning purposes only.
Do not scale from plan - contractor to verify a
dimensions on site prior to commencing
construction.

The plants used have low water requirements. Native plant species selection chosen for environmental appropriateness and low maintenance/irrigation requirements.

Low growing shrub forms maintain sight lines and provide colour interest.

Neat architectural foliage to provide year-round green texture without ongoing maintenance (clipping, pruning) requirements.



MAINTENANCE NOTES

The Landscape maintenance period is to be a minimum **12 months** duration from Practical Completion and continue until Hand Over to McDonald's.

Maintenance shall be comprised of the following works to ensure continuous healthy growth of all vegetation and ensure the site is maintained in a tidy fashion for the duration of the Maintenance Period:

- initial establishment (first 3 months);
- **minimum weekly site visits**

Consolidation period (3-6 months);

- **minimum weekly site visits during warmer months**
- **minimum fortnightly site visits during cooler months**

Ongoing period (6-24 months);

- **minimum fortnightly site visits**

Maintenance Works

Commencement: Immediately following Practical Completion

Maintenance Period Duration: 12 months (52 weeks)

Actions to be undertaken: All vegetation planted as part of the program of works will be regularly maintained to ensure ongoing health and establishment of the works, including:

- watering,
- rubbish removal,
- fertilising,
- pest and disease control,
- re-staking and tying,
- replanting,
- mulching, and
- pruning.

This work will be undertaken by the landscape contractor appointed by the developer. The work is to be undertaken on a minimum basis outlined above and as required to ensure successful establishment as per the contract specifications.

The developer will be responsible for the costs associated with the Maintenance Period until handed over to Council.

Maintenance Specification

Maintain the landscape works intensely for a period of 13 weeks to ensure healthy establishment (weekly visits) followed by regular ongoing maintenance for a minimum duration of 12 months following the date of the issue of the Certificate of Practical Completion by the Superintendent. Any defects shall be rectified immediately.

Maintenance shall include the care of the works by accepted horticultural practices, as well as rectifying any defects that become apparent in the works under normal use. This shall include, but shall not be limited to, the following items where and as required:

WATERING, FERTILIZING, CULTIVATION, TOP DRESSING, RENOVAING, WEEDING, PESTS AND DISEASE CONTROL, STAKING MAINTENANCE, REPLACEMENT OF PLANT MATERIALS, REPLANTING, PRUNING, RE-MULCHING, MOWING OF GRASS, KEEPING THE SITE NEAT AND TIDY.

Any soil subsidence or erosion which may occur after the soil filling and preparation operations shall be made good.

All newly planted areas shall be protected from casual pedestrian traffic as specified herein. Protective fences, where required, shall be removed following successful establishment of the works.

All mulched surfaces shall be kept in a clean and tidy condition and be reinstated or topped up where necessary.

Defects liability: The whole of the works shall be upheld against any defects due to faulty and / or inferior quality materials and / or workmanship as per the requirements of the Head Contract.

Practical completion of planting: Practical completion of the planting works includes, but is not limited to the replacement of plants which have failed, been damaged or been stolen during the works.

Program: Furnish a proposed planting maintenance program, and amend it as required. Comply with the amended program.

Log book: Keep a log book recording when and what maintenance work has been done and what materials, including toxic materials, have been used. Make the log book available for inspection on request.

Existing planting and grass: Where existing planting or grass is within the landscape contract area, maintain it as for the corresponding classifications of new grassland or planting.

Recurrent works: Throughout the maintenance period, continue to carry out recurrent works of a maintenance nature including, but not limited to, watering, mowing, weeding, rubbish removal, fertilising, pest and disease control, reseeding, returfing, staking and tying, replanting, cultivating, pruning, hedge clipping, aerating, renovating, top dressing, weekly mowing of grass and keeping the site neat and tidy.

Replacements: Continue to replace failed, damaged or stolen plants. If failed due to incorrect/insufficient establishment or maintenance or technique, or neglect, no additional cost for replacement may be claimed. It is the Contractor's responsibility to demonstrate plants have been stolen/vandalised.

Mulched surfaces: Maintain the surface in a clean and tidy condition and reinstate the mulch as necessary.

Grassed areas: Carry out grass mowing throughout the contract period only as required to maintain the site in a neat, healthy condition

Insecticide Spraying: Spray against insect and fungus infestation as required, and if considered necessary by the Superintendent. All spraying shall be carried out in accordance with the manufacturer's directions.

Report any occurrence of insect attack or evidence of disease amongst the plant material. The Superintendent shall be notified prior to spraying work being carried out.

Watering: All planting and garden beds are to be watered regularly to ensure continuous healthy growth. The minimum requirement shall be consistent with the natural rainfall of the site location. New planting shall receive regular and frequent deep soakings to ensure establishment and healthy growth. Watering method and technique shall accord with current water restrictions. Monitor water requirements and water adequately to ensure active growth, especially during warmer months.

Garden Areas: Garden beds shall be maintained in a weed free state. Any use of spot spraying or other form of weeding shall be undertaken so as not to damage plants planted as art of the contract. Any planting planted as part of the contract which is damaged by the contractor shall be replaced at the contractor's expense.

The Contractor shall mow the grass areas at a suitable height as instructed so as to maintain healthy growth and a neat appearance. The mowing frequency may be subject to change as approved by the Superintendent due to weather and other circumstances. Other maintenance activities for grassing such as weeding, reseeding, and rolling etc, shall be priced separately and approved by the Superintendent. If approved, grass areas to be weeded shall be sprayed with approved selective herbicide against broadleaf weeds in accordance with the manufacturer's directions.

Expiry: On expiry of the **52 week** Maintenance Period, a site inspection shall be arranged between the Superintendent or Landscape Architect and the Landscape Contractor. On approval of the works, and rectification of any defects, the Maintenance Period shall be deemed completed. A final Completion Certificate will then be issued.

Disclaimer

This email, including any attachments, may be confidential and/or legally privileged. You must not use, access or disclose it other than for the purpose for which it was sent. If you receive this message or any attachments or information in it in error, please destroy and delete all copies and notify the sender immediately by return email or by contacting TasWater by telephone on 136992. You must not use, interfere with, disclose, copy or retain this email. TasWater will not accept liability for any errors, omissions, viruses, loss and/or damage arising from using, opening or transmitting this email



Amended Submission to Planning Authority Notice

Council Planning Permit No.	PLAM-23/03	Council notice date	31/05/2023
TasWater details			
TasWater Reference No.	TWDA 2023/00700-GCC	Date of response	17/11/2023 06/06/2023
TasWater Contact	Timothy Carr Karen Triffett (Trade Waste)	Phone No.	0419 306 130 0439 492 314
Response issued to			
Council name	GLENORCHY CITY COUNCIL		
Contact details	gccmail@gcc.tas.gov.au		
Development details			
Address	8-10 MAIN RD, CLAREMONT	Property ID (PID)	5329948
Description of development	Take Away Food Services Restaurant & Drive Through		
Schedule of drawings/documents			
Prepared by	Drawing/document No.	Revision No.	Date of Issue
TIMMINS + WHYTE	Proposed Site Plan – A062	B 1	30/08/2023 06/04/2023
Conditions			
Pursuant to the <i>Water and Sewerage Industry Act 2008 (TAS)</i> Section 56P(1) TasWater makes the following submission(s): 1. TasWater does not object and has no formal comments for the Tasmanian Planning Commission in relation to this matter and does not require to be notified of nor attend any subsequent hearings. Pursuant to the <i>Water and Sewerage Industry Act 2008 (TAS)</i> Section 56P(1) TasWater imposes the following conditions on the permit for this application: CONNECTIONS, METERING & BACKFLOW 2. A suitably sized water supply with a metered connection and sewerage system and connection to the development must be designed and constructed to TasWater's satisfaction and be in accordance with any other conditions in this permit. 3. 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. 4. Prior to commencing construction of the development, any water connection utilised for construction must have a backflow prevention device and water meter installed, to the satisfaction of TasWater. TRADE WASTE 5. Prior to the commencement of operation the developer/property owner must obtain Consent to discharge Trade Waste from TasWater. 6. The developer must install appropriately sized and suitable pre-treatment devices prior to gaining Consent to discharge. 7. The Developer/property owner must comply with all TasWater conditions prescribed in the Trade Waste Consent.			



DEVELOPMENT ASSESSMENT FEES

8. The applicant or landowner as the case may be, must pay a development assessment fee of \$376.68 to TasWater, as approved by the Economic Regulator and the fee 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>

Service Locations

Please note that the developer is responsible for arranging to locate the existing TasWater infrastructure and clearly showing it on the drawings. Existing TasWater infrastructure may be located by a surveyor and/or a private contractor engaged at the developers cost to locate the infrastructure.

- (a) A permit is required to work within TasWater's easements or in the vicinity of its infrastructure.

Further information can be obtained from TasWater.

- (b) TasWater has listed a number of service providers who can provide asset detection and location services should you require it. Visit <https://www.taswater.com.au/building-and-development/service-locations> for a list of companies.

- (c) Sewer drainage plans or Inspection Openings (IO) for residential properties are available from your local council.

Trade Waste

Prior to any Building and/or Plumbing work being undertaken, the applicant will need to apply to TasWater for a Certificate for Certifiable Work (Building and/or Plumbing). The Certificate for Certifiable Work (Building and/or Plumbing) must accompany all documentation submitted to Council.

Documentation must include a floor and site plan with:

Location of all pre-treatment devices i.e. grease arrestor;

Schematic drawings and specification (including the size and type) of any proposed pre-treatment device and drainage design; and

Location of an accessible sampling point in accordance with the TasWater Trade Waste Flow Meter and Sampling Specifications for sampling discharge.

At the time of submitting the Certificate for Certifiable Work (Building and/or Plumbing) a Trade Waste Application form is also required.

If the nature of the business changes or the business is sold, TasWater is required to be informed in order to review the pre-treatment assessment.

The application forms are available at <http://www.taswater.com.au/Customers/Liquid-Trade-waste/Commercial>

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



Applicants supporting documents

Acoustic Response to RFI	2
Acoustic Report – Clarity Acoustics	7
Obtrusive Light Analysis, Rubidium Light	47
Odour Risk Assessment – ES&D Consulting	52
Stormwater Management Report, JMG	70
Transport Impact Assessment, Ratio	92
Environmental Site Assessment EM&C	175

Consultant Advice



To: McDonalds Australia

Attention: Stephanie Richardson

From: Ross Leo

Project: McDonald's Claremont

Date: 21 September 2023

Re: Response to Council queries

Dear Stephanie,

Thank you for your time on the phone earlier this week. As discussed, the following summarises our response to Council's queries in relation to the acoustic report for the above application.

1 The adopted criteria for noise emissions associated with the proposed development are as follows:

- "LAeq, 15 minute $\leq$ the existing background noise level (LA90, 15 minute) + 5 dB
- A sleep disturbance criterion of 60 dB LAmax
- A low frequency noise threshold of C-weighted noise level minus A-weighted $\leq$ 15 dB."

However, details regarding the sleep disturbance value of 60dB for the LAmax is required. Please detail how 60 dB LAmax is more appropriate than the criteria provided in the New South Wales Noise Policy for Industry (2017) as (LAeq, 15min 40 dB(A) or the prevailing RBL plus 5 dB, whichever is the greater, and/or LAfmax 52 dB(A) or the prevailing RBL plus 15 dB, whichever is the greater).

The assessment must cover the maximum noise level, the extent to which the maximum noise level exceeds the rating background noise level, and the number of times this happens during the night-time period.

CA Comments:

The NSW Noise Policy for Industry (NPfI) provides the above criteria as an initial test and recommends that, if the above criteria are exceeded, a detailed test should be undertaken. The NPfI then refers to the NSW Road Noise Policy (NSW RNP) for further guidance in relation to the detailed maximum noise level assessment. The methodology used in the Acoustic Report is consistent with the recommendations outlined in the NSW RNP.

Furthermore, the proposed 60 dB LAmax is also consistent with the acoustic environment indicator level for outside bedrooms at night as outlined in the *Environment Protection Policy (Noise)* 2009 published by the Department of Environment, Parks, Heritage and the Arts Tasmania.

2 The cumulative noise (Table 6-8) must include vehicle and patron noise levels.

CA Comments:

Noted and the Acoustic Report has been updated to clarify this matter.



3 Detail the method/calculations/mitigation factors relating to how the vehicle noise values listed in Table 12 are mitigated to achieve the noise levels provided in Table 10

CA Comments:

The values presented in Table 12 are sound power levels. A sound power level is a measure of the inherent acoustic energy of a noise source and is not dependent on noise source distance, position or environment. A sound pressure level is the noise level that is experienced at a particular distance/position in relation to a noise source and is dependent on the environment in the surrounding area. If sound power level is considered the acoustic equivalent of the wattage/lumens of a light bulb then sound pressure level is considered the acoustic equivalent of brightness in a space or environment.

In this instance, the sound power levels are converted to sound pressure levels at the nearby noise sensitive receivers in accordance with International Standard ISO 9613-2:1996 *Acoustics – Attenuation of sound during propagation outdoors – Part 2: General method of calculation* considering the following noise propagation factors:

- Attenuation of noise provided by the distance between the source and receiver, the built form of the subject site and any existing intervening screening structures
- Reflections from built form, adjacent buildings, screening structures and the ground surface
- Duration of exposure at the receiver locations.

4 Provide what is the estimated noise attenuation value from the acoustic walls?

CA Comments:

Typically, acoustic walls which are appropriately designed and built can achieve a noise reduction of approximately 10-15 dB, however, the noise attenuation provided by any acoustic wall is dependent on the following factors:

- Location and height of noise source relative to the noise sensitive receiver
- Height of acoustic wall
- Distance between the noise source and the acoustic wall
- Distance between the noise sensitive receiver and the acoustic wall
- Acoustic spectrum of noise source
- Acoustic reflections of hard surfaces.

All of these factors are considered in the ultimate design of the acoustic walls for the subject site.

5 Provide the background data collected over the entire data collection period. It is noted the monitoring period occurred from 14th of December to the 28th of December which incorporates the Christmas period. The associated background impacts of undertaking background monitoring during this time period are unknown without reviewing that data collected.

CA Comments:

The Acoustic Report has been updated to include the background noise monitoring data.



6 Detail the associated times for 'day', 'evening' and 'night'.

CA Comments:

The day, evening and night periods outlined in the EPA Tasmania's *Noise Measurement Procedures Manual* (2008) have been adopted in the Acoustic Report as follows:

- Day – 0700 to 1800 hours
- Evening – 1800 to 2200 hours
- Night – 2200 hours to 0700 hours.

The Acoustic Report has been updated to clarify this.

7 Detail how many times are the estimated L_{Amax} markers expected to be hit per night as per Table 10

CA Comments:

The sleep disturbance assessment is not based on the number of events but the maximum noise level of events. Notwithstanding this, as a general rule we consider that a worst-case vehicle movement constitutes less than 5 % of all vehicles for a site such as this.

8 The sensitive receiver located at 13 Main Road, Claremont TAS 7011 has not been accounted for. 13 Main Road, Claremont TAS 7011 is required to be considered in the calculations.

CA Comments:

Noted and the Acoustic Report has been updated to include the dwelling at 13 Main Road, Claremont.

9 Confirm the delivery times as it is stated as 7am – 10pm 7 days a week on page 5 and contradicted on page 11.

CA Comments:

Noted and the Acoustic Report has been updated to clarify this matter.

10 Background monitoring occurred in a single location and was not undertaken at any of the sensitive receivers' locations. Background noise levels currently experienced at the sensitive receivers is required.

CA Comments:

The L_{A90} acoustic parameter is used to quantify the background noise level in an area and is sometimes referred to as the "repeatable minimum noise level". The L_{A90} acoustic parameter is defined as the noise level exceeded for 90% of a given period (or the lowest 10% over a given period). In this case, the given period is 10 minutes. By definition, a background noise level measurement excludes noise sources such as local traffic etc unless there is constant traffic over the 10-minute period and the measured background noise level typically reflects the distant hum of traffic over the broader road network and other more distant noise sources.

For the subject site assessment, background noise levels were measured in 10-minute intervals between 14 December and 28 December 2022. The measured background noise levels were then divided in to the day, evening and night periods (as outlined in the EPA Tasmania's *Noise Measurement Procedures Manual*). For each of the day, evening and night periods, the 10th percentile value (i.e., lowest 10 %) of measured background noise levels is calculated and the median of the day, evening and night periods is then used in the assessment to determine appropriate noise criteria applicable to the development.

The background noise levels presented in the report have been calculated in accordance with the *Noise Measurement Procedures Manual* and effectively represent the lowest 1 % of noise over the day, evening and night periods during the 2-week monitoring period.



The *Noise Measurement Procedures Manual* includes the following guidance:

A background measurement is intended to provide an indication of the quiet ambient conditions over an extended area. As such, the background noise level should not change significantly for modest changes in location.

The background noise monitoring and assessment was conducted in accordance with the guidance outlined in the *Noise Measurement Procedures Manual* and, in our experience, background noise levels do not vary over the area in question. As such, it is our opinion that the measured background noise levels are representative of the background noise levels at nearby receiver positions and we do not believe additional noise monitoring is necessary.

11 Detail the means in ensuring 'refrigeration condensers associated with delivery vehicles must be switched off during deliveries (i.e., prior to entering the site)' and the impacts if this does not occur (page 11).

CA Comments:

While noise from a truck refrigeration condenser operating as the vehicle moves through the subject site would not affect compliance, if the refrigeration condenser remained on while the truck is being unloaded a non-compliance may occur at 1/4 Pascoe Avenue and 3/6 Main Street.

Restricting refrigeration condenser use is a reasonably common noise control measure and has been implemented at many sites including supermarkets, convenience restaurants and service stations. This would require management to inform suppliers/delivery companies of this restriction and the installation of signage within the loading dock area ensuring delivery drivers are aware of this restriction.

12 The loading zone requires delivery vehicles to reverse into the loading bay. Detail the impacts associated with reverse warning systems inclusive of sensitive receiver predicted noise readings. The entry and exit path identified in the traffic management plan occurs in close proximity to the residential receivers and needs to be accounted for

CA Comments:

A + 2 dB tonal correction has been applied to reflect the tonality associated with reversing beepers for delivery and waste collection vehicles. The Acoustic Report has been updated to clarify this matter.

13 What are the mitigatory values associated with the residential dwelling and what material standard is that based on? (i.e. current construction methods i.e. double glazing, or other methods)

CA Comments:

As the assessment positions are external to dwellings, dwelling sound insulation is not a consideration in the assessment.

14 How has the noise modelling and adopted noise criteria considered noise character, with respect to tonality? In the Vic. Guidelines when the noise is tonal in character then an adjustment is made:

- when the tonal character of the noise is just detectable then $A_{tone} = +2$ dB;
- when the tonal character of the noise is prominent then $A_{tone} = +5$ dB

CA Comments:

A + 2 dB tonal correction has been applied to reflect the tonality of reversing beeper for delivery and waste collection vehicles. The Acoustic report has been updated to clarify this matter.



We trust the above information meets your requirements. If you have any queries or require any further information, please do not hesitate to contact us.

Yours faithfully

A handwritten signature in black ink, appearing to read "Ross Leo", is placed over a light grey rectangular background.

Ross Leo
Director

CLARITY ACOUSTICS PTY LTD



Report R01 Rev2 22193

21 September 2023

8-10 Main Road, Claremont

Planning Application - Acoustic Assessment Report

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**PROJECT SUMMARY:**

R01 Rev2 22193
 8-10 Main Road, Claremont
 Planning Application Acoustic Report

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1.0 INTRODUCTION

McDonald's Australia Ltd propose to develop a new restaurant with associated drive through facility at 8-10 Main Road in Claremont.

Clarity Acoustics Pty Ltd (Clarity Acoustics) has been engaged by McDonald's Australia Ltd to conduct an acoustic assessment for the proposed development to be submitted as part of the planning application.

This report provides details of the proposed site operations, measured background noise environment, relevant noise criteria, recommended noise controls and an assessment of operational noise with the incorporation of the recommended noise controls.

A glossary of acoustic terminology used in this report is provided in APPENDIX A.

2.0 PROJECT DESCRIPTION

2.1 Subject site

The subject site is located to the west of Main Road in Claremont and is bounded by:

- Lady Clark Avenue to the north-west with club rooms and dwellings beyond
- Dwellings on Pascoe Avenue to the west and south-west
- Dwellings on Main Road to the south and south-east
- Main Road the north-east with Claremont Recreation Ground and dwellings beyond.

The nearest receivers are dwellings on Main Road to the south-east of the subject site and on Pascoe Avenue to the west and south-west of the subject site.

2.2 Nearest affected noise sensitive receivers

Table 1 provides details of the nearest affected receivers that have been considered in the following assessment.

Table 1 - Details of the nearest noise sensitive receivers

ID	Address	Description
R1	1/6 Main Road	Single storey dwelling to the south-east of the subject site
R2	2/6 Main Road	Single storey dwelling to the south of the subject site
R3	3/6 Main Road	Single storey dwelling to the south of the subject site
R4	3/4 Pascoe Avenue	Single storey dwelling to the south-west of the subject site
R5	2A Pascoe Avenue	Single storey dwelling to the west of the subject site
R6	2 Lady Clark Avenue	Single storey dwelling to the north-west of the subject site
R7	13 Main Road	Single storey dwelling to the east of the subject site

An aerial photograph of the subject site and nearest affected receivers is provided in Figure 1.



Figure 1 - Aerial photograph of the subject site and receivers (source: Nearmap)



2.3 Proposed operations

The proposed development is to include a convenience restaurant with dual customer order devices (CODs) installed in parallel with a single drive through lane. The CODs will be located to the south-west of the restaurant building and the cashier and servery windows will be located along the north-western facade of the building.

The convenience restaurant will have a dedicated loading bay to the south-west of the restaurant building. Deliveries to the restaurant will be via delivery vans or delivery trucks up to 14 m in length. Waste collection from the subject site will also occur from the loading bay area.

Mechanical plant associated with subject site will be installed on the roof of the restaurant and will be shielded by the proposed parapet around the roof.

The proposed site layout is provided in APPENDIX B.

The subject site is proposed to operate between 0600-2300 hours, Sunday to Thursday and between 0600 hours-midnight, Friday and Saturday.



3.0 ADOPTED CRITERIA

The subject site is located within an Inner Residential Zone. Within an Inner Residential Zone, a food services use is classified as a discretionary use under the Glenorchy planning scheme provided it is not a take away food premises with a drive through facility. As such, part of the planning application seeks to include a site-specific amendment.

Discretionary use standards for an Inner Residential Zone include the following in relation to noise:

Objective That Discretionary uses do not cause an unreasonable loss of amenity to adjacent sensitive uses.	
Acceptable Solutions	Performance Criteria
A1 Hours of operation of a use listed as Discretionary, excluding Emergency Services, must be within the hours of: (a) 7.00am to 7.00pm Monday to Friday; and (b) 8.00am to 6.00pm Saturday and Sunday.	P1 Hours of operation of a use listed as Discretionary, excluding Emergency Services, must not cause an unreasonable loss of amenity to adjacent sensitive uses, having regard to: (a) the timing, duration or extent of vehicle movements; and (b) noise, lighting or other emissions.
A3 Commercial vehicle movements and the unloading and loading of commercial vehicles for a use listed as Discretionary, excluding Emergency Services, must be within the hours of: (a) 7:00am to 8:00pm Monday to Friday; (b) 9:00am to 12 noon Saturday; and (c) nil on Sunday and public holidays.	P3 Commercial vehicle movements and the unloading and loading of commercial vehicles for a use listed as Discretionary, excluding Emergency Services, must not cause an unreasonable loss of amenity to adjacent sensitive uses, having regard to: (a) the extent and timing of traffic generation; (b) the dispatch of goods and materials; and (c) existing levels of amenity.
A4 No Acceptable Solution.	P4 A use listed as Discretionary must not cause an unreasonable loss of amenity to adjacent sensitive uses, having regard to: (a) the intensity and scale of the use; (b) the emissions generated by the use; (c) the type and intensity of traffic generated by the use; (d) the impact on the character of the area; and (e) the need for the use in that location.



The above guidance does not provide objective noise measures required to be achieved for the proposed development at the subject site. In the absence of objective noise measures, and based on discussions with EPA Tasmania, we have adopted the following criteria for noise emissions associated with the proposed development:

- $L_{Aeq, 15 \text{ minute}} \leq \text{the existing background noise level (} L_{A90, 15 \text{ minute}}) + 5 \text{ dB}$
- A sleep disturbance criterion of 60 dB L_{Amax}
- A low frequency noise threshold of C-weighted noise level minus A-weighted $\leq 15 \text{ dB}$.

Each of the above criteria are discussed in more detail in the following sections.

3.1 $L_{Aeq, 15 \text{ minute}} \leq \text{the existing background noise level (} L_{A90, 15 \text{ minute}}) + 5 \text{ dB}$

A "background noise level plus" approach is commonly used for the assessment of noise and the proposed criteria are consistent with the Acceptable Solution A1 for sensitive uses within a substation facility between 1800 hours and 0800 hours (C4.5.1) under the Glenorchy Planning Scheme. The proposed criteria are also consistent with Acceptable Solutions in other jurisdictions such as the Clarence Interim Planning Scheme 2015 use standard for General Business Zone (between 1900 hours and 0700 hours).

It should be noted that in the examples provided above, the noise criterion applicable during between 0700-1900 hours is 55 dB $L_{Aeq, 15 \text{ minute}}$ which is considerably higher than the criteria proposed to be applied to the development.

Furthermore, the proposed criteria are consistent with the intrusiveness criteria in NSW EPA's *Noise Policy for Industry* (NPfI) however, under the NPfI, a base limit of 35 dB $L_{Aeq, 15 \text{ minute}}$ is applicable during the night period which is 2 dB higher than the proposed night time criteria for the subject site. For the day and evening period, the NPfI sets base limits of 35 and 40 dB $L_{Aeq, 15 \text{ minute}}$, however, these would not be considered relevant for the subject site due to the background noise environment (i.e., a background + 5 dB criteria would apply for day and evening periods rather than base criteria).

In Victoria, EPA publication 1826.4 *Noise limit and assessment protocol for the control of noise from commercial, industrial and trade premises and entertainment venues* (Noise Protocol) is used to determine noise limits applicable to commercial, industrial or trade premises. Considering the background noise environment at the subject site, the noise limits that would apply under the Noise Protocol are as follows:

For urban areas:

- Day period - 50 dB $L_{Aeq, 30 \text{ minute}}$
- Evening period - 44 dB $L_{Aeq, 30 \text{ minute}}$
- Night period - 37 dB $L_{Aeq, 30 \text{ minute}}$

For rural areas:

- Day period - 46 dB $L_{Aeq, 30 \text{ minute}}$
- Evening period - 40 dB $L_{Aeq, 30 \text{ minute}}$
- Night period - 33 dB $L_{Aeq, 30 \text{ minute}}$.

It can be seen from the above that proposed criteria are consistent with, or more stringent than, the acoustic criteria applicable to similar developments in other jurisdictions.



3.2 Sleep Disturbance Criterion

The NSW Environmental Protection Authority (EPA) conducted a review of sleep disturbance studies the results of which are outlined in the NSW EPA's Road Noise Policy. The NSW EPA concluded that:

- *maximum internal noise levels below 50–55 dB L_{Amax} are unlikely to awaken people from sleep*
- *one or two noise events per night, with maximum internal noise levels of 65–70 dB L_{Amax} are not likely to affect health and wellbeing significantly.*

An open window provides an approximate noise reduction of 10–15 dB from outside to inside (refer to World Health Organisation guidelines and RNP). As a conservative approach and based on discussions with EPA Tasmania, a sleep disturbance criterion of 60 dB L_{Amax} (applicable externally to existing dwellings) has been applied to the subject site.

This approach is consistent with the acoustic environment indicator level for outside bedrooms at night as outlined in the *Environment Protection Policy (Noise)* 2009 by the Department of Environment, Parks, Heritage and the Arts Tasmania.

Again, the proposed sleep disturbance criterion is consistent with, or more stringent than, the acoustic criteria applicable in other jurisdictions.

3.3 Low frequency threshold

NSW EPA's *Noise* NPfl includes corrections for low frequency noise based on the difference between the A-weighted noise level and the C-weighted noise level. If the C-weighted noise level is more than 15 dB higher than the A-weighted noise level, a 2 dB correction is applied to the day time noise level and a 5 dB correction is applied to the evening and night periods noise levels.

For the purposes of this assessment, we are proposing that the low frequency threshold of C-weighted noise level minus A-weighted ≤ 15 dB be achieved rather than applying penalties for scenarios if the threshold is not achieved.



4.0 BACKGROUND NOISE MONITORING

As outlined in Section 3.1, the adopted criteria for the subject site are set accounting for existing background noise levels in the vicinity of the proposed use. Accordingly, noise monitoring was undertaken at the subject site to quantify the background noise levels.

The background noise monitoring was undertaken using a Class 1 sound level meter (Svantek 971 Sound & Vibration Analyser - serial number 60697) between 1100 hours on Wednesday, 14 December and 1430 hours on Wednesday, 28 December 2022. Figure 2 provides the noise monitoring position.

Figure 2 – Noise monitoring position (source: Nearmap)



The background noise has been processed in accordance with the EPA Tasmania's *Noise Measurement Procedures Manual*. Table 2 provides the results of the background noise monitoring.

Table 2 – Measured background noise levels, dB

Period	Time Period	Measured background noise levels, L_{A90} , 10 minute
Day	0700 - 1800 hours, Monday to Sunday	38
Evening	1800 – 2200 hours, Monday to Sunday	35
Night	0600-0700 hours, Monday to Sunday 2200 – 2300 hours, Sunday to Thursday 2200-0000 hours, Friday & Saturday	31

Refer to APPENDIX C for further data relating to the background measurement data.



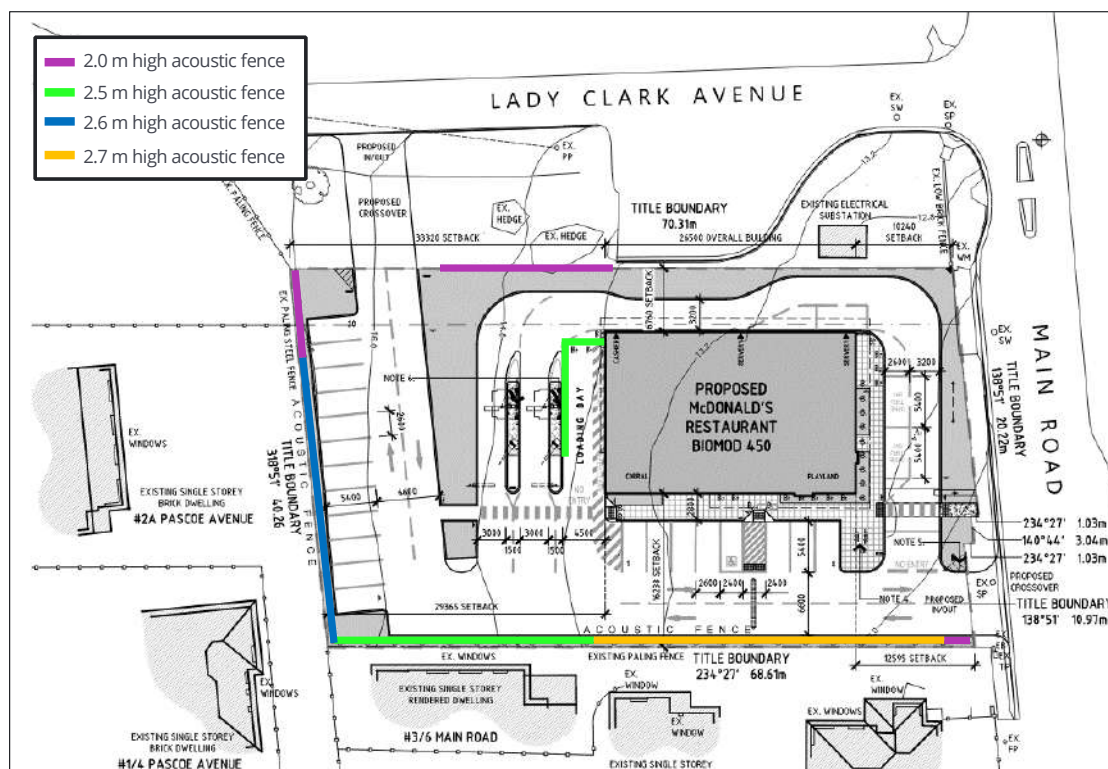
5.0 NOISE CONTROL MEASURES

A 3-D noise model of the site and surrounding area has been created to predict noise levels from the subject site at neighbouring residential properties. Outcomes of the noise modelling indicate that the following noise controls will be required to enable compliance with the adopted environmental noise criteria.

5.1 Perimeter acoustic fencing

It is recommended that acoustic fencing be provided to the south-western and south-eastern site boundaries and to a section of the north-western site boundary. The acoustic fences are to be between 2.0 and 2.7 m high (above NGL). The location, extent and heights of the proposed acoustic fences are provided in Figure 3.

Figure 3 – Extent of perimeter acoustic fencing



To provide adequate noise attenuation the construction material of the proposed acoustic screens must have a minimum surface density of 12 kg/m² and be free from holes and gaps. Materials such as 9 mm thick fibre cement sheet, 25 mm thick plywood timber panelling or proprietary acoustic panels such as *ModularWalls AcoustiMax* panels or *Wallmark EVO* panels will achieve the required surface density. A typical acoustic timber fence detail is provided in APPENDIX D.

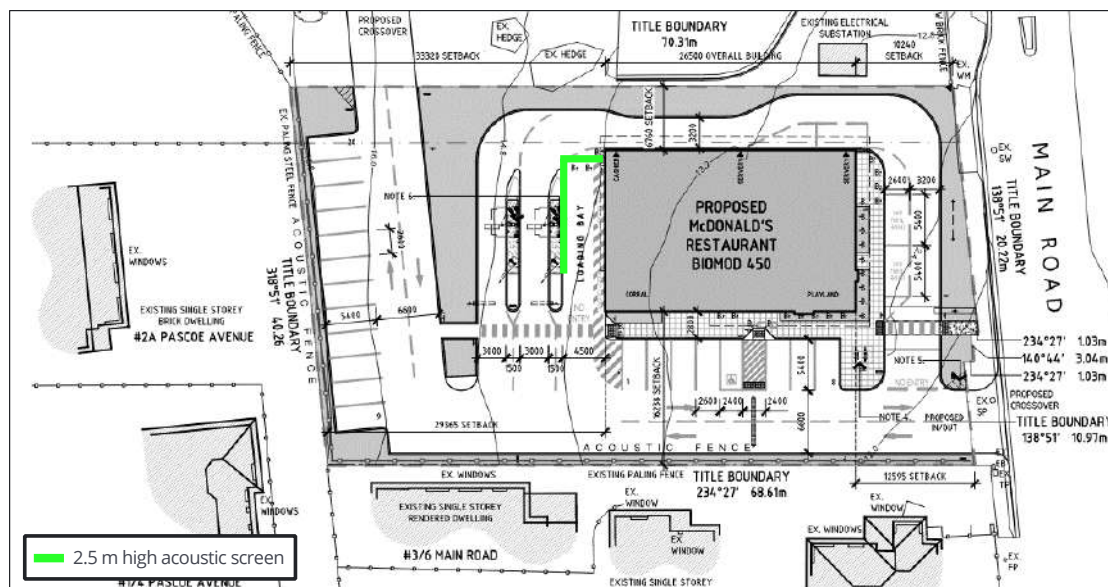
If a material which meets the above requirement and does not restrict light is required, 12 mm thick Perspex, 16 mm thick Thermoclear or 6 mm thick float glass can be used. Where a perforated finish or batten screen finish is preferred such as metal or timber perforated balustrades or a timber look batten screen, the chosen finish will require a solid backing such as 12 mm thick Perspex or 6 mm thick glass or any other approved material which meets the minimum surface density specification.



5.2 Acoustic screening to loading bay

In addition to the perimeter acoustic fencing, a 2.5 m high acoustic screen should be provided to the west and north-west of the loading bay. The extent of the proposed loading dock acoustic screen is provided in Figure 4.

Figure 4 – Acoustic screening to loading bay



The acoustic screen should also be constructed of a material with a minimum surface density of 12 kg/m² and be free from holes and gaps. In addition, it is recommended that acoustic absorption be provided to the inner face of the acoustic screen to the loading bay. The absorptive lining should have a minimum Noise Reduction Coefficient (NRC) of 0.7. Materials such as 100 mm thick glasswool insulation with perforated metal facing, 50 mm thick Stratocell Whisper, 50 mm thick Envirospray 300 or any other material with an NRC ≥ 0.7 can be used.

5.3 Operational restrictions

Deliveries to the subject site via Heavy Rigid Vehicles (HRVs) should be restricted to the day time periods only on weekdays and in accordance with Acceptable Solution A3 of Clause 9.3.1 for Saturdays (i.e., between 0700-1800 hours, weekdays and 0900 hours-midday, Saturdays).

All other deliveries to the subject site (i.e., deliveries via delivery vans, Light Rigid Vehicles (LRVs) and Medium Rigid Vehicles (MRVs)) are to be restricted in accordance with Acceptable Solution A3 of Clause 9.3.1 (i.e., between 0700-2000 hours, weekdays and 0900 hours-Midday, Saturdays).

In addition, to enable compliance with the environmental noise criteria, waste collection from the subject site should be scheduled to only occur during the day time period (i.e., 0700-1800 hours, weekdays and 0900 hours-midday, Saturdays) and refrigeration condensers associated with delivery vehicles must remain switched off during deliveries (i.e., prior to entering the subject site).



5.4 Mechanical Plant

All plant associated with the proposed development will need to be designed to be compliant with the adopted noise criteria at the nearest affected receivers in conjunction with all other noise sources associated with the site that are covered under the adopted criteria.

At this stage, the final mechanical services plant selections have not been undertaken for the site. Based on the indicative plant layout provided, it is understood that plant associated with the subject site will be housed on the roof of the store building and will be afforded acoustic shielding via the roof parapet. Based on the indicative layout provided, the following plant and maximum sound power level for each plant item has been incorporated in our noise model.

Table 3 – Sound Power Level of mechanical plant, dB L_{Aw}

Description	Maximum permissible sound power level
AC Unit 1	82
AC Unit 2	81
AC Condenser 3	62
Toilet Exhaust Fan	66
Fry Exhaust Fan	73
Filet Exhaust Fan	73
Grill Exhaust Fan	70
Washup Exhaust Fan	57
Make Up Air Fan	64
Relief Air Fan	70
FSB Condenser	68
MAC-90 Refrigeration Unit	84

It will also be a requirement that AC Units 1 and 2 operate at low speed at night (2200 hours to 0700 hours). The sound power levels of for AC Units 1 and 2 operating at low speed are to be 77 and 76 dB L_{Aw}, respectively.

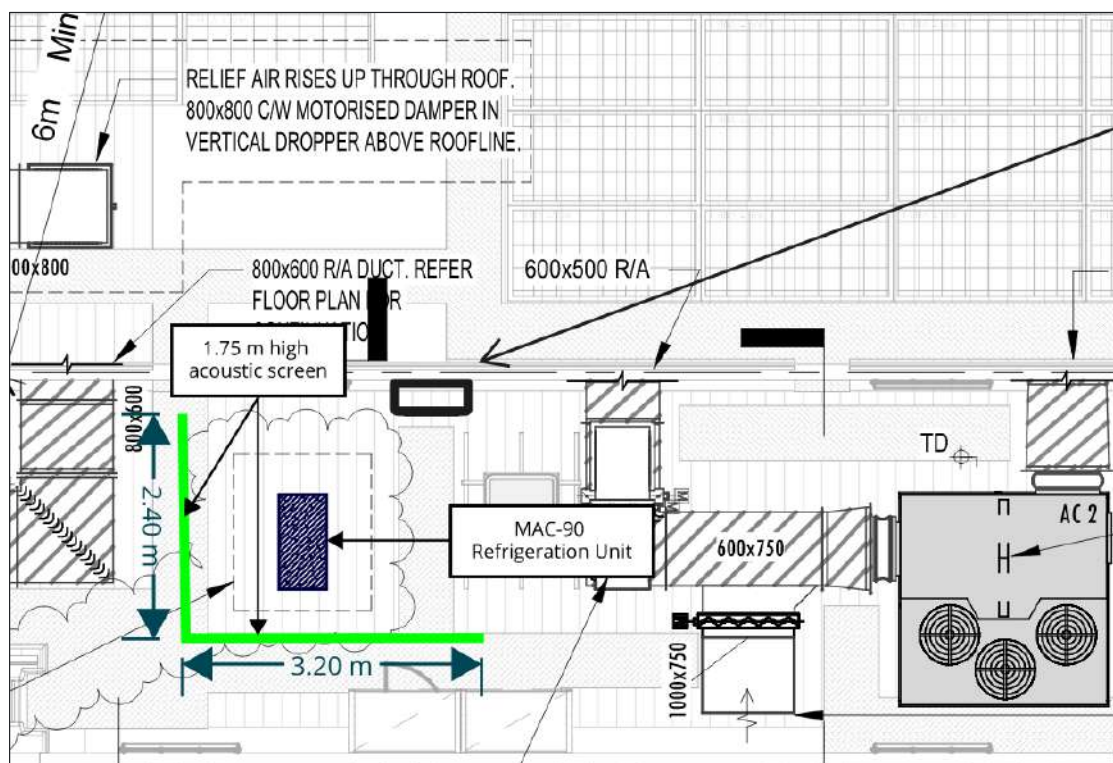
In addition, the MAC- 90 refrigeration unit will also require localised acoustic screening to be installed directly to the south-west and south-east of the unit. The acoustic screen is to be 1.75 m high and be constructed of a material with a minimum surface mass of 12 kg/m². The minimum surface mass can be achieved by 7.5 mm compressed fibre cement sheet or similar.

In addition, it is recommended that acoustic absorption be provided to the inner face of the acoustic screen to the MAC-90 refrigeration unit. The absorptive lining should have a minimum Noise Reduction Coefficient (NRC) of 0.7. Materials such as 100 mm thick glasswool insulation with perforated metal facing, 50 mm thick Stratocell Whisper, 50 mm thick Enviro spray 300 or any other material with an NRC ≥ 0.7 can be used.

The location and the extent of the acoustic screening to the MAC-90 refrigeration unit is provided in Figure 5.



Figure 5 – Acoustic screening to MAC-90 refrigeration unit



6.0 NOISE ASSESSMENT

The following sections detail the methodology for noise prediction from the proposed development and compare the predicted noise levels with the adopted criteria for the subject site.

6.1 Assessment methodology

Noise levels from the subject site have been calculated using the proprietary noise modelling software SoundPLAN v8.2 which implements International Standard ISO 9613-2:1996 *Acoustics – Attenuation of sound during propagation outdoors – Part 2: General method of calculation* (ISO 9613-2).

The noise modelling considers the following:

- The noise prediction methodology outlined in APPENDIX E
- Source noise level data for noise sources associated with the proposed operation of the subject site as summarised in APPENDIX F
- Assumed maximum sound power levels for mechanical plant associated with the subject site as summarised in Table 3
- Attenuation of noise provided by the distance between the source and receiver, the built form of the subject site and any existing intervening screening structures
- Reflections from built form, adjacent buildings, screening structures and the ground surface
- Duration of potential noise exposure at the receiver locations assessed over a 15 minute period.



6.2 Assessment criteria

Table 4 provides the assessment criteria for noise emissions from the subject site, based on the adopted criteria and measured background noise levels.

Table 4 – Assessment criteria, dB

Period	Assessment criteria		
	L _{Aeq} , 15 minute	L _{Amax}	Low frequency noise threshold
Day	43		C-weighted level – A weighted noise level ≤ 15 dB
Evening	40		C-weighted level – A weighted noise level ≤ 15 dB
Night	36	60	C-weighted level – A weighted noise level ≤ 15 dB

6.3 Source noise data

Noise sources associated with the proposed development include:

- Goods deliveries to the convenience restaurant
- Operation of mechanical services plant
- Operation of CODs associated with the convenience restaurant
- Waste collection from the subject site
- Customer vehicle movements within the subject site.

Source noise levels for the proposed development associated with vehicle movements, patrons, deliveries and operation of CODs have been taken from measurements conducted at similar facilities.

Noise levels from customer vehicles using the car park and drive through have been modelled in SoundPLAN using methods prescribed in the Bavarian State Office for the Environment's *Parking Area Noise* (BayLfU, 2007). Noise levels from the car park and drive through have been modelled based on 80 vehicle movements per hour during day/evening peak periods and a peak of 40 vehicle movements per hour for the night period.

Source noise levels for mechanical plant have been based on the maximum permissible sound power level data provided in Section 5.4. These have been incorporated in to our noise model to predict the noise level contribution from each noise source associated with the subject site at the receiver locations.

A detailed schedule of the noise source data used in our noise model is provided in APPENDIX F.

It should be noted that a + 2 dB tonality correction has been applied to account for the reversing beepers associated with delivery and waste collection vehicles.



6.4 Predicted noise levels

Predicted noise levels from the operation of noise sources associated with the operation of the subject site are provided in the subsequent sections based on the following operational assumptions for a worst-case 15-minute period:

Table 5 – Operational assumptions for worst case 15-minute period

Period	Deliveries and Waste Collection	COD Usage
Day	1 x waste collection from loading bay OR 1 x main delivery via Heavy Rigid Vehicle (HRV)	5 orders per COD
Evening	1 x small delivery via Medium Rigid Vehicle (MRV) or Light Rigid Vehicle (LRV)	5 orders per COD
Night	No deliveries proposed	2 orders per COD

Based on previous experience, it is assumed that the average time taken per order is approximately 20 seconds.

The predicted noise levels account for the proposed built form of the subject site and the noise control measures outlined in Section 5.0.

6.4.1 Day period operation

Predicted noise levels from the proposed day time operation of the subject site are presented in Table 6.

Table 6 - Predicted day period operational noise levels, dB L_{Aeq}, 15 minute

Source	Predicted noise level at receiver (Day)						
	1/6 Main Rd	2/6 Main Rd	3/6 Main Rd	3/4 Pascoe Ave	2A Pascoe Ave	2 Lady Clark Ave	13 Main Rd
CODs	13	22	28	31	28	27	<10
Mechanical plant	34	36	33	34	34	35	29
Goods deliveries or waste collection ¹	42	41	41	41	39	40	36
Customer vehicles and patron noise	30	28	29	28	26	29	29
Cumulative noise level	43	43	42	42	42	42	38
Assessment criteria	43	43	43	43	43	43	43
Compliance?	Yes	Yes	Yes	Yes	Yes	Yes	Yes

As detailed in Table 6, compliance with the day period assessment criteria is predicted to be achieved at the nearest dwellings.

¹ The higher noise level of waste collection or goods delivery is presented.



6.4.2 Evening period operation

Predicted noise levels from the proposed evening period operation of the subject site are presented in Table 7.

Table 7 - Predicted evening period operational noise levels, dB L_{Aeq}, 15 minute

Source	Predicted noise level at receiver (Evening)						
	1/6 Main Rd	2/6 Main Rd	3/6 Main Rd	3/4 Pascoe Ave	2A Pascoe Ave	2 Lady Clark Ave	13 Main Rd
CODs	13	22	28	31	28	27	<10
Mechanical plant	34	36	33	34	34	35	29
Goods deliveries	38	38	39	37	35	27	32
Customer vehicles and patron noise	30	28	29	28	26	29	29
Cumulative noise level	40	40	40	40	38	37	35
Assessment criteria	40	40	40	40	40	40	40
Compliance?	Yes	Yes	Yes	Yes	Yes	Yes	Yes

As detailed in Table 7, compliance with the evening period assessment criteria is predicted to be achieved at the nearest dwellings.

6.4.3 Night-time operation

Predicted noise levels from the proposed operation of the site during the night time period are presented in Table 8.

Table 8 - Predicted night time operational noise levels, dB L_{Aeq}

Source	Predicted noise level at receiver (Night)						
	1/6 Main Rd	2/6 Main Rd	3/6 Main Rd	3/4 Pascoe Ave	2A Pascoe Ave	2 Lady Clark Ave	13 Main Rd
CODs	10	18	24	27	24	23	<10
Mechanical services	32	33	30	32	32	33	28
Customer vehicles and patron noise	28	27	28	27	24	27	27
Cumulative noise level	34	34	33	34	33	34	30
Assessment criteria	36	36	36	36	36	36	36
Compliance?	Yes	Yes	Yes	Yes	Yes	Yes	Yes

As detailed in Table 8 above, compliance with the night time noise limit is predicted to be achieved at the nearest dwellings.



6.4.4 A weighted vs. C weighted noise level

As outlined in Section 3.3, we are proposing that noise from the subject site comply with a low frequency threshold based on a maximum difference between the C-weighted and A weighted noise level of 15 dB. Table 9 provides the low frequency assessment for the day, evening and night periods.

Table 9 - Predicted difference between the A-weighted and C-weighted noise levels, dB L_{Amax}

Receiver	Difference between the C-weighted and A-weighted noise levels			Less than 15 dB?
	Day	Evening	Night	
1/6 Main Rd	9	12	14	Yes
2/6 Main Rd	11	13	14	Yes
3/6 Main Rd	9	13	13	Yes
3/4 Pascoe Ave	7	10	10	Yes
2A Pascoe Ave	8	10	10	Yes
2 Lady Clark Ave	8	10	11	Yes
13 Main Rd	9	12	14	Yes

It can be seen from Table 9, that the adopted low frequency threshold is not predicted to be exceeded at any nearby dwelling during the day, evening or night time periods.

6.4.5 Maximum noise levels

Predicted maximum noise levels from the night time operation of the subject site are provided in Table 10.

Table 10 - Predicted maximum noise levels from late night activity, dB L_{Amax}

Receiver	'Normal' car	Worst case car	Patron voices	Vehicle pass by	COD	Compliance with 60 dB L _{Amax} ?
1/6 Main Rd	51	60	55	51	46	Yes
2/6 Main Rd	50	59	54	49	47	Yes
3/6 Main Rd	48	57	52	52	49	Yes
3/4 Pascoe Ave	48	57	51	47	52	Yes
2A Pascoe Ave	44	53	48	45	49	Yes
2 Lady Clark Ave	51	60	54	51	48	Yes
13 Main Rd	50	60	55	52	28	Yes

It can be seen from Table 10 that the night-time maximum noise levels from CODs, voices in the carpark/drive-through areas and vehicle movements within the subject site will comply with the maximum noise level component of the adopted assessment criteria.



7.0 CONCLUSION

McDonald's Australia Ltd propose to develop a new restaurant with associated drive through facility at 8-10 Main Road in Claremont.

Clarity Acoustics has carried out an environmental noise assessment of the proposed restaurant and, based on the proposed design of the development, the adopted assessment criteria for the site can be met by implementing the following:

- Providing perimeter acoustic fencing to the south-western and south-eastern site boundaries and to part of the north-western site boundary as per Section 5.1 of this report
- Providing a 2.5 m high acoustic screen to the west and north-west of the loading bay. The inner face of the acoustic screen to the loading bay will need to be provided with an absorptive lining with a minimum NRC of 0.7
- Restricting waste collection from the subject site in accordance with Acceptable Solution A3 of Clause 9.3.1 (i.e., between 0700-1800 hours, weekdays and 0900 hours-midday, Saturdays)
- Restricting HRV deliveries to the subject site to the day periods only on weekdays and in accordance with Acceptable Solution A3 of Clause 9.3.1 for Saturdays (i.e., between 0700-1800 hours, weekdays and between 0900 hours-midday, Saturdays)
- Restricting all other deliveries to the subject site in accordance with Acceptable Solution A3 of Clause 9.3.1 (i.e., between 0700-2000 hours weekdays and 0900 hours-midday, Saturdays)
- Instructing delivery drivers to switch off the truck refrigeration condensers whilst on site
- Selecting mechanical plant to not exceed the permissible sound power levels outlined in Table 3 of this report
- Operating AC-1 and AC-2 in low-speed mode during the night time period i.e., between 2200-0700 hours
- Providing 1.75 m high localised acoustic screening to the roof mounted MAC-90 refrigeration unit. The inner face of the acoustic screen to the MAC-90 refrigeration unit will need to be provided with an absorptive lining with a minimum NRC of 0.7.

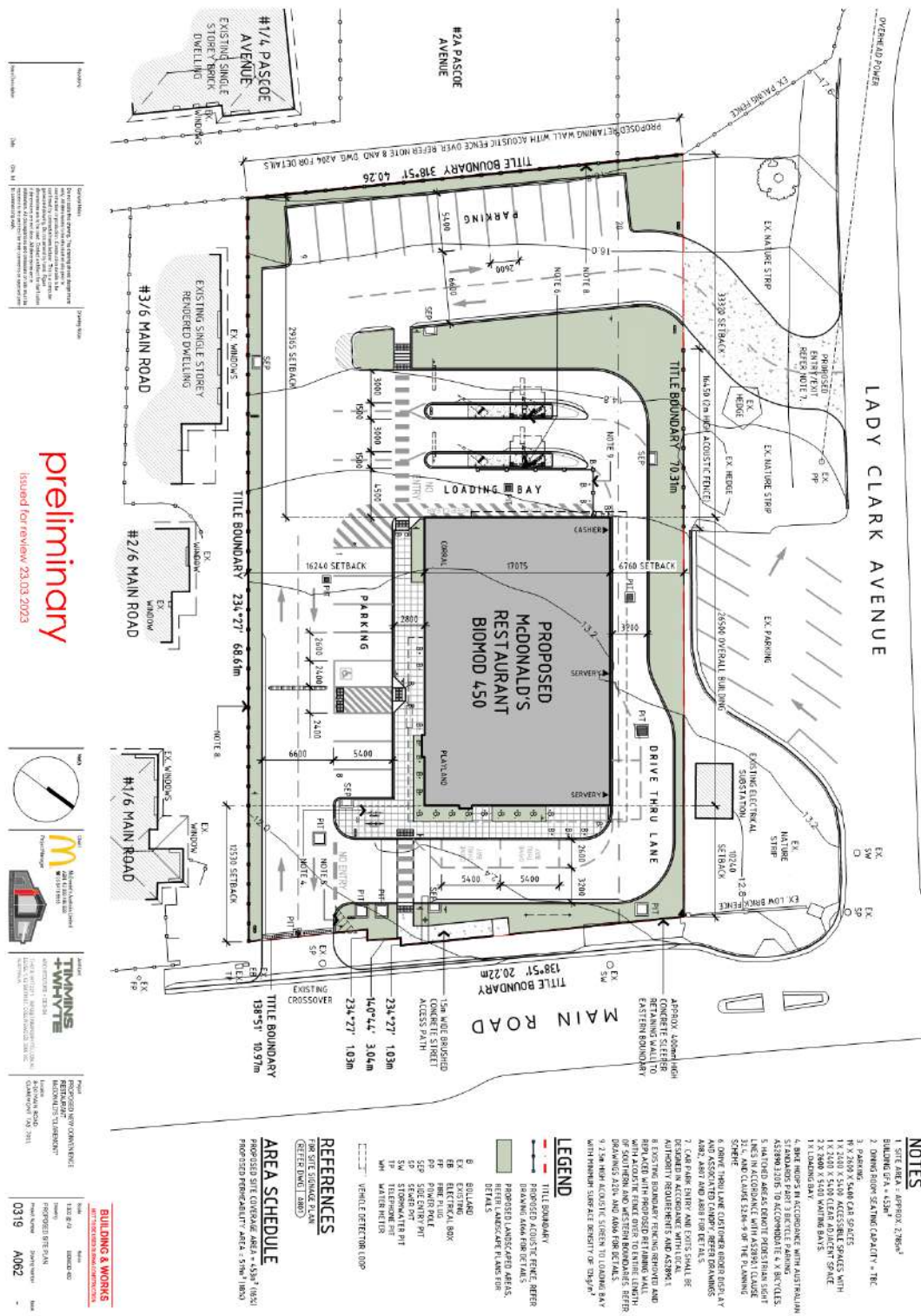


APPENDIX A GLOSSARY OF TERMINOLOGY

dB	Decibel (dB) a relative unit of measurement widely used in acoustics, electronics and communications. The dB is a logarithmic unit used to describe a ratio between the measured sound level and a reference or threshold level of 0 dB.
A-weighting	The A-weighting filter covers the full audio range - 20 Hz to 20 kHz and the shape is similar to the response of the human ear at lower levels. A-weighted measurements correlate well with the perceived loudness at low sound levels, as originally intended.
Hertz	Hertz (Hz) the unit of Frequency or Pitch of a sound. One hertz equals one cycle per second. 1 kHz = 1000 Hz, 2 kHz = 2000 Hz, etc.
$L_{A90}(t)$	The sound level exceeded for 90% of the measurement period, A-weighted and averaged over time (t) and commonly referred to as the background sound level.
$L_{Aeq}(t)$	A-weighted equivalent continuous sound Level is the sound level equivalent to the total sound energy over a given period of time (t). Commonly referred to as the average sound level.
L_{Amax}	The A-weighted maximum noise level. The highest sound level which occurs during the measurement period or a noise event.
NRC	Noise Reduction Coefficient (NRC) a single number rating system used to compare the sound absorbing characteristics of building materials. A measurement of the acoustic absorption performance of a material, calculated by averaging its sound absorption coefficients at 250, 500, 1000 and 2000 Hz, expressed to the nearest multiple of 0.05.



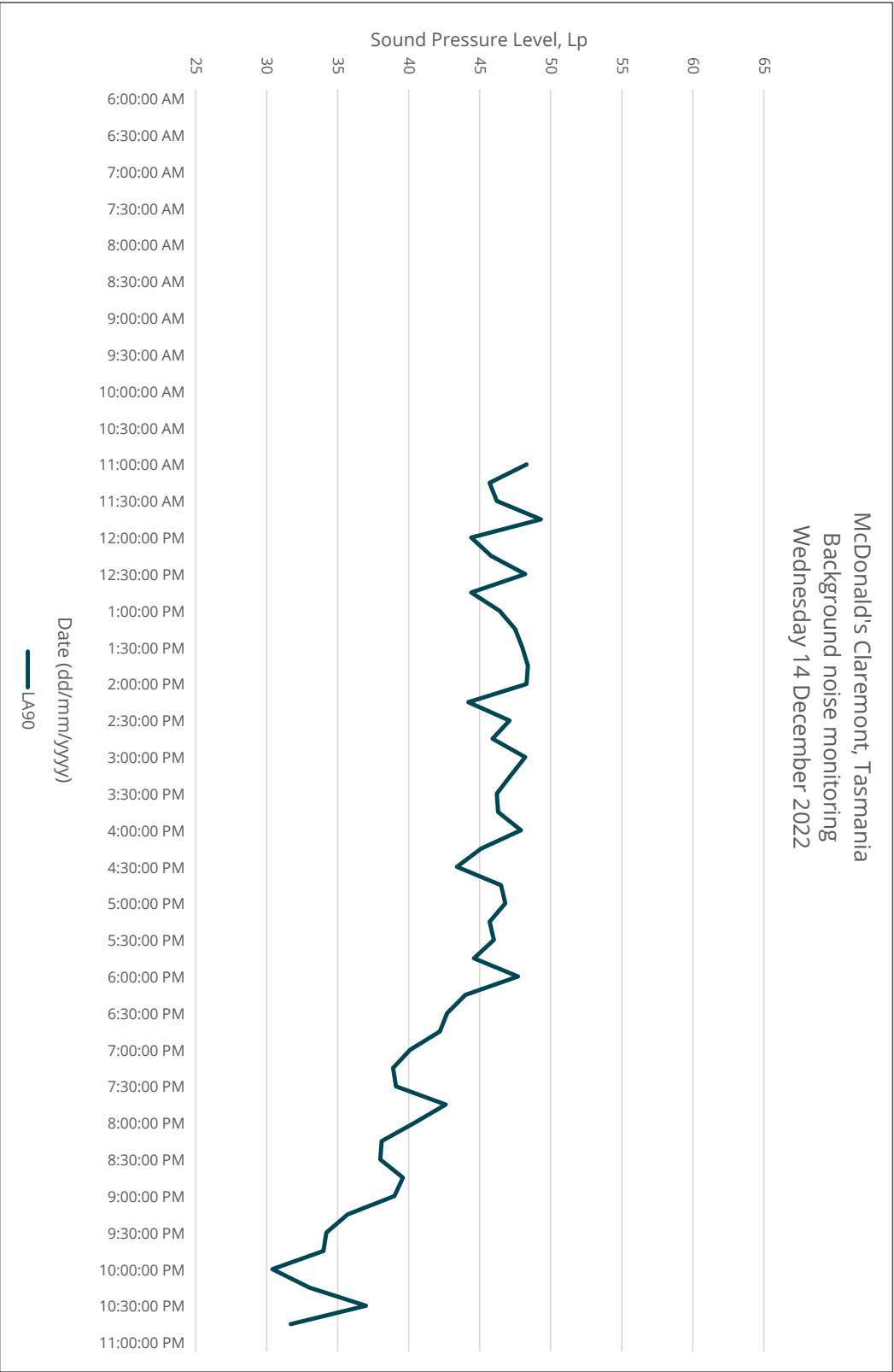
APPENDIX B PROPOSED SITE LAYOUT

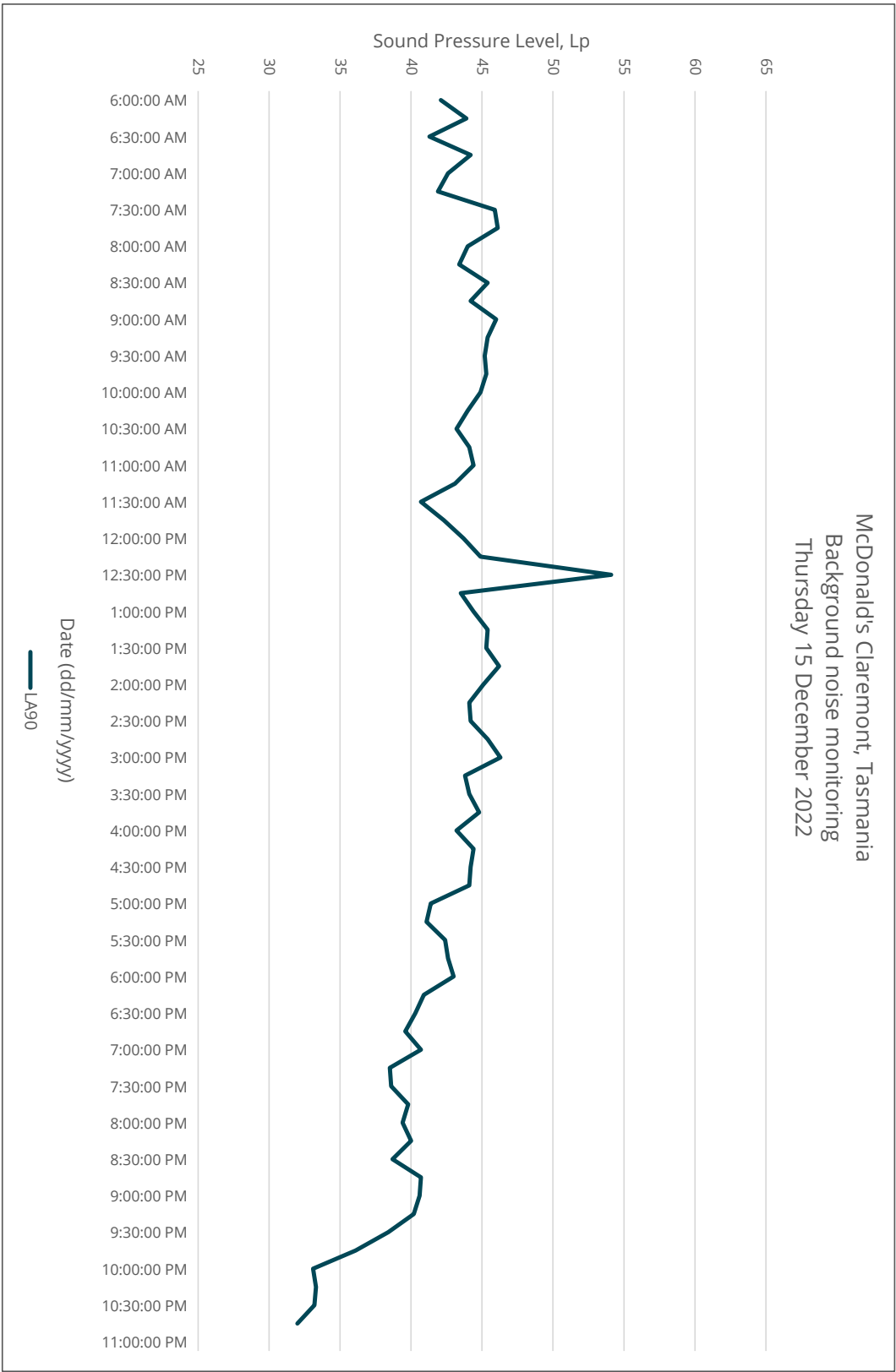


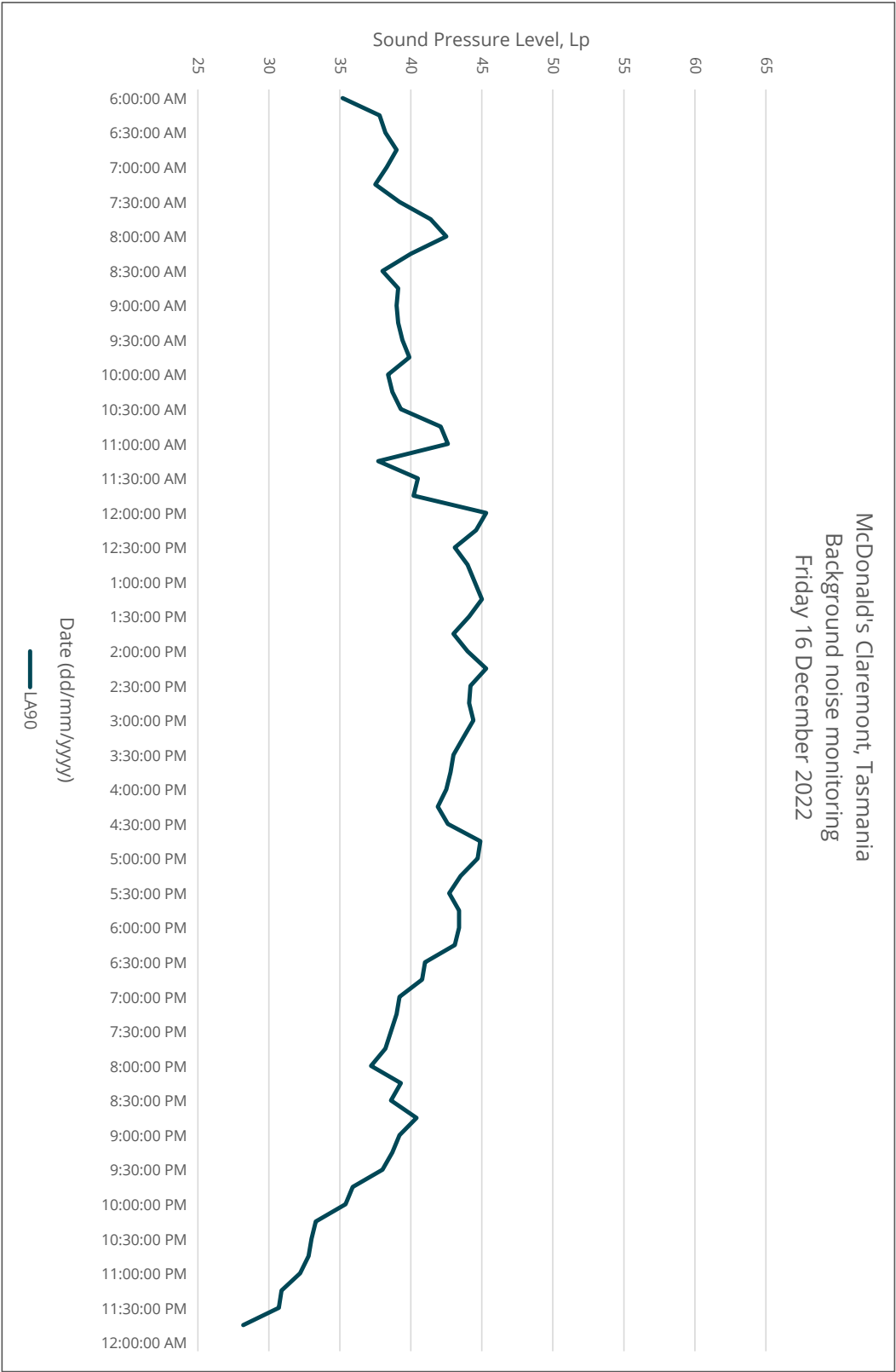


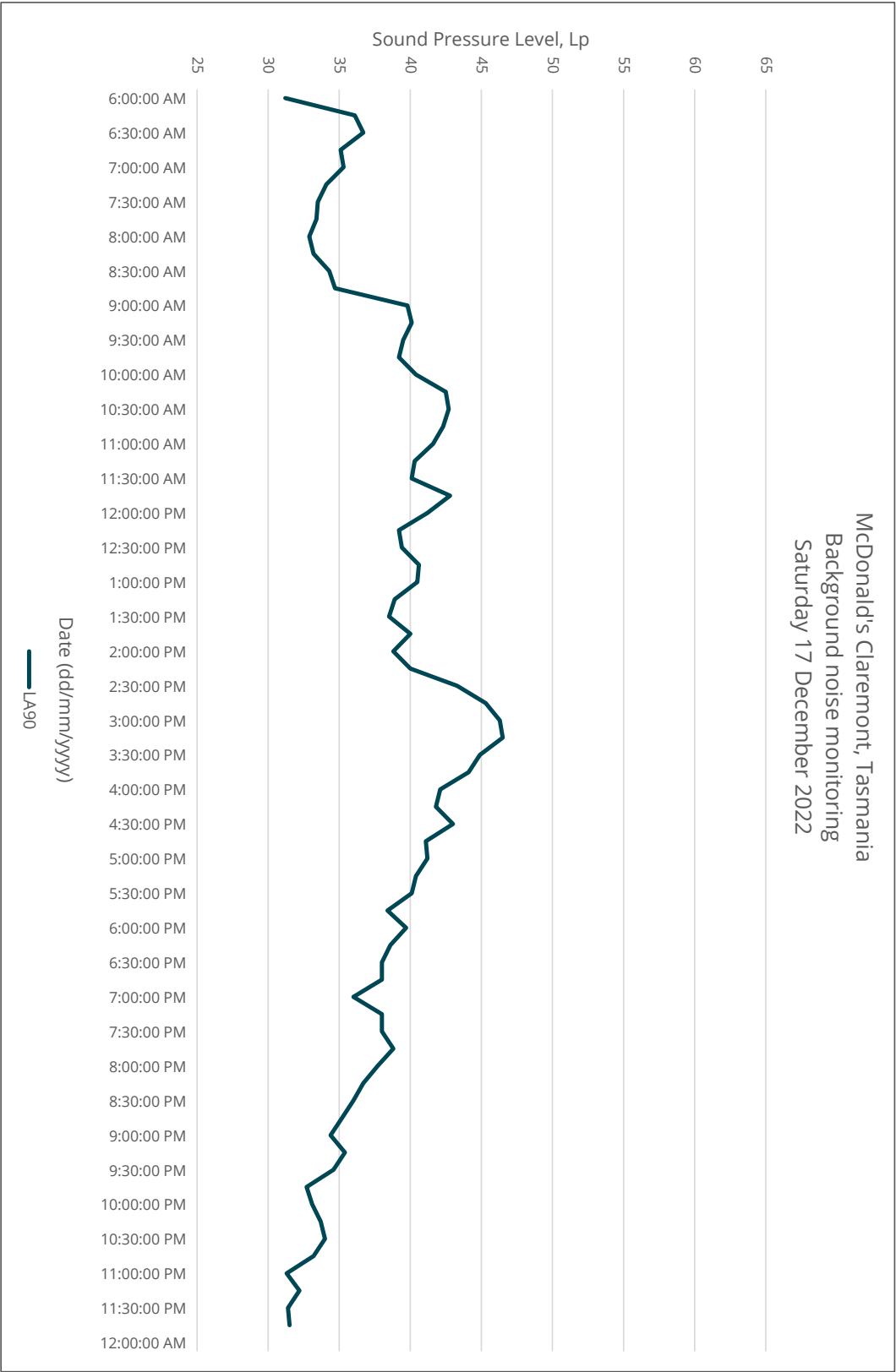
APPENDIX C BACKGROUND NOISE DATA

Day	10 th Percentile of background noise levels		
	Day	Evening	Night
14 December 2022	44	35	31
15 December 2022	42	38	33
16 December 2022	38	38	31
17 December 2022	39	35	30
18 December 2022	37	36	32
19 December 2022	37	35	29
20 December 2022	36	34	29
21 December 2022	37	34	32
22 December 2022	38	33	29
23 December 2022	38	34	31
24 December 2022	41	35	30
25 December 2022	37	33	30
26 December 2022	37	33	30
27 December 2022	37	34	33
Median of 90th percentile	38	35	31



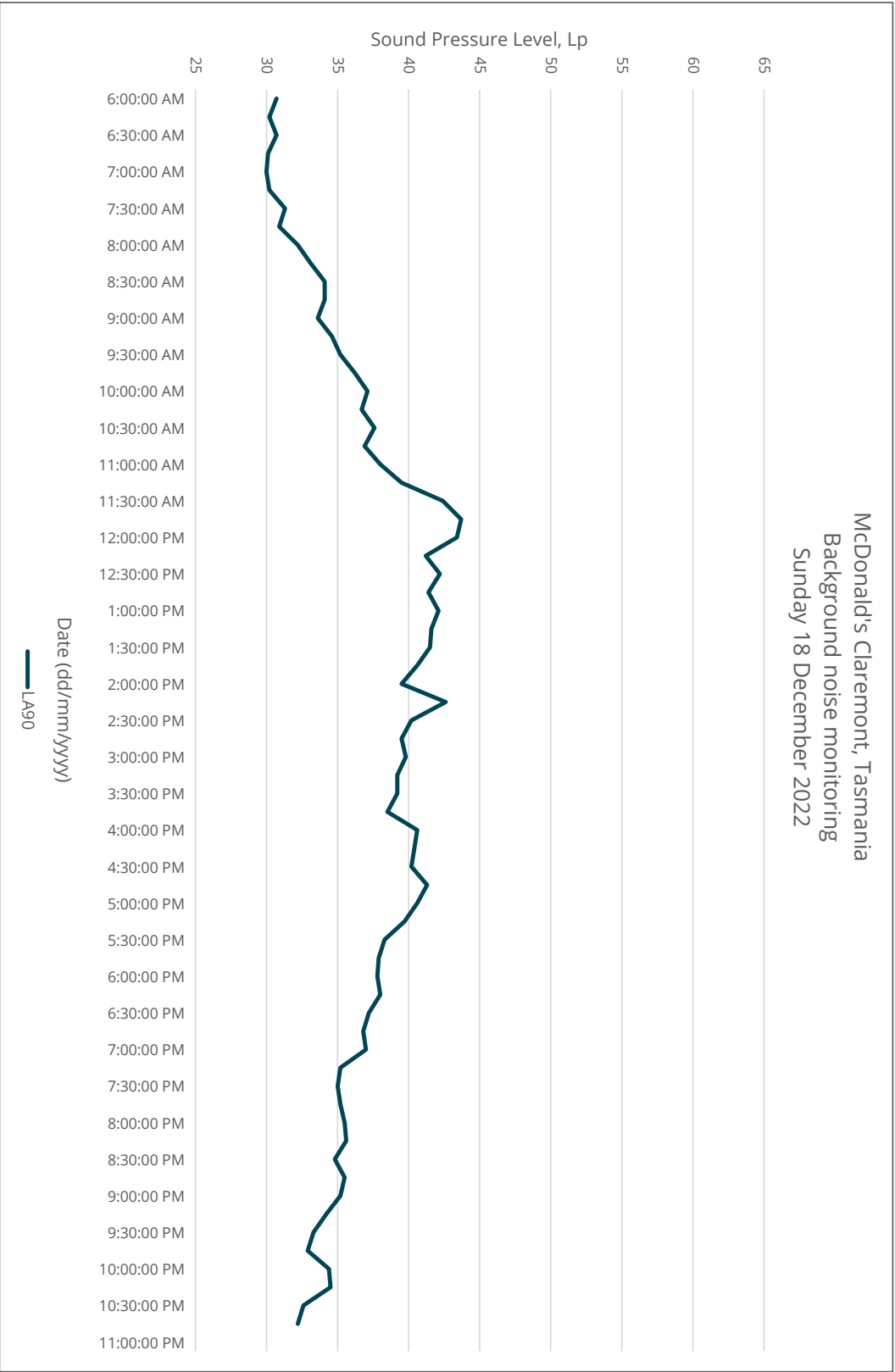






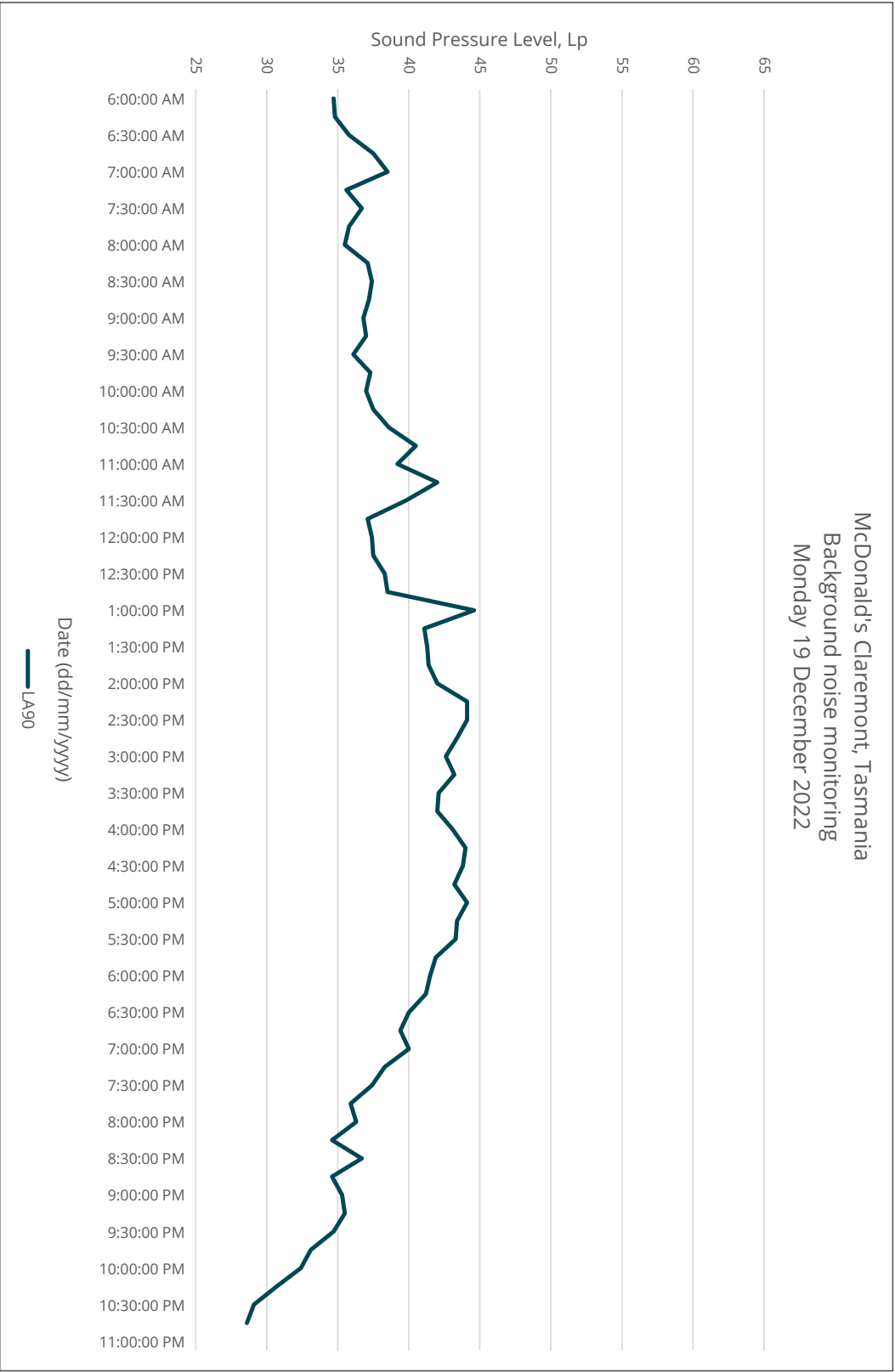


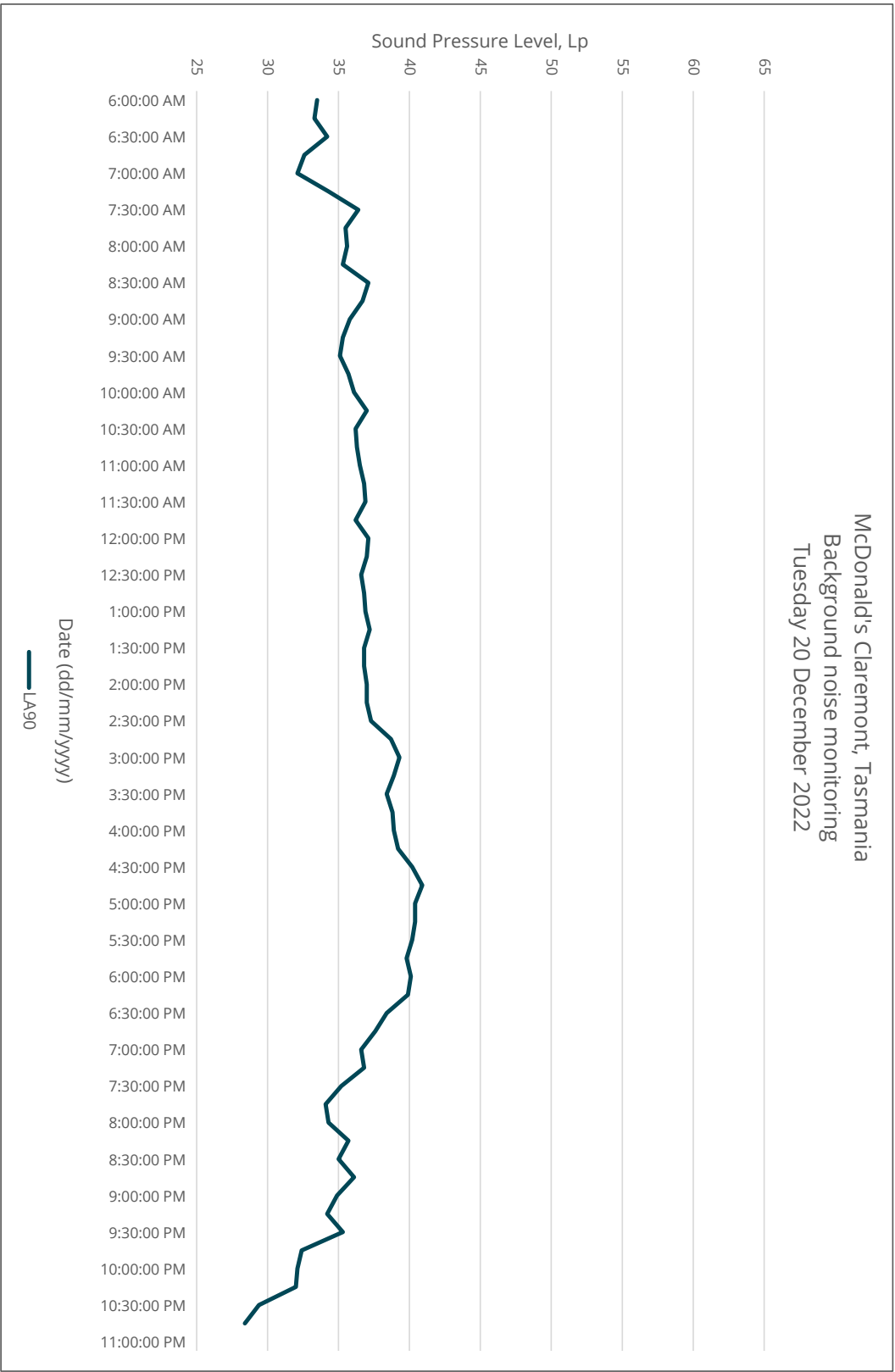
McDonald's Claremont, Tasmania
Background noise monitoring
Sunday 18 December 2022





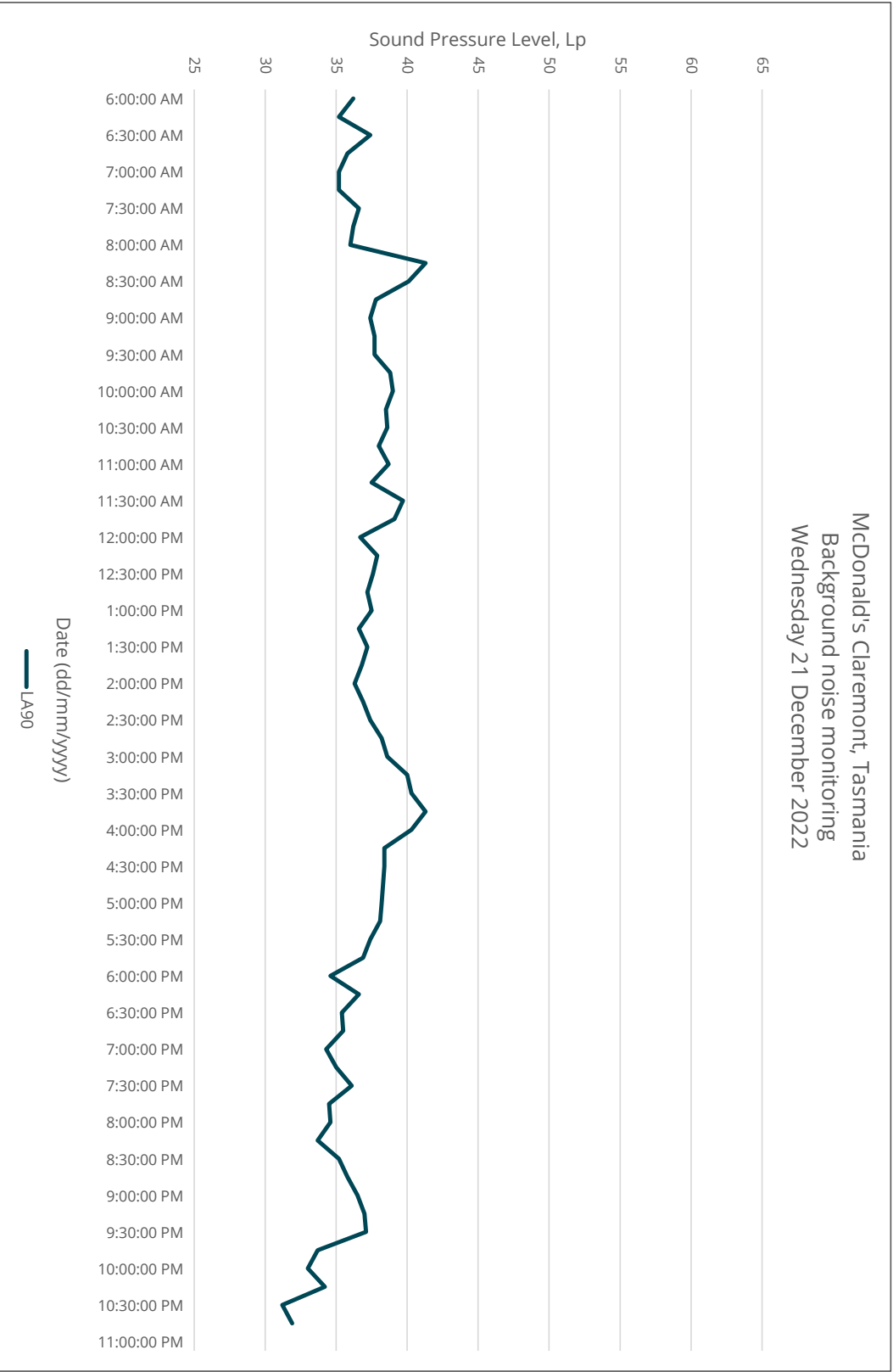
McDonald's Claremont, Tasmania
Background noise monitoring
Monday 19 December 2022





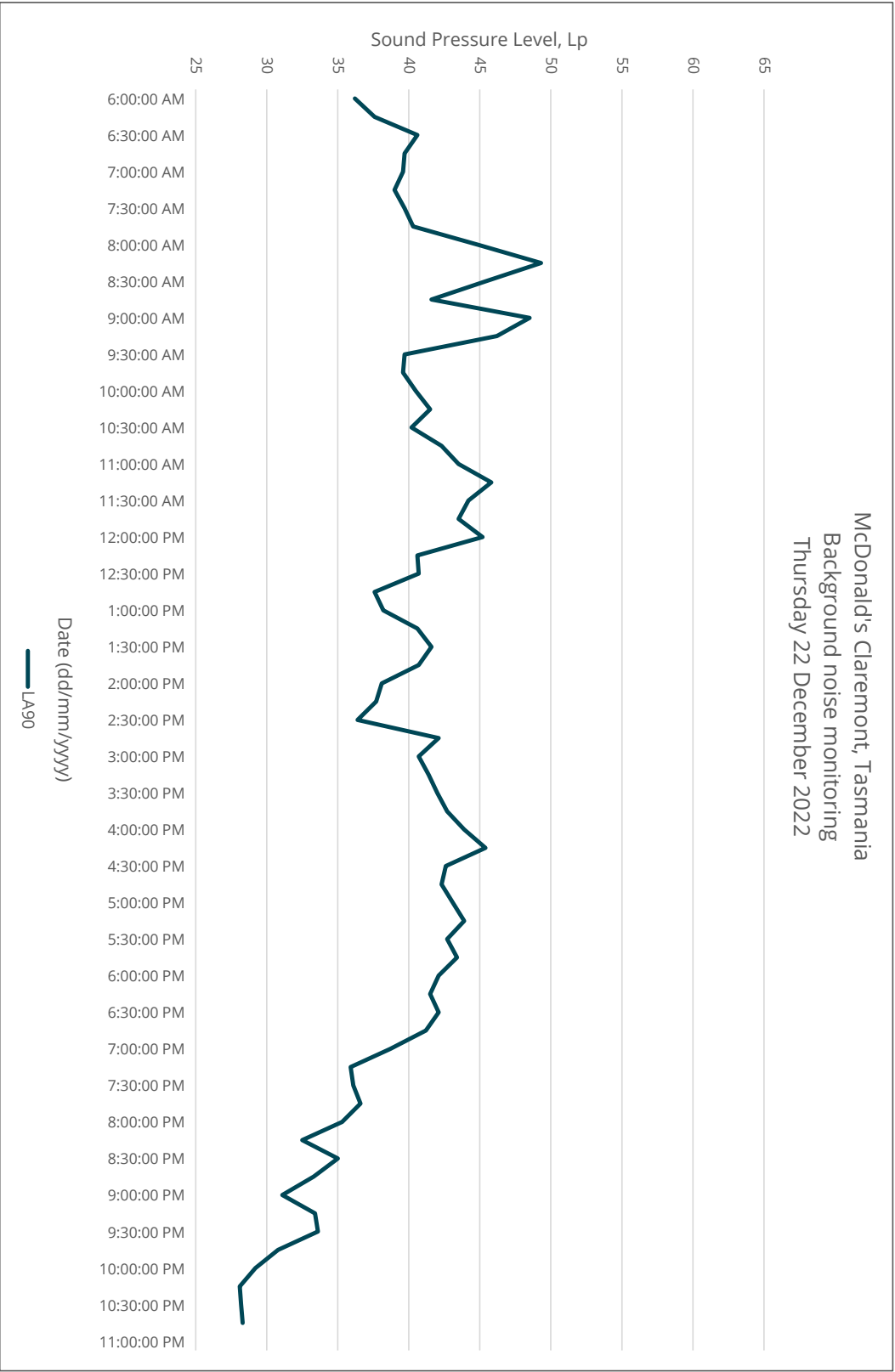


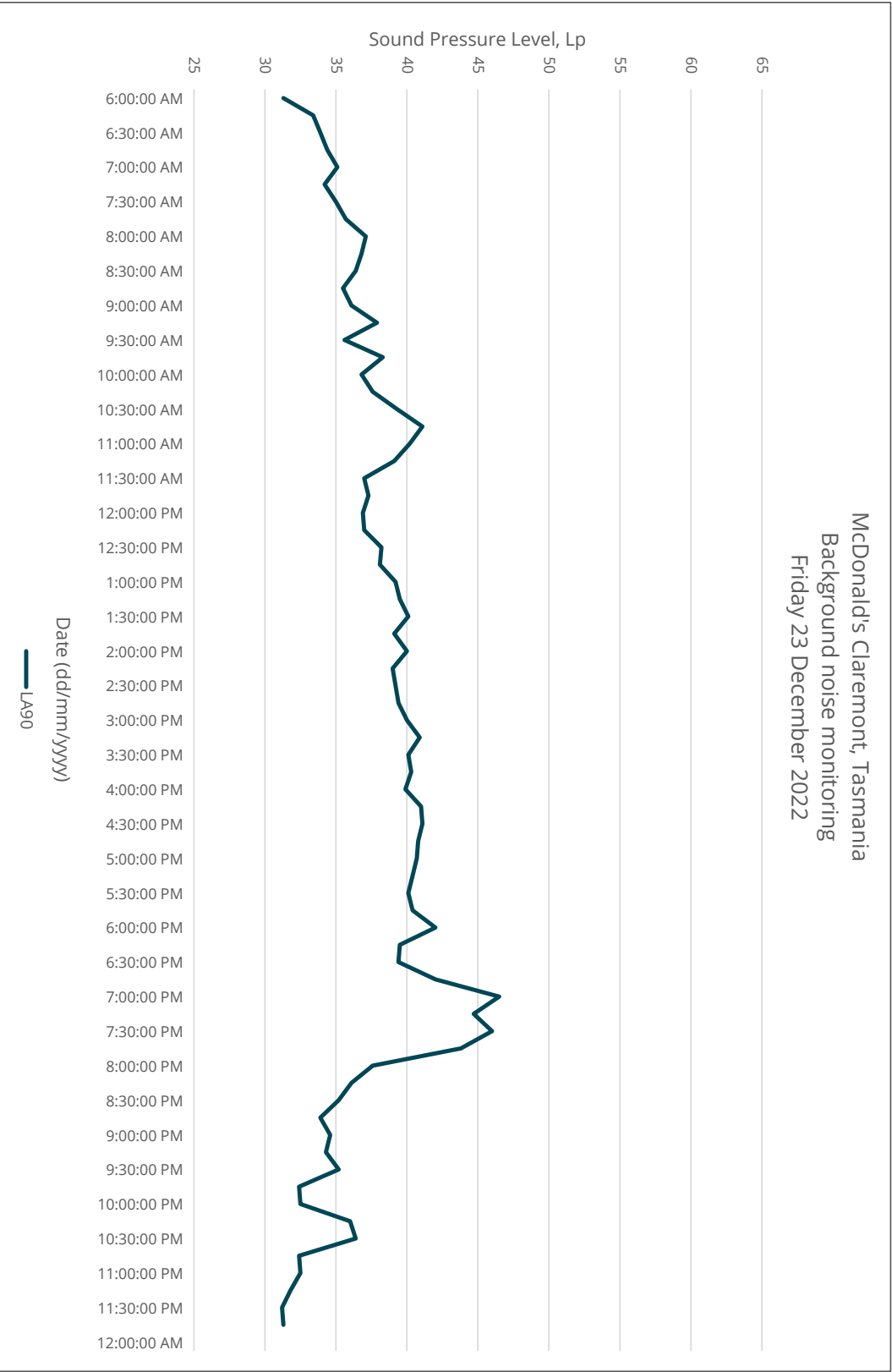
McDonald's Claremont, Tasmania
Background noise monitoring
Wednesday 21 December 2022

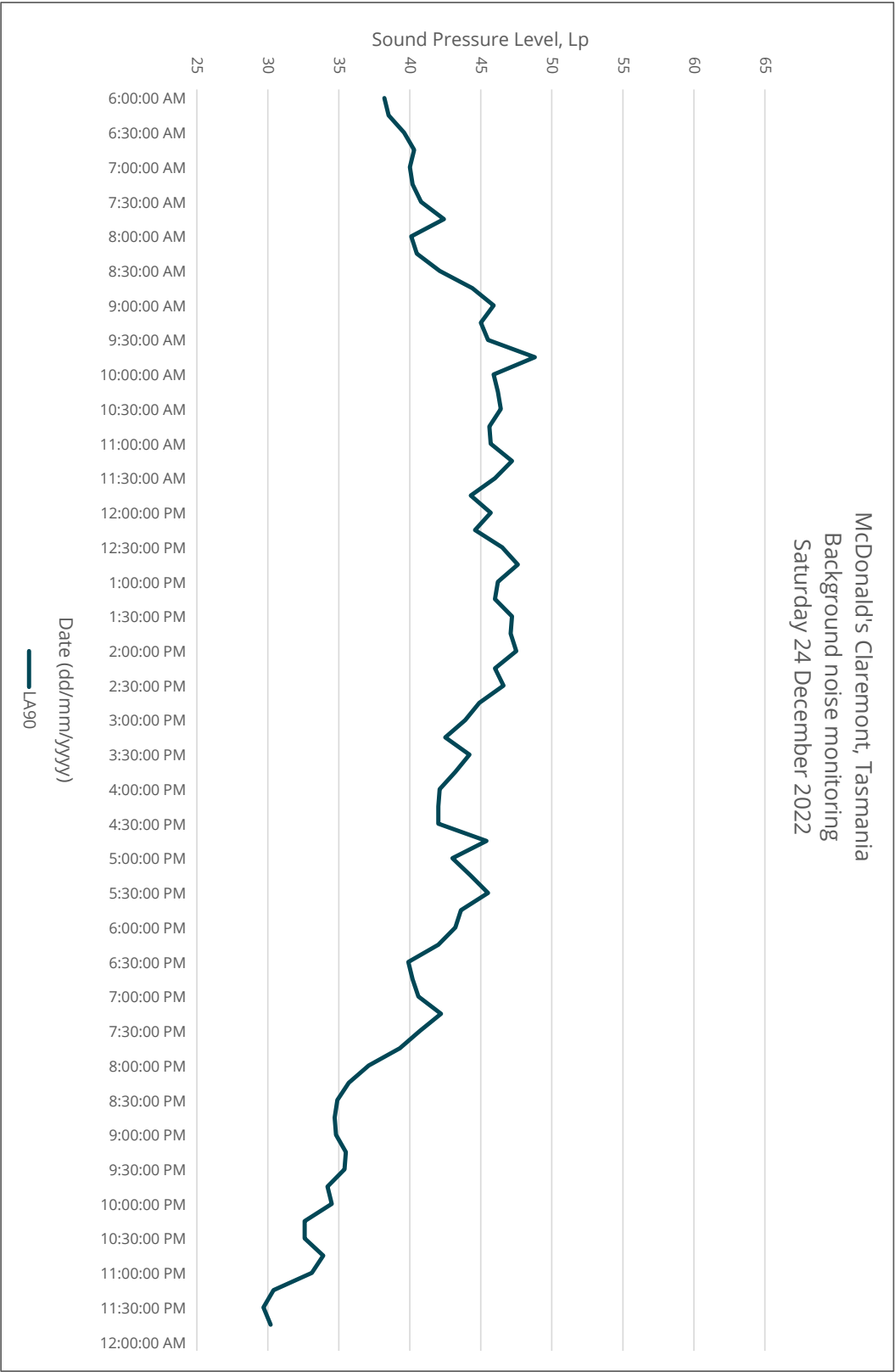


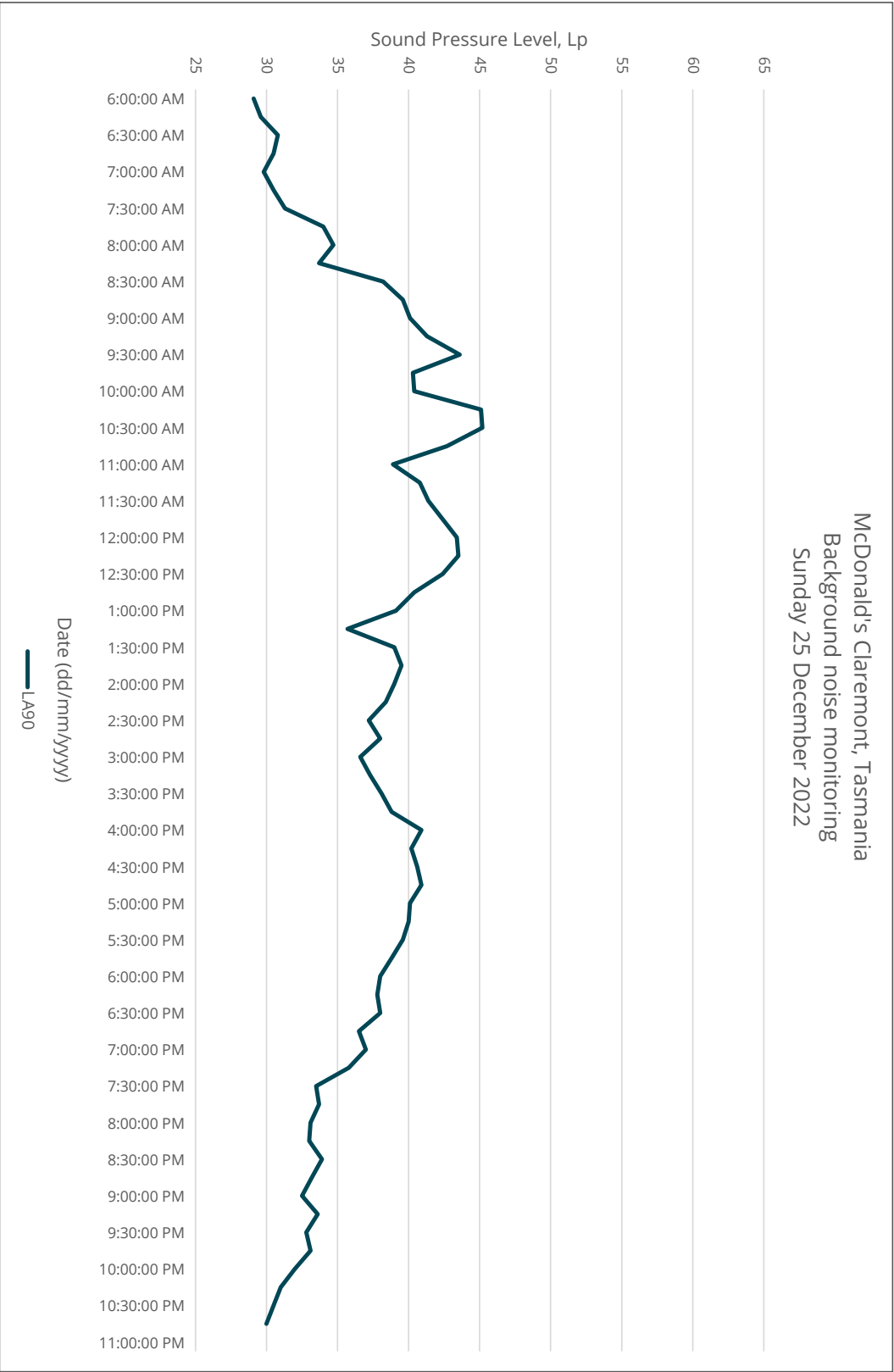


McDonald's Claremont, Tasmania
Background noise monitoring
Thursday 22 December 2022



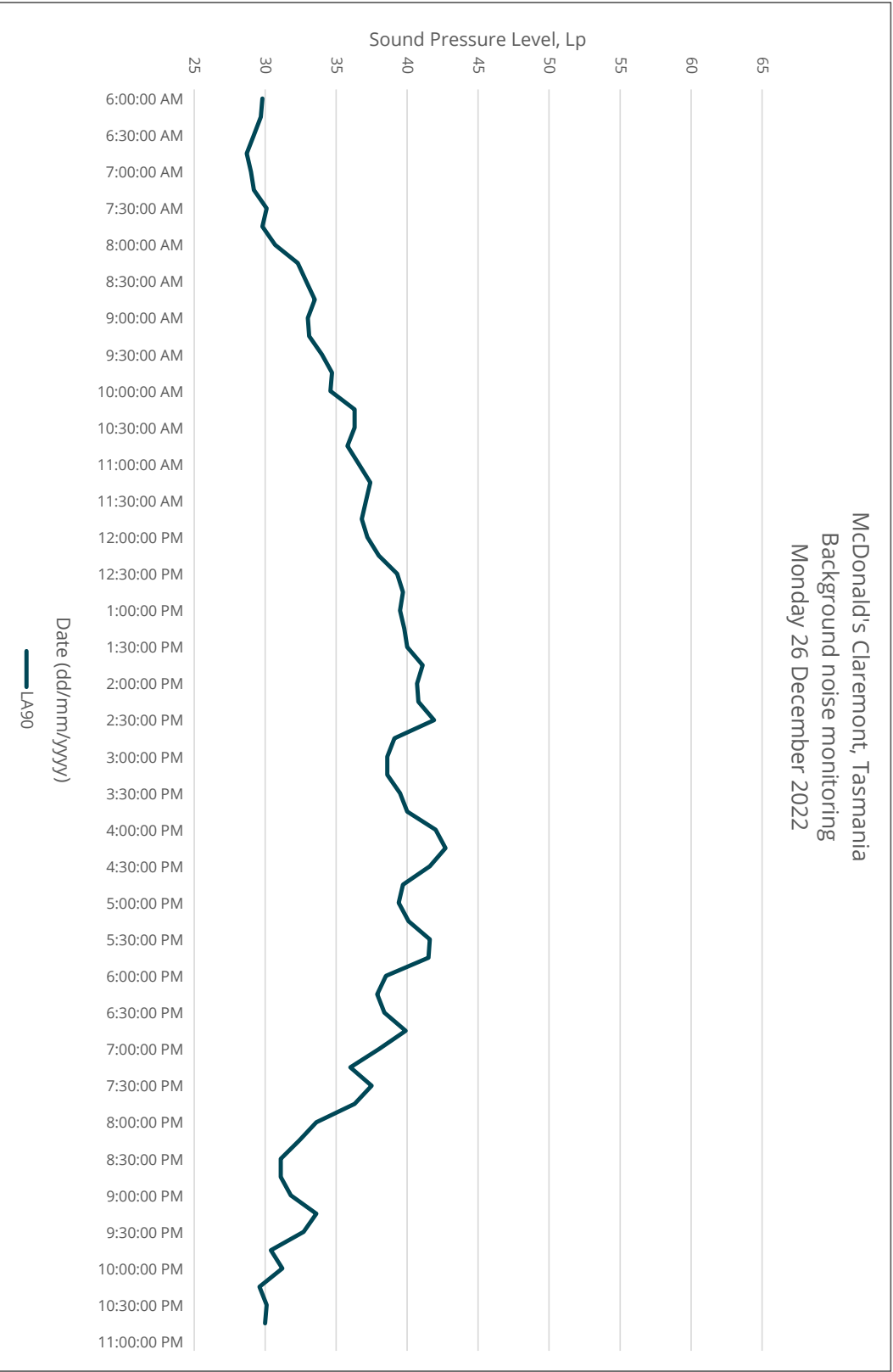






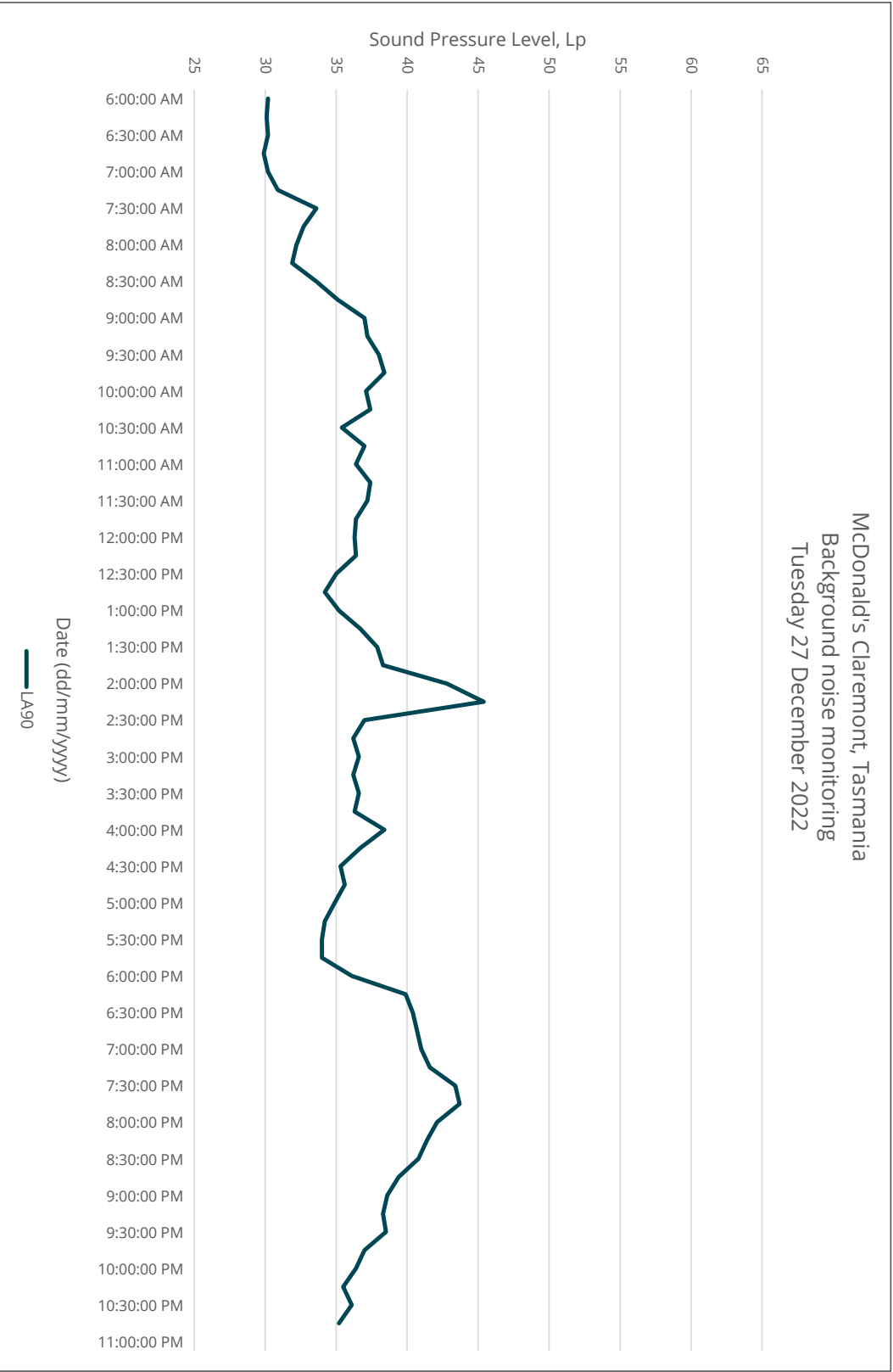


McDonald's Claremont, Tasmania
Background noise monitoring
Monday 26 December 2022





McDonald's Claremont, Tasmania
Background noise monitoring
Tuesday 27 December 2022

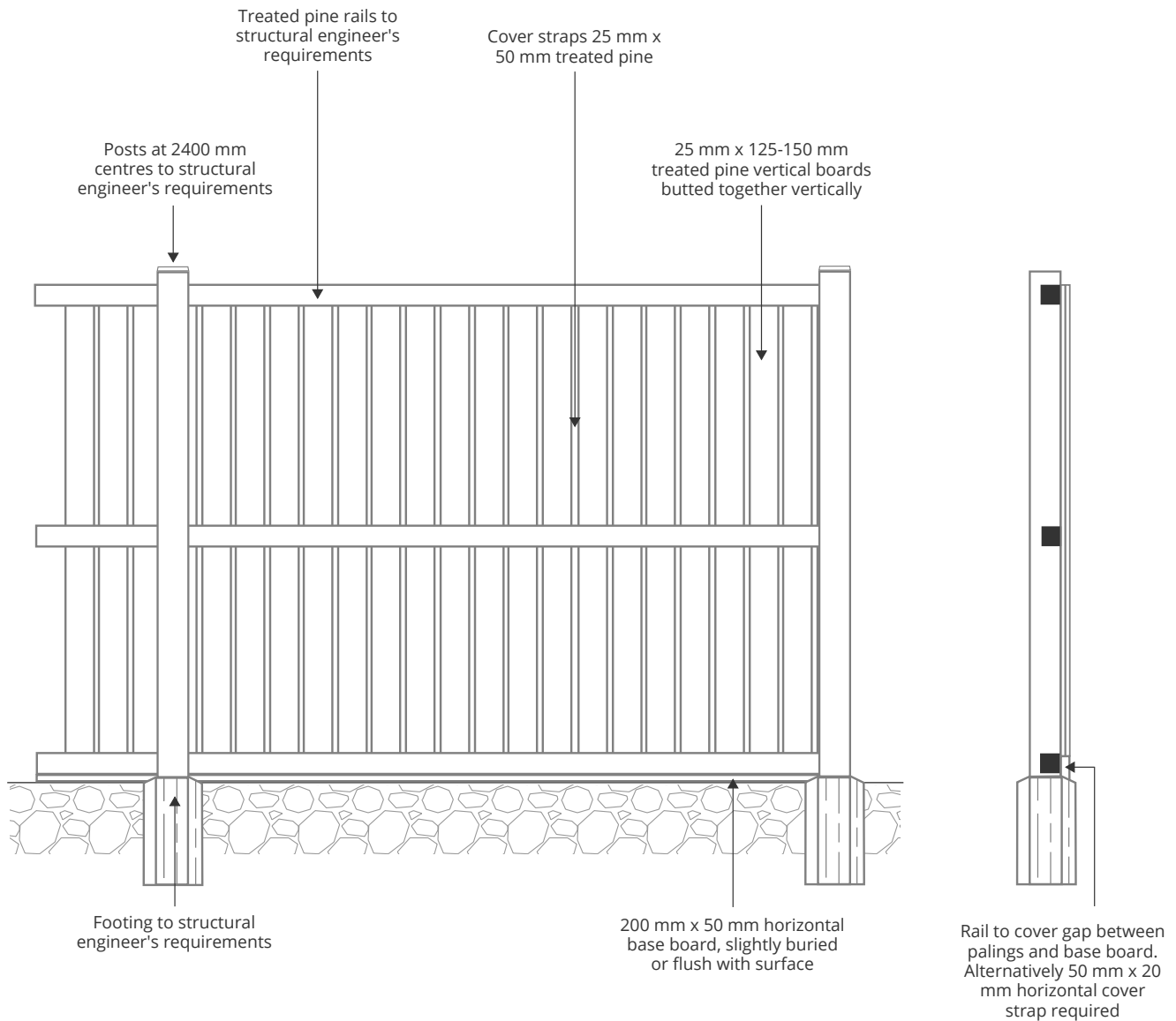




APPENDIX D ACOUSTIC FENCE DETAIL

TYPICAL ACOUSTIC FENCE SPECIFICATION

CLARITY
ACOUSTICS

ELEVATIONSECTIONNOTES:

1. Drawing is not to scale.
2. Specification provided for indicative purposes only. Final specification will be based on individual requirements.
3. Fence, fastenings and footings should be designed by a suitably qualified structural engineer.

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APPENDIX E NOISE PREDICTION METHODOLOGY

Predictions of operational noise from the subject site have been undertaken on the basis of:

- The sound emissions of noise sources associated with the development as outlined in APPENDIX F
- A digital noise model of the site and surrounding environment
- International standard(s) used for the calculation of environmental noise propagation.

Details of the prediction methodology are summarised in Table 11 below.

Table 11 - Noise prediction methodology

Detail	Description
Software	Proprietary noise modelling software SoundPLAN v8.2
Method	International Standard ISO 9613-2:1996 Acoustics – Attenuation of sound during propagation outdoors – Part 2: General method of calculation (ISO 9613-2).
Ground conditions	Ground factor of $G = 0.5$ i.e., 50 % hard ground
Atmospheric conditions	Temperature 10°C and relative humidity 70% This represents conditions which result in relatively low levels of atmospheric sound absorption.
Receiver heights	1.5 m above finished floor level
Terrain	Subject site finished surface levels taken from DWG No. C21 "Contours and Levels Plan" prepared by Parkhill Freeman (dated Jan 2023). Terrain for area surrounding the subject site obtained from thelist.tas.gov.au.



APPENDIX F NOISE LEVELS OF ON-SITE EQUIPMENT AND ACTIVITIES

Source noise levels for deliveries, vehicle movements, COD units and patron activity have been sourced from measurements at similar sites conducted by Clarity Acoustics. Source noise levels for mechanical plant have been based on manufacturer's data with assumed octave band data if not available from the manufacturer.

The sound power level data used in our assessment is summarised in Table 12.

Table 12 - Sound power level of proposed equipment and activity, dB L_w

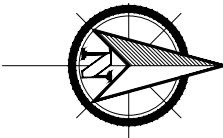
Noise source	Octave band centre frequency							A
	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	
Equivalent Average Noise Level, L _{eq}								
Light Rigid Vehicle (LRV)	95	92	87	84	84	83	77	89
MRV	103	97	92	89	90	91	85	96
HRV	105	99	94	91	92	93	87	98
Garbage Truck	97	95	95	96	96	94	90	100
Bin Emptying	105	97	94	97	95	94	89	100
Customer Vehicle	87	84	79	76	76	75	69	81
Customer Voice	63	65	68	69	67	61	53	71
CODs	65	61	71	80	80	78	62	84
AC Unit 1	90	89	82	79	76	71	63	82
AC Unit 1 – Low speed	85	84	77	74	71	66	58	77
AC Unit 2	90	89	79	76	75	71	64	81
AC Unit 2 – Low speed	85	84	75	72	70	66	60	76
AC Condenser 3	51	60	57	60	62	59	52	66
Toilet Exhaust Fan	63	64	66	63	61	56	52	65
Fry Exhaust Fan	80	78	74	71	62	64	63	73
Filet Exhaust Fan	80	78	74	71	62	64	63	73
Grill Exhaust Fan	80	79	72	66	62	60	58	70
Washup Exhaust Fan	63	55	60	54	51	48	43	57
Make Up Air Fan	68	68	64	59	56	57	56	64
Relief Air Fan	64	72	68	66	65	64	60	70
MAC-90 Refrigeration unit	85	86	85	83	77	73	64	84



Noise source	Octave band centre frequency							A
	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	
Maximum Noise Level Events, L _{max}								
'Normal' car ¹	108	96	95	90	90	86	79	94
'Worst-case' car ^{1,2}	110	108	101	96	99	98	91	104
Vehicle pass by	104	95	88	88	89	85	79	93
Patron maximal shout	83	92	98	97	92	87	87	98
CODs	90	90	83	95	91	95	71	98

¹ Includes door closing and vehicle start up from stationary

² A 'worst-case' car includes a V8 or high-powered vehicle driving in an aggressive manner



PROPOSED MCDONALDS RESTAURANT

MAIN ROAD, CLAREMONT

OBTUSIVE LIGHT ANALYSIS

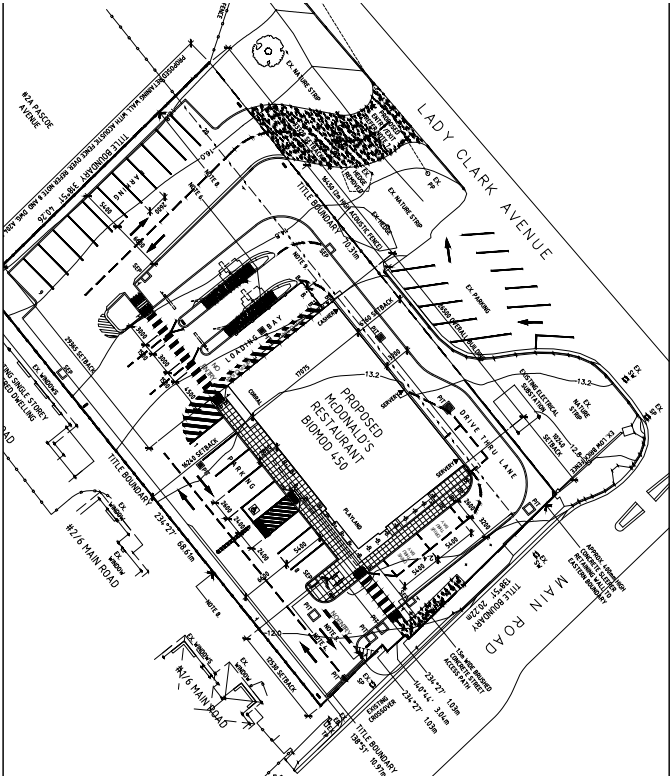
GENERAL LIGHTING NOTES:

1. THIS DRAWING SET DEMONSTRATES COMPLIANCE WITH AS/NZS4282:2019 FOR THE PROPOSED LIGHTING ARRANGEMENT SHOWN, INCLUDING ILLUMINATED SIGN LUMINANCE LIMITS.
2. CARPARK AND DRIVEWAYS COMPLY WITH AS/NZS1158.3.1 SUB CAT. PC1 AND PCD.
3. ALL LUMINAIRE DATA IS SUPPLIED BY MANUFACTURER.
4. DESIGN SOFTWARE USE AGI32 V20.
5. ALL CALCULATIONS AND RESULTS PROVIDED ARE SUBJECT TO TOLERANCES IN ACCORDANCE WITH AS/NZS3827.1-1998 AND AS/NZS3827.2-1998 LIGHTING SYSTEM PERFORMANCE AND ACCURACY TOLERANCES.
6. MINIMUM POLE SETBACK TO BE 600mm FROM FACE OF KERB.

OBTUSIVE LIGHTING ANALYSIS:

7. COMPLIANCE WITH AS/NZS4282-2019 IS DEMONSTRATED FOR AN A3 ENVIRONMENTAL ZONE FOR NON-CURFEW AND CURFEW OPERATION.
8. ALL OBTUSIVE LIGHT ANALYSIS IS EVALUATED AT INITIAL FLUX.

Drawing List			
Drawing Number	Sheet Number	Revision	Title
MC.D01206-E01	1	A	Title Page
MCD01206-E01	2	A	Luminaire Layout
MCD01206-E01	3	A	Obtrusive Light Analysis
MCD01206-E01	4	A	Sign Luminance Calculations
MC.D01206-E01	5	A	Headlight Beams Analysis



SITE PLAN

SCALE: N.T.S.



LOCALITY PLAN

SCALE: N.T.S.



LIGHTING CERTIFICATION

LIGHTING CERTIFIED TO COMPLY WITH AS/NZS4282:2019 FOR NON-CURFEW AND CURFEW OPERATION IN AN A3 ENVIRONMENTAL ZONE.

- * CARPARK AND DRIVEWAYS COMPLIANT WITH AS/NZS1158.3.1:2020 SUB CAT. PC1 AND PCD.
- * ALL LUMINAIRE DATA HAS BEEN SUPPLIED BY MANUFACTURER.

MCDONALDS CLAREMONT Tas.

MIES No. 280

Date	Drawn	Description
11/123	SAF	ISSUED FOR APPROVAL
01/123	SAF	REVISED HEADLIGHT ANALYSIS

Project	Title
PROPOSED MCDONALDS RESTAURANT MAIN ROAD	ELECTRICAL SERVICES LIGHTING

Drawn	SAF	CHK	SAF	Date	10/11/2023
Scale	Drawn	Miles	Draw	Scale	



Date	Drawn	Description	Checked	Project	Title	Drawn	Checked	Date	Scale	Revision
11/23	SAF	ISSUED FOR APPROVAL		PROPOSED McDONALDS RESTAURANT	ELECTRICAL SERVICES	SAF		10/11/2023		
01/23	SAF	REVISED HEADLIGHT ANALYSIS		MAIN ROAD	LIGHTING	SAF				



UPWARD WASTE LIGHT - COMPLIANCE REPORT
AS/NZS 4282:2019, A3 - MEDIUM DISTRICT BRIGHTNESS, CURFEW
FILENAME: MCD01206 - 1 - CURFEW
3/11/2023 10:05:17 AM

ILLUMINANCE

MAXIMUM ALLOWABLE VALUE: 2 LUX

CALCULATIONS TESTED (6):

CALCULATION LABEL	TEST RESULTS	MAX. RESULT ILLUM.
16 MAIN ROAD ILL SEG1	PASS	1
16 MAIN ROAD ILL SEG2	PASS	1
16 MAIN ROAD ILL SEG3	PASS	2
16 MAIN ROAD ILL SEG4	PASS	1
4 PASCOE AVE ILL SEG1	PASS	1
13 MAIN ROAD ILL SEG1	PASS	0

LUMINOUS INTENSITY (CD) AT VERTICAL PLANES

MAXIMUM ALLOWABLE VALUE: 2500 CD

CALCULATIONS TESTED (6):

CALCULATION LABEL	TEST RESULTS
16 MAIN ROAD CD SEG1	PASS
16 MAIN ROAD CD SEG2	PASS
16 MAIN ROAD CD SEG3	PASS
16 MAIN ROAD CD SEG4	PASS
4 PASCOE AVE CD SEG1	PASS
13 MAIN ROAD CD SEG1	PASS

UPWARD WASTE LIGHT RATIO (UWLIR)

MAXIMUM ALLOWABLE VALUE: 20 %

CALCULATED UWLIR: 0.7 %

TEST RESULTS: PASS

THRESHOLD INCREMENT (TI)

MAXIMUM ALLOWABLE VALUE: 20 %

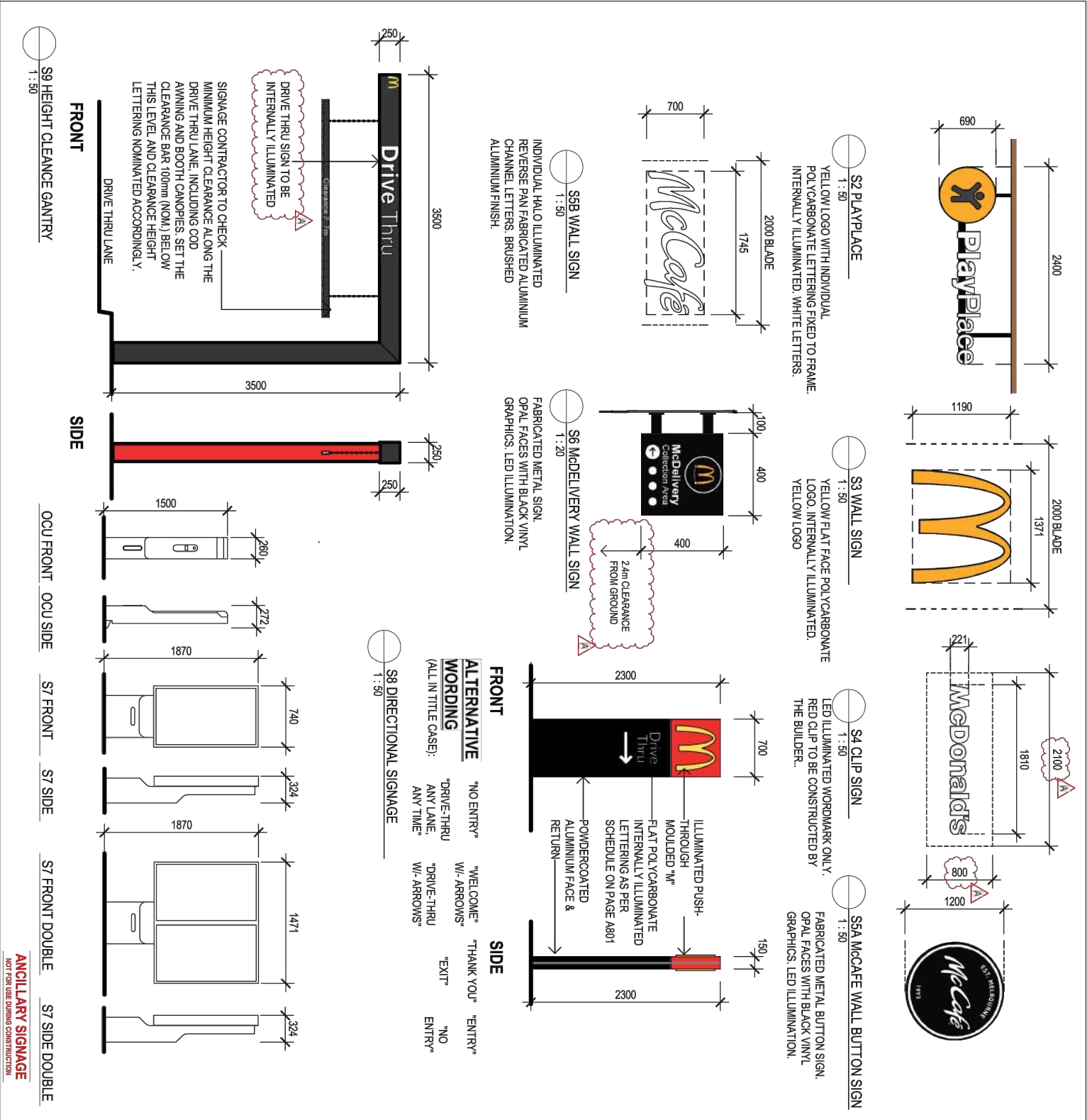
CALCULATIONS TESTED (3):

CALCULATION LABEL	ADAPTATION LUMINANCE	TEST RESULTS
TI 1	1	PASS
TI 2	1	PASS
TI 3	1	PASS

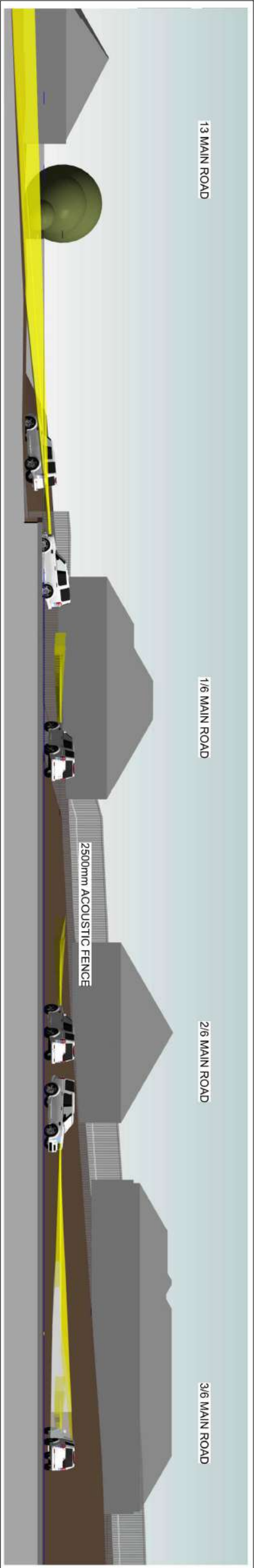
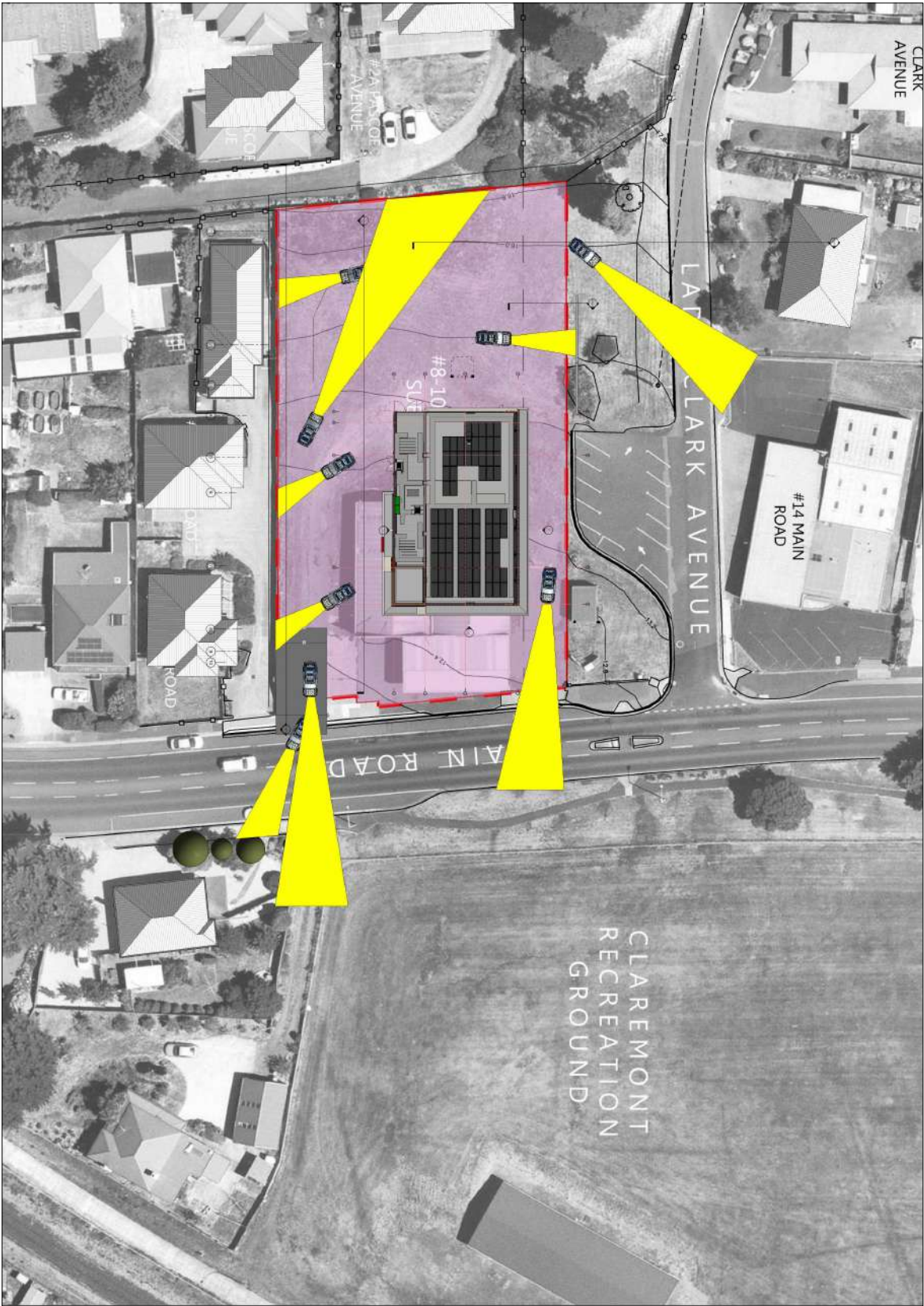
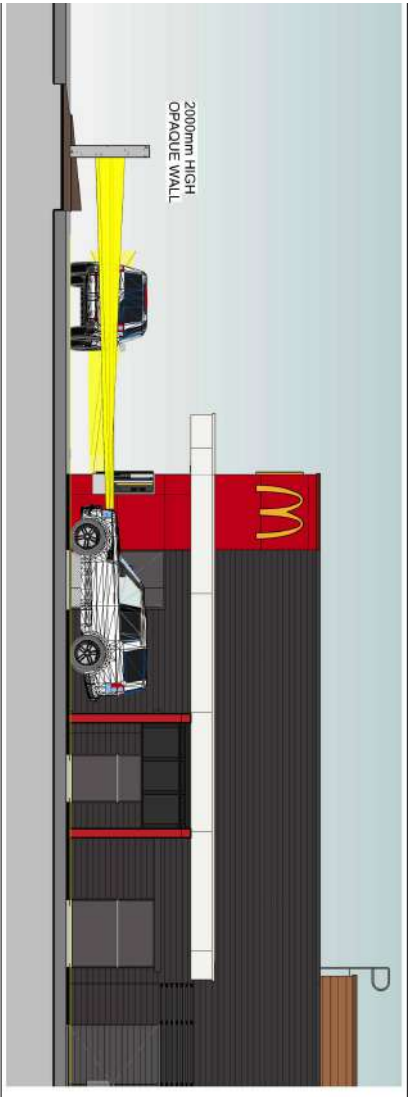
MAXIMUM LUMENS	
Zone	Non-curve
A0	See Note
A1	2 500
A2	7 500
A3	12 500
A4	25 000
TV	100 000

McDonalds Prospect Vale - Sign Luminance Calculations

	ILLUMINATED AREA	INSTALLED MODULES	LUMENS	COLOR	SIGN 'N' FACTOR	EXITANCE (LUMENS PER SQ.M)	L (OFFICE) EXITANCE/ LUMIT 260
PYLON SIGN ARCH PYLON SIGN RED KEYSTONE	6.784	696	34800	YELLOW	0.7	5130	1144
	6.954	518	25900	RED	0.5	3724	593
	0.5	48	3800	YELLOW	0.7	7200	1805
FLAT PLATE	3.111	112	8400	WHITE / YELLOW	0.7	2700	602
ENTRY CLIP	0.3978	130	812.5	RED	0.5	2042	325
MAGNETIC BLADE BUTTON	10.444	77	5775	WHITE / BLACK	0.7	5528	1233
	1.1304	68	5100	WHITE / BLACK	0.7	4512	1006



ALL ILLUMINATED SIGNAGE WILL BE LIMITED TO 250cd/m² by the sign manufacturer/supplier to comply with Table 3.3 AS/NZS4282:2019 Environmental zone A3

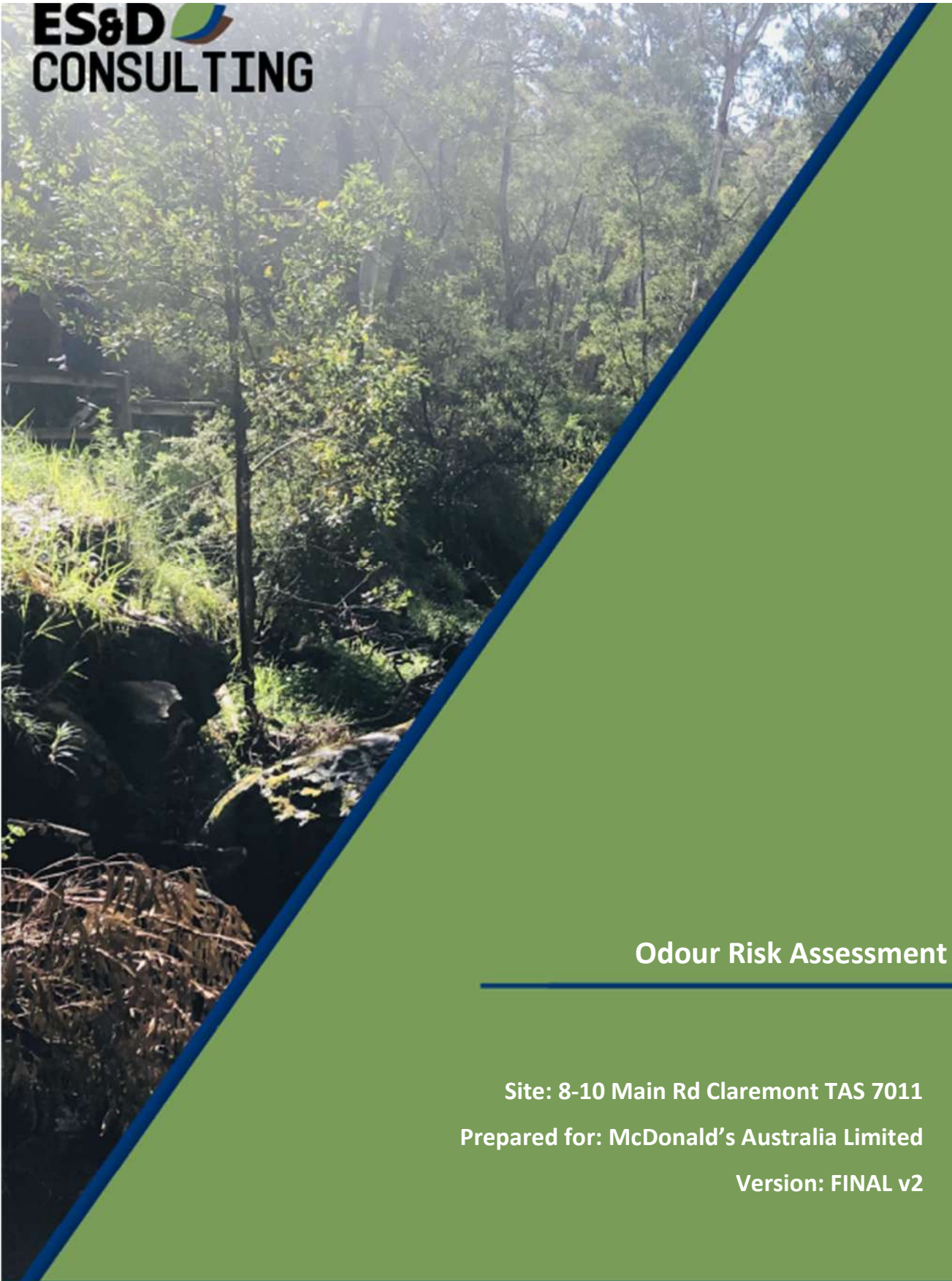


Date	Drawn	Description	Chkd	Project	Title	Drawn	Chk	Date	Scale	Revision No.	Revision Light
11/23	SAF	ISSUED FOR APPROVAL		PROPOSED McDONALDS RESTAURANT	ELECTRICAL SERVICES	SAF		10/11/2023			
01/23	SAF	REVISED HEADLIGHT ANALYSIS		MAIN ROAD	LIGHTING						



The logo for ES&D CONSULTING is located in the top left corner. It features the text "ES&D" in a large, bold, black sans-serif font, with a small green and blue circular graphic to its right. Below "ES&D" is the word "CONSULTING" in a smaller, bold, black sans-serif font.

ES&D
CONSULTING

The background of the cover page is a photograph of a dense forest with tall trees and lush green foliage. A diagonal blue line runs from the bottom left corner towards the top right, separating the forest image from a solid green area on the right side of the page.

Odour Risk Assessment

Site: 8-10 Main Rd Claremont TAS 7011

Prepared for: McDonald's Australia Limited

Version: FINAL v2



Document Control

Prepared & published by: ES&D Consulting
Version: FINAL v2
File: 8965C
Contact name: Royce Aldred
Contact number: 0429 335 664
Prepared for: McDonald's Australia Limited

Version:	Author:	Company:	Date:
DRAFT 1.0	Evan Langridge	ES&D	25/9/2023
DRAFT 2.0	Evan Langridge	ES&D	3/10/2023
FINAL	Royce Aldred	ES&D	11/10/2023
FINAL 2.0	Royce Aldred	ES&D	18/10/2023

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1 Background and Scope

ES&D are assisting their client with the planning aspects for the construction of a McDonald's restaurant at the subject site, with a drive through. The opening hours will be Sunday to Thursday 6am until 11pm, and Friday and Saturday, 6am until midnight. The development will be a potential source of odour relating to the use of cooking oils, odour from stored rubbish, exhaust emissions from idling vehicles and odour from extracted air/mechanical ventilation beyond the building.

As part of their assessment, Glenorchy City Council (Council) requires a site-specific environmental assessment from a suitably qualified person addressing the relevant environmental emissions associated with the development. This assessment has been undertaken by ES&D to meet Council's requirements.

1.1 Scope of assessment

The scope of the assessment included the following:

- Review of odour complaints history relating to a similar development.
- A qualitative assessment of odour at similar McDonalds.
- Assessment of meteorological conditions for the locality, including wind rose information.
- A risk assessment relating to the likelihood of odour related nuisance within the development.



1.2 Planning Scheme Requirements

The Tasmanian Planning Scheme Zoning has the site and its surrounds currently zoned as Inner Residential except for an open park space to the northeast which is zoned as Recreation. The proposed hours of operation exceed the Acceptable Solution A1 of Clause 15.3.1, and accordingly compliance with the Performance Standard must be demonstrated. Glenorchy City Council has requested an odour report to satisfy this standard, as per item 3 (a) in their request for further information letter sent to the applicant.

The assessment must demonstrate that odour will not cause an unreasonable loss of amenity to the neighbouring residential zones, as per P1 of 15.3.1 of the Planning Scheme. The sources of odour addressed should include vehicles, vehicle movements and idling, odour from extracted air/mechanical ventilation beyond the building, having regard to the overall development.

The relevant section of the *Tasmanian Planning Scheme – State Planning Provisions* is:

- 15.3 Use Standards, 15.3.1 All uses,

Objective: That uses do not cause an unreasonable loss of amenity to residential zones

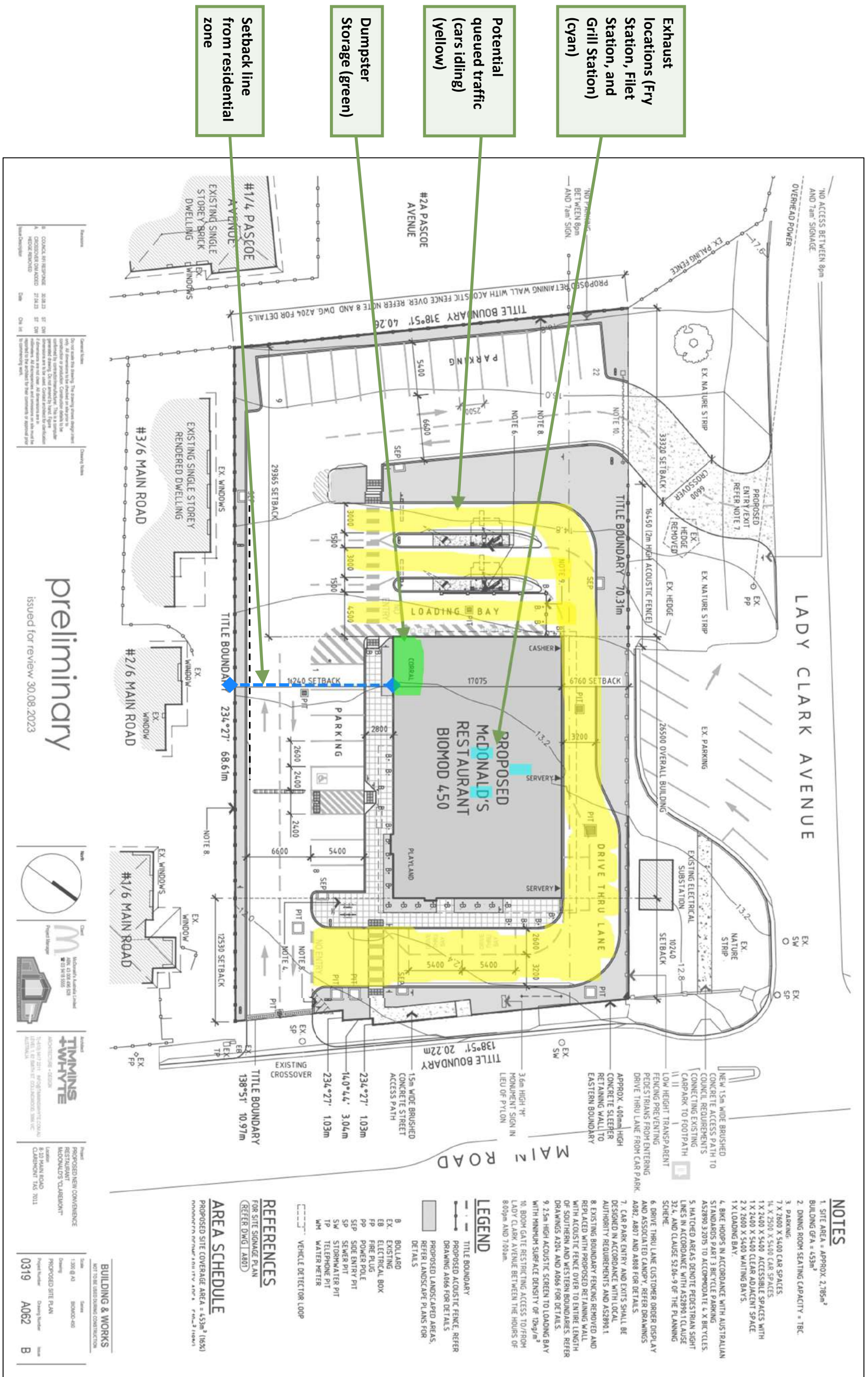
Performance Criteria P1

Hours of operation of a use, excluding Emergency Services, Natural and Cultural Values Management, Passive Recreation, Residential, Utilities or Visitor Accommodation, on a site within 50m of a General Residential Zone or Inner Residential Zone, must not cause an unreasonable loss of amenity to the residential zones having regard to:

- (a) the timing, duration, or extent of vehicle movements; and
- (b) noise, lighting, or other emissions.

1.3 Odour Sources

Figure 1 below shows the proposed site layout for the development, with potential odour sources shown in yellow.





Potential odour sources from the proposed McDonald's are listed as follows:

- Rooftop exhausts. The Fry Station, Filet Station, and Grill Station would be the main exhausts of interest.
- Odour from dumpsters, and
- Odour from vehicle exhausts, where cars are likely to be queued and idling.

1.4 Review of odour complaints history relating to other McDonald's Restaurants

ES&D selected existing McDonald's restaurants to assess for odour complaints based on their proximity to residences. The McDonald's restaurants in the Glenorchy City Council municipality do not have much interaction with residential areas, so were not suitable to use as example restaurants. South Launceston and Invermay McDonald's in the City of Launceston municipal area were selected, as they are both close to residential areas, have similar designs to the proposed Claremont restaurant and are relatively modern. Both Launceston restaurants have 24/7 drive throughs, unlike the proposed Claremont McDonald's, which has reduced hours.

Odour complaints history has been provided by City of Launceston Environmental Health Department for the two existing McDonald's Restaurants. They have confirmed that no noise or odour concerns have been recorded in relation to either location, noting that both restaurants have been operating for a while so the community tolerance around them is high.

The South Launceston McDonald's is surrounded mainly by light industrial and commercial buildings in most directions, except there are five residences approximately 30 to 40 metres to the south of the restaurant and a total of ten residences within 100 metres to the south of the restaurant.

The Invermay McDonald's similarly is surrounded by commercial premises, but has one residence immediately to the east, less than 20 m from the restaurant and six residences to the north within about 60 to 80 metres.

By comparison, the proposed McDonald's will have approximately 10 sensitive receptors (residential dwelling) ranging from approximately 30 to 60 metres from the kitchen exhaust locations on the proposed development.



1.5 Assessment of meteorological conditions for the locality

Wind rose information has been obtained from the Bureau of Meteorology website (http://www.bom.gov.au/climate/averages/wind/selection_map.shtml) and is included in Figure 2 and Figure 3.

At 9am, the annual wind rose indicates that:

- Prevailing winds are from the northwest about 45% of the time.
- Remainder of wind directions occur less than 5% to 15% of the time.
- Calm conditions occur about 6% of the time.

At 3pm, the annual wind rose indicates that:

- Prevailing winds are from the southeast 20% of the time.
- North westerly winds occur almost 20% of the time.
- Remainder of wind directions occur less than 5% to 10% of the time.
- Calm conditions occur for about 2% of the time.

Warm still conditions are thought to be worst case for dispersion of odour, as any odour plume would simply spread around the source by diffusion in a reasonably even fashion. The other unfavourable scenario would be a gentle breeze towards the nearest sensitive receptor, which would blow the plume towards the receptor before it is diluted by ambient air. In the case of Claremont, that scenario would be a gentle breeze from the north/northwest, which is a regular occurrence.

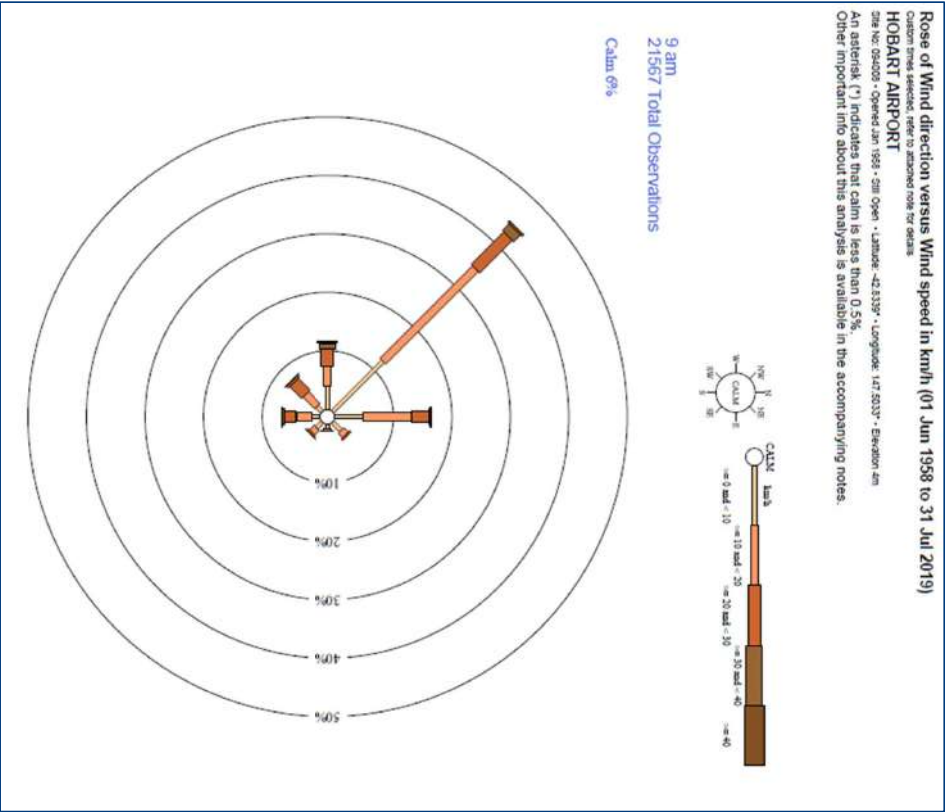


Figure 2: Annual 9am Windrose for Hobart Airport weather station (Site No: 094008)

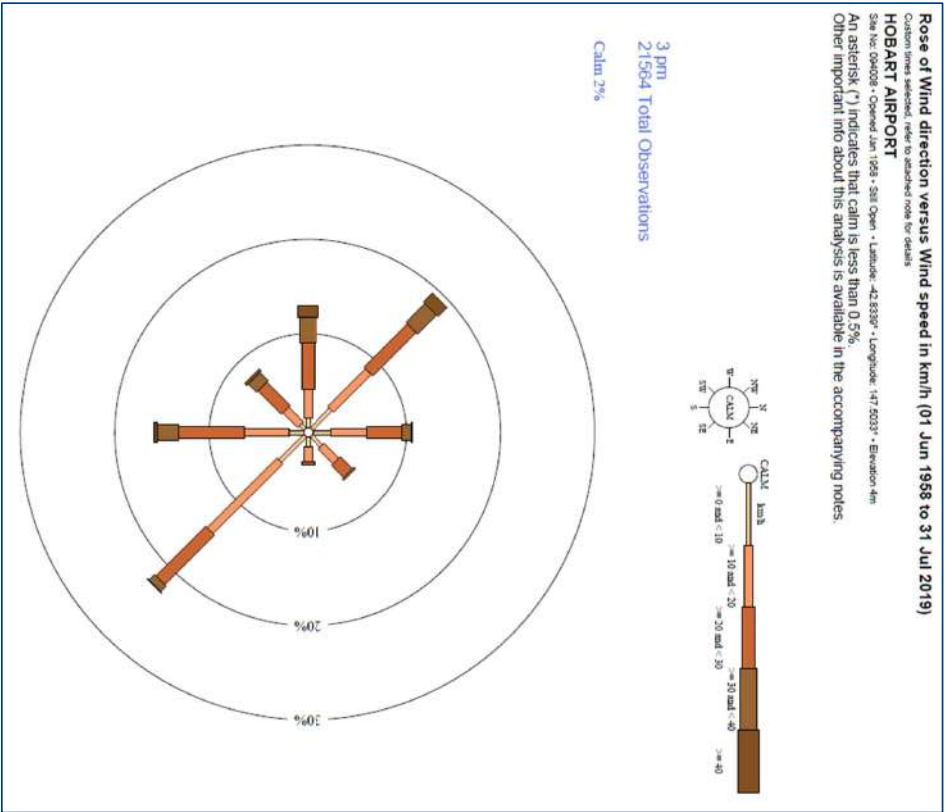


Figure 3: Annual 3pm Windrose for Hobart Airport weather station (Site No: 094008)



1.6 Site specific odour assessment - Invermay

On Monday 28 August 2023, Royce Aldred (RA) and Evan Langridge (EL) of ES&D conducted a field survey of the McDonald's Restaurant at the corner of Goderich and Forster Streets, Invermay. The survey was based on the *Guide to conducting field odour surveys* published by the NSW EPA in 2021. The survey was completed between 1:50 and 3:30 pm on the Monday.

An initial rapid screening field survey was completed by both team members within 10 metres of the front entrance (see location 'R' in Figure 4). The details were as follows:

- Time 1:50 pm
- Wind speed: up to 1.5 m/s, direction N/A
- Odour detected: Yes, Odour intensity: 2 – 3 (weak to distinct)
- Odour character: 8 (Meaty (cooked, good)), 16 (Garlic, onion), 30 (Oily, fatty)
- Hedonic tone: +2 (pleasant)
- Comments: Intermittent, frier/grill exhaust dominant.



Figure 4: Invermay Odour Field Survey Locations

Subsequently, a series of 10-minute odour assessments were completed by Royce and Evan around the boundary of the site, at locations 1 – 8 as per Figure 4. There was no odour



detected at most locations for most of the time. The weather conditions were assumed to be worst case as the conditions were still and the temperature was around 15°C for the entire assessment period. Field record sheets were completed by both participants. The wind speed was typically described by both participants as ranging from calm (wind scale score zero) to a light breeze (score 2). Royce's (RA) and Evan's (EL) notes are summarised below. NSW EPA Odour Descriptors were used for notation purposes and are included in the following section, for reference.

Table 1: Odour survey – 10 minutes, notes, and details

Location	Start Time	Wind Speed	Notes
1	2:01 pm	Calm to light breeze (0 – 2)	RA: Intensity 0, EL: Intensity mostly 0, with the occasional intermittent reading of intensity 1 – 2 with descriptor 8 (meaty cooked, pleasant)
2	2:15 pm	Calm to light air (0 – 1)	RA: Intensity 0 with one reading of intensity 1 with descriptors 8, 16 and 30 ((Meaty (cooked, good), Garlic, onion, Oily, fatty), EL: Intensity 0
3	2:27	Calm to light breeze (0 – 2)	RA: Intensity 0, EL: Intensity 0
4	2:39	Calm to gentle breeze (0 – 3)	RA: Intensity mostly 0, with the occasional intermittent reading of intensity 2 with descriptor 8, 16 and 30 ((Meaty (cooked, good), Garlic, onion, Oily, fatty), EL: Intensity mostly 0, with the occasional intermittent reading of intensity 2 with descriptor 8, 16 and 30 ((Meaty (cooked, good), Garlic, onion, Oily, fatty), smell of cleaner at 6-minute mark.
5	2:50	Calm to light breeze (0 – 2)	RA: Intensity mostly 0, with the occasional intermittent reading of intensity 1 – 2 with descriptor 8 (meaty cooked, pleasant), EL: Intensity mostly 1 - 3, with descriptor "food", whiff of coffee (descriptor 6) at 9-minute mark.
6	3:03	Calm to light breeze (0 – 2)	RA: Intensity 0, EL: Intensity mostly 0, with the occasional intermittent reading of intensity 1 with descriptor "food".
7	3:15	Light air to gentle breeze (1 – 3)	RA: Intensity 0, EL: Intensity 0
8	3:26	Calm to light breeze (0 – 2)	RA: Intensity 0, EL: Intensity 0

It was also noted that the car park was about 50% full most of the time, and both the drive through and restaurant were moderately busy during the survey.

The findings of the survey are summarised here:



- The odour from car exhausts and dumpsters would be described as unpleasant, however was not noticed by either participant during the survey, even at close to the source.
- The dumpsters are well contained in a compound with ventilation, and are well maintained, reducing the risk of the odour from this source.
- Even in the drive through location, the car exhaust was not noticeable to either participant.
- It was clear from the survey that the cooking odour from the exhaust fans on the roof is the main noticeable odour source at the site.
- However, for the duration of the survey, the cooking odour did not carry far from the source and was only experienced at locations within about 15 metres of the source (mainly locations 4, 5 and 6).
- Even in location 4 in the drive through area, which is closest to the exhaust source, the odour was mild and only occasionally experienced by one or both participants.
- There was occasionally an odour experienced, however it was mild and contained within the boundary of the premises most if not all, of the time.
- The odour also did not persist at any of the locations for more than a few minutes at a time during the survey period.
- The cooking odour was described as pleasant by both participants.
- The participants went into the neighbouring car park area east of location 5 and could not notice an odour from any of the McDonald's sources.



1.7 Site specific odour assessment – South Launceston

On Monday 3rd October 2023, Royce Aldred (RA) and Evan Langridge (EL) of ES&D conducted a field survey of the McDonald's Restaurant at 99-105 Howick Street, South Launceston. The survey was based on the *Guide to conducting field odour surveys* published by the NSW EPA in 2021. The survey was completed between 2:45 and 4:30 pm on the Monday.



Figure 5: South Launceston Odour Field Survey Locations

A series of 10-minute odour assessments were completed by Royce and Evan around the boundary of the site, at locations 1 – 7 as per Figure 5. There was no odour detected at most locations for most of the time. The weather conditions were fine with varying wind speeds and the ambient temperature was around 18°C for the entire assessment period. Field record sheets were completed by both participants. The wind speed was typically described by both participants as ranging from light breeze (score two) to a fresh breeze (score five). Royce's (RA) and Evan's (EL) notes are summarised below. NSW EPA Odour Descriptors were used for notation purposes and are included in the following section, for reference.



Table 2: Odour survey – 10 minutes, notes, and details

Location	Start Time	Wind Speed	Notes
1	3:00 pm	Gentle to Moderate breeze (3 – 4)	RA: Intensity 0 - 1, EL: Intensity 0 – 1. Occasional intermittent reading of intensity 1 with descriptor 8/30 (meaty/oily).
2	3:15 pm	Gentle to Fresh breeze (3 – 5)	RA: Intensity 0 - 2, EL: Intensity 0 – 3. Intermittent reading of intensity 1 to 3 with descriptor 8/16/30 (meaty/onion/oily). Building was channelling the wind.
3	3:30 pm	Light to Moderate breeze (2 – 4)	RA: Intensity 0 - 1, EL: Intensity 0 – 1. Occasional intermittent reading of intensity 1 with descriptor 8/16/30 (meaty/onion/oily).
4	3:45 pm	Gentle to Moderate breeze (3 – 4)	RA: Intensity 0 - 1, EL: Intensity 0 – 1. Only one recording of intensity 1 with descriptor 8/16/30 (meaty/onion/oily).
5	4:00 pm	Light to Fresh breeze (2 – 5)	RA: Intensity 0 , EL: Intensity 0. No odours detected.
6	4:15 pm	Light to Moderate breeze (2 – 4)	RA: Intensity 0 - 1, EL: Intensity 0. RA one recording noting vehicle exhaust fumes at intensity 1.
7	4:30 pm	Gentle to Fresh breeze (3 – 5)	RA: Intensity 0 - 1, EL: Intensity 0 – 1. Only a couple recordings at intensity 1 but unsure of odour character.

It is worth noting that the car park was about 25 to 50% full and the drive through was moderately busy during the survey.

The findings of the South Launceston survey are summarised here:

- The odour from car exhausts were not noticeable by either participant (except one occasion), even in the drive through locations close to vehicles.
- The dumpsters would be described as unpleasant; however, they are well contained in a compound with ventilation, and are well maintained, reducing the risk of the odour from this source. Even standing close to this source odours were not recorded.
- There was occasionally cooking related odour experienced, however it was mild at best and did not persist at any of the locations for more than a few minutes.
- The cooking odour was most noticeable in survey locations near the building where air movement was concentrated such as the drive through pickup. Beyond these locations no odour was noticeable.



1.8 Odour Field Survey Descriptors

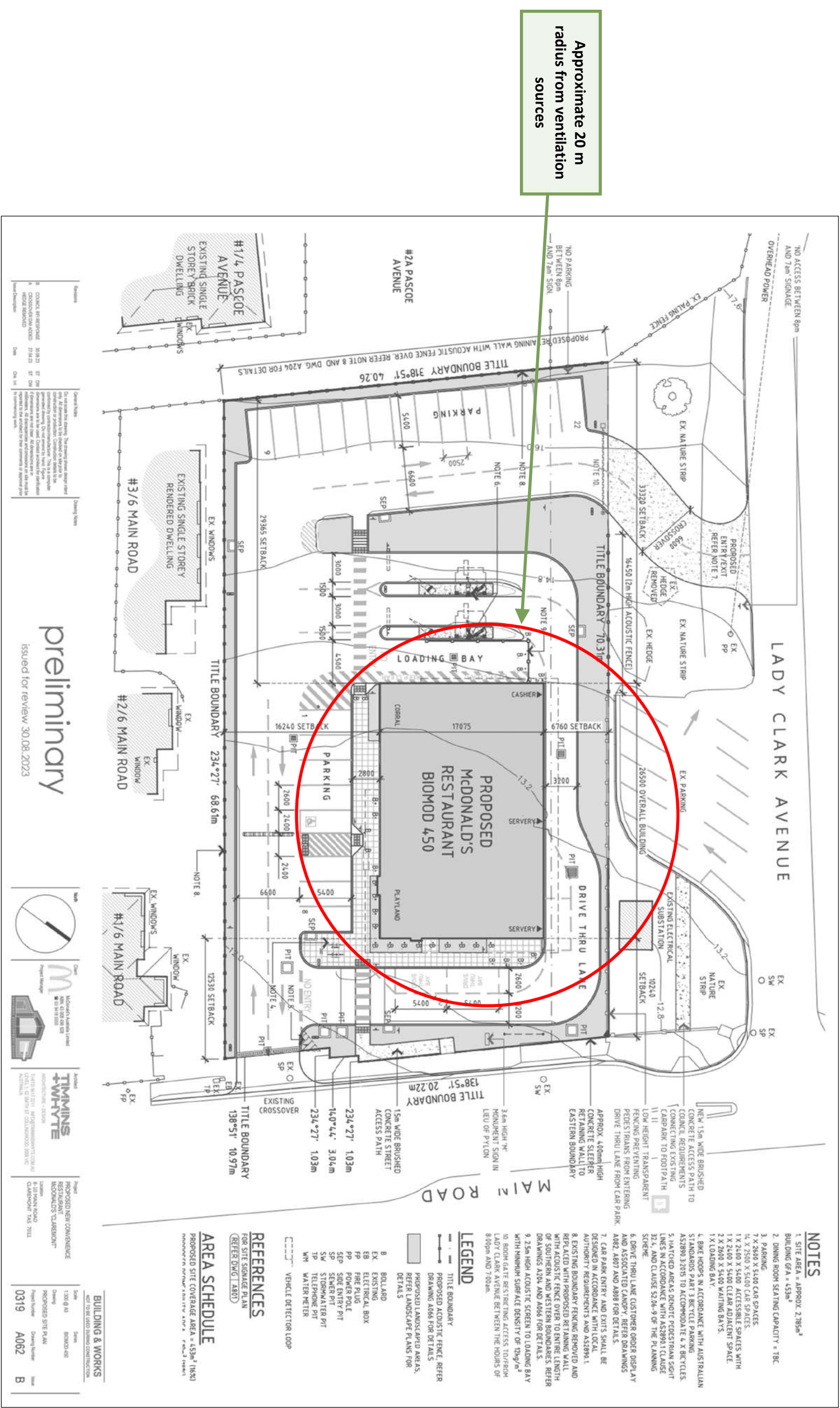
Intensity		Hedonic Tone		Beaufort Wind Scale			
Scale	Description	Scale	Description	Scale	Description	How to recognise	~m/s
6	Extremely strong	-4	Extremely unpleasant	0	Calm	Smoke rises straight up	0.0-0.2
5	Very strong	-3		1	Light air	Smoke drifts	0.3-1.5
4	Strong	-2		2	Light breeze	Wind felt on face; leaves rustle	1.6-3.3
3	Distinct	-1		3	Gentle breeze	Flags flap; twigs move all the time	3.4-5.4
2	Weak	0	Neutral	4	Moderate breeze	Papers blow; small branches move	5.5-7.9
1	Very weak	+1		5	Fresh breeze	Small trees sway	8.0-10.7
0	No odour	+2		6	Strong breeze	Large branches move; wind whistles	10.8-13.8
		+3		7	Near gale	Whole trees sway	>13.8
		+4	Extremely pleasant				

Character Descriptors									
Number	Description	Number	Description	Number	Description	Number	Description	Number	Description
1	Fragrant	11	Bark-like	21	Like blood, raw meat	31	Like gasoline, solvent		
2	Perfumy	12	Woody, resinous	22	Rubbish	32	Fishy		
3	Sweet	13	Medicinal	23	Compost	33	Putrid, foul, decayed		
4	Fruity	14	Burnt, smoky	24	Silage	34	Paint-like		
5	Bakery (fresh bread)	15	Soapy	25	Sickening	35	Rancid		
6	Coffee-like	16	Garlic, onion	26	Musty, earthy, mouldy	36	Sulphur smelling		
7	Spicy	17	Cooked vegetables	27	Sharp, pungent, acid	37	Dead animal		
8	Meaty (cooked, good)	18	Chemical	28	Metallic	38	Faecal (like manure)		
9	Sea/marine	19	Etherish, anaesthetic	29	Tar-like	39	Sewer odour		
10	Herbal, green, cut grass	20	Sour, acrid, vinegar	30	Oily, fatty	40	Other – please describe		

Odour Risk Assessment

1.9 Site-Specific Risk Assessment

Figure 6 below shows the ventilation odour source relative to receptors, with an approximate 20 metre radius shown.





For the odour surveys undertaken, during warm still to slightly windy conditions the odour was not noticed more than about 15 - 20 metres from the exhaust outlets. At more than 20 metres from the exhaust outlets, it is likely that there will be no odour most of the time, with intermittent odour for short periods only. This means that the risk to residences more than 40 metres from the exhaust vents is low.

In the case of the proposed Claremont development, all neighbouring residences are more than 30 metres away. The likelihood of odour nuisance at these residences is low due to wind direction being variable most of the time. The severity of any odour experienced at most residences is also low due to distance from the source.

It should be noted that at the McDonald's in Howick Street, South Launceston, there are residences around 30 metres to the south, in the path of the prevailing wind (see Figure 7). There have been no complaints from these residences, even though the McDonald's has existed at that location since 1996. Lack of complaints is a good indicator that a loss of amenity has not occurred.

Risk of loss of amenity caused by nuisance odour for residences of the proposed development is therefore low.



Figure 7: South Launceston McDonald's



2 Conclusion

Based on the odour surveys conducted by ES&D at the Invermay and South Launceston McDonald's the main odour source was determined to be the cooking odour from the roof top exhaust locations. The odour from the dumpsters and vehicles on the site, even when idling, was not noticeable during the survey, even when the participants were close to these sources. The cooking odour was noticeable only intermittently during what were selected to be worst case conditions, and only within about 15 - 20 metres from the source. This finding indicates that the odour disperses rapidly even during worst case conditions.

Overall, the risk of loss of amenity within the neighbouring residences around the proposed McDonalds is low. This is due to most residences being 30 metres or more from the exhaust fans.

The recommendation to ensure there is no loss of amenity is to ensure that the ventilation installed is sufficient to force the odour at least one metre above the roof, clear of the low dispersion area that the building will create at the roof level. An exhaust air speed of greater than 2 metres per second should achieve that.

If the above recommendation is actioned, the risk of loss of amenity caused by nuisance odours will be low, and the development could proceed without creating loss of amenity at nearby residences.

References

Tasmanian Planning Scheme – State Planning Provisions

Environmental Management and Pollution Control Act 1994 (EMPCA)

http://www.bom.gov.au/clim_data/cdio/tables/pdf/windrose

Guide to conducting field odour surveys, NSW EPA, 2021

STORMWATER MANAGEMENT REPORT

8-10 Main Road Claremont
McDonald's Development

MCDONALD'S AUSTRALIA LIMITED

OCTOBER 2023

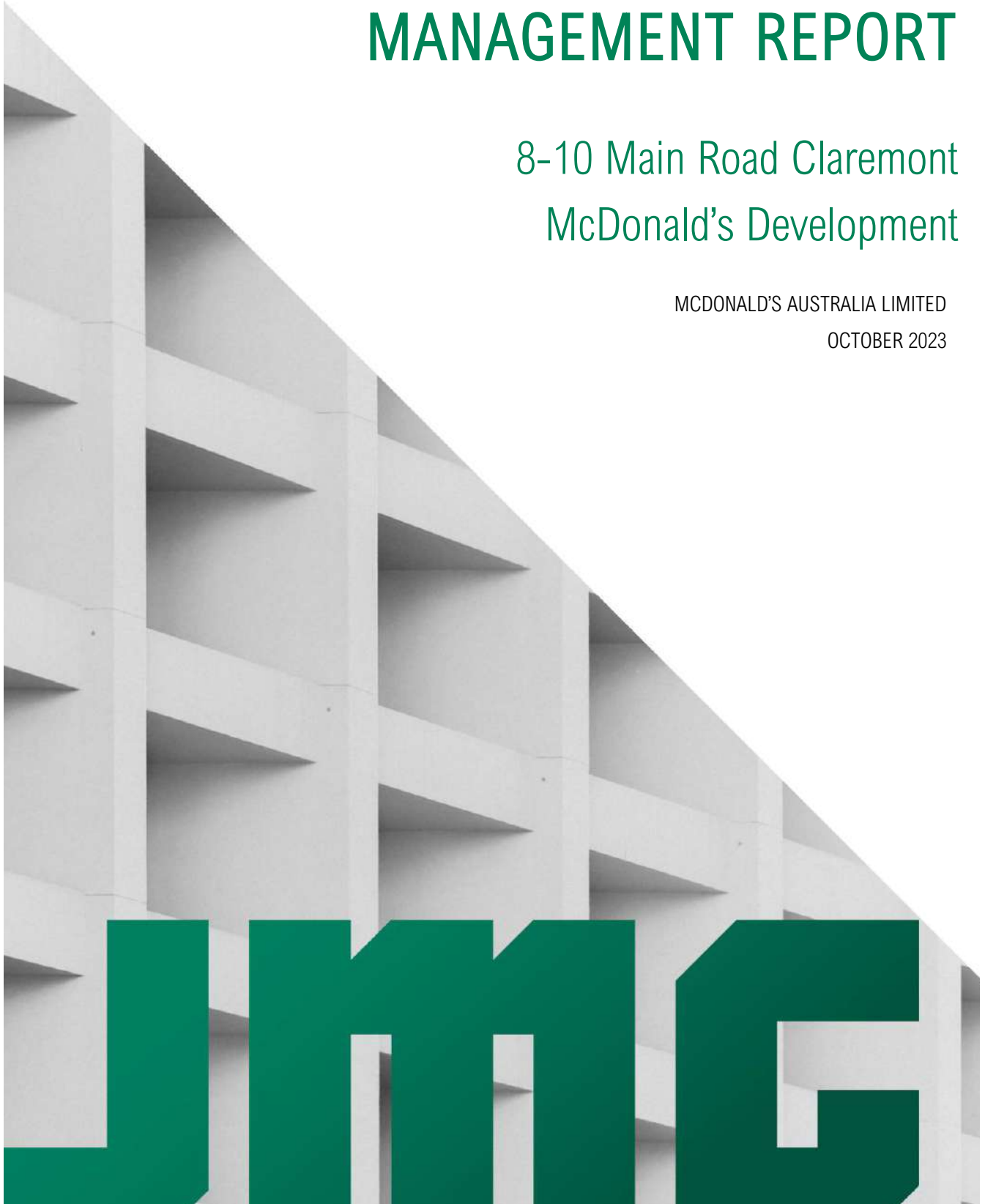


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Appendix A - Concept Stormwater Plan

Appendix B - Calculations

Appendix C - Proposed Preliminary Site Plan - Architect (Timmins + Whyte)

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8-10 Main Road, Claremont • October 2023

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1. Introduction

This Stormwater Report has been prepared in support of a Development Application and in response to the stormwater component of a Glenorchy City Council request for information for the construction of a new convenience restaurant, McDonald's and associated infrastructure (carpark and access) at 8-10 Main Road, Claremont. The specific details of the request for information are provided in Section 2 of this report.

The subject site area is approximately 2790m² and currently comprises of an existing single storey blockwork auto repair shop with existing bitumen paving at the Main Road frontage which is to be demolished and removed. There is also an existing gravel driveway which provides access to the rear of the building. The remaining area is grassed and forms approximately 1540m².

Stormwater from the existing site currently drains to Main Road on the eastern boundary of the site. The Glenorchy City Council GIS data shows 2 DN100 stormwater connections to the site which connect into a DN300 main that runs parallel with Main Road, and ultimately into Faulkners Rivulet/ Derwent via an outlet headwall.

A preliminary site plan which details the proposal undertaken by the Architect (Timmins + Whyte) is attached in Appendix C.

2. Glenorchy City Council RFI

This report addresses the requirements as set out in the Glenorchy City Council RFI PLAM-23/03 dated 20th June 2023 (stormwater component).

See below the specific requirements of the RFI in italics, followed by the location that it is addressed within this report in bold text.

General Manager's Consent for Interference with Public Stormwater Systems

You are required to provide the following information to enable Council to assess stormwater management aspects of the proposal under section 14(1) of the Urban Drainage Act 2013.

- *Please provide Stormwater Concept Servicing plan showing how the stormwater will be managed and connected to public infrastructure in accordance with Council's Stormwater Management Policy. The servicing plan must clearly indicate how all additional stormwater from the site, including hardstand drainage, driveway and parking areas, will be discharged to Council infrastructure with sufficient receiving capacity. The applicant is required to accurately locate, size and accurately plot the location on the submitted site plans. Advice: the connection must be a minimum of 150mm equivalent diameter and upgrading work will be required.*

Refer Section 3.2 of this report, and Appendix A for concept stormwater plan.

- *Please provide a Stormwater Management Report demonstrating the stormwater infrastructure has been designed in accordance with Council's Stormwater Management Policy. This report should include but not limited to:*
 - *Design demonstrating that the minor stormwater drainage system is designed to accommodate a 5% AEP storm event. Advice: The design will need to demonstrate that stormwater runoff will be no greater than pre-existing runoff (including calculations for any detention required) or any increase can be accommodated within existing or upgraded public stormwater infrastructure.*

Refer Calculations Appendix B, and Section 3.2 for 5% AEP flow summary and Section 3.3 for detention summary.

- *Design demonstrating that the major stormwater drainage system is designed to accommodate a 1% AEP storm event with an allowance for climate change loading.*

Refer Calculations Appendix B, and Section 3.2 for summary.

- *For new impervious surface greater than 500 sqm, please provide a concept design and supporting calculations to demonstrate that the proposed development incorporates the principles of Water Sensitive Urban Design (WSUD) and complies with the 10 Stormwater Quality Management Requirements of the Stormwater Management Policy.*

Advice: the supporting calculations should include a MUSIC model showing compliance with the stormwater quality targets. The Stormwater Management Policy can be found in Council website or via this link provided Stormwater-Management-Policy-September-2022-Updated-final-ocx.pdf (gcc.tas.gov.au)

Refer Section 3.4.

3. Stormwater

3.1 Applicable Design Standards

Stormwater drainage will be designed in accordance with the Tasmanian Stormwater Policy & Guidance, Glenorchy City Council (GCC) Stormwater Management Policy and GCC Planning Scheme requirements.

A 24% increase in rainfall intensity has been applied to this catchment in line with advice from the GCC stormwater department to account for the impacts of climate change for 1% AEP overland flow.

3.2 Proposed Stormwater System

Pre-Development Flows

The existing site as described in the introduction comprises a fraction impervious area of 67%.

The Rational Method has been used to calculate the site flows. Runoff coefficients have been adopted in line with the GCC Stormwater Policy. GCC have advised a critical catchment storm duration of 30 minutes is to be used for detention calculations.

Predevelopment 5% AEP runoff for the 30min duration storm is calculated at 15 L/s.

The permitted site discharge (PSD) is thus 15 L/s and detention has been sized to restrict flows to this level for the 5% AEP event as detailed in section 3.3 of this report.

Post-Development Flows

The fully developed site has an estimated fraction impervious area of 87%.

Runoff from the post development site will be collected in a new internal piped stormwater network, that will discharge to an existing connection located at the eastern corner of the site, at the frontage to Main Road before eventually entering the Derwent via Faulkner Rivulet.

According to the GCC GIS, there currently exists 2 DN100 property connections to the site. In order to contain flows adequately within the system and treat stormwater efficiently, it is proposed to reduce the number of property connections to 1 DN150 connection. A DN150 connection at 1% grade is adequately sized to take the pre-development, and post-development restricted flows, generated by the development. The existing eastern DN100 connection will be upgraded to DN150 (and the existing northern connection to be made redundant).

The Post development 5% AEP runoff for a range of storm durations is shown in Appendix B. The results indicate there is an increase in runoff in the post development scenario, and thus stormwater detention is required, as detailed in Section 3.

1% AEP overland Flows

Currently, overland flow generated from the subject site (and flow upstream on the south western boundary) sheets to the eastern corner of the site and onto Main Road which directs flow to Cadbury Road via a dip in the carriageway and ultimately into Faulkner Creek (approximately 240m from the subject site).

Overland flow will sheet in a similar way post-development, utilising the proposed car parking areas and access in which kerbs will contain the overland flow within the development before flowing to Main Road. It is proposed however that a spoon drain sized to take the upstream 1% AEP overland flow will cut off any upstream flow above the retaining wall on the western boundary and direct flows to Council land to the north west of the site where it will be dispersed by rock pitching and eventually flow to Lady Clark Avenue.

The 1% AEP overland flow (including an additional 24% on the intensities for climate change) generated by the post development site is 84 L/s. The 1% 'gap' flow taking into account the 5% AEP pipe flow in the internal stormwater system is 42 L/s.

Refer Appendix B for calculations.

3.3 Stormwater Detention

An on-site detention system is required under GCC's Stormwater Management Policy to address the increase in post development flow and limit flows to the pre-development levels for a 5% AEP event. Boyd's Formula has been used to determine onsite detention requirements for the catchment and was calculated at 17m³. Details of calculation are shown in Appendix B.

Detention will be in the form of a below ground oversize pipes. An orifice plate will be installed in the outlet manhole of the detention to restrict outflow to the calculated pre-development condition. For flow greater than the 5%AEP event, excess flow will exit via a designated surcharge pit or side entry pit in the kerb and channel and continue as overland flow directly onto the roadway.

3.4 Stormwater Quality

The development provides a new impervious surface area greater than 500m² (approx. 694m² additional hardstand area). Because of this, the design has incorporated WSUD principles in line with the requirements of Council's Stormwater Management Policy which requires the following treatment standards:

- 90% reduction in the average annual load of litter/ gross pollutants
- 80% reduction in the average annual load of total suspended solids
- 45% reduction in the average annual load of total phosphorus
- 45% reduction in the average annual load of total nitrogen

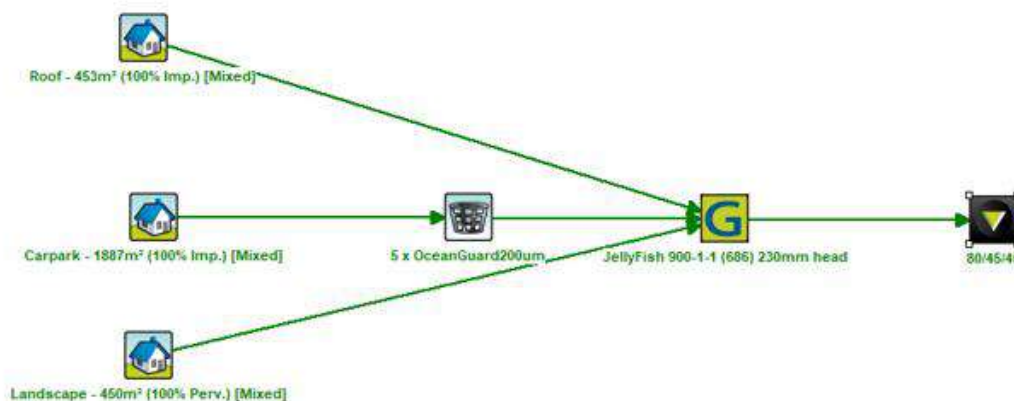
Given the site space limitations with specifying natural treatment options such as swales / rain gardens, proprietary devices have been specified in order to achieve the above standards by either Ocean Protect or Atlan as follows:

Ocean Protect option (refer Figure 1 below for schematic and treatment train effectiveness):

- 5 (or as many as required to fill grated and side entry pits) OceanGuards with 200µm mesh bags (OG-200)
- Jellyfish JF900-1-1 (686) 230mm Head

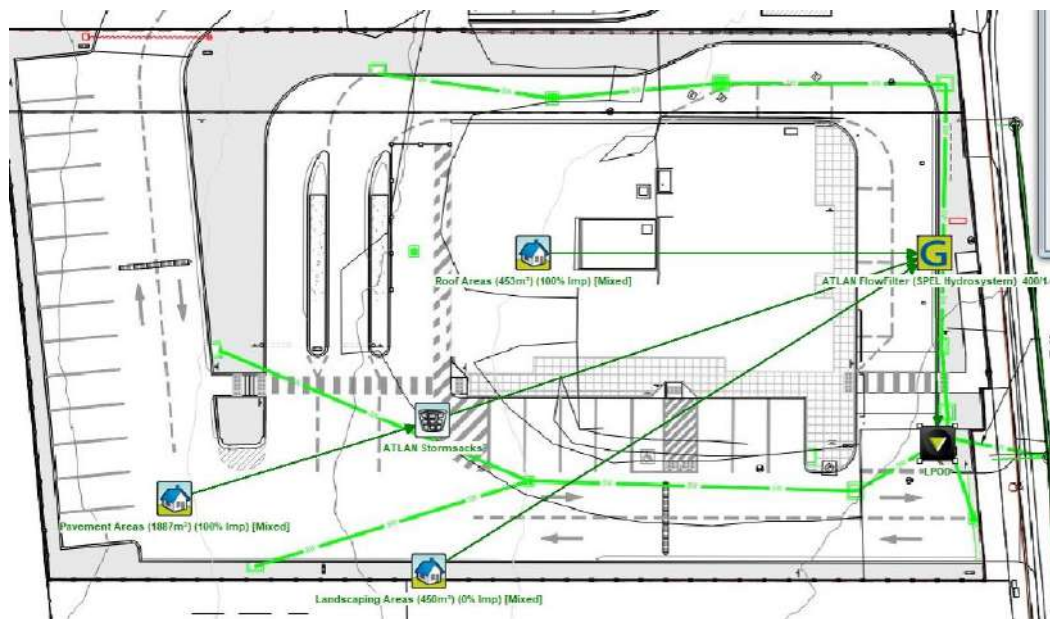
Atlan option (refer Figure 2 below for schematic and treatment train effectiveness):

- 5 (or as many as required to fill grated and side entry pits) Atlan Stormsacks
- Atlan FlowFilter 400/1



	Sources	Residual Load	% Reduction
Flow (ML/yr)	0.989	0.989	0
Total Suspended Solids (kg/yr)	289	15.2	94.8
Total Phosphorus (kg/yr)	0.489	0.194	60.3
Total Nitrogen (kg/yr)	2.43	1.22	49.7
Gross Pollutants (kg/yr)	37	0.806	97.8

Figure 1 - MUSIC Model Schematic & Modelling Results of Ocean Protect Option



	Sources	Residual Load	% Reduction
Flow (ML/yr)	1.39	1.39	0
Total Suspended Solids (kg/yr)	389	47	87.9
Total Phosphorus (kg/yr)	0.674	0.139	79.4
Total Nitrogen (kg/yr)	3.46	1.48	57.2
Gross Pollutants (kg/yr)	48.4	1.03	97.9

Figure 2 - MUSIC Model Schematic & Modelling Results of Atlan Option

4. Conclusion

The proposed stormwater system complies with best practises and Glenorchy City Council requirements as noted in the GCC Stormwater Management Policy.

Further analysis into the cost effectiveness and maintenance requirements / schedule will assist in choosing either the Atlan or Ocean Protect options and will be confirmed at detailed design phase however both are adequate in meeting the required pollution reduction targets.

APPENDIX A

Concept Stormwater Plan



8-10 Main Road, Claremont • October 2023



APPENDIX B

Calculations



8-10 Main Road, Claremont • October 2023

-10 Main Road, Claremont
VIG Ref: J210733PL

Stormwater Calculations
Sheet Name: IFD Table

Metadata:	
Copyright Commonwealth of Australia 2016	
Bureau of Meteorology (ABN 92 637 533 532)	
FD Design Rainfall Intensity (mm/h)	
ssued:	29.05.2023
requested coordinate:	
.altitude	-42.8130
.ongitude	147.2460
nearest grid cell:	
.altitude	42.8125(S)
.ongitude	147.2375 (E)

		Rainfall mm/hr						
		Annual Exceedance Probability (% AEP)						
		1	2	3	4	5	6	7
		63.20%	50%	20%	10%	5%	2%	1%
Duration (min)								
1	60.9	69.3	97.6	118	140	171	197	
2	52.6	59.6	81.8	97.3	113	133	148	
3	46.5	52.7	72.9	87.1	101	120	135	
4	41.9	47.6	66.1	79.5	93.1	111	126	
5	38.3	43.5	60.8	73.4	86.3	104	119	
10	27.6	31.5	44.5	54.2	64.4	79.3	91.6	
15	22.3	25.5	36	43.9	52.3	64.5	74.7	
20	19.1	21.8	30.7	37.4	44.5	54.8	63.3	
25	16.9	19.3	27.1	33	39.1	47.9	55.2	
30	15.3	17.4	24.5	29.7	35.1	42.8	49.2	
45	12.3	13.9	19.4	23.4	27.5	33.2	37.9	
60	10.5	11.9	16.5	19.8	23.2	27.8	31.4	
90	8.45	9.6	13.3	15.8	18.3	21.7	24.4	
120	7.27	8.26	11.4	13.5	15.6	18.4	20.5	
180	5.9	6.71	9.24	10.9	12.6	14.7	16.4	
270	4.78	5.45	7.53	8.9	10.2	12	13.3	
360	4.11	4.7	6.51	7.71	8.85	10.4	11.5	
540	3.29	3.78	5.27	6.26	7.22	8.5	9.48	
720	2.79	3.21	4.5	5.37	6.21	7.36	8.25	
1080	2.18	2.51	3.55	4.26	4.96	5.92	6.68	
1440	1.8	2.08	2.95	3.56	4.16	5	5.67	
1800	1.54	1.78	2.53	3.06	3.6	4.34	4.93	
2160	1.35	1.56	2.22	2.69	3.17	3.83	4.36	
2880	1.09	1.25	1.78	2.16	2.56	3.1	3.53	
4320	0.788	0.901	1.28	1.55	1.84	2.22	2.52	
5760	0.622	0.709	0.998	1.21	1.43	1.71	1.94	
7200	0.517	0.588	0.823	0.992	1.17	1.39	1.57	
8640	0.446	0.507	0.704	0.844	0.986	1.17	1.32	
10080	0.395	0.448	0.619	0.739	0.858	1.02	1.14	

Stormwater Calculations
Sheet Name: ToC (Pred)

Time of Concentration - Sheet, Channel and Pipe							
Section	Description	Method				Unit	Comment
1		Assumed			ToC	5.00	min Estimated Sub-Catchment Runoff
Time of Concentration - Selection for future use							
Total ToC			30	min			

Revision: D
27/10/2023 1:22 PM

Stormwater Calculations
Sheet Name: %Imp (Pred)

	Buildings/Roof	Roads	Gravel	Grass/Landscape
1	473	773		1544
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				

% Impervious	67%
--------------	-----

Revision: D
27/10/2023 1:22 PM

-10 Main Road Claremont
VIG Ref: J210733PL

Stormwater Calculations
Sheet Name: Flows (Pred)

Time of Concentration			
C _i ,10	25	mm	10% AEP, 60min Rainfall
A=	2790	m ²	Insert Catchment Area
A=	0.00279	Km ²	Calculated in Km ²
t _c =	30	mins	Whole Number T _c

Impervious Area		
Existing Hardstand Area=	1863.6	m ²
Total Area =	2790	m ²
Fraction Impervious =	67%	

Runoff Coefficient	
Fraction Impervious =	53% ***
C _i ,10 =	0.100 Formula - Refer ARR Book VIII
C ₁₀ =	0.52 Runoff Coefficient
*** Adjusted to meet GCC Requirements	

Frequency Conversion Factors -Refer AR&R 1987										
ARI (years)	1	2	5	10	20	40	50	60	80	100
Factor, F _y	0.8	0.85	0.95	1	1.05	1.12	1.15	1.17	1.19	1.2

Peak Catchment Flows For Varied 5% AEP Storm Durations		
AEP	Duration (min)	Flow (m ³ /s)
5%	1	0.060
5%	2	0.048
5%	3	0.043
5%	4	0.040
5%	5	0.037
5%	10	0.027
5%	15	0.022
5%	20	0.019
5%	25	0.017
5%	30	0.015
5%	45	0.012
5%	60	0.010
5%	90	0.008
5%	120	0.007

Peak Catchment Flows For Given AEP at T.O.C.				
AEP	t _{tc,y} (mm/h)	Flow (m ³ /s)	Flow + CC (m ³ /s)	Flow + CC (l/s)
63.20%	15.3	0.0050	0.0062	6.17
50.00%	17.4	0.0060	0.0075	7.45
20.00%	24.5	0.0095	0.0117	11.73
10.00%	29.7	0.0121	0.0150	14.97
5.00%	35.1	0.0150	0.0186	18.57
2.00%	42.8	0.0200	0.0248	24.81
1.00%	49.2	0.0240	0.0298	29.75

Stormwater Calculations
Sheet Name: TOC (PostD)

Time of Concentration - Sheet, Channel and Pipe							
Section	Description	Method				Unit	Comment
1	Roof	Assumed			ToC	10.00	min Assumed roof/road and downpipe/pipe

Time of Concentration - Selection for future use		
Total ToC	10	min
		Sheet, Channel & Pipe

Revision: D
27/10/2023 1:22 PM

-10 Main Road, Claremont
VG Ref: J210733PL

Stormwater Calculations
Sheet Name: %imp (PostD)

Total Site Area		2790	m ²			
		0.279	Ha			
	Buildings/Roof	Driveway + Hardstand	Footpath	Grass/Landscape		
1	453	1887		450		
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
Sum	453	1887	0	450		Total
Factor	1	0.95	0.95	0.4		2790
Impervious Area	453	1792.65	0	180		N/A
						2425.65
Buildings/Roads Total	2245.65			% Impervious	87%	

_PROJECTS\PL\2021\J210733PL - 8-10 Main Road, Claremont\06-Civil\Design\SW Calculations

-10 Main Road, Claremont
V/G Ref: J210733PL

Stormwater Calculations
Sheet Name: Flows (PostD)

Time of Concentration			
C _{i,10}	25	mm	10% AEP, 60min Rainfall
A=	2790	m ²	Insert Catchment Area
A=	0.00279	Km ²	Calculated in Km ²
t _c =	10	mins	Whole Number T _c

Impervious Area			
Existing Hardstand Area=		2425.65	m ²
Total Area =		2790	m ²
Fraction Impervious =		87%	

Runoff Coefficient			
Fraction Impervious = 87%			
C _{i,10} =	0.100	Formula - Refer ARR Book VIII	
C ₁₀ =	0.80	Runoff Coefficient	

Frequency Conversion Factors -Refer AR&R 1987										
ARI (years)	1	2	5	10	20	40	50	60	80	100
Factor, F _y	0.8	0.85	0.95	1	1.05	1.12	1.15	1.17	1.19	1.2

Peak Catchment Flows For Varied 5% AEP Storm Durations		
AEP	Duration (min)	Flow (m ³ /s)
5%	1	0.091
5%	2	0.073
5%	3	0.065
5%	4	0.060
5%	5	0.056
5%	10	0.042
5%	15	0.034
5%	20	0.029
5%	25	0.025
5%	30	0.023
5%	45	0.018
5%	60	0.015
5%	90	0.012
5%	120	0.010

Peak Catchment Flows For Given AEP at T.O.C.				
AEP	t _{c,y} (mm/h)	Flow (m ³ /s)	Flow + CC (m ³ /s)	Flow + CC (l/s)
63.20%	27.6	0.0136	0.0169	16.89
50.00%	31.5	0.0165	0.0205	20.49
20.00%	44.5	0.0261	0.0323	32.35
10.00%	54.2	0.0334	0.0415	41.47
5.00%	64.4	0.0417	0.0517	51.74
2.00%	79.3	0.0563	0.0698	69.77
1.00%	91.6	0.0678	0.0841	84.10

Gap 1% Flow = 42.38 l/s

Catchment & Flow Details		Comments
Catchment Area =	0.2790	Ha
10 Year Runoff Coefficient =	0.80	-
20 Year Effective Catchment Area =	0.23	Ha
Restricted Outflow Requirement =	0.015	m ³ /s

Detention Calculation					
Storm Duration (min)	5% AEP Intensity (mm/hr)	Q _i (m ³ /s)	Q _o (m ³ /s)	V ₁ (m ³)	S _{max} (m ³)
1	140.00	0.091	0.015	5.44	4.54
2	113.00	0.073	0.015	8.78	6.98
3	101.00	0.065	0.015	11.77	9.07
4	93.10	0.060	0.015	14.46	10.87
5	86.30	0.056	0.015	16.76	12.27
10	64.40	0.042	0.015	25.01	16.03
15	52.30	0.034	0.015	30.47	16.99
20	44.50	0.029	0.015	34.57	16.59
25	39.10	0.025	0.015	37.97	15.50
30	35.10	0.023	0.015	40.90	13.94
45	27.50	0.018	0.015	48.07	7.62
60	23.20	0.015	0.015	54.07	0.14
90	18.30	0.012	0.015	63.97	-16.91

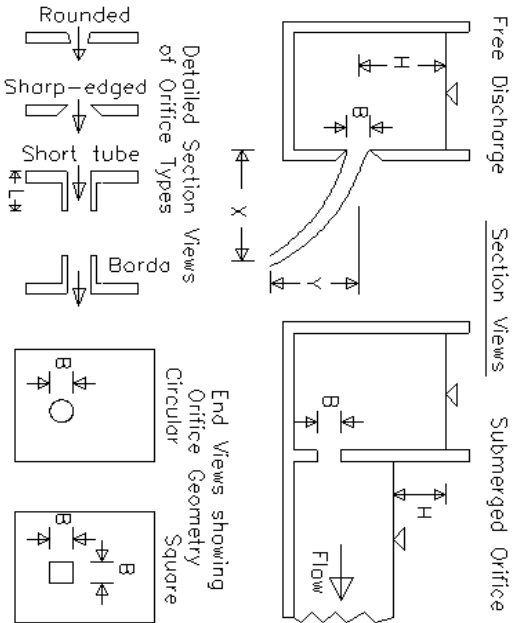
-10 Main Road, Claremont
VG Ref: J210733PL

Stormwater Calculations
Sheet Name: Orifice Analysis

Catchment & Flow Details		
Maximum Allowable Outflow	0.0150	m^3/s
	14.98	l/s
Free Discharge Orifice		
No. orifices	1	No.
Orifice Diameter	0.080	m
Head Above Orifice	80	mm
Head (H)	1.46	m
Co	0.6	-
Orifice Area	0.005	m^2
Flow per Orifice	0.016	m^3/s
	16.142	l/s
	0.016	m^3/s
Total Flow (Q)	16.14	l/s

0.9

0.636 6.361725124



APPENDIX C

Proposed Site Plan - Architect (Timmins + Whyte)



8-10 Main Road, Claremont • October 2023



1. SITE AREA = APPROX. 2,785m²
BUILDING GFA = 4,535m²
2. DINING ROOM SEATING CAPACITY = 75 SEATS.
3. PARKING:
 - 7 X 2600 X 5400 CAR SPACES.
 - 14 X 2500 X 5400 CAR SPACES.
 - 1 X 2400 X 5400 ACCESSIBLE SPACES WITH 1 X 2400 X 5400 CLEAR ADJACENT SPACE.
 - 2 X 2600 X 5400 WAITING BAYS.
 - 1 X LOADING BAY.
4. BIKE HOOPS IN ACCORDANCE WITH AUSTRALIAN STANDARDS PART 3 BICYCLE PARKING AS2890.3:2015 TO ACCOMMODATE 6 X BICYCLES.
5. HATCHED AREAS DENOTE PEDESTRIAN SIGHT LINES IN ACCORDANCE WITH AS2890.1 CLAUSE 32.4, AND CLAUSE 52.06-9 OF THE PLANNING SCHEME.
6. DRIVE THRU LANE CUSTOMER ORDER DISPLAY AND ASSOCIATED CANOPY, REFER DRAININGS A082, A807 AND A808 FOR DETAILS.
7. CAR PARK ENTRY AND EXITS SHALL BE DESIGNED IN ACCORDANCE WITH LOCAL AUTHORITY REQUIREMENTS AND AS2890.1
8. EXISTING BOUNDARY FENCING REMOVED AND REPLACED WITH PROPOSED RETAINING WALL WITH ACOUSTIC FENCE OVER TO ENTIRE LENGTH OF SOUTHERN AND WESTERN BOUNDARIES. REFER DRAININGS A204, AND A066 FOR DETAILS.
9. 2.5m HIGH ACOUSTIC SCREEN TO LOADING BAY WITH MINIMUM SURFACE DENSITY OF 12kg/m²
10. BOMB GATE RESTRICTING ACCESS TO/FROM LADY CLARK AVENUE BETWEEN THE HOURS OF 7.00pm AND 7.00am.

 TITLE BOUNDARY
 PROPOSED ACOUSTIC FENCE, REFER
 DRAWING A066 FOR DETAILS

- PROPOSED LANDSCAPED AREAS
REFER LANDSCAPE PLANS FOR
DETAILS

- | | |
|-----|----------------|
| B | BOLLARD |
| EX. | EXISTING |
| EB | ELECTRICAL BOX |
| FP | FIRE PLUG |
| PP | POWER POLE |
| SFP | SIDE ENTRY PIT |
| SP | SEWER PIT |
| SW | STORMWATER PIT |
| TP | TELEPHONE PIT |
| WM | WATER METER |

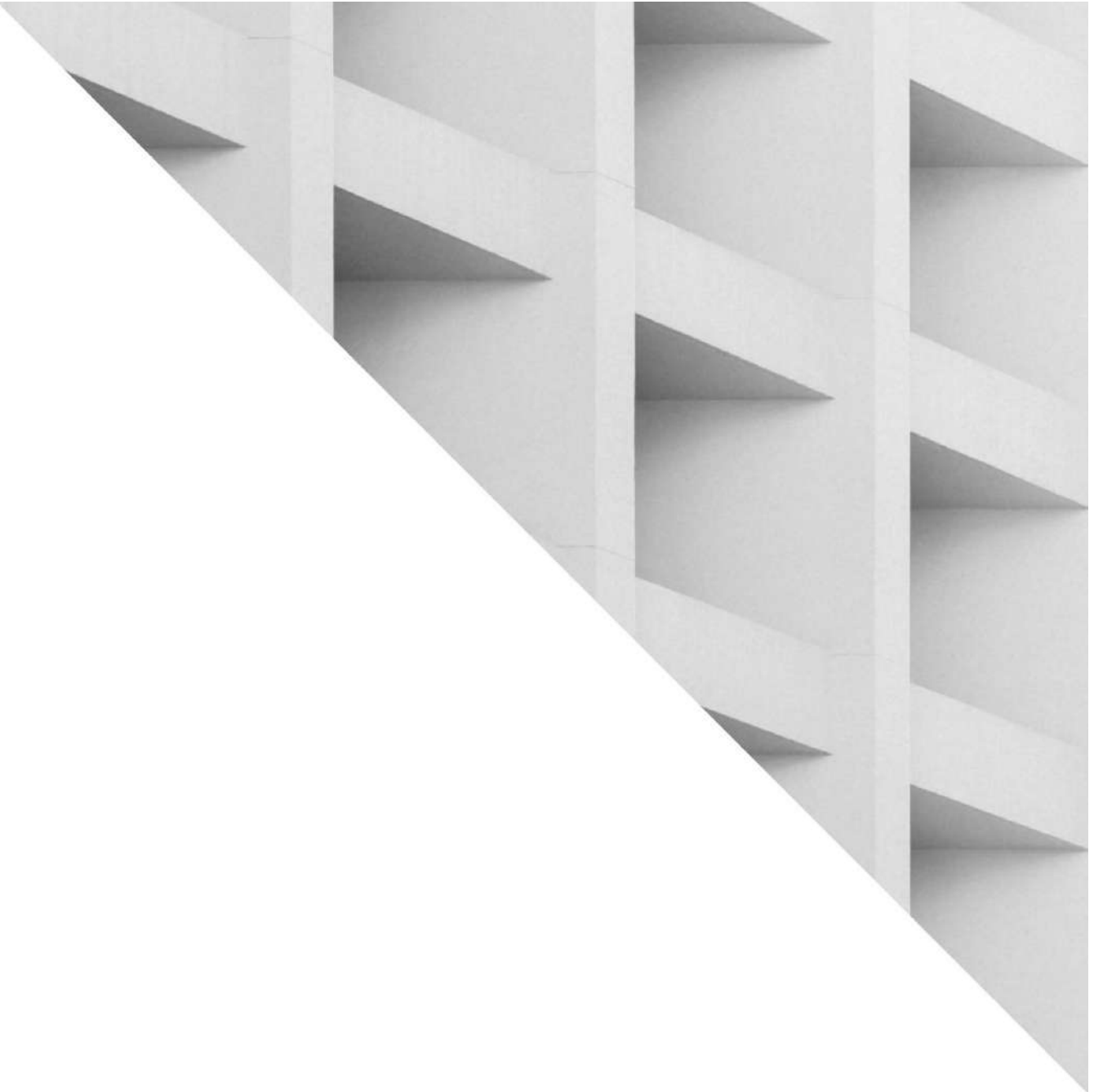
VEHICLE DETECTOR LOOP

REFER DWG A801

PROPOSED PERMEABILITY AREA = 483m² (17%)

NOT TO BE USED DURING CONSTRUCTION

Scale	Series
1:300 @ A3	BIOMOD-450
Drawing	
PROPOSED SITE PLAN	
Project Number	Drawing Number
0319	A062
	Issue
	B



ACN 009 547 139 | ABN 76 473 834 852

117 HARRINGTON STREET, HOBART (03) 6231 2555
49-51 ELIZABETH STREET, LAUNCESTON (03) 6334 5548
www.img.net.au

Client
McDonald's Australia Limited

Date
13 October 2023

Planning

Transport

Urban Design

Waste Management

ratio.com.au

Transport Impact Assessment Report

Proposed McDonald's Convenience Restaurant 8-10 Main Road, Claremont, Tasmania



Project

Proposed McDonald's Convenience Restaurant 8-10
Main Road, Claremont, Tasmania

Prepared for

McDonald's Australia Limited

Our reference

19354T-REP01-F02

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Version	Date	Issue	Prepared by	Checked by	Approved by
F01	24/03/23	Final	Sam Lewis	Andy Harmer	Chris Greenland
F02	13/10/23	Amended Final	Sam Lewis	Andy Harmer	Chris Greenland

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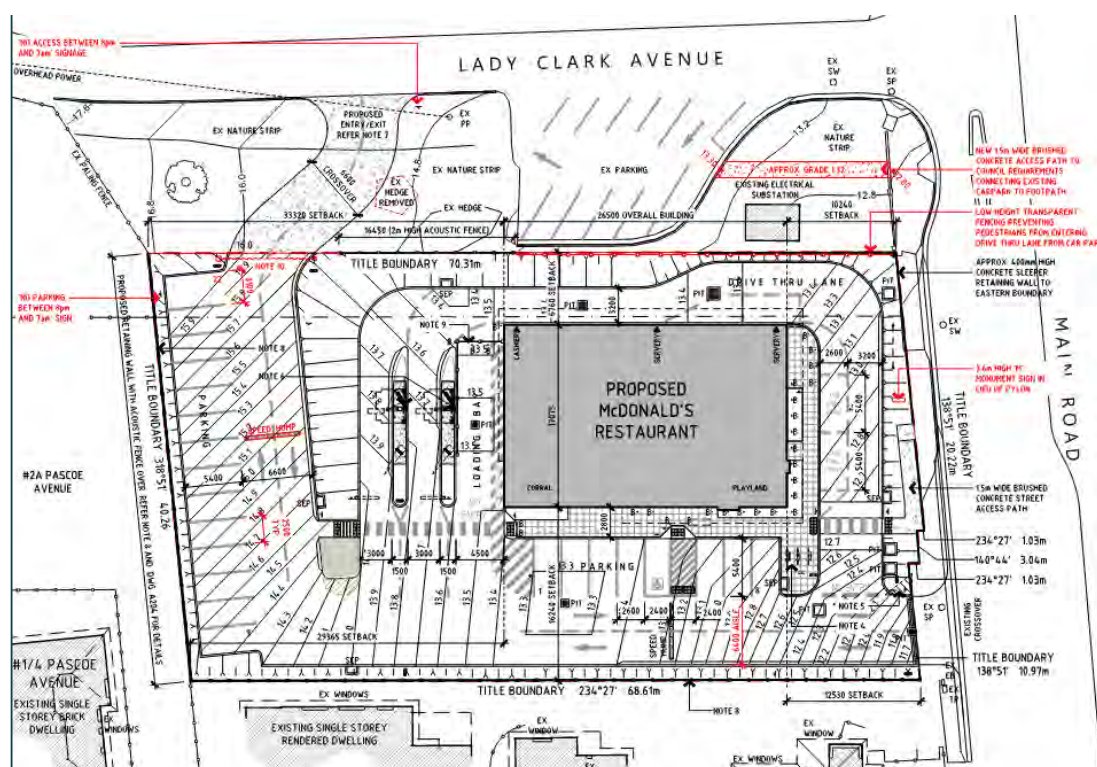
1. Introduction

1.1. Overview

A combined Planning Scheme Amendment and Planning Permit is currently being sought for a proposed McDonald's convenience restaurant (food services) on land located at 8-10 Main Road, Claremont in Tasmania.

For reference, an excerpt of the site plan is provided in Figure 1.1, with a copy of the new proposed development plans also provided in Appendix A of this report.

Figure 1.1: Site Plan



Ratio Consultants were commissioned by McDonald's Australia Limited (the Permit Applicant) to undertake a Transport Impact Assessment report of the proposed development at 8-10 Main Road in Claremont in Tasmania.

It should be noted that Ratio previously prepared a Transport Impact Assessment report for the proposal (dated 24 March 2023). Following the submission, Glenorchy City Council provided a Request for Further Information (RFI) letter, dated 20 June 2023.

Accordingly, Ratio has reviewed the Council comments and updated the Transport Impact Assessment report to respond to transport engineering matters raised in Council's RFI letter and provide additional clarification and information where possible.

It should also be noted that the proposed development plans have been updated to respond to the matters raised in Glenorchy City Council's Request for Further Information letter.

1.2. Purpose & Structure of this Report

This report sets out an assessment of the anticipated parking, traffic and transport implications of the proposed Planning Scheme Amendments and Permit Application, including consideration of the:

1. Existing traffic conditions surrounding the site
2. Parking demand likely to be generated by the proposed development
3. Suitability of the proposed parking in terms of supply and layout
4. Traffic generation characteristics of the proposed development
5. Proposed access arrangements for the site
6. Transport impact of the development proposal on the surrounding road network.

1.3. References

In preparing this report, reference has been made to the following:

- Plans for the proposed development prepared by Timmins+Whyte, attached as Appendix A.
- Tasmanian Planning Scheme and the Glenorchy Local Provisions Schedule.
- Australian/New Zealand Standard, Parking Facilities Part 1: Off-Street Car Parking (AS2890.1:2004).
- Australian Standard, Parking Facilities Part 2: Off-Street Commercial Vehicle Facilities (AS2890.1:2002).
- Australian/New Zealand Standard, Parking Facilities Part 6: Off-Street Parking for People with Disabilities (AS/NZS 2890.6:2009).
- Glenorchy City Council Request for Further Information Letter, dated 20 June 2023.
- An inspection of the subject site and its surrounds.
- Traffic surveys undertaken on 24/02/2023 and 25/02/2023.
- Other documents as nominated.

2. Existing Conditions

2.1. Location and Environment

The subject site is located on the south-west corner of Main Road / Lady Clark Avenue intersection in Claremont, Tasmania.

The site is broadly rectangular in shape with approximate frontages of 70m to Lady Clark Avenue and 30m to Main Road, for an overall site area of 2,785 sqm.

The subject site is currently occupied by an existing automotive repair store (Just 1 Call Automotive), with an indented on-street car parking area currently located along the northern section of site frontage to Lady Clark Avenue. Given the nature of the existing use of the site, the eastern frontage of the site to Main Road is predominantly one extended crossover, with a secondary site connection via an informal path extending from the existing on-street car park to Lady Clark Avenue.

Land uses surrounding the site are predominantly residential in nature with a variety of retail opportunities located within Claremont Shopping Plaza approximately 150m north of the subject site.

In addition to Claremont Shopping Plaza, the following notable land uses are in close proximity to the subject site:

- Claremont Hall, located directly opposite the site to the north-west.
- Lady Clark Retirement Village, located approximately 60 metres west of the subject site.
- Claremont Central Business District (Claremont Shopping Centre), located 150 metres north-east of the subject site.
- Claremont College, located approximately 240 metres south-west of the subject site.

In respect to zoning, the site is located within an Inner Residential Zone (11) and is currently subject to a site-specific qualification under the Glenorchy Local Provisions which allows for the use of the land for Service Industry (motor repairs) and Vehicle Fuel Sales and Service (GLE-0.1).

A portion of the subject site is subject to a Flood-Prone Areas Overlay (113.12.30).

Figure 2.1 shows the location of the site and the Glenorchy Planning Scheme Zones.

Figure 2.1: Planning Scheme Zones



Source: landchecker.com.au

Figure 2.2 shows the current aerial view of the site and its immediate surrounds.

Figure 2.2: Aerial View of the Site and Surrounds



Source: Landchecker.com.au

2.2. Site Operation

The key features in respect to how the subject site is currently operating, are summarised as follows:

- Automotive Repair Shop.
- Vehicle access to the subject site is provided along the eastern boundary of the site fronting to Main Road that extends along the entire eastern frontage, with a secondary informal access route to Lady Clark Avenue through the on-street parking area (evidently used regularly based on wheel track marks).

It is understood that historically the subject site was used as a service station (until 2008) and that there are presently three fuel caps located along the north-western side of the existing building.

2.3. Greater Glenorchy Plan

The Greater Glenorchy Plan was prepared in 2021 and provides a strategic direction and high-level precinct plans for each of the three activity centres within the municipality.

The subject site is located at the fringe of the Claremont CBD precinct at an 'entry gateway' identified within the context plan.

The precinct plan actions to achieve its 2040 vision include upgrading Main Road with streetscape improvements, create a new garden parkland, consider new bus stops to service the centre, and anticipating the future transit hub location.

The Claremont CBD Precinct Plan is shown in Figure 2.3.

Figure 2.3: Claremont CBD Precinct Plan



2.4. Road Network

Main Road is classified as an Arterial Road that runs in a northwest-southeast direction (fronting the site) along the north-eastern frontage of the site and is under the jurisdiction and management of Council.

In the vicinity of the subject site, Main Road is configured with one traffic lane in each direction, within a 12.3m carriageway (includes parking lanes) set within a 17m road reserve (approx.).

The two lanes are separated by a 3.0m wide driveable median that informally facilitates the storing of right turning vehicles seeking to access the properties on the either side of Main Road.

In proximity of the subject site, indented on-street car parking lanes are available on both sides of the roadway, with footpaths also provided on each side of the road. Main Road operates at a posted speed limit of 50km/hr.

Main Road is shown in Figure 2.4 and Figure 2.5.

Figure 2.4: Main Road Looking Northwest



Source: www.google.com/maps

Figure 2.5: Main Road Looking Southeast



Source: www.google.com/maps

Lady Clark Avenue is classified as a Local Road that runs in a southwest-northeast direction along the north-western frontage of the site and is under the jurisdiction of Council.

In the vicinity of the subject site, Lady Clark Avenue is configured with one lane in each direction terminating within a courtbowl arrangement approximately 150m south-west of the subject site. Lady Clark Avenue operates at a default speed limit of 50km/hr.

Along the north-west boundary of the subject site, there is an unconventional 45 degree on-street car parking arrangement available on the southern side of the roadway, with a separated access aisle and catering for approximately eight spaces.

As the existing car park on Lady Clark Avenue is not within the subject site boundary, no changes are proposed to the existing car parking arrangement along Lady Clark Avenue as part of the proposed development given the spaces are an on-street treatment.

Given that the abovementioned Lady Clark Avenue on-street car parking spaces are an existing arrangement that do not appear to have caused any negative issues currently, it is expected that these spaces will remain in their current arrangement under post development conditions. The Applicant would not object to this proposal.

Furthermore, the existing road width of Lady Clark Avenue is not in accordance with the requirements of the Tasmanian Standard Drawings, with a minimum road width of approximately 5.6m. This is a common arrangement for many existing Council roads. Notwithstanding, the existing width is suitable to cater for two-way simultaneous vehicle movements, as observed during the existing condition assessment of Lady Clark Avenue and via swept paths contained within this report.

Lady Clark Avenue is shown in Figure 2.6 and Figure 2.7.

Figure 2.6: Lady Clark Avenue Looking Southwest



Source: www.google.com/maps

Figure 2.7: Lady Clark Avenue Looking Northeast



Source: www.google.com/maps

2.5. Surrounding Intersections

The key intersection in the vicinity of the subject site is Main Road / Lady Clark Avenue (T-intersection).

2.6. Existing Traffic Volumes

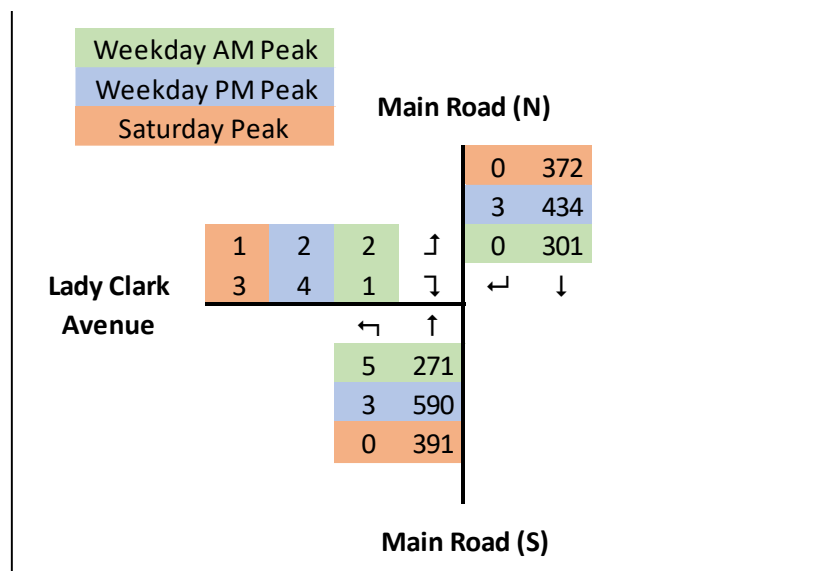
In order to understand the existing traffic conditions in the vicinity of the subject site, Ratio Consultants sourced turning movement count surveys at the Main Road / Lady Clark Avenue intersection.

The surveys were conducted between 7:00am-10:00am and 4:00pm-7:00pm on Friday 24 February 2023 and 10:00am-2:00pm on Saturday 25 February 2023 to coincide with the peak periods of the proposed on-site land use. The extensive collection of existing conditions traffic data (as detailed above) was undertaken to ensure the peak hour traffic period was captured for the Friday AM and PM and Saturday midday peak hours typically experienced by convenience restaurant land uses and the surrounding road network.

The analysed survey data revealed the AM peak hour to be 8:00am-9:00am, the PM peak hour to be 4:00pm-5:00pm and the Saturday peak hour to be 11:30am-12:30pm.

The peak hour turning movements as shown in Figure 2.8.

Figure 2.8: Existing Turning Movement Volumes (Main Road / Lady Clark Avenue)



As a traffic engineering rule of thumb, peak hour traffic volumes typically represent approximately 10% of daily traffic volumes.

As detailed above, Main Road is currently carrying peak hour traffic volumes of approximately 1,036 two-way vehicle movements. Following the application of the 10% peak hour factor, it is estimated that Main Road currently carries up to 10,000 two-way daily vehicle movements.

Lady Clark Avenue is currently carrying approximately 12 two-way vehicle movements. Following the application of the 10% peak hour factor, it is considered that Lady Clark Avenue currently carries in the order of 100 vehicle movements per day.

2.7. Existing Conditions SIDRA Assessment

General

An existing condition weekday PM and Saturday peak hour intersection analysis has been undertaken for the Main Road / Lady Clark Avenue intersection, using SIDRA Intersection traffic modelling software. It is noted that these are considered to be the two critical peak periods for the proposal, where both the site generated traffic volumes and existing road network volumes are at their highest.

The AM peak hour has not been assessed in this instance, as it is not the critical peak period when considering the peak traffic generated by the proposed convenience restaurant development, as well as having regard to the existing traffic volumes on the road network as shown by Figure 2.8.

SIDRA Parameters

The key parameters used to determine the operational capacity of an intersection are queue length, average delay and degree of saturation (or volume to capacity ratio).

Degree of Saturation (DOS) is a ratio of arrival (or demand) flow to capacity. DOS above 1.0 represent oversaturated conditions and a DOS below 1.0 represent undersaturated conditions.

The operational rating associated with the DOS is summarised as shown in Table 2.1.

Table 2.1: Rating of Degree of Saturation

Degree of Saturation (DOS)	Rating
Up to 0.6	Excellent
0.61 – 0.70	Very Good
0.71 – 0.80	Good
0.81 – 0.90	Fair
0.91 – 1.00	Poor
Greater than 1.00	Very poor

Although operating conditions with a degree of saturation around 1.00 are undesirable, it is acknowledged that this level of congestion is typical of many metropolitan intersections during the AM and PM peak hours.

The 95th percentile queue length is the value below which 95 percent of all observed cycle queue lengths fall, or 5 percent of all observed queue lengths exceed.

Average Delay is the average time, in seconds, that all vehicles making a particular movement can expect to wait at an intersection.

Main Road / Lady Clark Avenue

The results of the existing PM and Saturday peak hour SIDRA analysis are detailed in Appendix B and summarised in Table 2.2 and Table 2.3.

Table 2.2: Existing Weekday PM Peak SIDRA Results

Approach	Movement	Existing PM Peak		
		DoS	95%ile Queue (m)	Avg. Delay (s)
Main Road (S)	Left	0.34	0	6
	Through	0.34	0	1
Main Road (N)	Through	0.25	0	1
	Right	0.01	1	8
Lady Clark Avenue	Left	0.02	1	8
	Right	0.02	1	19
Intersection		0.34		

Table 2.3: Existing Saturday Peak SIDRA Results

Approach	Movement	Existing Saturday Peak		
		DoS	95%ile Queue (m)	Avg. Delay (s)
Main Road (S)	Left	0.22	0	6
	Through	0.22	0	1
Main Road (N)	Through	0.21	0	1
	Right	0.01	0	7
Lady Clark Avenue	Left	0.01	1	7
	Right	0.01	1	12
Intersection		0.22		

As shown in the preceding tables, the Main Road / Lady Clark Avenue intersection is currently operating with 'Excellent' conditions during the PM and Saturday Peak hours, indicating that there are minimal queues and delays during the peak hour at this intersection.

The existing conditions SIDRA traffic modelling analysis indicates that the road network surrounding the site and in particular the Main Road / Lady Clark Avenue intersection is currently operating well within traffic capacity limits.

2.8. Sustainable Transport

Public Transport

Due to the close proximity to the Claremont Shopping Plaza, the site has convenient access to a wide range of bus services, including the following routes outlined in Table 2.4.

Table 2.4: Local Bus Routes Summary

Route No.	Route Description	Nearest Stop	Walking Distance
510	Glenorchy – Austins Ferry	Main Road	85 metres
520	Hobart – Bridgewater		
521	Brighton – Bridgewater		
522	Hobart – Herdsmans Cove		
720	Glenorchy – New Norfolk		
722	Hobart – New Norfolk		
X11	Hobart – Claremont		
X20	Hobart – Bridgewater		
X21	Hobart – Brighton		
X22	Hobart – New Norfolk		

Pedestrian and Bicycle Network

Pedestrian movements are well facilitated with footpaths provided on both sides of the majority of the roads within the vicinity of the site.

There is convenient access to local cyclist infrastructure in the area with the Intercity Cycleway located approximately 100m north of the subject site on the northern side of the Claremont Recreation Ground. This off-road bicycle path extends between Claremont and Hobart.

2.9. Crash Analysis

A review has been conducted of the Tasmanian Crash Data database of for any reported casualty crashes in the vicinity of the subject site. The extent of the area reviewed includes the site frontages to Lady Clark Avenue and Main Road as well as the Main Road / Lady Clark Avenue intersection.

This database records all accidents causing injury that have occurred in Tasmania since 1st January 2011 and categorises these accidents as follows:

- *Fatal;*
- *Serious;*
- *Minor;*
- *First Aid Given; and,*
- *Property Damage Only.*

A summary of the accidents in the vicinity of the subject site since 1 January 2011 is presented in Table 2.5.

Typically, only the five most recent years of accident are presented, however, in order to provide a thorough and comprehensive review, all available data has been reviewed since 2011 when the data began being collated.

Table 2.5: Summary of Crashes in the Vicinity of the Subject Site

Location	Accident No.				
	Fatal	Serious	Minor	First Aid	Property Damage
<i>Site Frontage (inc. Westbury Road / Stuart Avenue intersection)</i>					
Lady Clark Ave	0	0	0	0	0
Main Road	0	0	0	0	1
<i>Nearby Intersections</i>					
Main Road / Lady Clark Avenue	0	0	0	0	0
Total	0	0	0	0	1

The above table indicates that since 1 January 2011, a total of one crash was recorded in the immediate vicinity of the subject site along the Main Road site frontage. The recorded accident resulted in Property Damage only and no vehicle damage, indicating a minor incident.

The one accident recorded since 1 January 2011 results in less than one accident recorded per ten years on average.

It should be noted that no crashes were recorded along Lady Clark Avenue including within the existing car park along the site boundary of Lady Clark Avenue.

Given the road classifications, the existing site operation along Main Road and associated traffic volumes, it is considered that the road network, inclusive of the Lady Clark Avenue car park is operating in a safe manner, particularly given the safe right turning movements that are allowable via the centre traffic lane and the Main Road road alignment.

3. The Proposal

3.1. General

It is proposed to develop the land at 8-10 Main Road in Claremont for the purpose of a McDonald's convenience restaurant with a dual lane drive-thru facility via a combined Planning Scheme Amendment and Planning Application.

More specifically, the development will incorporate the following land use yield and associated transport infrastructure, as summarised in Table 3.1.

Table 3.1: Development Summary

Land Use		
Land Use Clarification	Description	Size / Number
Convenience Restaurant	Building GFA	453 sqm / 75 seats [1]
Transport Infrastructure		
Type	Description	Details
Pedestrian Access	From footpath along eastern boundary to Main Road	-
Vehicle Access	Main Road	Fully Directional
	Lady Clark Avenue	Fully Directional
Parking	Car Spaces	22 spaces [2]
	Bicycle Spaces	6 spaces [3]
Loading	Loading and Waste	Up to 11.5 metre 14-pallet delivery trucks (HRV)

[1] A total of 75 indoor dining seats are proposed. No outdoor dining area or seats are proposed.

[2] Comprising 21 standard car parking spaces and 1 parking space for people with disabilities. This is an increase in two car parking spaces when compared to the previous scheme.

[3] 6 spaces for visitors provided via bicycle hoops to the front of the building, with any informal staff bicycle parking available within the corral storage area of the restaurant.

As shown on the development plans, the redundant driveway crossovers on Main Road are proposed to be reinstated with kerb and channel to the satisfaction of the Relevant Authority, thus allowing these spaces to be used for on-street parking.

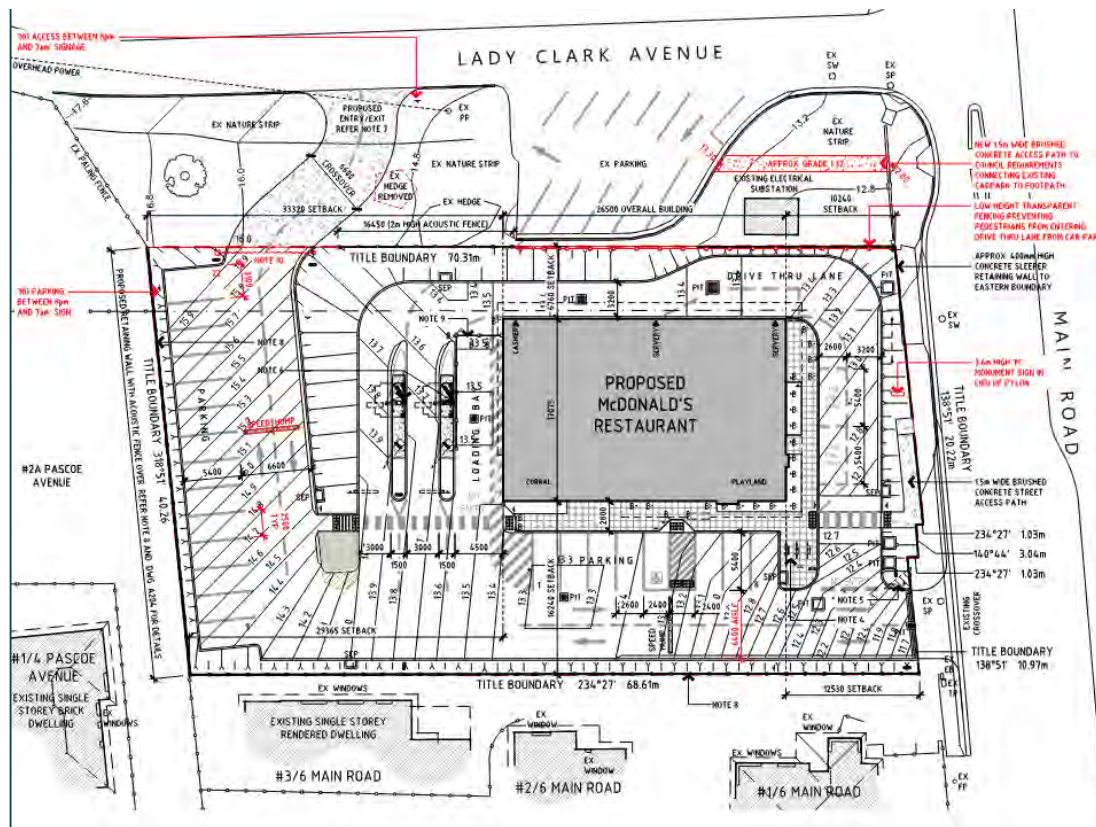
In addition to the above, a dual drive-through facility containing two order points, one cashier station and two servery locations, as well as two waiting bays is also proposed. The drive-through facility has an ability to contain a total of up to 12 vehicles back from the second server window at any one time, as well as two additional vehicles contained within waiting bays.

In order to reduce the impacts to Lady Clark Avenue, the crossover to Lady Clark Avenue is proposed to be closed to departure movements between 8:00pm and 7:00am. This access restriction is proposed to be managed via a boom gate.

The boom gate will be supported with the provision of a sign adjacent to car space 22 outlining 'No Parking Between 8:00pm and 7:00pm', as the space will operate as a turning bay. During the 8:00pm-7:00am time period, the swept paths show that a B99 vehicle is able to utilise the vacant space to turnaround in the event that all car parking spaces are occupied.

The proposed site layout is shown in Figure 3.1 with a full copy of the plans provided in Appendix A.

Figure 3.1: Proposed Site Layout

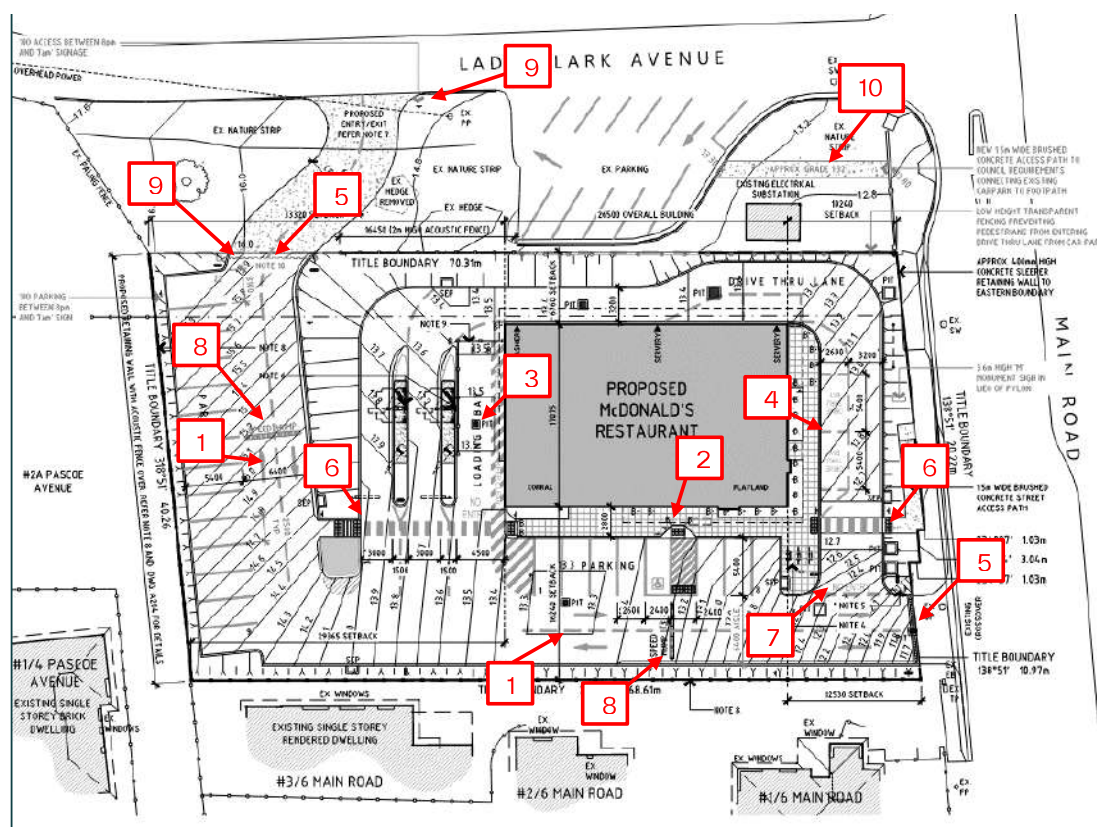


3.2. Internal Design Notes

There are a number of internal design features that are proposed within the on-site car parking area that will assist with the safe management and movement of pedestrian and vehicle movements through the site.

These are shown in Figure 3.2.

Figure 3.2: Internal Design Features



The numbers in each of the above callouts are expanded upon below:

- 1: Linemarking treatment to manage directional movements within car park.
- 2: DDA space provided with adjacent shared zone and pram ramp to assist with pedestrian movements to the front of the store.
- 3: Dedicated truck loading bay area to facilitate loading and waste collection activities, separated from the drive-through aisles.
- 4: Inclusion of waiting bays within the drive-through to increase drive-through capacity (reduce car parking demand) and reduce internal queuing.
- 5: Full turning movement access points proposed to both site frontages.
- 6: Pedestrian crossings and pram ramps provided with good sight distance to allow safe pedestrian movement between the restaurant and the car parking area and external public footpath.
- 7: Drive-through exit to be managed via No Entry signage and linemarking treatments.
- 8: Speed humps provided to encourage reduced internal speeds.
- 9: No Entry to the site permitted via Lady Clarke Avenue access between 8:00pm-7:00am enforced through signage and boom gate.
- 10: Provision of external pathway to connect to existing on-street car parking to Lady Clark Avenue.

3.3. Pedestrian Design Notes

Through the initial design process and redesign process, pedestrian accessibility and movements through the subject site and to the adjacent pedestrian road network were considered in significant detail.

The spaces to the south of the building have direct access via the front of house area. Whilst the provision of an east-west pedestrian path within the western section of the car park has been provided to provide a

safe and convenient pedestrian connection / route through the car park to the convenience restaurant for the vehicles within the car park.

In addition to the above, it is now proposed to provide a new pedestrian path on Lady Clark Avenue as part of this project. This path would allow pedestrians to walk front the front of the store when exiting, along the on-site pathway to connect to the existing path on Main Road, and then allows connection to the existing on-street car parking spaces on Lady Clark Avenue to safely access these spaces if required.

3.4. Staff Member Characteristics

As detailed within the Planning Report submitted with the original Planning Application (dated March 2023) it is expected that at any one time, there will be approximately 20 staff members working in the convenience restaurant.

It is important to note that the proposed convenience restaurant will predominantly employ younger people from the local community. Due to the younger demographic of future employees, a number of staff are typically 'dropped off' by parents / others for work at McDonald's and as such do not generally generate a large demand for car parking.

4. Car Parking Assessment

4.1. Planning Scheme Assessment

The Acceptable Solution A1 of Clause C2.5.1 of the Tasmanian Planning Scheme states:

“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”.

Based on the above, Table C2.1 requires the following car parking provision for the development proposal:

Food Services Use Class: Restaurant / Take-Away Food Premises: 1 space per 15sqm. of floor area (including any outdoor dining areas) + 6 queueing spaces for drive-through (if applicable).

Accordingly, the proposed 453 sqm convenience restaurant with drive-through facility generates a requirement for 30 car spaces plus capacity for at least 6 queueing spaces within the drive-through.

The proposal includes the provision of 22 on-site car parking spaces and therefore is seeking a reduction of 8 car spaces against the requirements of Acceptable Solution A1 of Clause C2.5.1 of the Planning Scheme. It should also be noted that the new proposed on-site car parking is an increase of +2 spaces when compared to the previous scheme.

4.2. Car Parking Demand Assessment

Preamble

Based on the above, a car parking demand assessment is required to be undertaken to determine the anticipated car parking demands associated with the proposal and whether the proposed parking supply and arrangements will be sufficient to cater for these demands.

This assessment will take into account the various performance criteria outlined within P1.1 under Clause C2.5.1 of the Planning Scheme.

On this basis, the anticipated car parking demand of the proposed uses are summarised as follows:

Convenience Restaurant Parking Demand

The car parking demands associated with convenience restaurants can vary significantly depending on the context of its location, including proximity to surrounding land uses, street frontages, location relative to other convenience restaurants etc.

In fact, the car parking demands tend not to have a linear relationship with the size of the restaurant specifically.

Notwithstanding, in order to establish the anticipated car parking demand of the convenience restaurant, a review has been undertaken of car parking demand survey data for 15 other convenience restaurant land uses. All of the 15 convenience restaurants are provided with a drive-through facility consisting of either single or double drive-through arrangement. The number of internal seats within the convenience restaurants varies between 59-128 seats with an average number of 82 seats across the convenience restaurants.

For reference, a graphical summary of the data is provided in Appendix C of this report. This data is considered to represent the best possible characteristics likely for the proposed development and is recommended to be utilised for this assessment. Indeed, given that the data has been sourced from recent surveys of comparable restaurants, it has been utilised in preference to the RTA document for car parking.

The data indicates an average peak car parking of 0.27 spaces per patron/seat. The number of patrons/seats is more commonly used to calculate car parking requirements for convenience restaurants than the floor area. This is an all-encompassing rate that includes staff.

Given that seating within each restaurant surveyed is a consistent parameter, this is the most appropriate mechanism for determining car parking demands, which has been utilised in this instance. It should also be noted that the average peak car parking rate does not simply equate to four people in a car, but rather the car parking demands of a similar convenience restaurant with a set number of seats.

Information provided by the Applicant indicates that this restaurant is expected to include approximately 75 dining seats. By utilising this value to estimate the maximum number of patrons on-site, equates to an anticipated peak demand for 20 car parking spaces. This expected demand is met with the new proposed provision of 22 on-site car parking spaces which is an increase in +2 spaces against the previous scheme.

4.3. Other Relevant Parking Considerations

Statutory Car Parking Rate Review

As detailed in Section 4.1 of this report, the applicable statutory car parking provision rate is 1 space per 15sqm of floor area (including any outdoor dining areas), which applies to the total floor area, including all back of house and food preparation area.

A more applicable assessment in our view would be a review against the dining floor area available to patrons, which is typically between 50-60% of a convenience restaurant layout. This would therefore account for the likely demand for patrons within the specific allowable areas of a typical convenience restaurant.

Available Public On-Street Car Parking

In addition to the 22 spaces being provided on-site, there is also the existing collection of 8 car parking spaces included within a small on-street angled parking area off Lady Clark Avenue.

While these spaces are not located within the site boundary, they do immediately front the site and there are limited other adjacent land uses that are expected to generate demand to use them (which is evident through review of aerial photography over time).

As such, it is considered suitable to consider these parking spaces as available to service any site generated parking demands on the unlikely scenario whereby the demand may exceed the 22 spaces provided on-site.

Furthermore, the Main Road frontage also includes a parking lane along the length of the site frontage. This site frontage is currently broken up with two separate crossovers for the existing service centre, which means there is currently limited parking available. However, with the proposed site layout and reinstatement of kerb and channel north of the site access crossover, this will create a continuous stretch of parking lane along the Main Road frontage that will cater for 4 on-street parking spaces.

Between the existing 8 spaces along the Lady Clark Avenue frontage and the future 4 spaces along the Main Road frontage, there will be a total of 12 on-street parking spaces that immediately front the site available for any unlikely overflow of parking demands beyond the on-site parking supply.

4.4. Car Parking Adequacy

Having regard to the average peak car parking demand data collected from multiple other convenience restaurants, the anticipated peak car parking demand for the site is anticipated to be up to 20 spaces.

The proposed on-site parking supply of 22 spaces exceeds this anticipated peak demand, noting that the new proposed on-site car parking is an increase of +2 spaces when compared to the previous scheme.

Notwithstanding, following development of the site, there will be a total of 12 publicly available on-street parking spaces located along the immediate site frontages that are available for use. In the unlikely scenario that the site generated parking demands should ever exceed the on-site supply of 22 spaces, these 12 spaces will be able to accommodate any small overflow and can still safely access the building via the pedestrian footpath connection to the Main Road frontage.

While the statutory car parking rate is considered to be high for a convenience restaurant, between the proposed on-site supply and the on-street parking immediately fronting the site, there statutory requirement of 30 spaces is still being met (albeit with a partial reliance on available off-site parking).

4.5. Assessment against Performance Criteria P1.1

The following assessment against the performance criteria outlined within P1.1 has been undertaken below.

- a) the availability of off-street public car parking spaces within reasonable walking distance of the site.*

There will be a total of 12 publicly available on-street parking spaces located along the immediate site frontages that are available for use.

In the unlikely scenario that the site generated parking demands should ever exceed the on-site supply of 22 spaces, these 12 spaces will be able to accommodate any small overflow and can still safely access the building via the pedestrian footpath connection to the Main Road frontage.

- b) the ability of multiple users to share spaces because of (i) variations in car parking demand over time or (ii) efficiencies gained by consolidation of car parking spaces.*

Car parking spaces are anticipated to be utilised by staff and customers. Car parking spaces are not proposed to be allocated within the car park which allows for multiple users to share spaces across the course of the day.

- c) the availability and frequency of public transport within reasonable walking distance of the site.*

As discussed in Section 2.8 of this report, the site is located within an area where public transport services are provided within convenient proximity of the site.

Employees and customers will be able to access the subject site readily via public transport modes.

The site is accessible to a wide range of bus services located within a short walking distance operating along Main Road approximately 85 metres walking distance from the site.

Given the site's access to public transport, staff and customers are able to travel to and from the site without the need and reliance of a private motor vehicle if required.

- d) the availability and frequency of other transport alternatives.*

As discussed in Section 2.8 of this report, employees and customers will be able to access the subject site readily via active transport modes.

Pedestrian movements are well facilitated with footpaths provided on both sides of the majority of the roads within the vicinity of the site.

There is convenient access to local cyclist infrastructure in the area with the Intercity Cycleway located approximately 100m north of the subject site on the northern side of the Claremont Recreation Ground. This off-road bicycle path extends between Claremont and Hobart.

Given the site's access to active transport, staff and visitors are able to travel to and from the site without the need and reliance of a private motor vehicle if required.

e) Any site constraints such as existing buildings, slope, drainage, vegetation and landscaping.

There are not considered to be any constraints on the site to inhibit the provision of car parking.

f) The availability, accessibility and safety of on-street parking, having regard to the nature of the roads, traffic management and other uses in the vicinity.

As detailed previously, there will be a total of 12 publicly available on-street parking spaces located along the immediate site frontages that are available for use.

In the unlikely scenario that the site generated parking demands should ever exceed the on-site supply of 22 spaces, these 12 spaces will be able to accommodate any small overflow and can still safely access the building via the pedestrian footpath connection to the Main Road frontage.

g) The effect on streetscape.

There are not considered to be any notable effects on the streetscape.

h) Any assessment by a suitably qualified person of the actual car parking demand determined having regard to the scale and nature of the use and development.

A car parking demand assessment has been undertaken within Section 4.2 of the traffic report. The car parking demand determined that the site is anticipated to generate a peak demand for 20 car parking spaces.

The proposal includes the provision of 22 on-site car parking spaces therefore satisfying the anticipated peak car parking demand.

4.6. DDA Car Parking

In addition to the statutory car parking requirements in the Planning Scheme, the Building Code of Australia (BCA) outlines the requirements for the provision of car parking for people with disabilities.

An assessment of the BCA disabled car parking requirements for the development proposal is outlined in Table 4.1.

Table 4.1: BCA Car Parking Requirements

Description	Use	BCA Disabled Parking Requirements
Shop	Class 6	1 space for every 50 car parking spaces or part thereof

The on-site provision of one space for people with a disability satisfies the BCA requirement and has been appropriately located.

Parking spaces for people with disabilities can be included in the total number of spaces required by the Planning Scheme.

5. Access and Car Parking Layout

In addition to the car parking supply requirements, the Tasmanian Planning Scheme includes various other 'Use Standards' under Clause C2.5 that relate to the site layout and design. The standards relevant to the transport related design of the site are addressed in the following sections.

5.1. Car Parking Layout

An assessment against the relevant design standards of the Acceptable Solution A1.1 of Clause C2.6.2 of the Planning Scheme is provided below.

The Acceptable Solution A1.1 of Clause C2.6.2 of the Planning Scheme states:

"Parking, access ways, manoeuvring and circulation spaces must either:

- i) 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".*

Each of the above points are responded to with respect to the development proposal below:

- i. The gradients comply with the relevant requirements of AS2890, without any notable gradients within the car park beyond what is needed for drainage. The gradients within the site are shown on the development plans attached as Appendix A.
- ii. All vehicles can enter and exit the site in a forward direction, with double-width two-way vehicle access points provided.
- iii. Table C2.2 requires an internal access width not less than 4.5m for the first 7m from the roadway carriageway and 3m thereafter; and at changes of direction or intersections have an internal radius not less than 4m or a width more than 4.2m.

In this case both the vehicle access widths exceed the 4.5m requirement, at 6.6m wide.
- iv. Table C2.3 requires parking dimensions of 5.4m length x 2.6m width with combined access and manoeuvring width of 6.4m for 90-degree parking.

In this case 8 of the 22 parking spaces exceed the requirements, with spaces that measure 5.4m long and 2.6m wide, accessed via a minimum aisle of 6.6 metres.

The 14 car parking spaces along the western boundary are proposed to be 5.4m long and 2.5m wide, accessed via a minimum aisle of 6.6 metres. Accordingly, these car parking spaces are 100mm narrower than the requirement.

The car parking spaces are all accessed via a 6.6m aisle exceeding the aisle requirements and as such are readily accessible. This has been confirmed through the preparation of swept path assessments of the car parking spaces and as such is considered to be a satisfactory design outcome.

- v. Refer to iv above.
- vi. No overhead obstructions are proposed within the car park.
- vii. Line marking is provided for all on-site car parking spaces in accordance with Australian Standards.

With respect to item b) under A1.1 of the Planning Scheme, the car park has been reviewed against the relevant parts of Australian Standard AS1890.1:2004. The design is addressed in the above responses as well as the other following relevant sections and satisfies the Australian Standard requirements.

The pedestrian sight lines at the site access points provide the relevant setbacks required.

Based on the above assessment the development meets the requirements of Acceptable Solution A1.1 of Clause C2.6.2 of the Planning Scheme.

5.2. Vehicle Access Points

The Acceptable Solution A1 under Clause C2.6.3 of the Planning Scheme requires the following with regards to vehicle access points:

"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."

In this regard, there is a single vehicle access point proposed to both site frontages, which complies with the above access requirements.

In addition to the above, the Main Road access is located in close proximity to the access to 11 Main Road on the other side of the roadway. However, noting that this access is for a single dwelling (that will likely generate one movement in a peak hour maximum) and noting that there is a turning lane provided within the median, there is adequate turning capability for a standard access point location and is therefore acceptable.

5.3. Pedestrian Access

The Acceptable Solution A1.1 of Clause C2.6.5 of the Planning Scheme states:

"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".*

As the development provides 22 car parking spaces, it triggers the requirement to provide for the footpath, signage and linemarking.

As shown on the Development Plan attached as Appendix A, it is proposed to provide a 1.5m wide pedestrian path (in excess of the required 1.0m), providing access to the McDonald's Convenience Restaurant from Main Road. A crossing and pedestrian link is also provided from the building entrance across the drive-thru entries to the car parking area in the western side of the site.

These pedestrian links will be suitably signed and line marked at their crossing points over the vehicle accessways and accordingly are considered to generally respond to the requirements of A1.1 of Clause C2.6.5 of the Planning Scheme.

The only exception is that the footpath does not maintain a full 2.5m offset from the drive-thru lane. Therefore, the layout has been assessed against the requirements of Performance Criteria P1 of Clause C2.6.5 of the Planning Scheme, which states:

"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."*

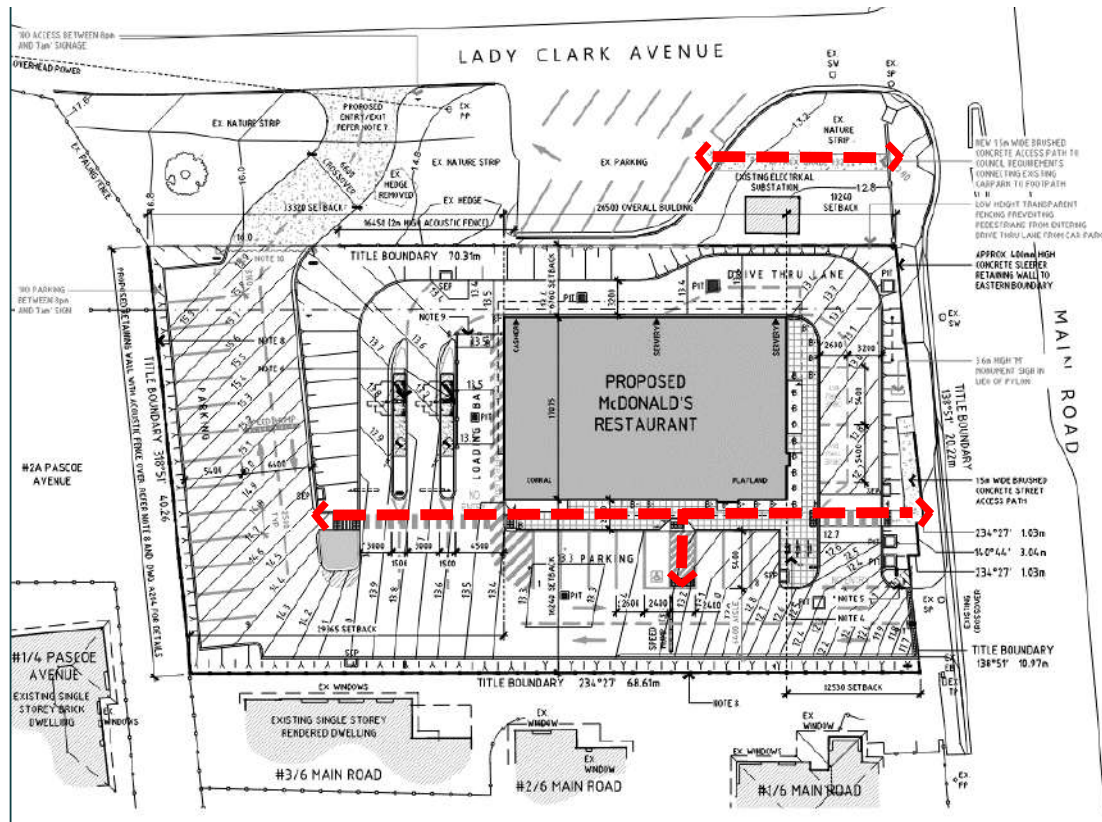
The following responses are provided with respect to P1:C2.6.5:

- a) The site layout and pedestrian facilities is considered typical of the characteristics of a McDonald's. In this respect, McDonald's typically have pedestrian movements within the car parking manoeuvring area (i.e. a customer walking from the car to the building). The low-speed environment and awareness of this activity makes this a generally safe and acceptable design.
- b) There will be a degree of familiarity with the operation of the development site and pedestrian movement through the site, due to the resemblances with similar sites.
- c) The site has a total of 22 on-site car parking spaces. Suitable pedestrian facilities have been provided such that there will be generally low vehicle / pedestrian conflict. Speed humps are proposed within the car park to encourage low vehicle speeds.
- d) A signed and line marked pedestrian crossing has been provided to facilitate safe pedestrian movements across the entry and exit points of the drive-through.
- e) One disabled parking space is located immediately adjacent to the buildings access. The path along the front of the building complies with gradient requirements of AS2890.6.
- f) To facilitate walk-up trade to the proposed restaurant, a pedestrian connection has been provided to the building entrance from the footpath along the Main Road frontage. This connection will crossover the drive-through lane (in a section where there are clear sightlines prior to the crossing), with kerb pram-ramps provided or a break in the landscaping strip. The pedestrian links are considered to be adequate to provide safe pedestrian movement through and to/from the site and are shown in Figure 5.1 below.

- g) Refer to (a) and (b) above. The low-speed environment and general awareness of this activity makes the pedestrian environment safe and acceptable given the nature of the land uses of the development.
- h) Refer to (a) above.
- i) Two speed humps are proposed within the car park to encourage low vehicle speeds. It is also recommended that wheel stops are installed to prevent vehicles from encroaching onto the footpath along the building frontage.

On this basis the car parking layout and pedestrian facilities are considered to satisfy the requirements of Performance Criteria P1 of Clause C2.6.5 of the Planning Scheme.

Figure 5.1: Pedestrian Links



5.4. Loading Arrangements

The Acceptable Solution A1 and A2 of Clause C2.6.6 of the Planning Scheme states:

"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".

"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."

Deliveries for the McDonald's restaurant are proposed to be completed by a 14-pallet McDonald's rigid vehicle (11.5m long). The Applicant has advised that the only loading vehicle available for McDonald's deliveries within Tasmania is the 14-pallet McDonald's rigid vehicle (11.5m).

Accordingly, the development has been designed to facilitate deliveries by this design vehicle.

AS2890.2 requires that the loading bay service area is dependent on a combination of:

- a) *The maximum size of vehicle likely to use the facility.*
- b) *The frequency with which vehicles of different classification use the facility; and,*
- c) *Whether the public road from which the facility is accessed is a major or minor road.*

The dedicated on-site loading area has been designed with a length of approximately 15.5m and a width of 4.5m. Deliveries for the McDonald's restaurant are proposed to be completed by a 14-pallet McDonald's rigid vehicle (11.5m long). Accordingly, the loading area has been designed in excess of the requirements detailed within *Australian Standard AS 2890.2-2002, Parking facilities, Part 2: Off-street commercial vehicle facilities*.

The dedicated on-site loading area has been designed to cater for 14-pallet McDonald's rigid delivery vehicle to access the site via the Main Road access in a forward direction and reverse into the loading bay from the car parking aisle fronting the restaurant entrance. Once loading is complete, the vehicle will then exit the loading area and the site in a forward direction via the egress point to Main Road.

The above movements by a 14-pallet (11.5m) McDonald's rigid vehicle have been confirmed via a swept path assessment (refer to Appendix C of this report).

It should be noted that the loading vehicle requires the full crossover width for vehicle access. Based on the Australian Standards (AS2890.2-2002) use of the full width of the crossover is allowable, noting that service is likely to be "occasional" based on the definitions with the standards (i.e. less than one delivery per day). It is understood that the site will have two to three deliveries per week, on average.

Accordingly, Acceptable Solutions A1 and A2 of Clause C2.6.6 of the Planning Scheme have been met.

Acceptable Solution A3 of Clause 9.3 in the Planning Scheme (Inner Residential Zone – Use Standards) restricts hours of operation for commercial vehicle movements (e.g. deliveries, waste collection etc.) to between 7am and 8pm on weekdays and between 9am and noon on Saturdays.

Accordingly, it is proposed to restrict hours of operation as per the requirements of Acceptable Solution A3 of Clause 9.3 (Inner Residential Zone – Use Standards).

With regard to the above points, the proposed loading vehicle access arrangements are considered acceptable.

Loading is typically undertaken outside of peak hours to reduce the potential for any conflict with loading vehicles proposed to reverse into the loading bay and not "out of the loading bay." Nevertheless, in order to further reduce any potential conflict and to restrict loading vehicles using Lady Clark Avenue, it is recommended that a Loading Management Plan be Conditioned as part of the Permit.

The proposal also incorporates a dedicated area for bin storage located in the corral adjacent to the loading area. It is understood that bins will be collected from this area by a private waste collection contractor.

Given that this area is accessible by a 14-pallet McDonald's rigid vehicle (11.5m), a waste truck which is typically smaller (around the size of an 8.8m MRV) will be able to adequately negotiate this area for refuse collection.

The proposed access and manoeuvring arrangements therefore comply with AS2890.2 and Acceptable Solution A1 of Clause C2.6.6 of the Planning Scheme.

5.5. Accessible Parking

The development provides a total of one disabled parking space.

The dimensions and layout of the accessible parking space comply with the requirements of AS2890.6 (specifically noting the requirement for a 'shared space' adjacent to the accessible parking space).

5.6. Motorcycle Parking

The Acceptable Solution A1 of Clause C2.5.3 of the Planning Scheme states "*the number of on-site motorcycle parking spaces for all users must be no less than the number specified in Table C2.4*".

The requirements of Table C2.4 are summarised as follows:

Table 5.1: Statutory Motorcycle Parking Requirement

No. of Car Parking Spaces Required for a Use	No. of Motorcycle Parking Spaces Required for a Use
0 – 20 spaces	No Requirement
21 – 40 spaces	1 space
41 or more spaces	1 space for every 20 car spaces

The proposal generates the requirement to provide 30 car parking spaces. Accordingly, in this instance, the required number of spaces is one motorcycle space.

It is not proposed to provide any motorcycle spaces, consistent with the approach adopted at the majority of other McDonald's restaurants. It is considered that any future motorcycle parking demand can be adequately catered for within one of the car parking spaces proposed on-site. Alternatively, there are other areas within the car parking or landscaping area that could cater for motorcycle parking if required.

Accordingly, the proposal is considered to adequately respond to the requirements of Acceptable Solution A1 of Clause C2.5.3 of the Planning Scheme.

5.7. New Vehicle Crossings

The Acceptable Solution A1.1 and A1.2 of Clause C3.5.1 of the Planning Scheme states:

"For a category 1 road or a limited access road, vehicular traffic to and from the site will not require: (a) a new junction; (b) a new vehicle crossing; or (c) a new level crossing".

"For a road, excluding a category 1 road or a limited access road, written consent for a new junction, vehicle crossing, or level crossing to serve the use and development has been issued by the road authority."

Neither of the fronting roads are Category 1 roads. The proposed development will consolidate the existing vehicular access points to the site to provide a double-width vehicle access to Lady Clark Avenue and Main Road. These access arrangements are considered to be suitable for the proposed land use.

The Acceptable Solution A1.4 of Clause C3.5.1 of the Planning Scheme states:

"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 license issued under Part IVA of the Roads and Jetties Act 1935 in respect to a limited access road."

Table C3.1 states that the acceptable increase in daily traffic volume at a vehicle crossing on major roads is 10% or 10 vehicles per day, whichever is greater.

The traffic generated by the future McDonald's convenience restaurant compared to the existing automotive repair store (Just 1Call Automotive) is anticipated to represent an increased daily traffic generation of more than 10% and therefore the Acceptable Solution A1.4 of Clause C3.5.1 of the Planning Scheme is not met.

The Performance Criteria P1 of Clause C3.5.1 states:

"Vehicular traffic to and from the site must minimise any adverse effects on the safety of a junction, vehicle crossing or level crossing or safety or efficiency of the road or rail network, having regard to:

(a) any increase in traffic caused by the use;

(b) the nature of the traffic generated by the use;

(c) the nature of the road;

(d) the speed limit and traffic flow of the road;

(e) any alternative access to a road;

(f) the need for the use;

(g) any traffic impact assessment; and,

(h) any advice received from the rail or road authority”.

The following responses are provided to each of these above performance criteria points with respect to the development proposal:

a. Increase in traffic. As detailed within Section 7, following the development of the subject site, the configuration of the accesses will result in safe and efficient traffic movements.

b. Nature of traffic. The traffic generated by the development will primarily regular vehicle traffic, with only occasional heavy vehicle movements.

c. Nature of road. Main Road and Lady Clark Avenue have sufficient spare capacity to cater for the traffic generated by the development proposal.

d. Speed limit and traffic flow on road. The posted speed limit of Main Road is 50km/hr. The default speed limit of Lady Clark Avenue is 50km/hr.

e. Alternative access. With a vehicle access provided to both street frontages, no further alternative access is considered necessary.

f. Need for use. The need for the development has not been assessed in this report.

g. Traffic impact assessment. Section 7 of this report completes a detailed traffic assessment of the development proposal.

h. Road authority advice. The Road Authority has not provided specific advice in relation to the development proposal at this stage.

With consideration to the Performance Criteria P1 of Clause C3.5.1 of the Planning Scheme, the proposed vehicle access strategy to the site is considered to be suitable for the proposed use.

It should be noted that the post development operation of the surrounding roads and key intersections has been assessed in detail within Section 7 of this traffic report.

5.8. Swept Path Assessment

Loading Bay

The dedicated on-site loading area has been designed to cater for 14-pallet McDonald's rigid delivery vehicle to access the site via the Main Road access in a forward direction and reverse into the loading bay from the car parking aisle fronting the restaurant entrance.

Once loading is complete, the vehicle will then exit the loading area and the site in a forward direction via the egress point to Main Road.

The above movements by a 14-pallet McDonald's rigid vehicle has been confirmed via a swept path assessment (refer to Appendix D of this report).

Site Access points and Drive-Through

Swept path assessments have been undertaken to demonstrate that B99 vehicle can suitably access the site with simultaneous two-way movements through the Main Road site access point.

As shown in the swept path assessment, attached as Appendix D, the Lady Clark Avenue access is slightly more constrained with a narrower carriageway, requiring the outbound vehicle to prop in the site access while an entering vehicle makes its movement. This is a typical arrangement for a secondary access point arrangement. This minor constraint is considered to be acceptable, noting that Lady Clark Avenue is a lower order street and will also be the secondary access to the site and therefore much less likely to experience simultaneous two-way movements.

The B99 vehicle is also able to navigate the drive-thru and circulate around stationary vehicles at the second servery and in the two waiting bays, all with adequate clearances.

For reference, these swept path diagrams are presented in Appendix D of this report. The swept path assessment provided within Appendix D demonstrates the accessibility of the site to/from Lady Clark Avenue.

Lady Clark Avenue

As detailed previously, whilst the existing road width of 5.6m is adequate to cater for two-way simultaneous vehicle movements, as observed during the existing condition assessment of Lady Clark Avenue. Noting that vehicles will typically circulate through the subject site in a single direction, the potential for conflicting traffic along Lady Clark Avenue is considered to be minimal.

A swept path assessment provided within Appendix D, demonstrates the ability for two vehicles to pass simultaneously along Lady Clark Avenue adjacent to the subject site.

5.9. Drive-Thru Arrangement

Guidance has been sought from the RTA NSW document 'Guide to Traffic Generation Developments' (2002), which provides the following stipulation regarding drive-thru service:

- *"An exclusive area for queueing of cars for a drive-thru facility is required (queue length of 5-12 cars from the pick-up point). There should also be a minimum of four car spaces queued from the ordering point."*

Having consideration to the above comment, Ratio has shown the anticipated vehicle storage capacity within the drive-thru area for the proposed development utilising a B99 vehicle overlaid in the site layout (Appendix D).

This drawing illustrates that up to 12 vehicles can be located within the storage area without encroachment into the car park area.

The drawing also demonstrates that vehicles can queue in the drive-thru areas in accordance with the requirement specified by the RTA NSW document for both pick-up and order points.

Having regard to the above, the drive-thru designs are considered appropriate in this instance, with storage in accordance with the RTS NSW guidelines with minimal, if any, disruptions anticipated to the car park circulation.

5.10. Signage and Line Marking

The Signage and Line Marking arrangements required through the site are anticipated to be managed through the provision of a Signage and Line Marking Plan. It is recommended that this be provided as a Condition of Permit.

5.11. Lady Clark Avenue

It is noted that the car parking assessment undertaken within this report recommended the on-street car parking to be retained on Lady Clarke Avenue. Indeed, a pedestrian path has now been proposed to allow safe and efficient access to this on-street car parking area from the site.

Given that swept paths demonstrate adequate vehicle access and there is benefit to retain these spaces based on the car parking assessment, it is not proposed to remove these on-street car parking spaces as part of the proposal.

5.12. Main Road

The primary site access point is proposed to be provided to Main Road, with further detail in respect to traffic impact discussed within Section 7 of this report. Additionally, a detailed sight distance assessment has also been undertaken within Section 5.8 of this report.

Given the above, there does not appear to be any reason why vehicles would be encouraged to use the private road which continues from the road reservation that ends fronting 8-10 Main Road.

5.13. Sight Distance Assessment

Within Councils RFI, Council cited a number of requests relating to sight distance assessments, including the following:

- *Detail if pedestrian sight lines are met at the pedestrian crossings within the car park and justify, if not, such as at the loading zone.*

- Detail the sight lines required and that obtained, at the driveway on Main Road which should include safe intersection sight distance, approach sight distance and stopping sight distance for vehicles leaving and entering due to the volume of traffic at this driveway, in accordance with AustRoads Guide to Road Design.
- Detail the sight lines required and that obtained, at the intersection of Lady Clark Avenue and Main Road, which should include safe intersection sight distance, approach sight distance and stopping sight distance for vehicles leaving and entering, in accordance with AustRoads Guide to Road Design.
- Within the site show that pedestrian sight lines are met at the pedestrian ramps, particularly alongside the loading zone in accordance with AustRoads Guide to Road Design.

The car park, including landscaping, is proposed to be clear of visual obstructions with clear visibility achieved at the pedestrian crossings within the car park. The proposed signage and line marking throughout the car park also assist in promoting a safer environment for pedestrians.

A number of safety measures to encourage reduced speeds, such as the provision of two speed humps, are proposed as part of the development which is considered to create a pedestrian friendly environment. Additionally, dedicated pedestrian pathways are provided within the site for pedestrians who do not prefer to walk within the car parking area, as per standard practice for retail sites.

A design assessment of the sight distance requirements including safe intersection sight distance, approach sight distance and stopping sight distance for vehicles leaving and entering the site, in accordance with AustRoads Guide to Road Design has been undertaken.

Austroroads Guide to Road Design (GTRD) – Part 4A outlines the required safe intersection sight distance (SISD) requirements.

As per Austroroads GTRD Part 4A, the types of sight distance that must be provided in the design of all intersections includes Approach Sight Distance (ASD), Safe Intersection Sight Distance (SISD) and Minimum Gap Sight Distance (MGSD).

Accordingly, a review of the achieved Approach Sight Distance (ASD), Safe Intersection Sight Distance (SISD), and Minimum Gap Sight Distance (MGSD) has been undertaken below.

Approach Sight Distance (ASD)

Austroroads Guide to Road Design (GTRD) – Part 4A defines the Approach Sight Distance (ASD) as “the minimum level of sight distance which must be available on the minor road approaches to all intersections to ensure that drivers are aware of the presence of an intersection”.

Equation 1 within Austroroads Guide to Road Design (GTRD) – Part 4A provides the formula for calculating the ASD:

$$ASD = \frac{R_T \times V}{3.6} + \frac{V^2}{254 \times (d + 0.01 \times a)}$$

where

- ASD = approach sight distance (m)
- R_T = reaction time (sec), refer to AGRD Part 3 (Austroroads 2016a) for guidance on values
- V = operating (85th percentile) speed (km/h)
- d = coefficient of deceleration, refer to Table 3.1. Refer also to AGRD Part 3, Table 5.3 for further information on coefficient selection
- a = a longitudinal grade in % (in direction of travel: positive for uphill grade, negative for downhill grade)

For the subject site, the following values have been adopted:

$Rt = 2$ second reaction time.

$V = 20\text{km/h}$

$d = 0.46$

$a = 5\%$

Adopting the above values, the required ASD for is 14.5m.

An investigation of the available approach sight distance for the proposed site access intersection with Main Road has been undertaken.

As demonstrated within the sight distance assessment contained within Appendix D, the approach sight distance is comfortably achieved with the site providing a maximum approach sight distance of approximately 56 metres and as such the proposed site access is considered to be suitable from a Approach Sight Distance perspective.

Safe Intersection Sight Distance (SISD)

Austrroads Guide to Road Design (GTRD) – Part 4A outlines the required safe intersection sight distance (SISD) requirements.

Safe Intersection Sight Distance (SISD) is defined as follows:

“SISD is the minimum sight distance which should be provided on the major road at any intersection. Designers should note that the object height for the application of SISD has been increased to 1.25 m (previously driver eye height was used i.e. 1.1 m) based on research by the Department of Main Roads (Lennie et al. 2008). The basis of the 1.25 m object height for cars is that this height is 0.2 m less than the 15th percentile height of passenger cars (1.45 m) as determined by the study.”

Equation 2 within Austrroads Guide to Road Design (GTRD) – Part 4A provides the formula for calculating the SISD:

$$SISD = \frac{D_T \times V}{3.6} + \frac{V^2}{254 \times (d + 0.01 \times a)}$$

where

SISD = safe intersection sight distance (m)

D_T = decision time (sec) = observation time (3 sec) + reaction time (sec) – refer to AGRD Part 3 (Austrroads 2016b) for a guide to values

V = operating (85th percentile) speed (km/h)

d = coefficient of deceleration – refer to Table 3.3 and AGRD Part 3 for a guide to values

a = longitudinal grade in % (in direction of travel: positive for uphill grade, negative for downhill grade)

For the subject site, the following values have been adopted:

$Dt = 3$ second observation time and 2 second reaction time

$V = 50\text{km/h}$

$d = 0.46$

$a = 5\%$

Adopting the above values, the required SISD for is 90.8m.

An investigation of the available safe intersection sight distance for the proposed site access intersection with Main Road has been undertaken.

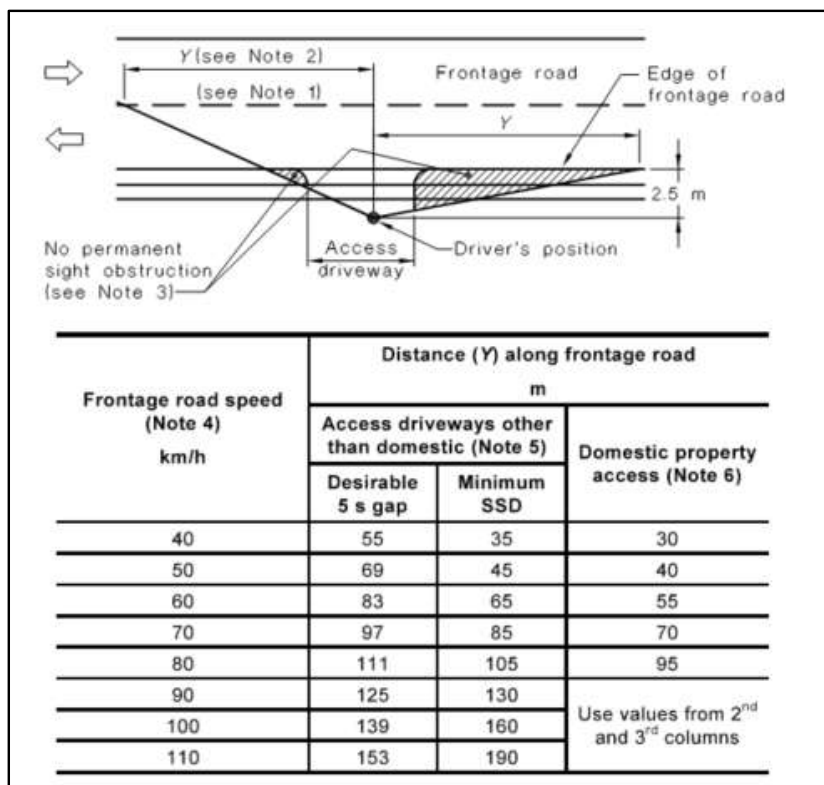
As demonstrated within the sight distance assessment contained within Appendix E, the safe intersection sight distance is comfortably achieved to the north. It is noted, however, that the intersection achieves a

sight distance to the south of approximately 60.1m and as such fails to achieve the required sight distance to the south.

It should be noted that the above requirement is considered to be applicable to a standard intersection and not an access driveway, as per the proposal.

In order to assess the adequacy of the proposed site access point location, reference is made to Section 3.2.4 within AS2890.1:2004, which outlines sight distance requirements at access driveways. For context, these requirements are shown in the figure overleaf.

Figure 5.2: Sight Distance Requirements at Access Driveways



Source: AS2890.1:2004 – Figure 3.2

Main Road has a posted speed limit of 50km/hr and therefore has a requirement to provide a sight distance of 69 metres in both directions along the frontage road against the above requirements.

As demonstrated within the sight distance assessment contained within Appendix E, the above sight distance of 69 metres is comfortably achieved to the north. It is noted, however, that the intersection achieves a sight distance to the south of approximately 60.1m and as such fails to achieve the required sight distance to the south by approximately 8.9m.

As shown on the sight distance diagram, the limitation restricting the ability to achieve the required sight distance are the bend within the road network.

Given the nature of the road network, it is anticipated that traffic will travel around the corner on Main Road at lower speeds than the 50km/hr that was used to assess the SISD. Adopting 40km/hr as the negotiating speed that vehicles are anticipated to travel around the corner results in a requirement to achieve a 55m sight distance.

The above sight distance of 55m is comfortably achieved to the south and as such the site access is considered to have been designed with suitable sight distance achieved.

In order to further determine the appropriateness of the reduced sight distance, a review of typical stopping distances for vehicles travelling at 50km/hr has been undertaken.

From a review of available studies into the relationship between speed and stopping distance, including studies undertaken by Queensland Governments Transport Department, stopping distances for vehicles travelling at 50km/hr range between 35-41m depending on the weather conditions.

As shown in the overleaf figure, during dry conditions a vehicle travelling at 50km/hr takes approximately 35m to stop including 21m reaction time and 14m braking distance. During wet conditions, the braking distance increases by 6m to a total braking distance of 41m.

Figure 5.3: Average Braking Distance



Source: www.qld.gov.au/transport

Noting the above braking distance, against the achieved sight distance (60.1m), it is evident that the site access intersection comfortably achieves a satisfactory sight distance for vehicles to brake when confronted with a vehicle departing the site.

It should also be noted that the subject site currently has an existing site access in the location of the access proposed as part of the application. As noted previously, since 1 January 2011, a single accident was recorded along the Main Road boundary which results in less than one accident recorded per ten years on average.

Given the road classifications, the existing site operation along Main Road including the site access location and associated traffic volumes, it is considered that the road network is operating in a safe manner and will continue to do so following post development conditions.

Accordingly, the proposed site access is considered to be suitable from a Safe Intersection Sight Distance perspective.

Minimum Gap Sight Distance (MGSD)

AustRoads Guide to Road Design (GTRD) – Part 4A states that the Minimum Gap Sight Distance (MGSD) is based on “distances corresponding to the critical acceptance gap that drivers are prepared to accept when undertaking a crossing or turning manoeuvre at intersections”.

Table 3.6 of AustRoads Guide to Road Design (GTRD) – Part 4A provides the minimum gap sight distances for various speeds. For clarity, the table has been copied below.

Table 3.6: Table of minimum gap sight distances ('D' metres) for various speeds

Critical gap acceptance time (t _a) (secs)	85 th percentile speed of approaching vehicle (km/h)										
	10	20	30	40	50	60	70	80	90	100	110
4	11	22	33	44	55	67	78	89	100	111	122
5	14	28	42	55	69	83	97	111	125	139	153
6	17	33	50	67	83	100	117	133	150	167	183
7	19	39	58	78	97	117	136	155	175	194	214
8	22	44	67	89	111	133	155	178	200	222	244
9	25	50	75	100	125	150	175	200	225	250	275
10	28	56	83	111	139	167	194	222	250	278	305

The critical manoeuvre for review at the site access intersection with Main Road is the left turn into the major road from the site.

For a left turn into the major road, a gap acceptance of 5 seconds is typically adopted with a follow up headway of 3 seconds.

Main Road operates with a default speed limit of 50km/hr. Accordingly, the applicable required Minimum Gap Sight Distance is 69m.

As demonstrated within the sight distance assessment contained within Appendix E, the minimum gap sight distance is comfortably achieved and as such the proposed site access is considered to be suitable from a Minimum Gap Sight Distance perspective.

5.14. Signage

Following a review of the development plans, all signs are considered to have been designed in accordance with the Performance Criteria detailed under Clause C1.6.1 P1.1. With a specific focus on the impact on the safe and efficient movement of vehicles and pedestrians, all signs are proposed to be designed and located appropriately so as to not obstruct vehicle movements or visibility of/for pedestrians.

The relevant Performance Criteria detailed under Clause C1.6.2 P1.1 states that *“an illuminated sign must not cause an unreasonable loss of amenity to adjacent properties or have an unreasonable effect on the safety, appearance or efficiency of a road, and must be compatible with the streetscape, having regard to... whether the sign is visible from the road and if so the proximity to and impact on an electronic traffic control device”*.

As detailed above, all of the proposed signs are designed and located appropriately so as to not obstruct vehicle movements or visibility.

With a specific focus on the electronic traffic control devices, the nearest electronic traffic control device to the subject site is located approximately 240m north of the subject site on Main Road. It should be noted that no electronic traffic control device is within viewing distance to the south of the site.

As demonstrated within the below figure, the electronic traffic control device (Main Road / Box Hill Road signalised intersection) is not visible from the subject site. Accordingly, any proposed signage is not considered to impact any electronic traffic control devices.

Figure 5.4: Electronic Traffic Device Visibility



Source: www.google.com/maps

5.15. Summary

The assessments and details contained within these previous sections confirm that the access arrangements and car parking layouts have been designed appropriately and in general accordance with the requirements of the Tasmanian Planning Scheme and/or AS/NZS 2890.1:2004.

6. Bicycle Parking

6.1. Bicycle Facilities

The Acceptable Solution A1 of Clause C2.5.2 of the Planning Scheme states:

“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”.*

The requirements of Table C2.1 are set out in Table 6.1.

Table 6.1: Statutory Bicycle Parking Requirement

Land Use	Size	Statutory Parking Rate	Statutory Requirement
Restaurant / Take-Away Food Premises	453 sqm	1 space per 75sqm of floor area	6 spaces
Total			6 spaces

The Acceptable Solution A1 of Clause C2.5.2 of the Planning Scheme states:

“Bicycle parking spaces must:

- c) be provided on the site or within 50m of the site; and*
- d) be no less than the number specified in Table C2.1”.*

The requirements of Table C2.1 are set out in Table 6.1.

Table 6.1 indicates that the proposal has a statutory bicycle parking requirement of six bicycle spaces.

A total of six bicycle spaces are proposed to be provided, therefore meeting the requirements of the Planning Scheme.

In this regard, Performance Criteria P1 under Clause C2.5.2 of the Planning Scheme outlines the following:

“Bicycle parking spaces must be provided to meet the reasonable needs of the use, having regard to:

- a) the likely number of users of the site and their opportunities and likely need to travel by bicycle; and*
- b) the availability and accessibility of existing and any planned parking facilities for bicycles in the surrounding area.”*

6.2. Proposed Bicycle Parking Provision

The provision of a total of six bicycle parking spaces meets the requirements specified above and is considered to be acceptable.

6.3. Bicycle Parking / Facilities Design

The Acceptable Solution A1 and A2 of Clause C2.6.7 of the Planning Scheme states:

“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.*

"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."*

With respect to the above, the bicycle parking spaces have been designed in accordance with the Australian Standards, which require a 0.5m wide x 1.8m long envelope for horizontal hoop spaces. The 0.7m wide spacing at the handlebars that is specified above is achieved by alternating the orientation of the parked bicycles on either side of the hoop rack.

The spaces have a clear access aisle width of more than the 2m specified in the Planning Scheme and the parking area is accessed using the parking aisles, as well as located in a visible area within 50m of the entrance.

As such, the requirements of Clause C2.6.7 of the Planning Scheme are considered to be suitably met.

7. Traffic Assessment

7.1. Traffic Generation

With reference to surveys undertaken of several existing McDonald's convenience restaurants, an average peak hour traffic generation of approximately 170 vehicles per hour can be expected from the subject site.

It is noted that this traffic generation rate can vary between McDonald's restaurants depending on the location, the proximity to other McDonald's or convenience restaurants (i.e. catchment area) and various other factors. However, the above total traffic generation rate is considered to represent a typical average regardless of the size of the restaurant.

Based on the sites location, in this instance, it is expected that the traffic generation for this site will be lower than the average identified above. Notwithstanding, in order to represent a conservative assessment, the average of 170 peak hour vehicle movements has been adopted for assessment purposes.

To determine the appropriate traffic generation volumes for adoption, an assessment of 14 McDonald's convenience restaurants was undertaken, which indicates an average of 170 vehicles per hour. The details of these sites are provided in Appendix C.

The adoption of the McDonald's specific case study data (i.e. 170 vehicles per hour), is considered to be more reflective of the future operation of the proposed McDonald's convenience restaurant than the RTA Guide.

Information provided by McDonalds indicates that approximately 60% of all trade to the convenience restaurant is via the drive-through with the remaining 40% consisting of walk ups and customers parking within the on-site car park.

The information provided by McDonald's included annual summaries of 15 McDonald's currently operating across Tasmania. The data revealed that drive-through sales account for approximately 40-70% of annual sales.

Based on the characteristics of the site against the currently operating McDonald's, the average of approximately 60% of all trade to the convenience restaurant being via the drive-through is considered appropriate to adopt.

Accordingly, the average of 170 peak hour vehicle movements has been adopted for the following assessment purposes.

7.2. Traffic Distribution and Assignment

The directional distribution and assignment of traffic generated by the proposed development will be influenced by a number of factors, including the:

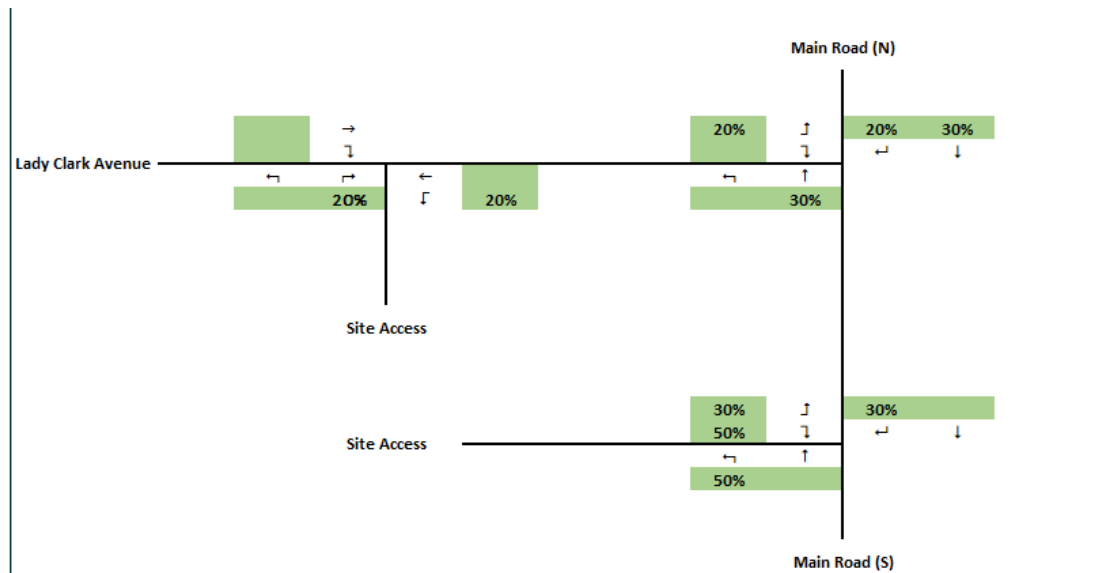
- Configuration of the arterial road network in the immediate vicinity of the site.
- Existing operation of intersections providing access between the local and arterial road network.
- Distribution of households in the vicinity of the site.
- Surrounding employment centres, retail centres and schools in relation to the site.
- Configuration of access points to the site.

Having regard to the above, the directional distribution of traffic to/from the site is expected to be generally 50:50 to/from the north and south, all via Main Road. Existing traffic volumes past the site along Main Road are approximately equal in both directions. The splits between the site access options have been based on how vehicles are logically expected to enter/exit the overall site when travelling to/from each direction.

In addition, the directional split of traffic (i.e. the ratio between the inbound and outbound traffic movements) is assumed to be 50:50, given the typical high turnover and short stay operating conditions of a McDonald's convenience restaurant.

These adopted distributions have been shown graphically in Figure 7.1.

Figure 7.1: Adopted Traffic Distribution



7.3. Characteristic Trip Type

An important characteristic of the traffic generation of a convenience restaurant is the different types of trips which may occur. These different trip types correspond to:

- 'Primary Trips'
- 'Link-diverted Trips'
- 'Non-link-diverted Trips'

Primary trips and link-diverted trips involve a vehicle either making a special trip or a modification of the route to an existing trip. Non-link-diverted trips, on the other hand, correspond to those trips which do not involve a diversion from the route that would otherwise have been taken, or in other words are trips generated by passing traffic.

The important distinction here is that it is only primary trips and link-diverted trips which impact upon the external road network. Non-link-diverted trips are already present on the adjacent road network, and although these trips need to be considered in the design of access driveways, turning lanes and so on, they do not constitute additional traffic per se.

A significant proportion of traffic is anticipated to access the site during the road network peak hour as non-link-diverted trips and as such, it is anticipated that there will be a reduced amount of additional trips generated along the two site frontage roads.

In this respect, reference is made to the 'RTA NSW – Guide to Traffic Generating Developments' which states the following regarding McDonald's convenience restaurants:

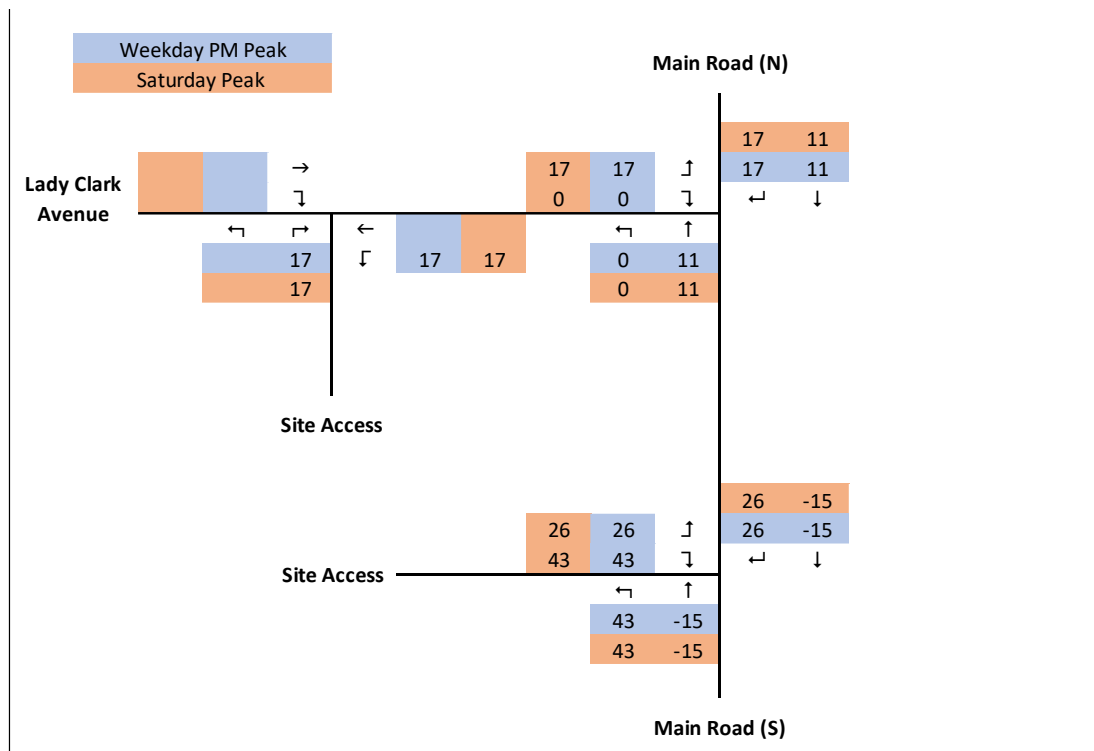
- *"The proportion of passing trade is typically about 35%. This discount should be taken into account in assessing external traffic impact."*

This assessment therefore assumes that 35% of traffic movements will be from existing external road traffic travelling past the site on Main Road, being the arterial road that will carry the vast majority of traffic past the site.

7.4. Traffic Generation Summary

Based on various factors outlined in the previous sections, Figure 7.2 has been prepared to show the estimated increase in vehicle turning movements in the vicinity of the site during the peak hour periods, including consideration of the reductions in through volumes as a result of passer-by trips that already travel past the site.

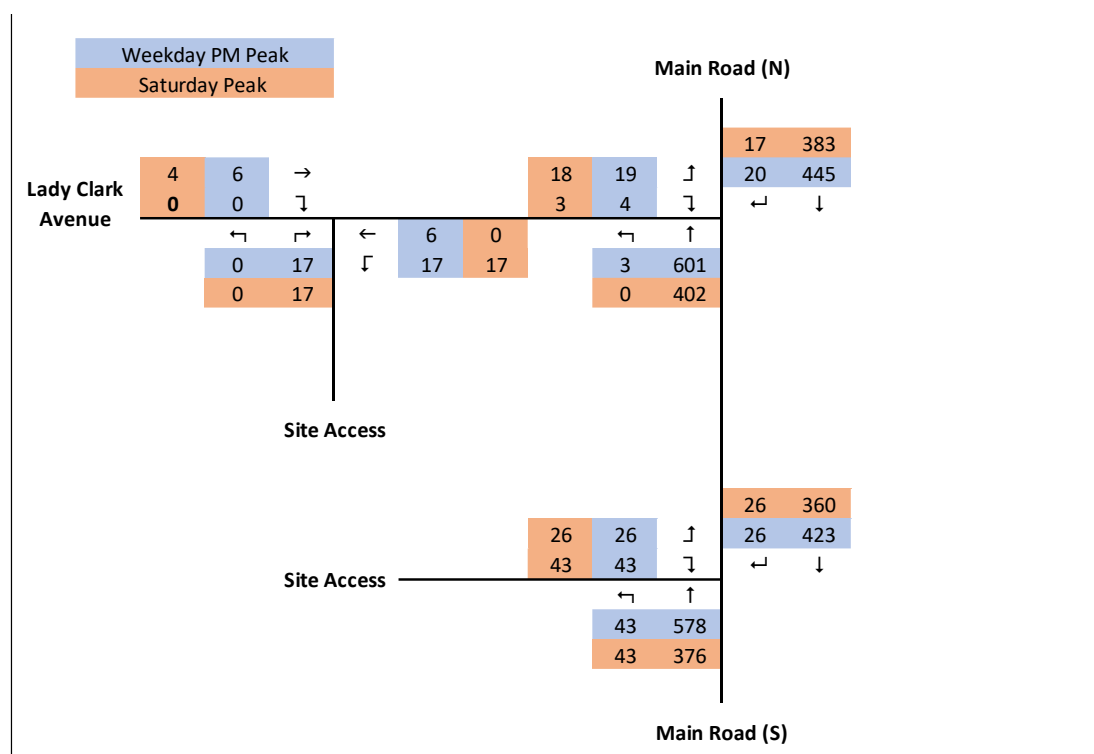
Figure 7.2: Peak Hour Site Generated Traffic Volumes (including Non-Link Diverted Trips)



7.5. Post Development Traffic Volumes

By combining the existing surveyed traffic volumes with the anticipated site generated traffic movements, the resultant estimated post development peak hour traffic volumes at the Main Road / Lady Clark intersection are shown in Figure 7.3.

Figure 7.3: Post Development Peak Hour Traffic Volumes



As detailed previously, it is widely agreed that peak hour traffic volumes represent 10% of daily traffic volumes.

As detailed above, following the construction of the development, Main Road is anticipated to carry peak hour traffic volumes of approximately 1,092 two-way vehicle movements. Following the application of the 10% peak hour factor, it is anticipated that Main Road will carry in the order of 10,920 two-way daily vehicle movements.

Following the construction of the development, Lady Clark Avenue is anticipated to carry approximately 46 two-way vehicle movements. Following the application of the 10% peak hour factor, it is anticipated that Lady Clark Avenue will carry in the order of 460 two-way daily vehicle movements.

7.6. Traffic Impacts – Post Development Conditions

Main Road / Lady Clark Avenue Intersection

A post development conditions weekday PM and Saturday peak hour intersection analysis has been undertaken of the Main Road / Lady Clark Avenue intersection, using SIDRA Intersection modelling.

Having regard to the above, the results of the post development weekday PM and Saturday peak hour SIDRA analysis are detailed in Appendix B and summarised in Table 7.1 and Table 7.2.

Table 7.1: Post Development PM Peak SIDRA Results – Main Road / Lady Clark Avenue

Approach	Movement	Post Development PM Peak		
		DoS	95%ile Queue (m)	Avg. Delay (s)
Main Road (S)	Left	0.34	0	6
	Through	0.34	0	0
Main Road (N)	Through	0.25	0	0
	Right	0.02	1	8
Lady Clark Avenue	Left	0.04	1	8
	Right	0.04	1	21
Intersection		0.35	1	1

Table 7.2: Post Development Saturday Peak SIDRA Results – Main Road / Lady Clark Avenue

Approach	Movement	Post Development Saturday Peak		
		DoS	95%ile Queue (m)	Avg. Delay (s)
Main Road (S)	Left	0.23	0	6
	Through	0.23	0	0
Main Road (N)	Through	0.22	0	0
	Right	0.02	0	7
Lady Clark Avenue	Left	0.03	1	7
	Right	0.03	1	13
Intersection		0.23	1	0

As shown in the preceding tables, the Main Road / Lady Clark Avenue intersection is anticipated to continue to operate with 'Excellent' conditions during the weekday PM and Saturday Peak hours, indicating that there are minimal queues and delays during the peak hour at this intersection after adding the site generated traffic to the network.

Main Road / Site Access Intersection

A post development conditions weekday PM and Saturday peak hour intersection analysis has also been undertaken for the Main Road / Site Access intersection, using SIDRA Intersection modelling.

Having regard to the above, the results of the post development weekday PM and Saturday peak hour SIDRA analysis are detailed in Appendix B and summarised in Table 7.3 and Table 7.4.

Table 7.3: Post Development PM Peak SIDRA Results – Main Road / Site Access

Approach	Movement	Post Development PM Peak		
		DoS	95%ile Queue (m)	Avg. Delay (s)
Main Road (S)	Left	0.35	0	6
	Through	0.35	0	0
Main Road (N)	Through	0.24	0	0
	Right	0.03	1	8
Site Access	Left	0.22	6	9
	Right	0.22	6	21
Intersection		0.35	6	2

Table 7.4: Post Development Saturday Peak SIDRA Results – Main Road / Site Access

Approach	Movement	Post Development Saturday Peak		
		DoS	95%ile Queue (m)	Avg. Delay (s)
Main Road (S)	Left	0.24	0	6
	Through	0.24	0	0
Main Road (N)	Through	0.21	0	0
	Right	0.02	1	7
Site Access	Left	0.14	4	7
	Right	0.14	4	14
Intersection		0.24	4	1

As shown in the preceding tables, the Main Road / Site Access intersection is also anticipated to operate with 'Excellent' conditions during the weekday PM and Saturday Peak hours, indicating that there are minimal queues and delays during the peak hour with the added site generated traffic volumes.

It is important to note that centre lane allows for the safe movement of right turning vehicles along Main Road. The traffic modelling assessment indicates that there are no traffic capacity issues with the right turning vehicle movements on both the road network and internal to the site. As such, it is evident that the proposed access arrangements are suitable.

Summary

Having regard to the analysis and discussion within the previous sections, the additional traffic generated by the proposed development is expected to have negligible impacts on the operation of the Main Road / Lady Clark Avenue intersection, which is expected to continue to operate in a satisfactory manner.

Similarly, the site access point to Main Road is also expected to function without any operational issues, with minimal queues and delays.

Based on the distance of the at Box Hill Road / Main Road intersection and Claremont Road / Main Road intersections from the site (230 metres and 360 metres respectively), it is not considered necessary to assess the impacts of the development on these intersections given that the site access to Main Road and the Main Road intersection with Lady Clarke Avenue demonstrate 'excellent' post development conditions.

7.7. Impact on Amenity

Lady Clark Avenue is a local street and as such has a maximum capacity from an environmental perspective of 300 vehicles per hour.

Under post development conditions, Lady Clark Avenue is anticipated to carry a maximum of 46 vehicle during the maximum peak hour. This is significantly below the environmental goal and as such is considered to be appropriate from an environmental capacity performance perspective.

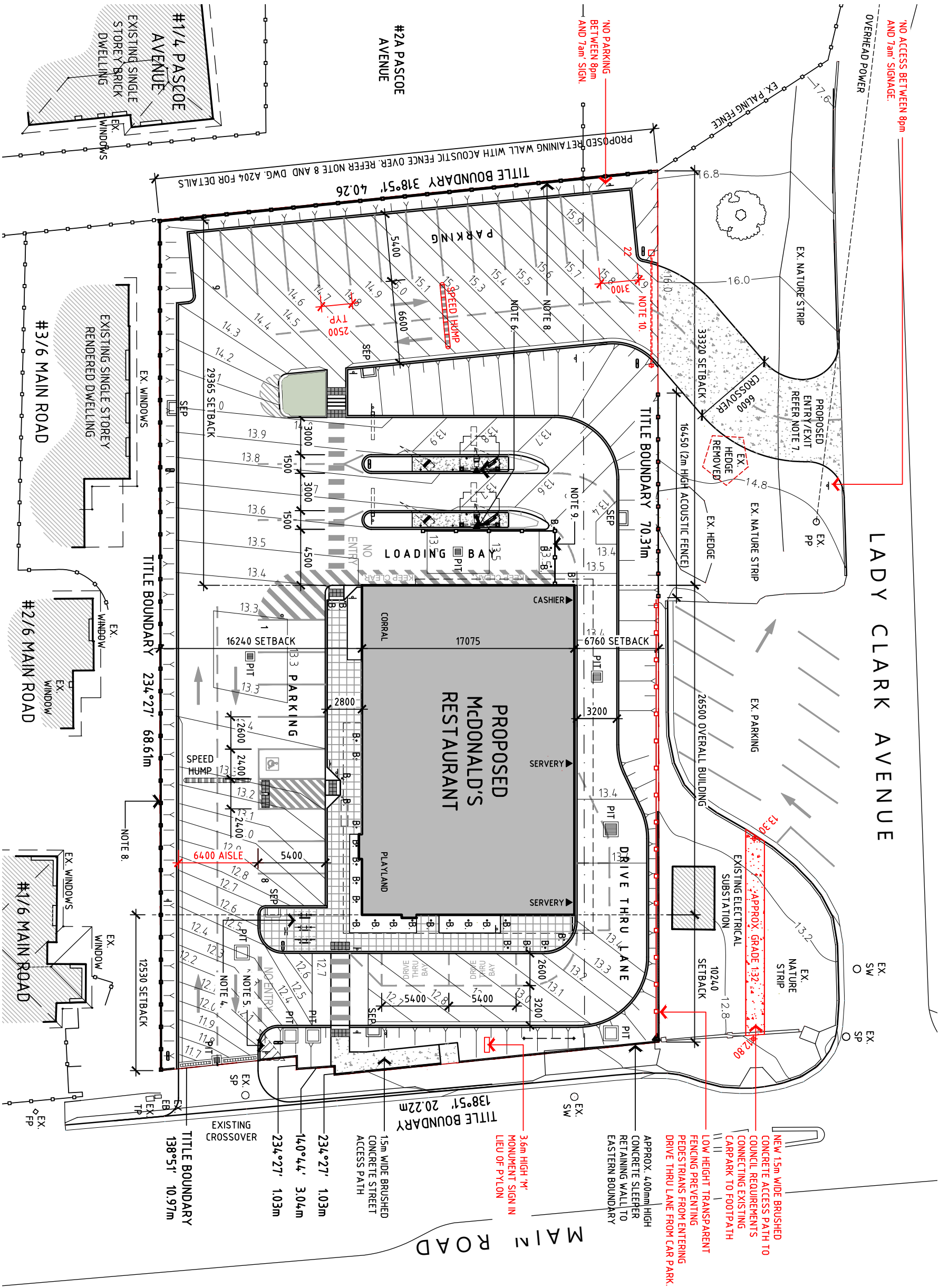
8. Conclusion

Based on the analysis and discussion presented within this report, the following conclusions are made:

- A combined Planning Scheme Amendment and Planning Permit is currently being sought for a proposed McDonald's convenience restaurant (food services) on the subject land.
- The proposed development generates a statutory parking requirement of 30 car parking spaces.
- The proposed supply of 22 on-site car parking spaces represents a shortfall of 8 car parking spaces against the statutory requirement.
- With consideration to the performance criteria within the Planning Scheme and the anticipated peak car parking demands based on surveys of multiple other McDonald's convenience restaurants, the proposed supply of 22 spaces is expected to be sufficient to cater for the peak demands generated by the development.
- Furthermore, there will be a total of 12 on-street parking spaces that immediately front the site that are able to cater for any potential shortfall in the unlikely event that the on-site parking supply is full.
- The proposed parking layout and site access arrangements are consistent with the requirements set out in the Tasmanian Planning Scheme and/or Australian/New Zealand Standards for Off Street Car Parking (AS/NZS2890.1:2004 and AS/NZS2890.6:2009).
- CAD-based swept paths have been completed which confirm the key vehicle movements can be completed with adequate clearance through the site access points and relevant key areas within the site.
- Vehicle access to the dedicated loading bay has been assessed through CAD-based swept path assessments and is considered satisfactory for the development.
- It is proposed to provide 6 visitor bicycle parking spaces as well as additional storage for informal staff bicycle parking within the corral area. These proposed bicycle parking and facilities are considered to be appropriate to service the proposed development, noting that established McDonald's restaurants rarely generate any demand for staff bicycle parking.
- The site is expected to generate up to 170 vehicle movements in any peak hour.
- The level of traffic generated by the proposed development is expected to be comfortably accommodated by the surrounding road network without creating adverse traffic safety or capacity impacts. The intersection of Lady Clark Avenue / Main Road and the site access point to Main Road have been modelled in SIDRA Intersection under post development conditions and are both expected to function with 'Excellent' operating conditions following completion of the proposed development, with no safety or traffic capacity issues.

Overall, the proposed development is not expected to create adverse traffic or parking impacts in the precinct.

Appendix A – Development Plans



NOTES

- 1. SITE AREA = APPROX. 2,785m²
BUILDING GFA = 453m²
- 2. DINING ROOM SEATING CAPACITY = 75 SEATS.
- 3. PARKING:
 - 7 X 2600 X 5400 CAR SPACES.
 - 14 X 2500 X 5400 CAR SPACES.
 - 1 X 2400 X 5400 ACCESSIBLE SPACES WITH 1 X 2400 X 5400 CLEAR ADJACENT SPACE.
 - 2 X 2600 X 5400 WAITING BAYS.
 - 1 X LOADING BAY.
- 4. BIKE HOOPS IN ACCORDANCE WITH AUSTRALIAN STANDARDS PART 3 BICYCLE PARKING AS2890.3:2015 TO ACCOMMODATE 6 X BICYCLES.
- 5. HATCHED AREAS DENOTE PEDESTRIAN SIGHT LINES IN ACCORDANCE WITH AS2890.1 CLAUSE 32.4, AND CLAUSE 52.06-9 OF THE PLANNING SCHEME.
- 6. DRIVE THRU LANE CUSTOMER ORDER DISPLAY AND ASSOCIATED CANOPY, REFER DRAWINGS A082, A807 AND A808 FOR DETAILS.
- 7. CAR PARK ENTRY AND EXITS SHALL BE DESIGNED IN ACCORDANCE WITH LOCAL AUTHORITY REQUIREMENTS AND AS2890.1.
- 8. EXISTING BOUNDARY FENCING REMOVED AND REPLACED WITH PROPOSED RETAINING WALL WITH ACOUSTIC FENCE OVER TO ENTIRE LENGTH OF SOUTHERN AND WESTERN BOUNDARIES. REFER DRAWINGS A204 AND A066 FOR DETAILS.
- 9. 2.5m HIGH ACOUSTIC SCREEN TO LOADING BAY WITH MINIMUM SURFACE DENSITY OF 12kg/m²
- 10. 800M GATE RESTRICTING ACCESS TO/FROM LADY CLARK AVENUE BETWEEN THE HOURS OF 8:00pm AND 7:00am.

LEGEND

- TITLE BOUNDARY
- PROPOSED ACOUSTIC FENCE, REFER DRAWING A066 FOR DETAILS
- PROPOSED LANDSCAPED AREAS, REFER LANDSCAPE PLANS FOR DETAILS
- B BOLLARD
- EX EXISTING
- EB ELECTRICAL BOX
- FP FIRE PLUG
- PP POWER POLE
- SEP SIDE ENTRY PIT
- SP SEWER PIT
- SW STORMWATER PIT
- TP TELEPHONE PIT
- WM WATER METER
- VEHICLE DETECTOR LOOP

REFERENCES

FOR SITE SIGNAGE PLAN
(REFER DWG A800)

AREA SCHEDULE

PROPOSED SITE COVERAGE AREA = 453m² (16%)
PROPOSED PERMEABILITY AREA = 483m² (17%)

BUILDING & WORKS

NOT TO BE USED DURING CONSTRUCTION

Revisions	General Notes
A	Do not scale this drawing. The drawing shows design intent only. All dimensions to be checked on site prior to construction. Dimensions are to be confirmed by contractor/master. This is a computer generated drawing. Do not amend by hand. Figure generated by AutoCAD. All dimensions are to be confirmed by contractor/master. All dimensions are to be confirmed by contractor

Appendix B – SIDRA Modelling Results

USER REPORT FOR SITE

All Movement Classes

Project: 19354T - SIDRA Analysis

Template: Movement Summary
& Phasing Summary

Site: 101 [Main Road / Lady Clark Avenue - Existing - PM Peak (Site Folder: General)]

Main Road / Lady Clark Avenue - Existing - PM Peak

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h]	[HV %]	[Total veh/h]	[HV %]				[Veh. veh]	[Dist m]				
South: Main Road (S)														
1	L2	3	0.0	3	0.0	0.336	5.6	LOS A	0.0	0.0	0.00	0.00	0.00	58.2
2	T1	590	5.0	621	5.0	0.336	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
Approach		593	5.0	624	5.0	0.336	0.1	NA	0.0	0.0	0.00	0.00	0.00	59.7
North: Main Road (N)														
8	T1	434	5.0	457	5.0	0.246	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
9	R2	3	0.0	3	0.0	0.004	8.1	LOS A	0.0	0.1	0.55	0.62	0.55	51.1
Approach		437	5.0	460	5.0	0.246	0.1	NA	0.0	0.1	0.00	0.00	0.00	59.8
West: Lady Clark Avenue														
10	L2	2	0.0	2	0.0	0.020	8.2	LOS A	0.1	0.5	0.74	0.83	0.74	46.9
12	R2	4	0.0	4	0.0	0.020	18.9	LOS C	0.1	0.5	0.74	0.83	0.74	46.4
Approach		6	0.0	6	0.0	0.020	15.3	LOS C	0.1	0.5	0.74	0.83	0.74	46.6
All Vehicles		1036	4.9	1091	4.9	0.336	0.2	NA	0.1	0.5	0.01	0.01	0.01	59.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Site: 101 [Main Road / Lady Clark Avenue - Existing - Sat Peak (Site Folder: General)]

Main Road / Lady Clark Avenue - Existing - Sat Peak

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] %	[Total veh/h	HV] %				[Veh. veh	Dist] m				
South: Main Road (S)														
1	L2	1	0.0	1	0.0	0.222	5.6	LOS A	0.0	0.0	0.00	0.00	0.00	58.2
2	T1	391	5.0	412	5.0	0.222	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach		392	5.0	413	5.0	0.222	0.1	NA	0.0	0.0	0.00	0.00	0.00	59.9
North: Main Road (N)														
8	T1	372	5.0	392	5.0	0.211	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
9	R2	1	0.0	1	0.0	0.001	6.8	LOS A	0.0	0.0	0.45	0.54	0.45	51.9
Approach		373	5.0	393	5.0	0.211	0.1	NA	0.0	0.0	0.00	0.00	0.00	59.9
West: Lady Clark Avenue														
10	L2	1	0.0	1	0.0	0.009	6.9	LOS A	0.0	0.2	0.59	0.70	0.59	49.6
12	R2	3	0.0	3	0.0	0.009	12.4	LOS B	0.0	0.2	0.59	0.70	0.59	49.1
Approach		4	0.0	4	0.0	0.009	11.0	LOS B	0.0	0.2	0.59	0.70	0.59	49.2
All Vehicles		769	5.0	809	5.0	0.222	0.1	NA	0.0	0.2	0.00	0.01	0.00	59.8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Site: 101 [Main Road / Lady Clark Avenue - Post Development - PM Peak (Site Folder: General)]

Main Road / Lady Clark Avenue - Post Development - PM Peak

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV %	[Total veh/h	HV %	v/c	sec		[Veh. veh	Dist] m				km/h
South: Main Road (S)														
1	L2	3	0.0	3	0.0	0.342	5.6	LOS A	0.0	0.0	0.00	0.00	0.00	58.1
2	T1	601	5.0	633	5.0	0.342	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
Approach		604	5.0	636	5.0	0.342	0.1	NA	0.0	0.0	0.00	0.00	0.00	59.7
North: Main Road (N)														
8	T1	445	5.0	468	5.0	0.253	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
9	R2	20	0.0	21	0.0	0.024	8.3	LOS A	0.1	0.7	0.56	0.70	0.56	51.0
Approach		465	4.8	489	4.8	0.253	0.4	NA	0.1	0.7	0.02	0.03	0.02	59.4
West: Lady Clark Avenue														
10	L2	19	0.0	20	0.0	0.043	8.4	LOS A	0.1	1.0	0.60	0.76	0.60	50.0
12	R2	4	0.0	4	0.0	0.043	20.5	LOS C	0.1	1.0	0.60	0.76	0.60	49.5
Approach		23	0.0	24	0.0	0.043	10.5	LOS B	0.1	1.0	0.60	0.76	0.60	49.9
All Vehicles		1092	4.8	1149	4.8	0.342	0.5	NA	0.1	1.0	0.02	0.03	0.02	59.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Site: 101 [Main Road / Lady Clark Avenue - Post Development - Sat Peak (Site Folder: General)]

Main Road / Lady Clark Avenue - Post Development - Sat Peak

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV %]	[Total veh/h	HV %]				[Veh. veh	Dist] m				
South: Main Road (S)														
1	L2	1	0.0	1	0.0	0.228	5.6	LOS A	0.0	0.0	0.00	0.00	0.00	58.2
2	T1	402	5.0	423	5.0	0.228	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach		403	5.0	424	5.0	0.228	0.1	NA	0.0	0.0	0.00	0.00	0.00	59.9
North: Main Road (N)														
8	T1	383	5.0	403	5.0	0.218	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
9	R2	17	0.0	18	0.0	0.015	7.0	LOS A	0.1	0.4	0.46	0.62	0.46	51.9
Approach		400	4.8	421	4.8	0.218	0.4	NA	0.1	0.4	0.02	0.03	0.02	59.5
West: Lady Clark Avenue														
10	L2	18	0.0	19	0.0	0.026	7.1	LOS A	0.1	0.7	0.48	0.65	0.48	51.8
12	R2	3	0.0	3	0.0	0.026	13.3	LOS B	0.1	0.7	0.48	0.65	0.48	51.3
Approach		21	0.0	22	0.0	0.026	8.0	LOS A	0.1	0.7	0.48	0.65	0.48	51.7
All Vehicles		824	4.8	867	4.8	0.228	0.4	NA	0.1	0.7	0.02	0.03	0.02	59.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Site: 101 [Main Road / Site Access - Post Development - PM Peak (Site Folder: General)]

Main Road / Site Access - Post Development - PM Peak

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV %]	[Total veh/h	HV %]				[Veh. veh	Dist] m				
South: Main Road (S)														
1	L2	43	0.0	45	0.0	0.352	5.6	LOS A	0.0	0.0	0.00	0.04	0.00	57.8
2	T1	578	5.0	608	5.0	0.352	0.1	LOS A	0.0	0.0	0.00	0.04	0.00	59.4
Approach		621	4.7	654	4.7	0.352	0.5	NA	0.0	0.0	0.00	0.04	0.00	59.3
North: Main Road (N)														
8	T1	423	5.0	445	5.0	0.241	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
9	R2	26	0.0	27	0.0	0.032	8.4	LOS A	0.1	0.9	0.57	0.72	0.57	50.9
Approach		449	4.7	473	4.7	0.241	0.6	NA	0.1	0.9	0.03	0.04	0.03	59.3
West: Site Access														
10	L2	26	0.0	27	0.0	0.223	8.9	LOS A	0.8	5.6	0.77	0.92	0.82	46.1
12	R2	43	0.0	45	0.0	0.223	21.4	LOS C	0.8	5.6	0.77	0.92	0.82	45.6
Approach		69	0.0	73	0.0	0.223	16.7	LOS C	0.8	5.6	0.77	0.92	0.82	45.8
All Vehicles		1139	4.4	1199	4.4	0.352	1.5	NA	0.8	5.6	0.06	0.09	0.06	58.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Site: 101 [Main Road / Site Access - Post Development - Sat Peak (Site Folder: General)]

Main Road / Site Access - Post Development - PM Peak

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV %	[Total veh/h	HV %				[Veh. veh	Dist m				
South: Main Road (S)														
1	L2	43	0.0	45	0.0	0.238	5.6	LOS A	0.0	0.0	0.00	0.06	0.00	57.7
2	T1	376	5.0	396	5.0	0.238	0.1	LOS A	0.0	0.0	0.00	0.06	0.00	59.3
Approach		419	4.5	441	4.5	0.238	0.6	NA	0.0	0.0	0.00	0.06	0.00	59.1
North: Main Road (N)														
8	T1	360	5.0	379	5.0	0.206	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
9	R2	26	0.0	27	0.0	0.024	7.1	LOS A	0.1	0.7	0.47	0.63	0.47	51.8
Approach		386	4.7	406	4.7	0.206	0.5	NA	0.1	0.7	0.03	0.04	0.03	59.3
West: Site Access														
10	L2	26	0.0	27	0.0	0.138	7.0	LOS A	0.5	3.5	0.59	0.79	0.59	49.6
12	R2	43	0.0	45	0.0	0.138	13.5	LOS B	0.5	3.5	0.59	0.79	0.59	49.1
Approach		69	0.0	73	0.0	0.138	11.1	LOS B	0.5	3.5	0.59	0.79	0.59	49.3
All Vehicles		874	4.2	920	4.2	0.238	1.4	NA	0.5	3.5	0.06	0.11	0.06	58.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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Project: Y:\19001-19500\19354T - 8-10 Main Road, Claremont\Work\Analysis\SIDRA\19354T - SIDRA Analysis.sip9

Appendix C – Empirical Car Parking Data and Traffic Information

Parking Generation Rate for Food and Drink Premises (Convenience Restaurant)

Facility	Location	Size	Day of Week	Peak Parking Rate	
				spaces	spaces/seat
McDonalds	Chadstone	124 seats			
McDonalds	Burwood	86 seats			
McDonalds	Glen Waverley	84 seats			
McDonalds	Doncaster East	98 indoor + 28 outdoor			
McDonalds	Flemington	109 indoor + 16 outdoor			
McDonalds	Nunawading	102 indoor + 16 outdoor			
McDonalds	Glen Waverley	104 indoor + 15 outdoor			
McDonalds	Holmesglen	76 indoor			
McDonalds	Burnswick East	64 indoor + 17 outdoor			
McDonalds	Rowville		Wednesday		
McDonalds	Kew	59 indoor + 39 outdoor	Friday	25	0.26
McDonalds	Balwyn	85 indoor + 20 outdoor	Saturday		
McDonalds	Bell Street, Preston	112 internal + 52 external	Fri & Sat	59	0.36
McDonalds	Albion Street, Burnswick East	74 internal + 35 external	Fri & Sat	16	0.15
McDonalds	Cnr Frankston-Flinders Road & Lee Street, Frankston		Fri & Sat		0.27
McDonalds	349-353 Whitehorse Road, Nunawading		Fri & Sat	50	
McDonalds	Mulgrave		Fri & Sat	48	
McDonalds	Lynhurst	128 indoor seats	Fri & Sat	48	0.38
McDonalds	Cnr Hume Highway & Mahoneys Road, Fawkner	109 seats	Friday	20	0.18
McDonalds	Cnr Macarandah Highway & New Street, Ringwood	93 internal, 40 external	Thursday	32	0.24
McDonalds	Balwyn		Thursday	18	
McDonalds	Box Hill North	115 seats	Thu & Sat	28	0.24
15th Percentile				19	0.18
Average				34	0.26
85th Percentile				49	0.36

Food and Drink Premises (V2.2)

Traffic Database for McDonald's Convenience Restaurants

Store Location	Number of seats	Drive-thru type	Day of Week	Morning Peak (8am-9am)			Road Network Peak (5pm-6pm)			Dinnertime Peak (6pm-7pm)		
				Mvts	% drive-thru	Parking	Mvts	% drive-thru	Parking	Mvts	% drive-thru	Parking
Ringwood	93 internal, 40 external	Double	Thursday	166	47%	32	154	40%	23	146	48%	30
Kew		Single	Thursday	64	56%		100	74%		100	60%	
Balmyn		Single	Thursday	123	52%	14	136	74%	11	148	61%	18
Malvern East		Single	Thursday				88			102	88%	
Mulgrave		Double	Friday			25			14			29
Mulgrave		Double	Saturday			21			40			25
Lynnhurst	128 internal seats	Double	Friday			46			34			33
Lynnhurst	128 internal seats	Double	Saturday			39			38			31
Sebastopol	80 internal, 31 terrace	Double	Friday	303	58%	27	323	63%	23			
Richmond	26 internal, 36 playground, 65 front internal terrace	Single	Friday	99	64%		105	55%		97	59%	
Holmesglen	86 internal, 30 external	Single	Friday	208	57%		103	50%		188	54%	
Doncaster East	79 internal, 58 external	Double	Friday	216	43%		322	57%		309	41%	
Brunswick East	70 internal, 20 external	Single	Friday	135	59%		184	54%		155	38%	
Mt Waverley	78 internal, 36 external	Single	Friday	181	45%		163	51%		222	59%	
15th Percentile				103.80	0.45	20.30	101.05	0.50	13.70	100.40	0.42	23.25
Average				166.11	0.53	29.14	167.80	0.58	26.14	163.00	0.56	27.67
85th Percentile				214.40	0.59	39.70	273.70	0.71	38.20	215.20	0.61	31.50

Parking Generation Rate for Food and Drink Premises (Convenience Restaurant)

Facility	Location	Size	Day of Week	Date	Peak Parking Rate	
					Weekday	
McDonald's	Flemington	109 indoor + 16 outdoor		Unknown	spaces	spaces/seat
McDonald's	Nunawading	102 indoor + 16 outdoor		Unknown	29	0.27
McDonald's	Glen Waverley	104 indoor + 15 outdoor		Unknown	26	0.25
McDonald's	Holmesglen	76 indoor		Unknown	18	0.17
McDonald's	Brunswick East	64 indoor + 17 outdoor		Unknown	29	0.30
McDonald's	Rowville		Wednesday	13-Mar-91	18	0.28
McDonald's	Kew	59 indoor + 39 outdoor	Friday	6-Dec-96	25	0.26
McDonald's	Belwyn	85 indoor + 20 outdoor	Saturday	7-Dec-96	28	0.27
McDonald's	Bell Street, Preston	112 internal + 52 external	Fri & Sat	22, 28 & 29-May-99	59	0.36
McDonald's	Albion Street, Brunswick East	74 internal + 35 external	Fri & Sat	28 & 29-May-99	16	0.15
McDonald's	Cnr Frankston-Flinders Road & Lee Street, Frankston		Fri & Sat	02 & 03-Jun-00		0.27
McDonald's	Lyndhurst	128 indoor seats	Fri & Sat	4 & 5-Jun-10	48	0.38
McDonald's	Cnr Hume Highway & McHoneys Road, Fawkner	109 seats	Friday	13-May-11	20	0.18
McDonald's	Cnr Macleod Highway & New Street, Ringwood	93 internal, 40 external	Thursday	24-May-12	32	0.24
McDonald's	Box Hill North	115 seats	Thu & Sat	18 & 20-Feb-16	28	0.24
15th Percentile					18	0.19
Average					29	0.27
85th Percentile					35	0.35

Food and Drink Premises (V2.2)

Food and Drink Premises (V2.2) - Convenience Rest

Appendix D – Swept Path Assessment



ratio

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ABN 005 422 104
8 GIVNNE STREET
CREMONA, VICTORIA 3121
TELEPHONE (03) 9429 3111
FACSIMILE F (03) 9429 3114

B99 Vehicle (AS/NZS2890.1:2004)

Overall length 5.2
Overall width 1.95
Min Body Height 1.94
Track Width 1.84
Lock to Lock Time 4.00 sec

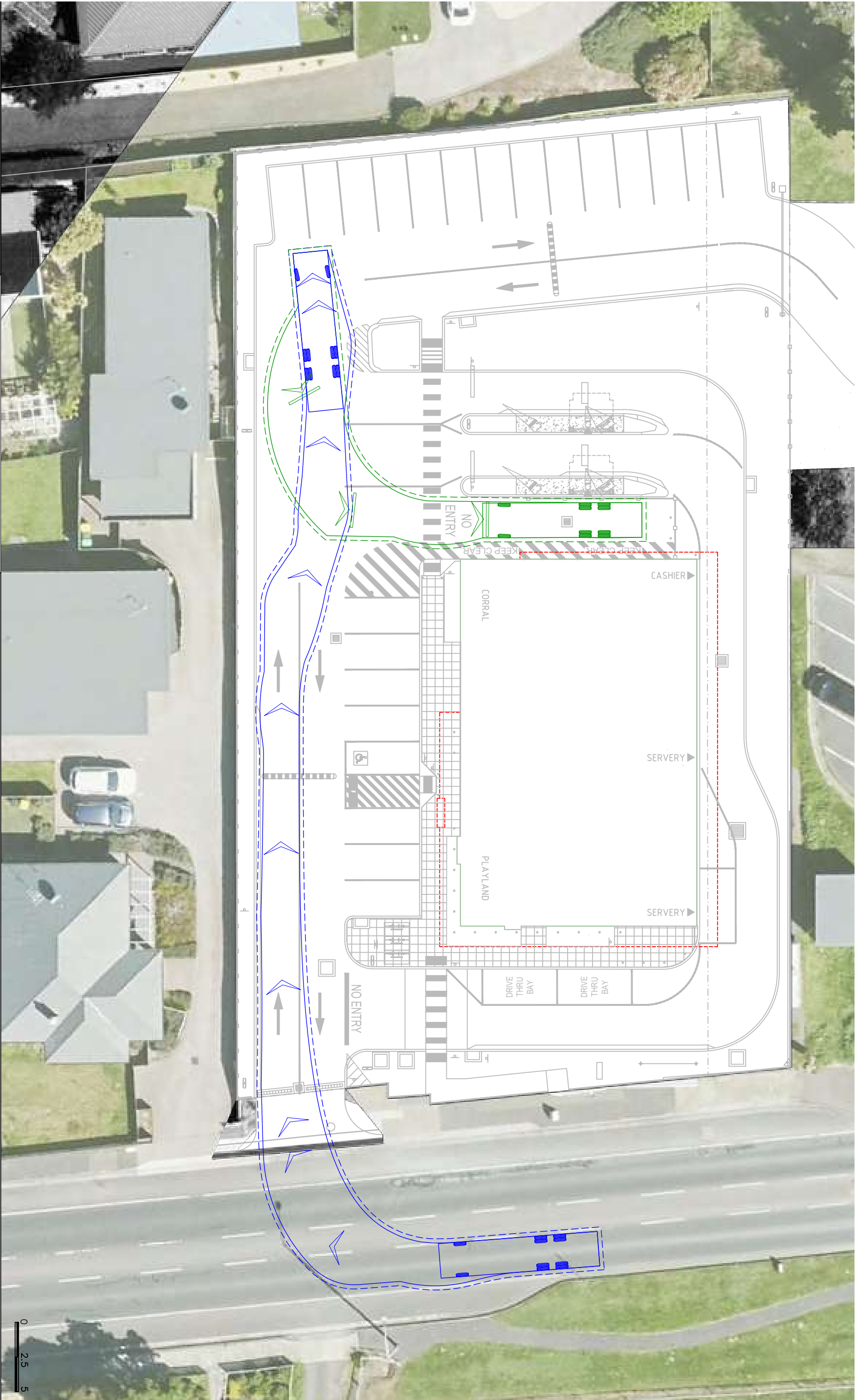
300mm CLEARANCE (FORWARD)
VEHICLE ENVELOPE (FORWARD)
300mm CLEARANCE (REVERSE)
VEHICLE ENVELOPE (REVERSE)

Proposed McDonald's Restaurant
8-10 Main Road, Claremont, Tasmania
Swept Path Assessment

NOTE:
1) Base Plan Supplied on 6 September 2023
2) Maximum Design Speed 50km/h

RATIO REFERENCE 193441.SKN5
SHEET No. 1 of 15
SCALE 1:1000000
DATE 08/10/2023





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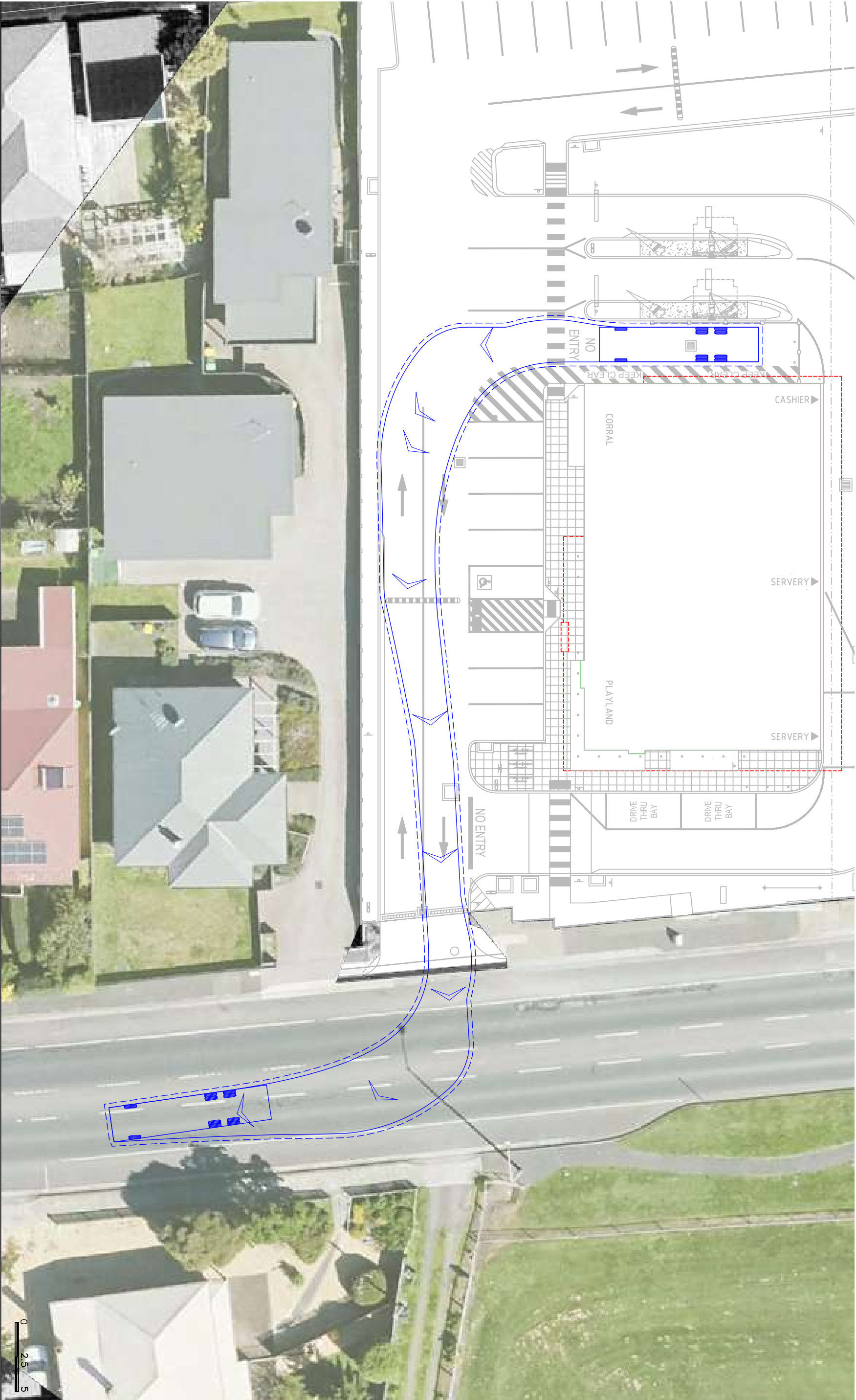
RATIO CONSULTANTS PTY LTD
ABN 005 422 104
8 GIVNNE STREET
CLARENDON, VICTORIA 3121
TELEPHONE (03) 9429 3171
FACEBOOK F: ratio293171

Proposed McDonald's Restaurant
8-10 Main Road, Clarendon, Tasmania
Swept Path Assessment - 14 Pallet Rigid

NOTE:
1) Base Plan Supplied on 6 September 2023
2) Maximum Design Speed 50km/h

RATIO REFERENCE	SHEET NO.	SCALE	DATE
1934LT-SK05	2 of 15	1:250m A3	08/10/2023



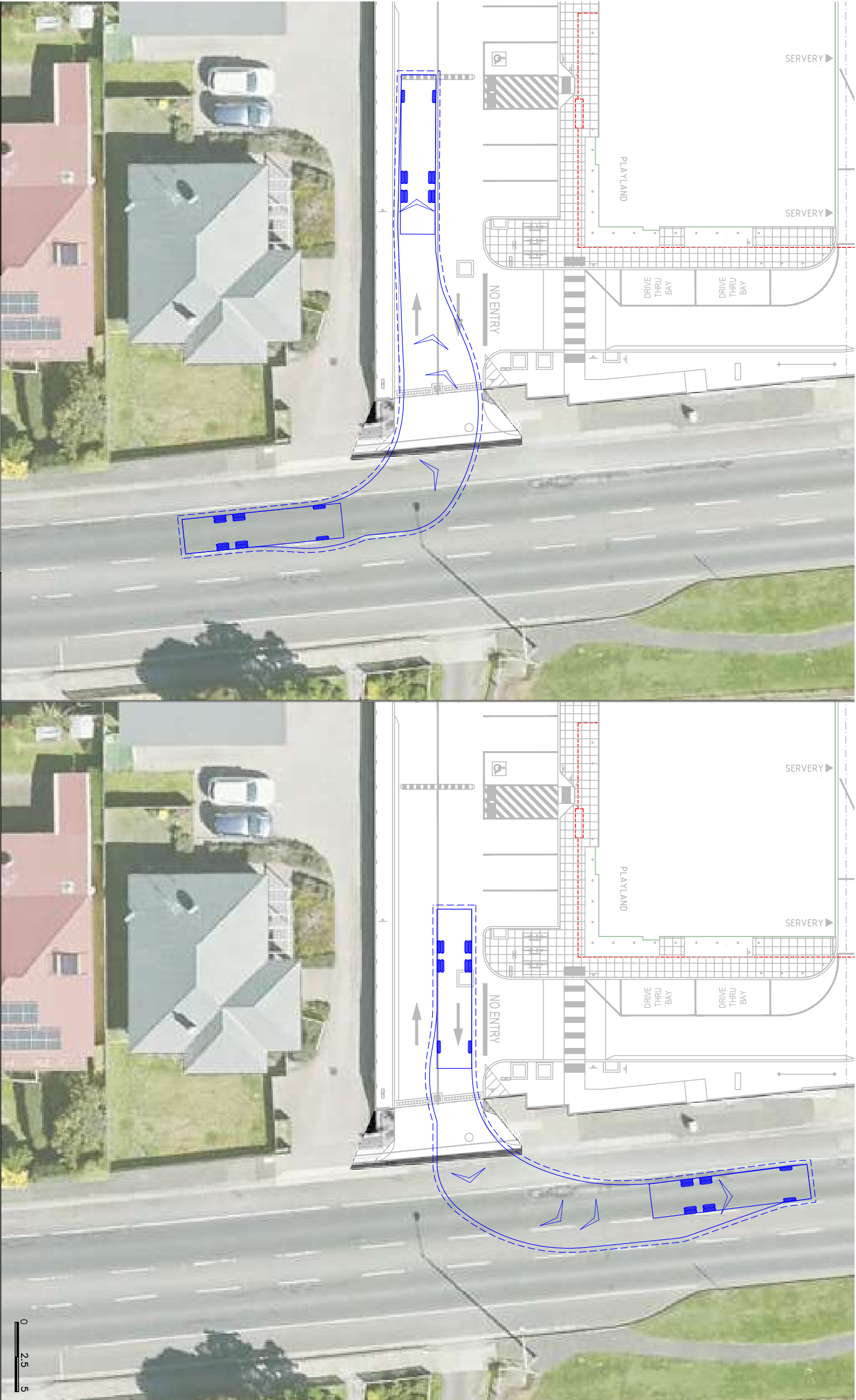


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RATIO CONSULTANTS PTY LTD
ABN 005 422 104
8 GYVINE STREET
CREMORNE, VICTORIA 3121
TELEPHONE (03) 9429 3171
FACSIMILE F (03) 9429 3014

Proposed McDonald's Restaurant
8-10 Main Road, Clarendon, Tasmania
Swept Path Assessment - 14 Pallet Rigid

NOTE:		RATIO REFERENCE	SHEET NO.	SCALE	DATE
1) Base Plan Supplied on 6 September 2023		193.FLT.SK05	3 of 15	1:750/MA3	08/10/2023
2) Maximum Design Speed 50km/h					



ratio:

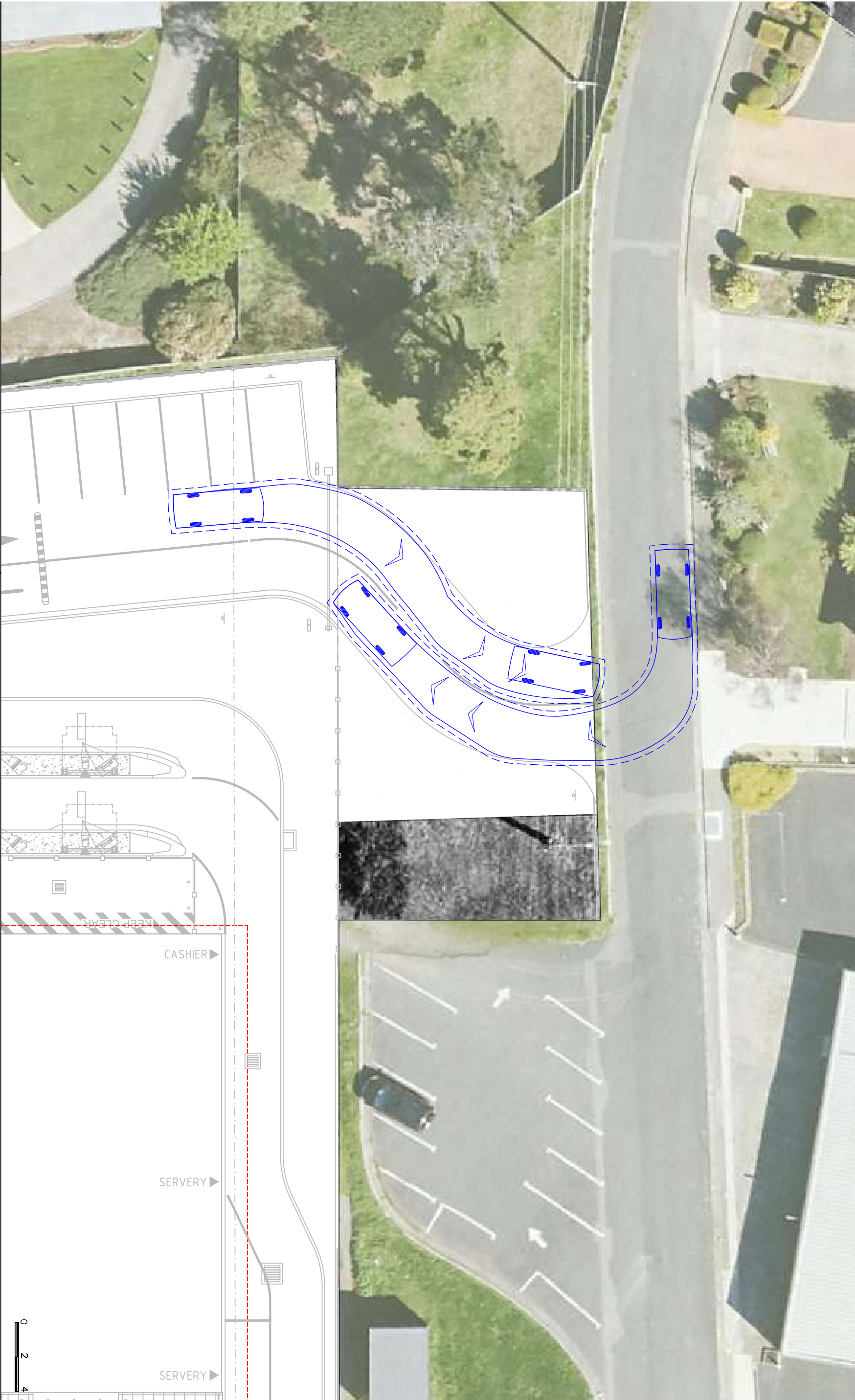
RATIO CONSULTANTS PTY LTD
ABN 005 422 104
8 GIVNNE STREET
CREMORNE, VICTORIA 3121
TELEPHONE (03)9429 3171
FACSIMILE F (03)9429 3014

Proposed McDonald's Restaurant
8-10 Main Road, Clarendon, Tasmania
Swept Path Assessment - 14 Pallet Rigid

NOTE:
1) Base Plan Supplied on 6 September 2023
2) Maximum Design Speed 50km/h

RATIO REFERENCE	SHEET NO.	SCALE	DATE
1934LT-SKM5	4 of 15	1:250m A3	08/10/2023





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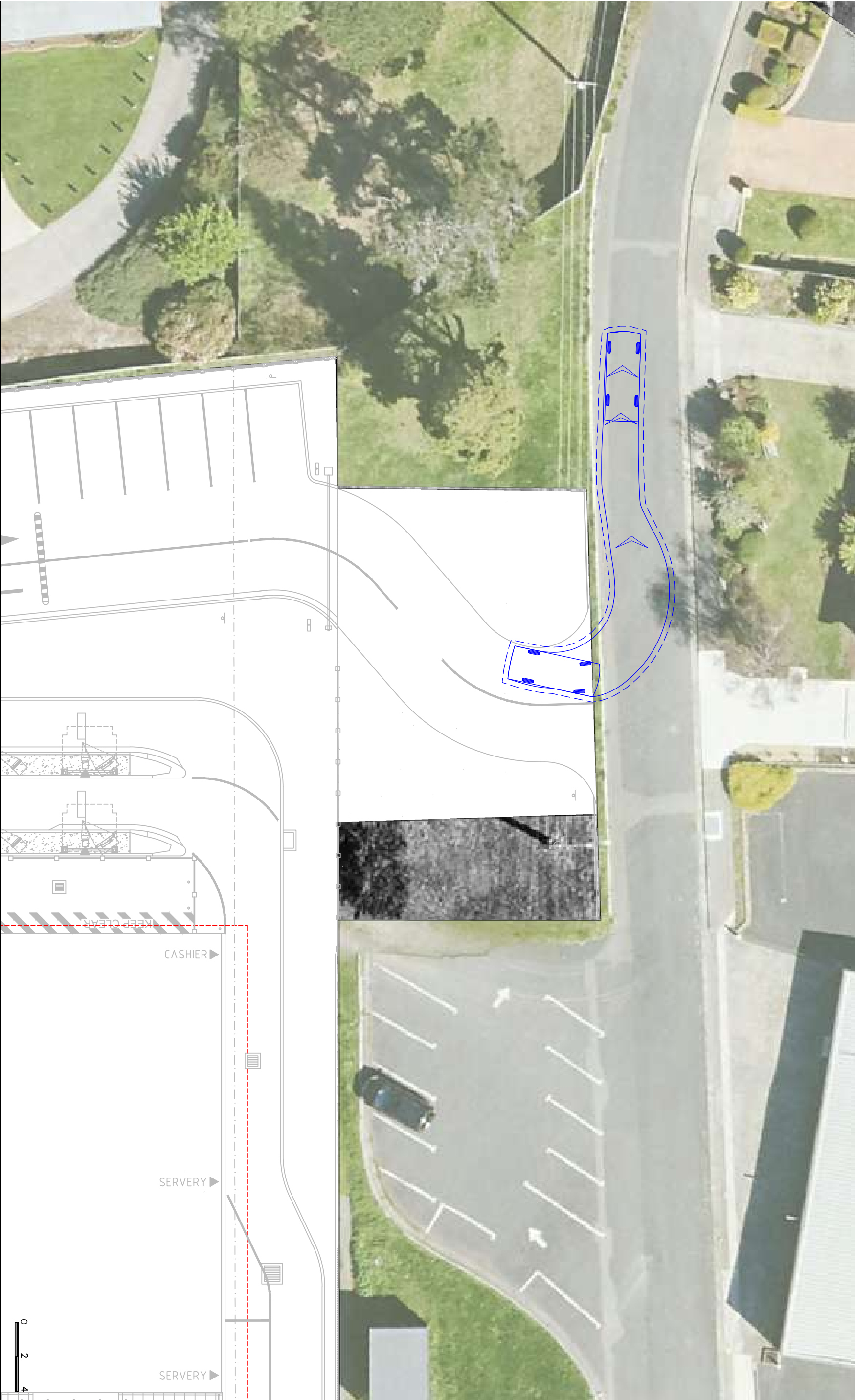
RATIO CONSULTANTS PTY LTD
ABN 005 422 104
8 GIVWINE STREET
CLAREMONT, VICTORIA 3121
TELEPHONE (03) 9429 3111
FACSIMILE (03) 9429 3014

B99 Vehicle (AS/NZS2890.1:2004)	
	
Overall length	5.200m
Overall width	1.940m
Overall height	2.200m
Min Body Ground Clearance	0.312m
Track Width	1.840m
Lock to Lock Time	4.00 sec

Proposed McDonald's Restaurant
8-10 Main Road, Claremont, Tasmania
Swept Path Assessment

NOTE:
1) Base Plan Supplied on 6 September 2023
2) Maximum Design Speed 50km/h

RATIO REFERENCE	SHEET NO.	SCALE	DATE
1934LT-SK05	5 of 15	1:200/1:100	08/10/2023



ratio:

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ABN 005 422 104
8 GIVWINE STREET
CREMORNE, VICTORIA 3121
TELEPHONE (03) 9429 3111
FACSIMILE (03) 9429 3014

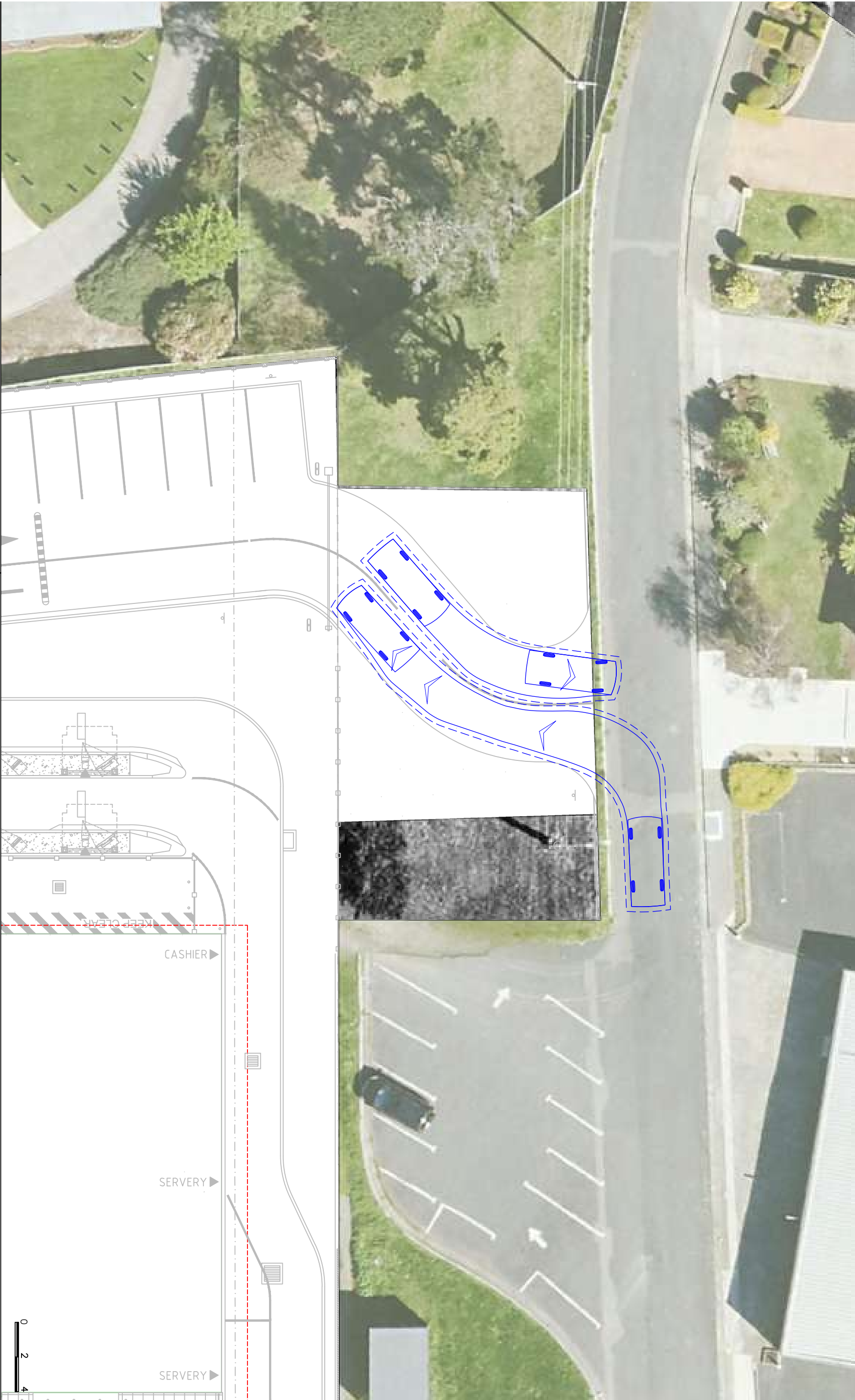
B99 Vehicle (AS/NZS2890.1:2004)	
	
Overall Length	5.200m
Overall Width	1.900m
Min Body Height	2.200m
Track Width	1.800m
Lock to Lock Time	4.00 sec
VEHICLE ENVELOPE (FORWARD)	
300mm CLEARANCE (FORWARD)	
VEHICLE ENVELOPE (REVERSE)	
300mm CLEARANCE (REVERSE)	

Proposed McDonald's Restaurant
8-10 Main Road, Claremont, Tasmania
Swept Path Assessment

NOTE:
1) Base Plan Supplied on 6 September 2023
2) Maximum Design Speed 50km/h

RATIO REFERENCE	SHEET NO.	SCALE	DATE
1934LT-SK05	A of 15	1:200/MA3	08/10/2023





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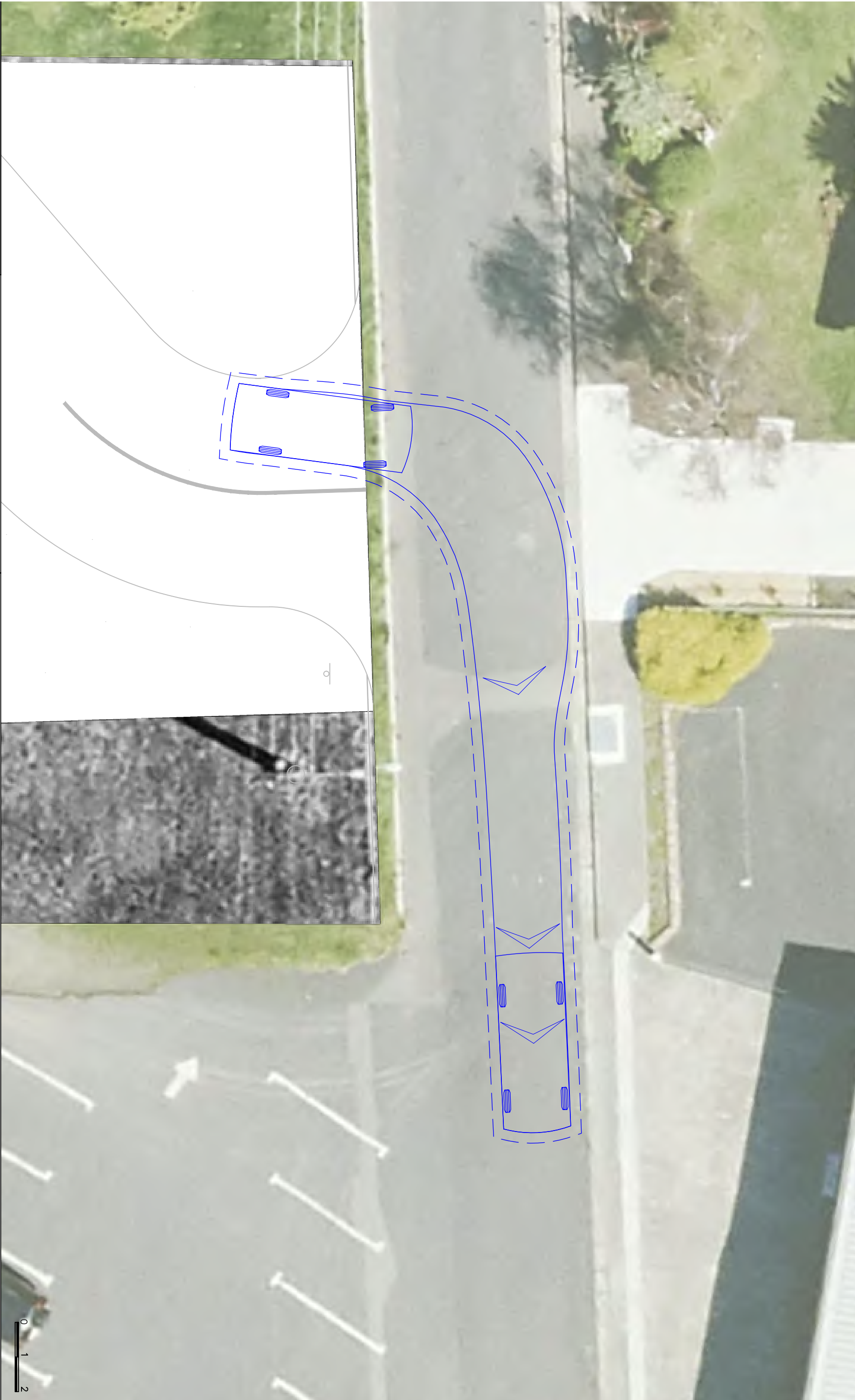
RATIO CONSULTANTS PTY LTD
ABN 005 422 104
8 GIVWINE STREET
CREMORNE, VICTORIA 3121
TELEPHONE (03) 9429 3111
FAX (03) 9429 3014

B99 Vehicle (AS/NZS2890.1:2004)	
Overall length	5.200m
Overall width	1.900m
Overall height	1.900m
Min Body Ground Clearance	0.312m
Track Width	1.840m
Lock to Lock Time	4.00 sec

Proposed McDonald's Restaurant
8-10 Main Road, Claremont, Tasmania
Swept Path Assessment

NOTE:
1) Base Plan Supplied on 6 September 2023
2) Maximum Design Speed 50km/h

RATIO REFERENCE	SHEET No.	SCALE	DATE
1934LT-SK05	7 of 15	1:200/MA3	08/10/2023



ratio:

RATIO CONSULTANTS PTY LTD
ABN 005 422 704
8 GIVNNE STREET
CREMONA, VICTORIA 3121
TELEPHONE (03) 9629 3171
FACSIMILE (03) 9629 3174

B99 Vehicle (AS/NZS2890.1:2004)
VEHICLE ENVELOPE (FORWARD)
300mm CLEARANCE (FORWARD)
VEHICLE ENVELOPE (REVERSE)
300mm CLEARANCE (REVERSE)
Overall length 5.2
Overall width 3.05
Overall height 1.940m
Min Body Ground Clearance 0.312m
Track Width 1.840m
Lock to Lock Time 4.00 sec

Proposed McDonald's Restaurant
8-10 Main Road, Claremont, Tasmania
Swept Path Assessment

NOTE:
1) Base Plan Supplied on 6 September 2023
2) Maximum Design Speed 50km/h

RATIO REFERENCE
193.FLT.SKN5

SHEET No.
8 of 15

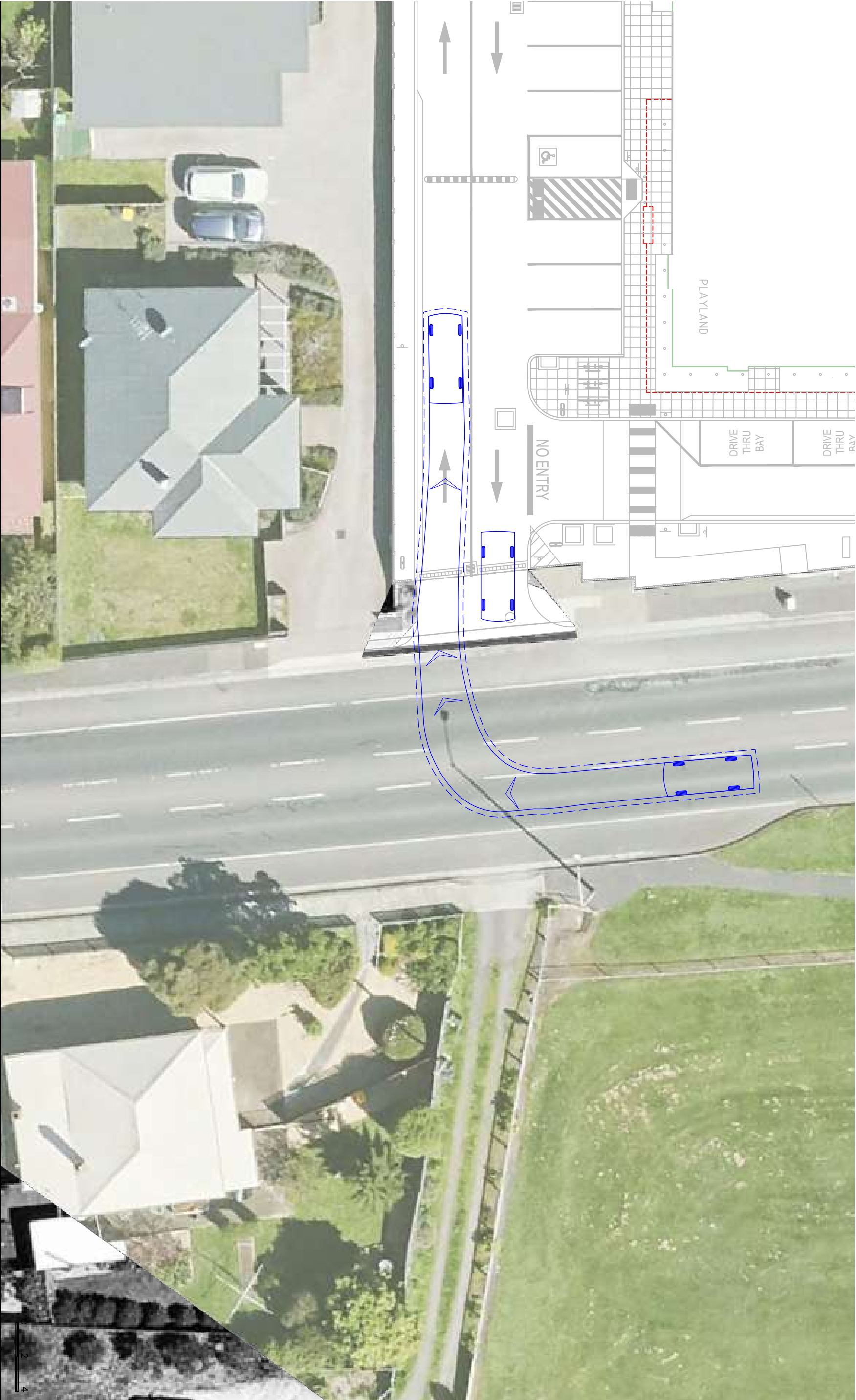
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DATE
08/10/2023





Attachments - Glenorchy Planning Authority - 13 December 2023



ratio:
RATIO CONSULTANTS PTY LTD
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CREMONA, VICTORIA 3121
TELEPHONE (03) 9429 3111
FACSIMILE (03) 9429 3114

B99 Vehicle (AS/NZS2890.1:2004)
VEHICLE ENVELOPE (FORWARD)
300mm CLEARANCE (FORWARD)
VEHICLE ENVELOPE (REVERSE)
300mm CLEARANCE (REVERSE)
Overall Length 5.2
Overall Width 3.05
Overall Body Height 1.940m
Min Body Ground Clearance 0.312m
Track Width 1.840m
Lock to Lock Time 4.00 sec

Proposed McDonald's Restaurant
8-10 Main Road, Claremont, Tasmania
Swept Path Assessment

NOTE:
1) Base Plan Supplied on 6 September 2023
2) Maximum Design Speed 50km/h

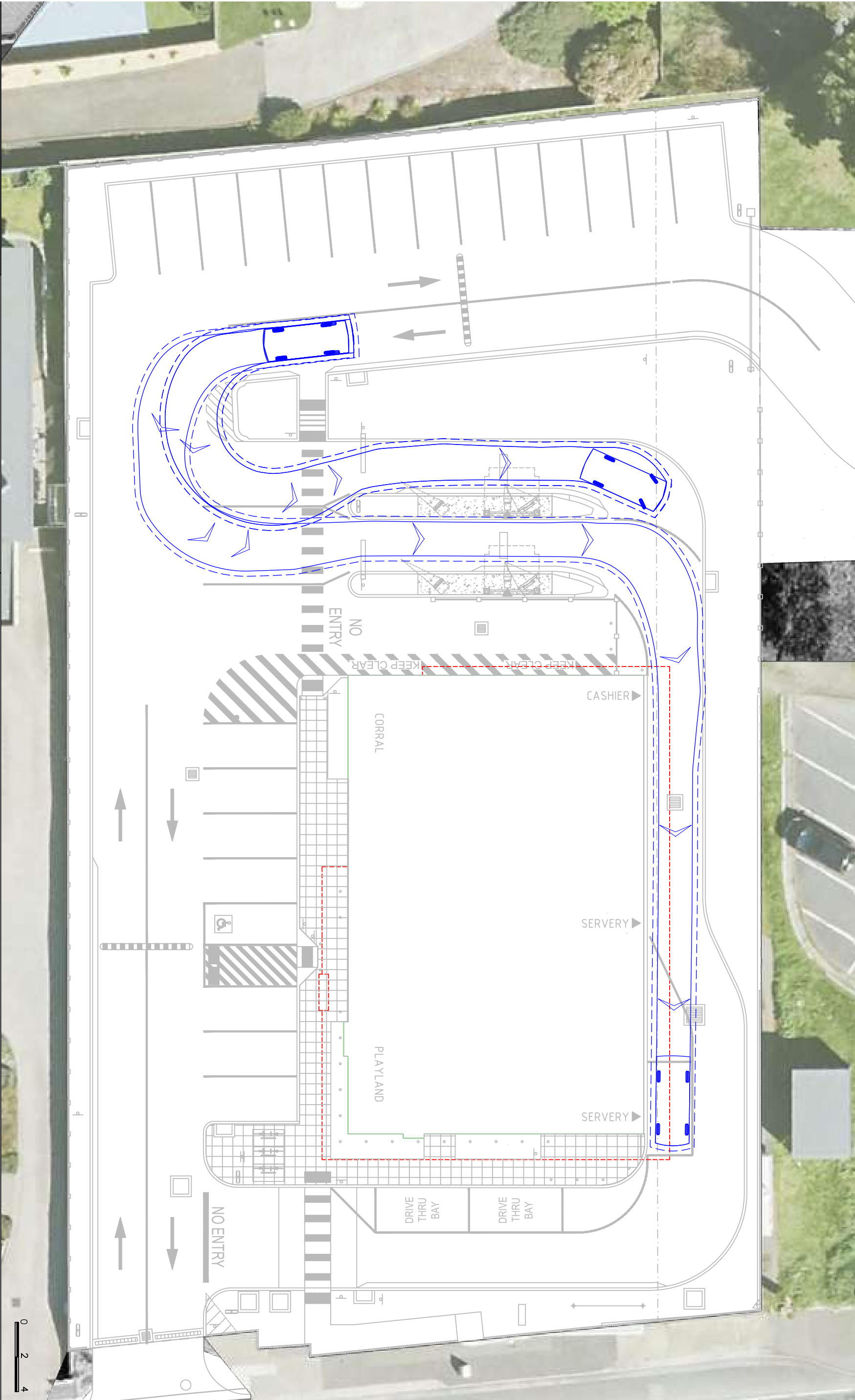
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SHEET NO.
10 of 15

SCALE
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DATE
08/10/2023





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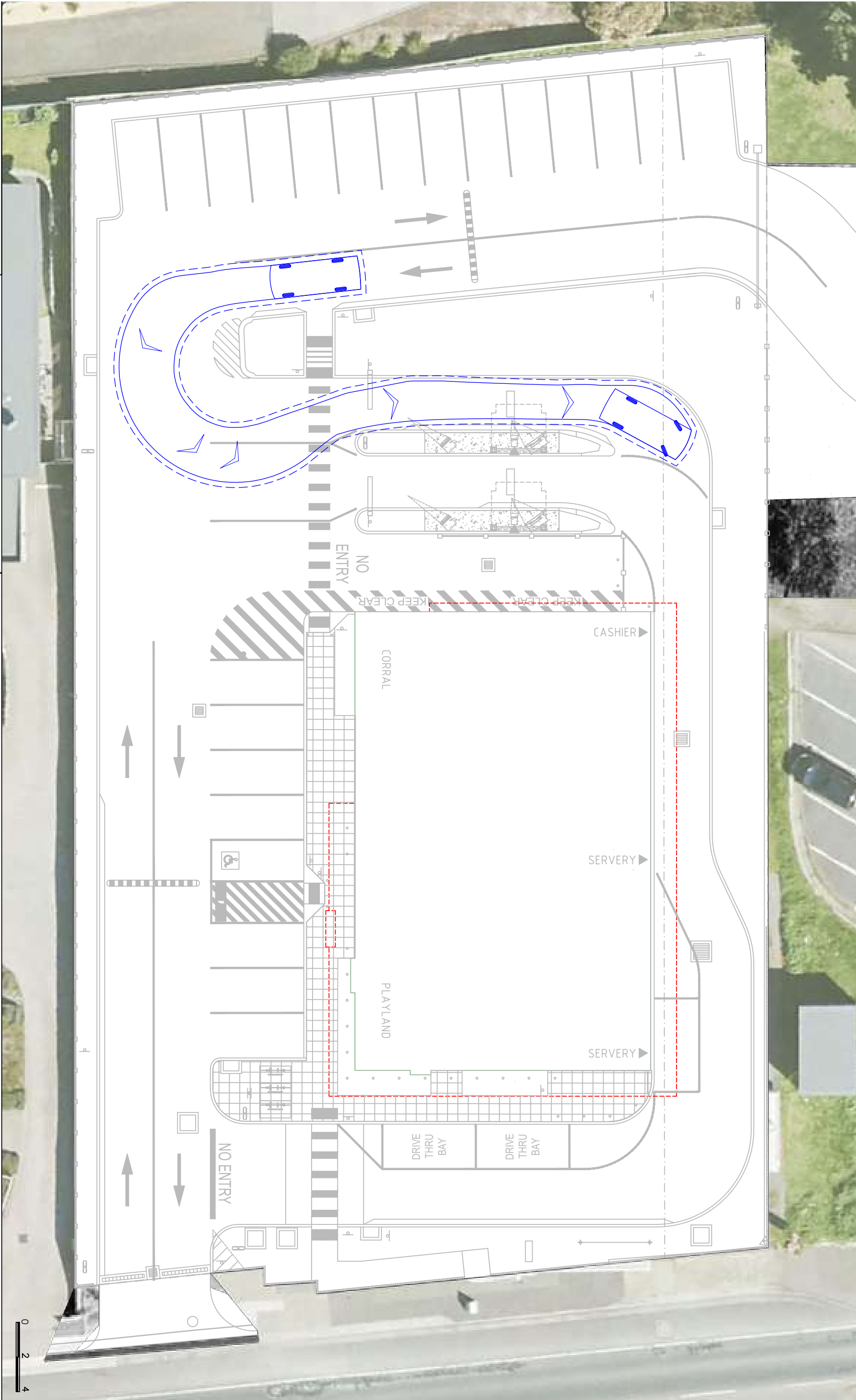
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ABN 005 422 104
8 GIVNNE STREET
CREMORNE, VICTORIA 3121
TELEPHONE (03) 9429 3111
FACSIMILE (03) 9429 3114

B99 Vehicle (AS/NZS2890.1:2004)	
Overall length	5.2
Overall width	1.9
Min Body Height	1.9
Track Width	1.8
Lock to Lock Time	4.00 sec
VEHICLE ENVELOPE (FORWARD)	
300mm CLEARANCE (FORWARD)	5.200m
VEHICLE ENVELOPE (REVERSE)	1.940m
300mm CLEARANCE (REVERSE)	2.200m
Overall length	1.940m
Overall width	1.940m
Min Body Height	1.940m
Track Width	1.840m
Lock to Lock Time	4.00 sec

Proposed McDonald's Restaurant
8-10 Main Road, Claremont, Tasmania
Swept Path Assessment

NOTE:
1) Base Plan Supplied on 6 September 2023
2) Maximum Design Speed 50km/h

RATIO REFERENCE	SHEET NO.	SCALE	DATE
1934LT-SKN5	11 of 15	1:2000000	08/10/2023



ratio

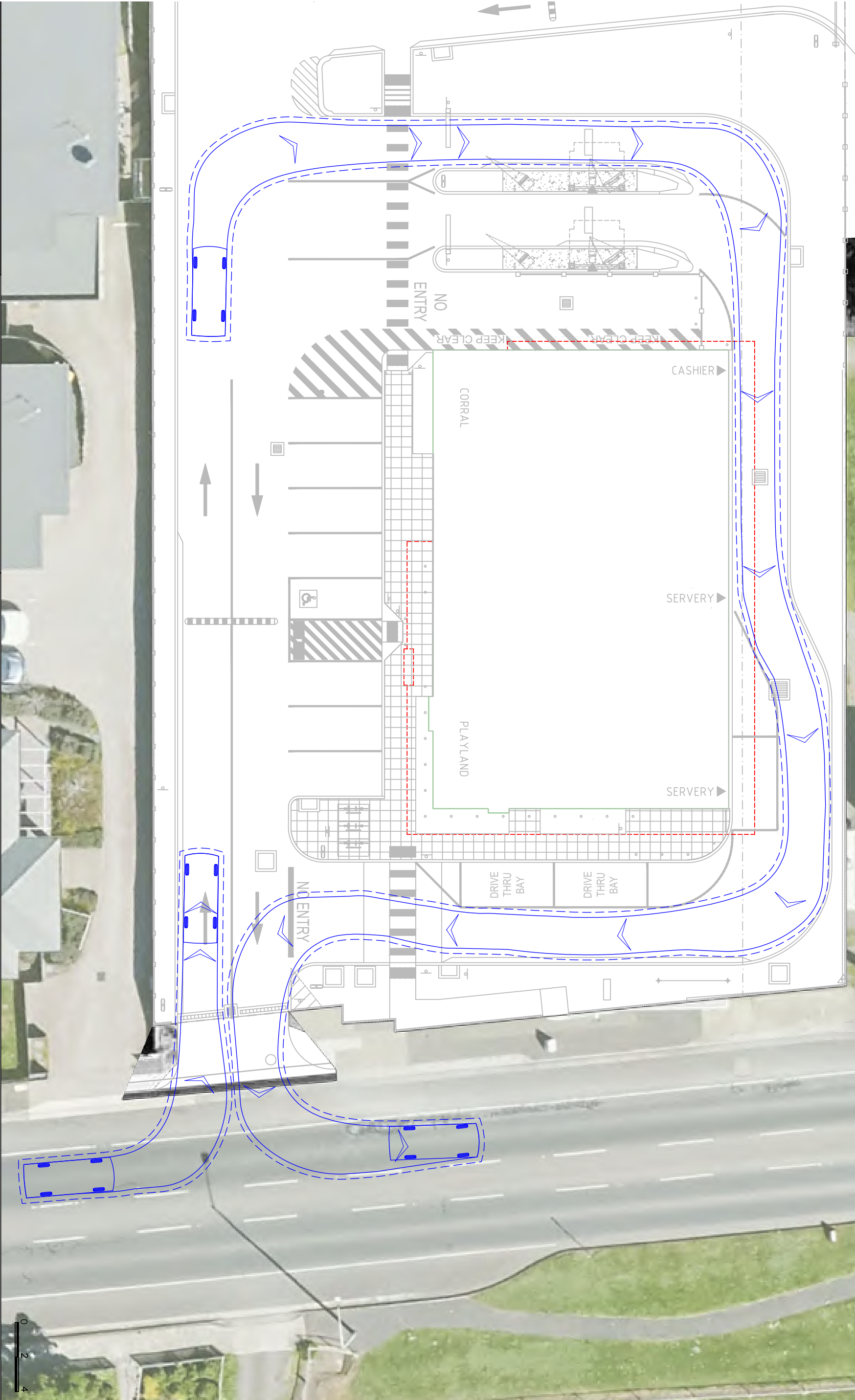
RATIO CONSULTANTS PTY LTD
ABN 005 422 104
8 GIVNNE STREET
CLARENDON, VICTORIA 3121
TELEPHONE (03) 9629 3111
FACSIMILE (03) 9629 3114

B99 Vehicle (AS/NZS2890.1:2004)	
VEHICLE ENVELOPE (FORWARD)	300mm CLEARANCE (FORWARD)
VEHICLE ENVELOPE (REVERSE)	300mm CLEARANCE (REVERSE)
Overall length	5.200m
Overall width	1.950m
Min Body Height	1.900m
Track Width	1.500m
Lock to Lock Time	4.00 sec

Proposed McDonald's Restaurant
8-10 Main Road, Clarendon, Tasmania
Swept Path Assessment

NOTE:
1) Base Plan Supplied on 6 September 2023
2) Maximum Design Speed 50km/h

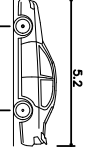
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193.FLT.SK05	12 of 15	1:200/MA3	08/10/2023





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ABN 005 422 104
8 GIVNNE STREET
CREMORNE, VICTORIA 3121
TELEPHONE (03) 9429 3111
FAX (03) 9429 3114

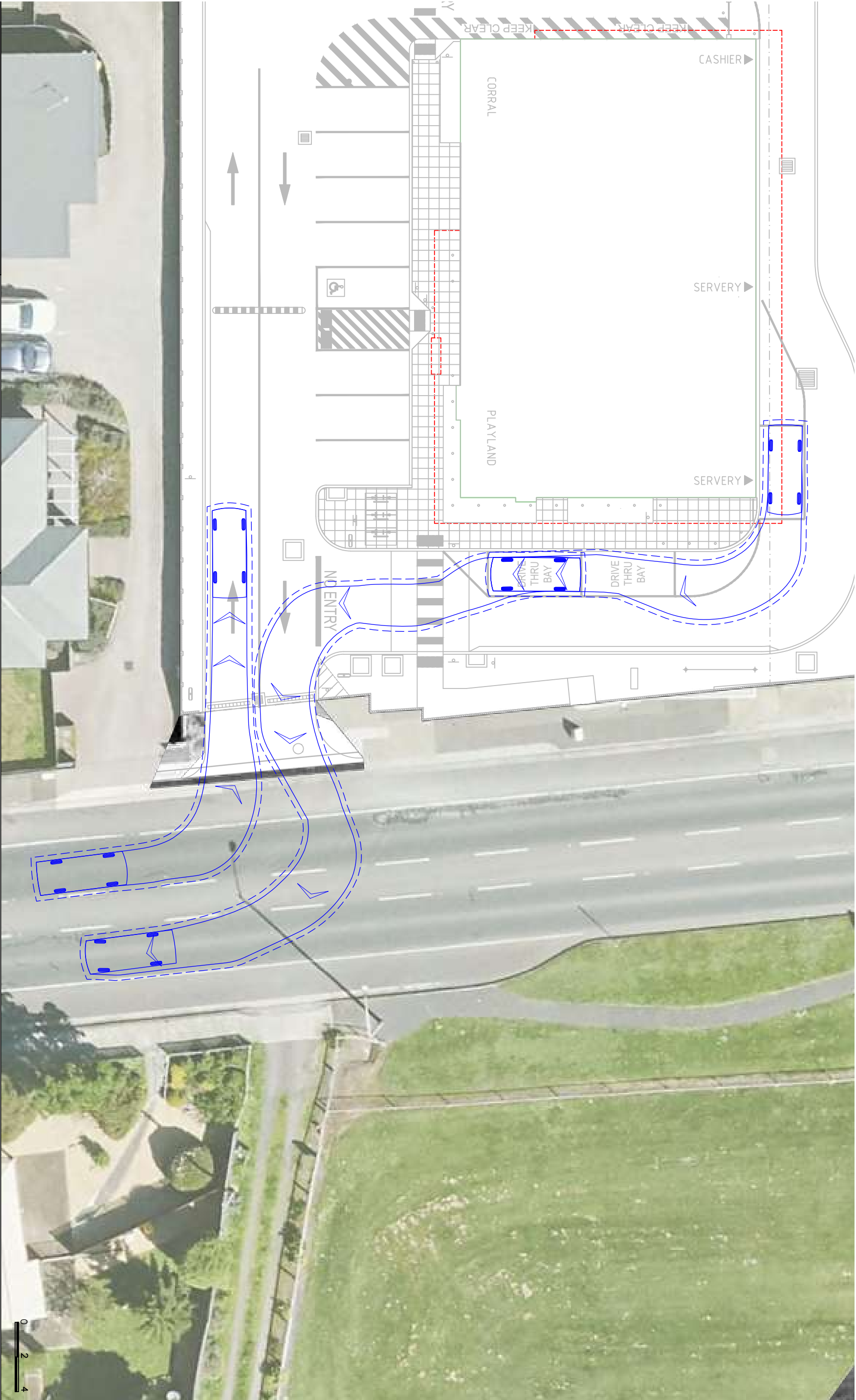
B99 Vehicle (AS/NZS2890.1:2004)



Overall length 5.2
Overall width 2.05
Min Body Height 1.940m
Track Width 1.840m
Lock to Lock Time 4.00 sec

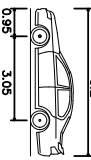
VEHICLE ENVELOPE (FORWARD) 300mm CLEARANCE (FORWARD)
VEHICLE ENVELOPE (REVERSE) 300mm CLEARANCE (REVERSE)

NOTE: 1) Base Plan Supplied on 6 September 2023 2) Maximum Design Speed 50km/h				Proposed McDonald's Restaurant 8-10 Main Road, Claremont, Tasmania Swept Path Assessment							
				RATIO REFERENCE		SHEET No.		SCALE		DATE	
				1935LT-SKM5		13 of 15		1:200@A3		08/09/2023	



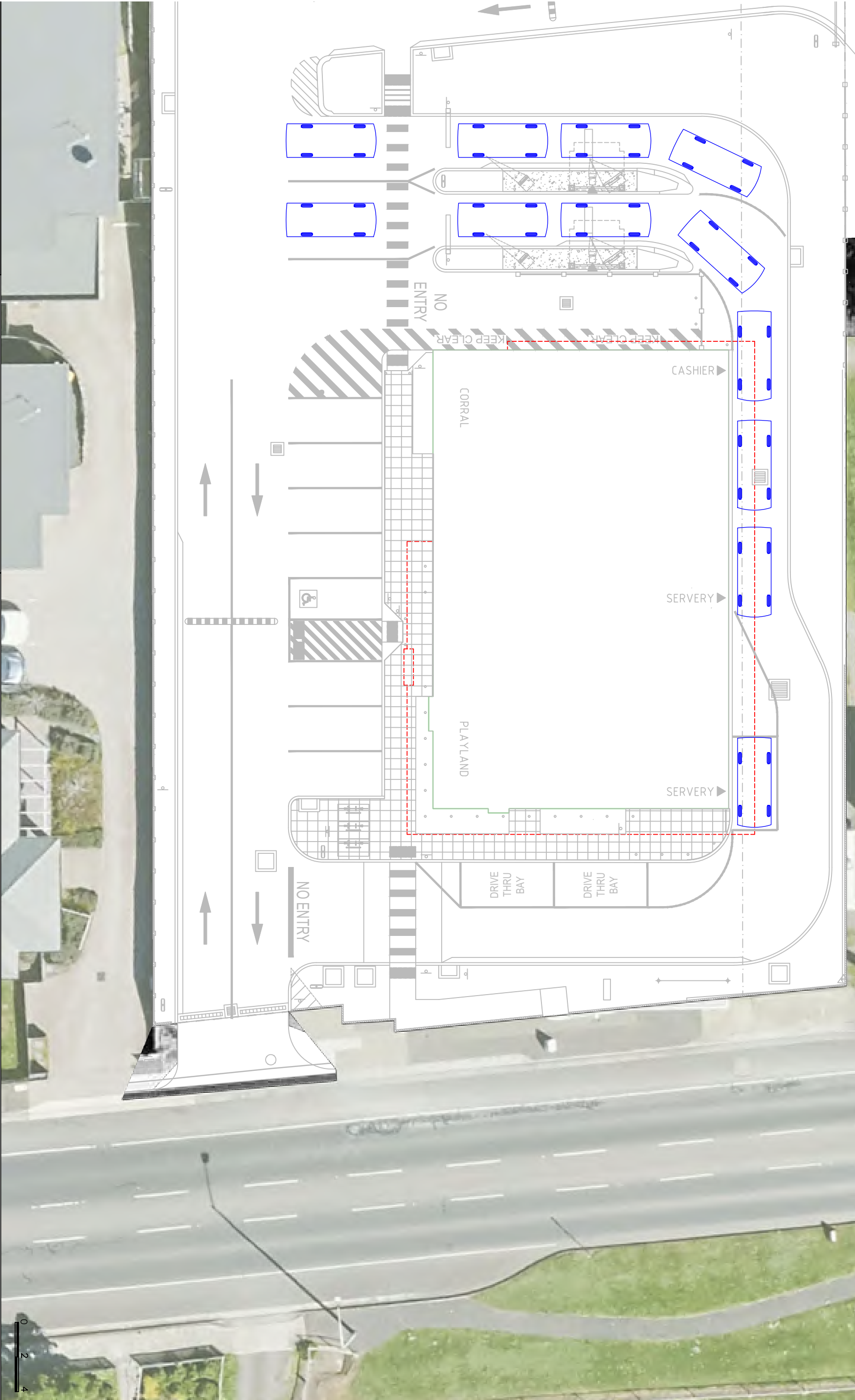
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RATIO CONSULTANTS PTY LTD
ABN 005 422 104
8 GIVNNE STREET
CREMONA, VICTORIA 3121
TELEPHONE (03) 9629 3111
FAX (03) 9629 3114

B99 Vehicle (AS/NZS2890.1:2004)	
	
Overall length	5.200m
Overall width	1.900m
Overall Body Height	2.200m
Min Body Ground Clearance	0.312m
Track Width	1.800m
Lock to Lock Time	4.00 sec

Proposed McDonald's Restaurant
8-10 Main Road, Claremont, Tasmania
Swept Path Assessment

RATIO REFERENCE	SHEET NO.	SCALE	DATE
193.FLT.SKN5	14 of 15	1:2000000	08/10/2023



ratio:

RATIO CONSULTANTS PTY LTD
ABN 005 422 104
8 GIVNNE STREET
CREMONA, VICTORIA 3121
TELEPHONE (03) 9429 3111
FAX (03) 9429 3114

B99 Vehicle (AS/NZS2890.1:2004)

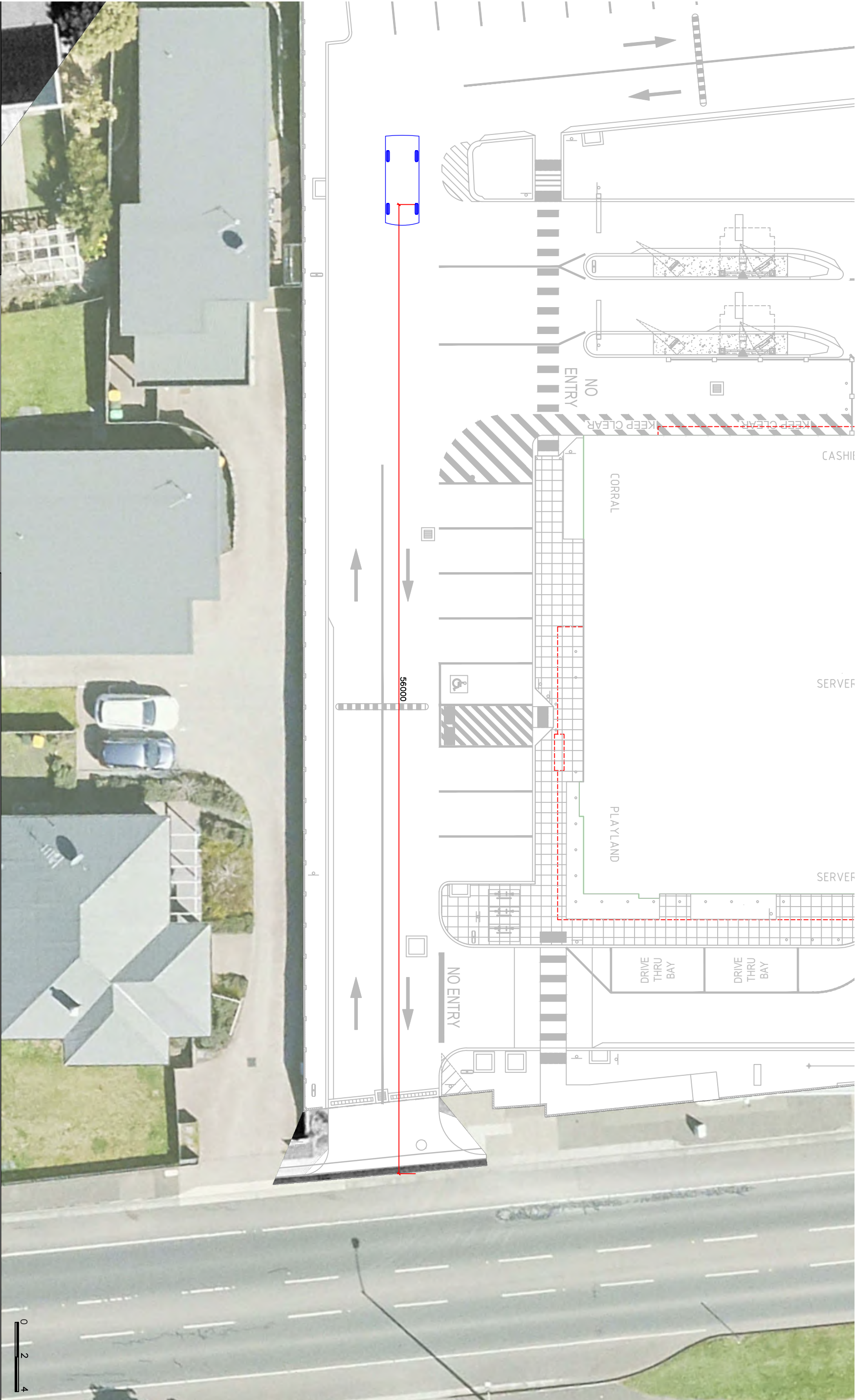
	VEHICLE ENVELOPE (FORWARD)	VEHICLE ENVELOPE (REVERSE)
Overall Length	5.2m	5.2m
Overall Width	1.92m	1.92m
Overall Body Height	2.20m	2.20m
Min Body Ground Clearance	1.84m	1.84m
Lock to Lock Time	4.00 sec	4.00 sec

Proposed McDonald's Restaurant
8-10 Main Road, Clarendon, Tasmania
Swept Path Assessment

NOTE:
1) Base Plan Supplied on 6 September 2023
2) Maximum Design Speed 50km/h

RATIO REFERENCE	SHEET NO.	SCALE	DATE
1934LT-SKM5	15 of 15	1:200/MA3	08/10/2023

Appendix E – Sight Distance Assessment



ratio:

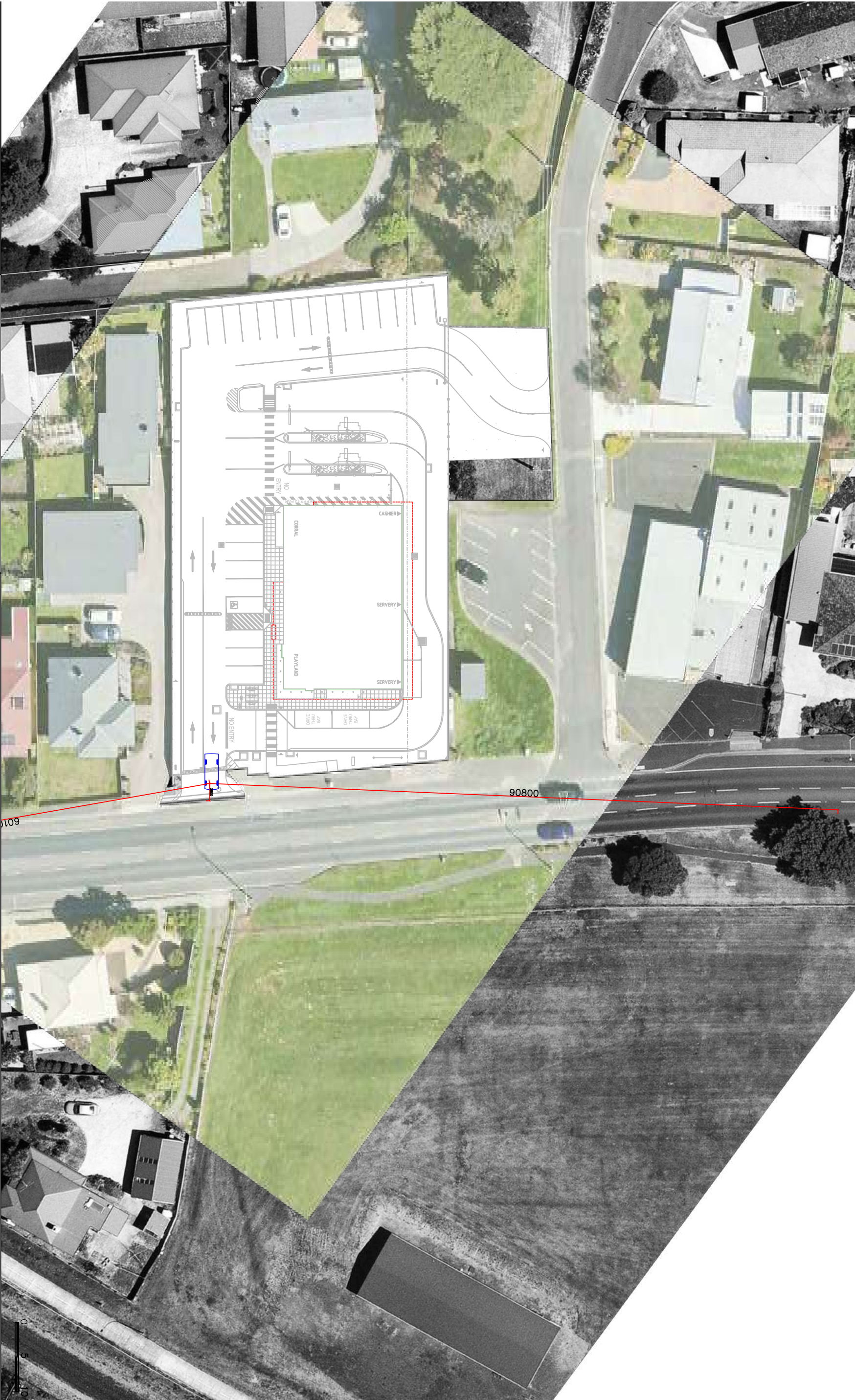
RATIO CONSULTANTS PTY LTD
ABN 005 422 104
8 GYVINE STREET
CREMORNE, VICTORIA 3121
TELEPHONE (03) 9429 3111
FACSIMILE F. (03) 9429 3114

Proposed McDonald's Restaurant
8-10 Main Road, Claremont, Tasmania
Approach Sight Distance (ASD) Assessment

NOTE:
1) Base Plan Supplied on 6 September 2023
2) Maximum Design Speed 50km/h

RATIO REFERENCE	SHEET NO.	SCALE	DATE
1934LT-SK06	1 of 4	1:2000/2023	25/10/2023





ratio:

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FACSIMILE F (03)929 3014

Proposed McDonald's Restaurant
8-10 Main Road, Clarenmont, Tasmania
Safe Intersection Sight Distance (SSD) Assessment

NOTE:
1) Base Plan Supplied on 6 September 2023
2) Maximum Design Speed 50km/h

RATIO REFERENCE	SHEET NO.	SCALE	DATE
19354LT-SK05	2 of 4	1:500/20A3	25/10/2023





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Proposed McDonald's Restaurant
8-10 Main Road, Clarendon, Tasmania
Safe Intersection Sight Distance (SISD) Assessment

NOTE:
1) Base Plan Supplied on 6 September 2023
2) Maximum Design Speed 50km/h

RATIO REFERENCE	SHEET NO.	SCALE	DATE
1934LT-SKM6	3 of 4	1:500/MA3	25/10/2023





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Proposed McDonald's Restaurant
8-10 Main Road, Clarendon, Tasmania
Minimum Gap Sight Distance (MGSD) Assessment

NOTE:
1) Base Plan Supplied on 6 September 2023
2) Maximum Design Speed 50km/h

RATIO REFERENCE	SHEET NO.	SCALE	DATE
193.FLT.SK06	4 of 4	1:4000000	25/10/2023







Report:

8-10 Main Road, Claremont, Tasmania

Environmental Site Assessment (ESA) Report

Prepared for:

Mark Cooper, Managing Director, Cooper Automotive

Prepared by:

Environmental Management & Consulting Pty Ltd

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DOCUMENT REVISION RECORD

Rev	Date	Details of Revisions
R01	10/8/18	ESA Report



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Appendix F	Data Quality Indicators Checklist
Appendix G	SEMF Preliminary Environmental Site Report (2007)
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LIST OF COMMON REPORT ABBREVIATIONS

• ANZECC	Australian and New Zealand Environment and Conservation Council
• AST	Above-ground Storage Tank
• B(a)P	Benzo(a)Pyrene
• BTEX	Benzene, Toluene, Ethylbenzene and Xylenes
• CARE	Contamination Assessment and Remediation of the Environment
• COC	Chain Of Custody
• COPC	Contaminants Of Potential Concern
• CRC	Cooperative Research Centre
• DO	Dissolved Oxygen
• DQO	Data Quality Objective
• DNAPL	Dense Non-Aqueous Phase Liquid
• DSI	Detailed Site Investigation
• DTW	Depth to Water
• EC	Electrical Conductivity
• EIL	Ecological Investigation Level
• EM&C	Environmental Management & Consulting Pty Ltd
• ESA	Environmental Site Assessment
• ESL	Ecological Screening Level
• EPA	Environment Protection Authority
• HIL	Health Investigation Level
• HSL	Health Screening Level
• LNAPL	Light Non-Aqueous Phase Liquid
• LOR	Limit Of Reporting
• MAH	Monocyclic Aromatic Hydrocarbons
• mBGS	Metres Below Ground Surface
• mTOC	Metres below Top of Casing
• NEPM	National Environment Protection (Assessment of Site Contamination) Amendment Measure 2013
• PAH	Polycyclic Aromatic Hydrocarbons
• Pb	Lead
• PH	Petroleum Hydrocarbon
• PID	Photo-Ionisation Detector
• PSI	Preliminary Site Investigation
• PVI	Petroleum Vapour Intrusion
• RPD	Relative Percentage Difference
• SAQP	Sample Analysis and Quality Plan
• TDS	Total Dissolved Solids
• TOC	Top Of Casing
• TPH/ TRH	Total Petroleum Hydrocarbons/ Total Recoverable Hydrocarbons
• UST	Underground Storage Tank
• VOC	Volatile Organic Compound
• QA/QC	Quality Assurance/ Quality Control

List of Abbreviated Measurement Units

m: metre	L: Litre	ppm: parts per million
km: kilometre	kL: kilolitre	ppb: parts per billion
mg/kg: milligram/ kilogram	mg/L: milligram/ litre	
µg/kg: microgram/ kilogram	µg/L: microgram/ litre	



1. EXECUTIVE SUMMARY

Environmental Management & Consulting Pty Ltd (EM&C) were engaged by Cooper Automotive to undertake an Environmental Site Assessment (ESA) of the Cooper Automotive Site, located at 8-10 Main Rd Claremont, Tasmania (the 'site'). The ESA was designed to address typical bank finance due diligence requirements for appraisal of contamination issues a retail petroleum facility.

This ESA was designed to meet the Tasmanian Environment Protection Authority's (EPA) published 'minimum standards for reporting contaminated sites' (Ref: <http://epa.tas.gov.au/regulation/contaminated-sites/regulation-of-contaminated-land/minimum-standards-for-reporting-on-contaminated-sites>) and was undertaken in accordance with the assessment framework outlined in the National Environment Protection (Assessment of Site Contamination) Measure (NEPM) 1999 (2013 Amendment). This NEPM document has been adopted by the Tasmanian government as State Policy and can reasonably be referenced as the standard(s) of the EPA.

OBJECTIVE

The objective of the ESA was to assess the site for potential contamination, which might be directly attributable to the historic operation of the site as a retail petroleum service station/garage and the continued operation of the site as an automotive repair shop, and to determine if any reported contamination poses either an acceptable or unacceptable risk to:

- On-going 'commercial/industrial' use of the site;
- Or to the environment.

WORKSCOPE

Field assessment for this ESA was completed between the 2nd and 18th July 2018 and comprised:

- The location of underground assets & utilities beneath the site with the assistance of a professional cable location contractor.
- The drilling of five soil bores, designated MW01 – MW05.
- The installation of five groundwater-monitoring wells within each of the completed soil bores (wells designated MW01 – MW05).
- A survey of installed groundwater well top of PVC casing (TOC) elevations.
- The assessment of collected soil and groundwater samples for contaminants of potential concern (COPC) associated with a petrol or diesel potential contamination source.

SUMMARY FINDINGS

A summary of assessment findings are presented below:

- All assessed soil samples were reported below all identified commercial/industrial land use and ecological protection criteria:
 - NEPM Health Investigation Level 'HIL D'.
 - NEPM Health Screening Level 'HSL D'.
 - CRC CARE Direct Contact HSLs.
 - CRC CARE intrusive maintenance worker (IMW) HSLs.
 - NEPM Ecological Investigation Levels (EIL).
 - NEPM Ecological Screening Levels (ESL).
 - NEPM Soil Management Limits.
- Groundwater was intersected beneath the site at between approximately 5.3 and 5.6 metres below ground surface (BGS).
- All assessed groundwater samples were reported below all identified commercial/industrial land use and ecological protection criteria:
 - NEPM HSL D for vapour intrusion.
 - CRC CARE intrusive maintenance worker (IMW) HSL for vapour intrusion.
 - NEPM Groundwater Investigation Levels (GIL) for marine water ecosystem protection.
 - NEPM GIL for recreational water protection – moderate to low use area.



- The direction of groundwater flow beneath the site generally follows the surface topography falling towards the east with an average hydraulic gradient across the site of 0.030.
- Neither potable or irrigation groundwater extraction was identified within an approximate 1.0km radius of the site.

CONCLUSIONS

At the completion of the Environmental Site Assessment (ESA) at 8-10 Main Rd Claremont, Tasmania (the 'site'), and subject to the report statement of limitations (Section 13), EM&C concludes the site **is suitable for on-going 'commercial/industrial' use** without an unacceptable level of risk¹ posed to either:

- The human health of site workers or customers; or
- To the surrounding environment.

The report conclusions are made against the existing commercial/industrial land use. Further assessment may be required if a change to a more sensitive land use is proposed.

¹ Term 'acceptable risk' as defined within the NEPM risk assessment framework as a 1×10^{-5} incremental lifetime risk of developing cancer arising from single or multiple underlying carcinogens.



2. INTRODUCTION

Environmental Management & Consulting Pty Ltd (EM&C) were engaged by Cooper Automotive to undertake an Environmental Site Assessment (ESA) of the Cooper Automotive Site, located at 8-10 Main Rd Claremont, Tasmania (the 'site').

Field assessment for this ESA was completed between the 2nd and 18th July 2018 and comprised:

- The location of underground asset's & utilities beneath the site with the assistance of a professional cable location contractor.
- The drilling of five soil bores, designated MW01 – MW05.
- The installation of five groundwater-monitoring wells within each of the completed soil bores (wells designated MW01 – MW05).
- A survey of installed groundwater well top of PVC casing (TOC) elevations.
- The assessment of collected soil and groundwater samples for contaminants of potential concern (COPC) associated with a petrol or diesel potential contamination source.

The location of the site within the township of Claremont and the state of Tasmania is shown on attached Figure 1. The layout of site buildings, underground petroleum storage system (UPSS) infrastructure and locations of all completed ESA sample points are shown on attached Figure 2. Groundwater contours across the site for 18 July 2018 are presented in the attached Figure 3.

3. BACKGROUND

One previous environmental assessment has been completed at the site however it was limited to the rear (south eastern) half of the site. In June 2007 a Preliminary Environmental Site Assessment Report was prepared by SEMF Pty Ltd. The assessment comprised a background study, site inspection, collection of ten soil samples from five test pits and laboratory assessment of eight selected soil samples for TPH, BTEX and lead, see Figure 2 for sample locations. This report concluded that there was no indication of hydrocarbon impact at the rear half of the site and reported all COPCs below the NEPM HILs for residential land use. A full copy of this report is attached in Appendix G.

A request for the site's historic Dangerous Goods Records (DGR) file was sent to Workplace Standards Tasmania (WST). WST reported no records bar a single file note reporting that all tanks are inactive, this note is attached in Appendix A.

The 2007 SEMF report references the DGR and reported that the initial approval to construct a petroleum service station at the site was given on the 1st November 1939 and that the site ceased operation as a service station in 2006. SEMF also noted that over the course of its operational life the service station several changes were made to the site's underground petroleum storage system (UPSS). Changes of note include: the abandonment of a total of seven USTs on site however no detail was provide for the decommissioning/ and or abandonment process.



EM&C completed a site visit on the 2 July 2018 and through inspection of fill/dip points confirmed the presence of these three USTs: one 5kL former Diesel UST, one 15kL former Petrol UST and one 27.5kL former Petrol UST. Tank sizes were confirmed through inspection of annotated dip sticks which were found in each of the remaining USTs.



4. ASSESSMENT FRAMEWORK

4.1. Assessment Objective

The objective of the ESA was to assess the site for potential contamination, which might be directly attributable to the historic operation of the site as a retail petroleum service station/garage and the continued operation of the site as an automotive repair shop, and to determine if any reported contamination poses either an acceptable or unacceptable risk to:

- On-going 'commercial/industrial' use of the site;
- Or to the environment.

4.2. Assessment Guidelines

This ESA was designed to meet the Tasmanian Environment Protection Authority's (EPA) published 'minimum standards for reporting contaminated sites' (Ref: <http://epa.tas.gov.au/regulation/contaminated-sites/regulation-of-contaminated-land/minimum-standards-for-reporting-on-contaminated-sites>) and was undertaken in accordance with the assessment framework outlined in the National Environment Protection (Assessment of Site Contamination) Measure (NEPM) 1999 (2013 Amendment). This NEPM document has been adopted by the Tasmanian government as State Policy and can reasonably be referenced as the standard(s) of the EPA.



5. SITE DESCRIPTION/SETTING

5.1. Site Identification Information

Table 5.1 Site Identification Information

Site Address	8-10, Main Rd, Claremont, Tasmania, 7011.
Certificate of Title (CoT)	64165/1 Ref: www.thelist.tas.gov.au (August, 2018)
Property Identification Number (PID)	5329948 Ref: www.thelist.tas.gov.au (August, 2018)
Approximate Location of Site	The approximated location of the site centroid is: E: 520858 N: 5262076 (GDA 94 MGA55) Ref: www.thelist.tas.gov.au (August, 2018)

5.2. Land Use

Table 5.2 Site Land Use Information

Current Land Use	The property has a commercial/industrial land use. The site, a former service station, contains an operating motor vehicle repair workshop located in the eastern half of the site. The southern half of the site contains a vacant grassed lot.
Current Site Zoning	The site is zoned '20.0 Local Business' under the Glenorchy Interim Planning Scheme, 2015.
Surrounding Land Uses	- Properties to the south, west and north are zoned '11.0 Inner Residential' under the Glenorchy Interim Planning Scheme, 2015. - Main Road, a two lane asphalt sealed local road abuts the site, running approximately SE to NW. - To the northeast, over Main Rd, lies Claremont Recreation Ground, zoned '18.0 Recreation' under the Glenorchy Interim Planning Scheme, 2015. - Across Main Road to the east lie more properties zoned '11.0 Inner Residential' under the Glenorchy Interim Planning Scheme, 2015. The surrounding land zoning (indicative of land use) is provided pictorially within Figure 5.2 below.
Site Area	The site covers an area of approximately 2390 m ² .

Property Buildings	Property buildings include an automotive repair shop, with a small canopy extending towards the north eastern boundary. Approximately half the shop is garage and the other half office space. The roofed area of the site composes of approximately 20% of the site area.
Surface Cover	Including the site building approximately 30% of the site is concrete covered, the concrete covered portion is that adjacent Main Rd. During onsite investigations, the encountered thickness of concrete was on average approximately 100mm. The remainder of the site (the western side of the site) is a vacant grassy lot.

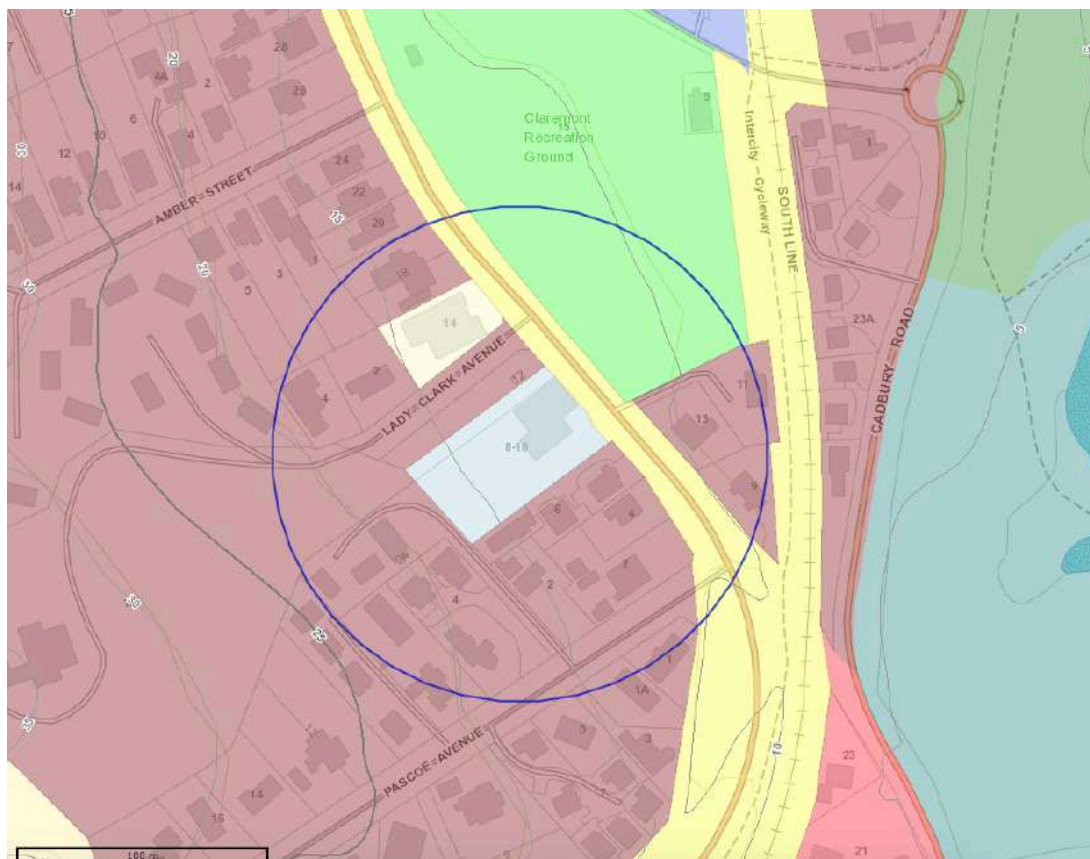


Figure 5.2. Local Area Land Zoning: The blue circle shows the area within a 100m radius of the Cooper Automotive Site. Maroon shading indicates 11.0 Inner residential. Green shading indicates 18.0 Recreation. Light blue shading indicates 20.0 Local Business. Yellow Shading Indicates 28.0 Utilities. Cream shading indicates 17.0 Community Purpose. Source: www.thelist.tas.gov.au. (August 2018).

5.3. Topography

Mapped regional topography is shown below in Figure 5.3. The figure indicates the site is situated on a slope generally tending to the east and draining into Windermere Bay (Derwent River).

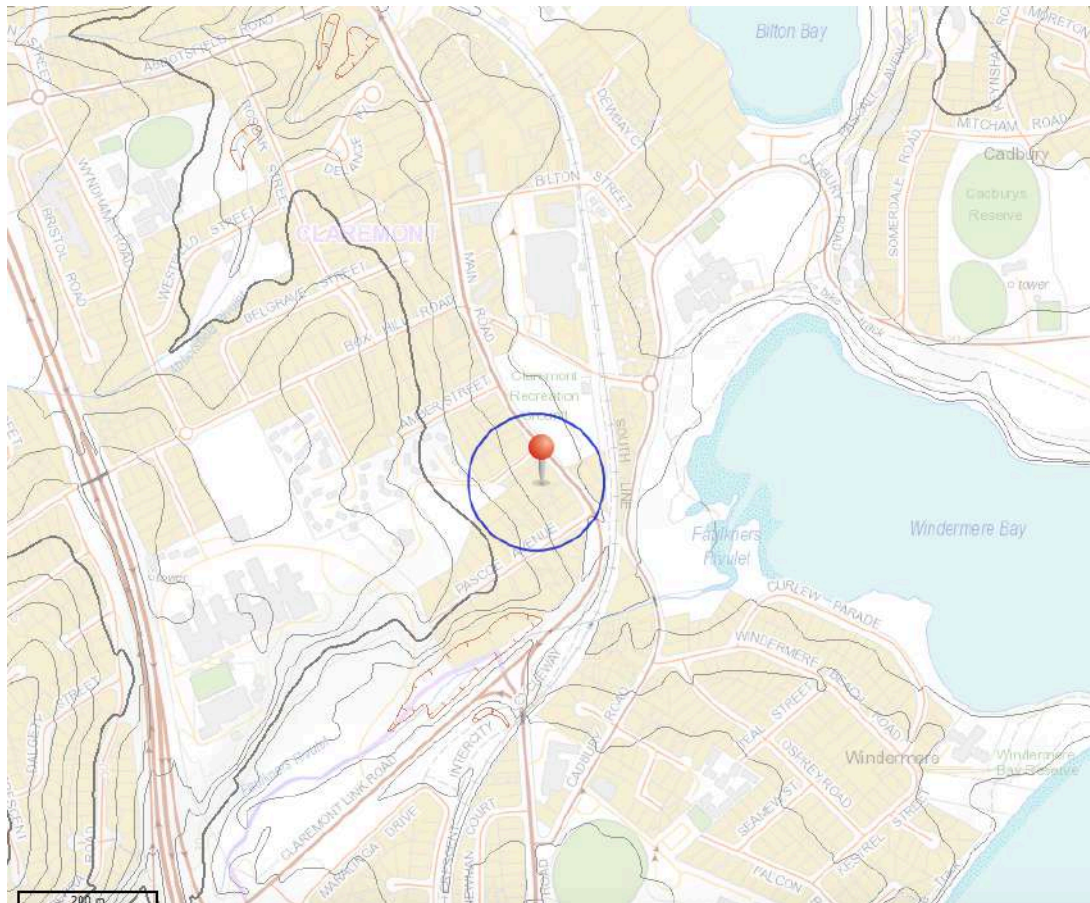


Figure 5.3. Local Area Topography: The blue circle shows the area within a 100m radius of the site. Mapped contours are at 5m intervals. Source: www.thelist.tas.gov.au. (August 2018).

5.4. Hydrology

The nearest year-round surface water body down hydraulic gradient of the site is Windermere Bay in the Derwent River, situated approximately 200m to the east of the site.

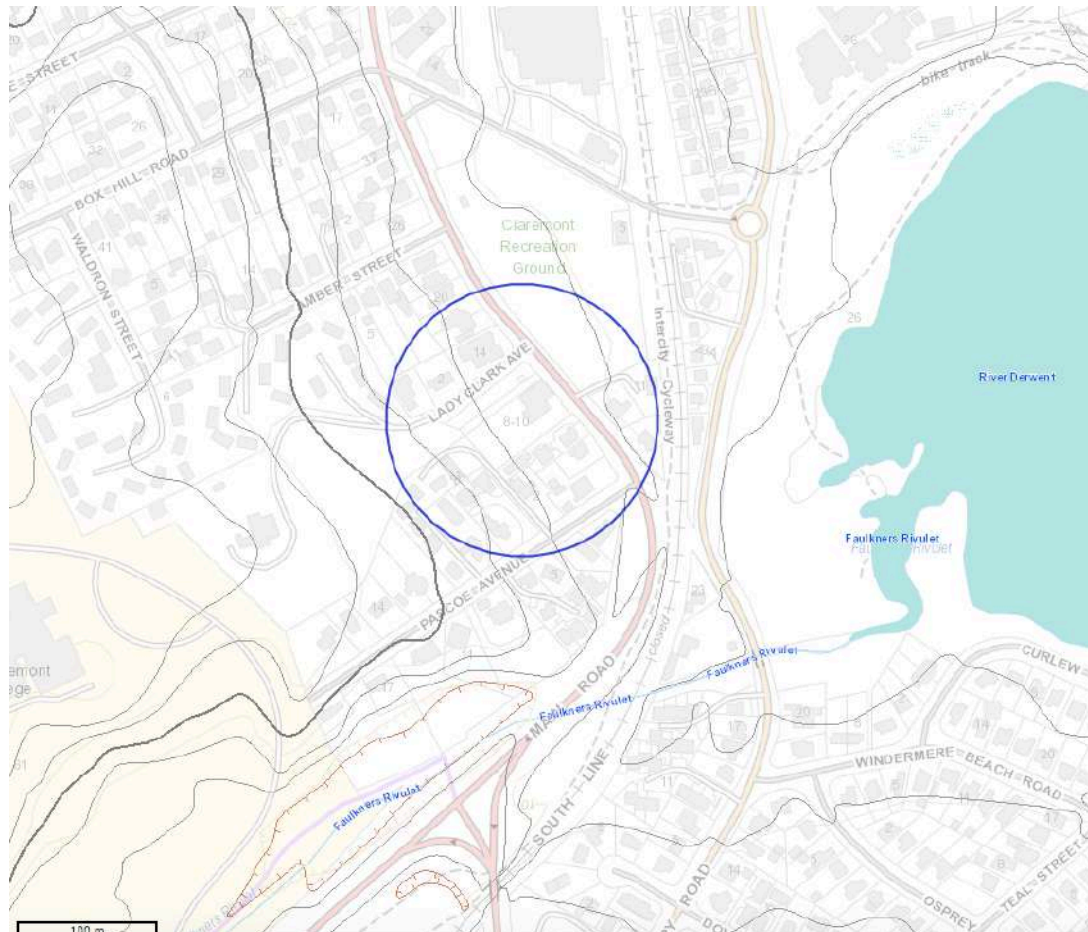


Figure 5.4. Local Area Hydrology: The blue circle shows the area within a 100m radius of the site. Mapped contours are at 5m intervals. Source: www.thelist.tas.gov.au. (August 2018).

5.5. Geology

The regional geology of the area is shown below in Figure 5.5 with a key below:

- Jurassic dolerite (Jd);
- Permian glaciomarine sediments of mudstone, siltstone and sandstones (Pua), forming part of the Lower Parmeener Supergroup;
- Triassic sandstone, siltstone, mudstone and coal measures and subordinate, usually lenticular, conglomerate layers and tuff form the Upper Parmeener Supergroup (R), found in the local area as part of the Knocklofty Formation (Rqph);
- Tertiary non-marine sediments forming poorly consolidated mudstone, siltstone and sandstone (Tser);

- Undifferentiated Cenozoic sediments (TQ);
- Dominantly siltstone, lithic sandstone and mudstone (Rvv);
- Dominantly non-marine sequences of gravel, sand, silt, clay and regolith (Ts);
- Undifferentiated Quaternary sediments (Q); and
- Talus, vegetated and active (CCS).

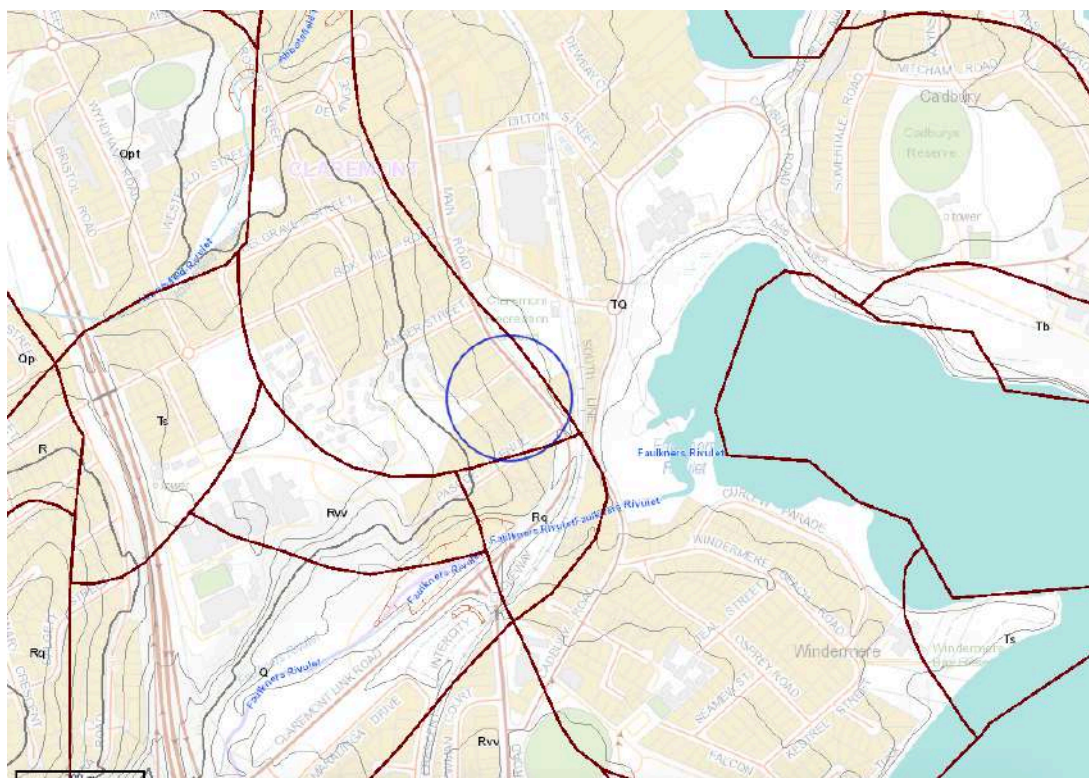


Figure 5.5 Local Site Geology: Geological formation boundaries mapped in red. The blue circle is a 100m radius from approximate site centroid indicating that the underlying site geology is predominantly Jurassic Dolerite.
Source: www.thelist.tas.gov.au (August 2018)

The site's shallow geology/soil horizons were logged as follows:

0.0 to 0.1mBGS Concrete

0.1 to 0.2 mBGS Bedding Sand/FCR.

0.2 to 8.5 mBGS intermittent layering of sandy CLAY, clayey SAND, Sandy GRAVEL and Silty SAND.

5.6. Hydrogeology

EM&C completed a search of Water Resources Tasmania's (WRT) Groundwater Information Access Portal (GIAP) in August 2018. This search identified no local groundwater bores located between the site and the Derwent River. The nearest registered groundwater bores to the site are located up topographical gradient, at an approximate distance of 1500m east - bore ID31021, and 2240m north - bore ID18820 (see Figure 5.6a below). EM&C does not consider either bore ID 18820 or Bore ID 31021 to be down hydraulic gradient of site.

A copy of the GIAP groundwater database search report for the area surrounding the site is included within Appendix E (Ref: wrt.tas.gov.au, 2018).

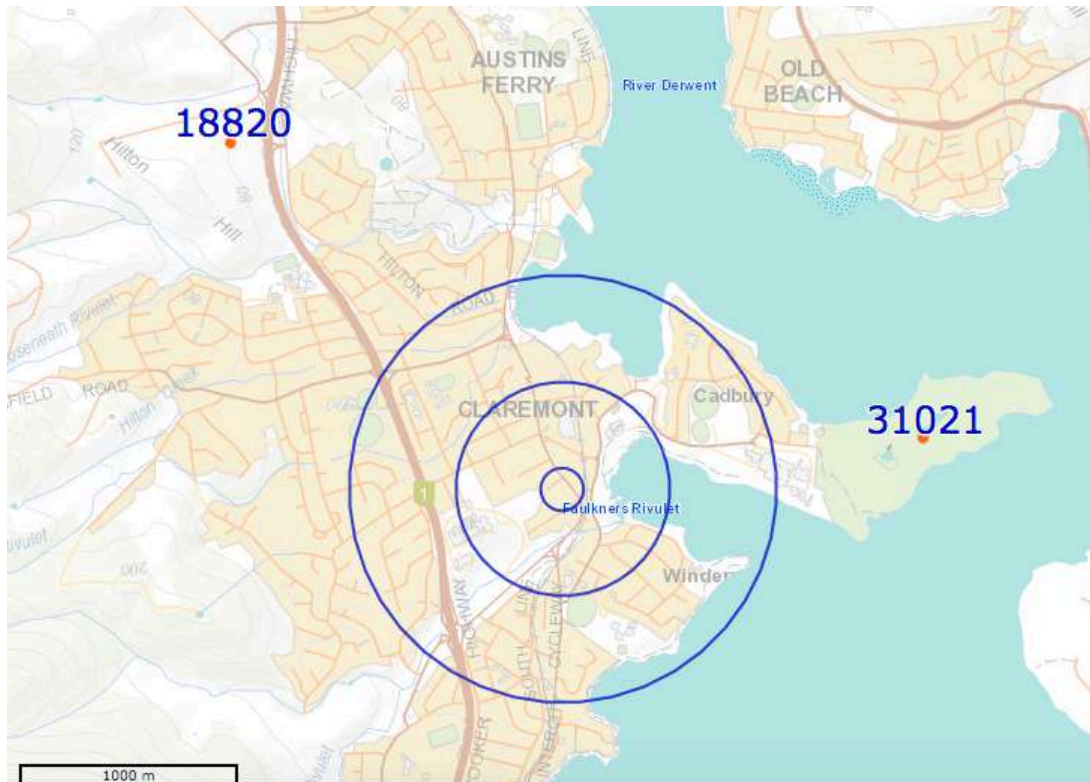


Figure 5.6a Registered Groundwater Wells. Blue circles are placed at 100m, 500m and 1000m from the approximate site centroid. Source: GIAP and www.thelist.com.au (August 2018)

Modelled groundwater elevation contours, using data collected by EM&C on 18 July 2018, is presented in attached Figure 3 and shows the direction of groundwater flow beneath the site to be generally towards the east with an approximate hydraulic gradient of 0.030.



6. UPSS INFORMATION

6.1. Details of UPSS

Known details of construction, size and history of the current reported site underground petroleum storage system (UPSS) are shown in Table 6.1 below. The locations of all of documented site USTs are shown on attached Figure 2.

A request for the site's historic Dangerous Goods Records (DGR) file was sent to Workplace Standards Tasmania (WST). WST reported no records bar a file note that mentions all tanks are to be considered inactive. This note is attached in Appendix A. EM&C completed a site inspection and confirmed the presence of three USTs detailed below. The age of the USTs is estimated based on the apparent age of the site buildings.

Table 6.1 Site Petroleum Storage Summary

Tank ID*	Type	Size (kL)	Product(s) Stored	Age Estimate (years)	Current Contents	Status
T1	UST, single wall steel tank	27	Petrol, likely leaded petrol due to the estimated age of the UST.	~40yrs	~40L sludge	Non-operational
T2	UST, single wall steel tank	15	Petrol, likely leaded petrol due to the estimated age of the UST.	~40yrs	~10kL of oil or oily water	Non-operational
T3	UST, single wall steel tank	5	Diesel, formerly petrol, likely leaded petrol due to the estimated age of the UST.	~40yrs	Empty	Non-operational

Notes:

UST: Underground storage tank



7. SAMPLING AND ANALYSIS QUALITY PLAN

This Sampling and Analysis Quality Plan (SAQP) aims to provide sufficient supporting data to determine the contamination status of the site, relative to the nominated assessment criteria. It also aims to present all data with an acceptable level of confidence. The project SAQP is summarised in the table below.

Table 7.1 Sampling and Analysis Quality Plan Summary

Objective of assessment	To assess the area surrounding the site's operational UPSS infrastructure for potential contamination associated with operation of the site as a retail petroleum service station.	
Quality Control samples to be collected	For each media: • 1 duplicate per 20 samples provided to laboratory. • 1 equipment rinsate per 20 samples. • 1 trip blank per day of sampling - to be prepared by the assessing laboratory.	
Media to be sampled	Soil and groundwater.	
Analytes to be tested for primary samples	Soil: Total hydrocarbons, reported as TRH and TPH fractions, benzene, toluene, ethylbenzene, xylenes, naphthalene (BTEXN), polycyclic aromatic hydrocarbons (PAHs) and lead. Groundwater: Total hydrocarbons, reported as TRH and TPH fractions, benzene, toluene, ethylbenzene, xylenes, naphthalene (BTEXN), polycyclic aromatic hydrocarbons (PAHs) and lead.	
Number of samples	Soil: Five soil bores (to become monitoring wells) to be completed with laboratory analysis of up to 3 samples per soil bore. Each soil bore to be screened for Volatile Organic Compounds ('VOC') as a minimum at each metre where drilling method permits. Groundwater: Sample all groundwater wells onsite, providing there is enough water and LNAPL is not present.	
Sampling methods	Soil: Samples for analysis to be taken from a clean decontaminated hand auger (rinsate blanks to confirm decontamination process) for top 1.5m (hand auger use mandatory for service clearance) and from push tube cores when sampling from drill rig. Where other methods of sampling are employed to obtain a sample, the method of collection should be clearly noted along with the sample results. Groundwater: Sampled using a no-purge Hydrasleeve method. Rock: No rock samples to be analysed by the laboratory for contamination, however additional samples of disturbed media (e.g. weather rock samples) to be field screened for VOC's to aid site investigation, where sample returns can be collected.	
Field Screening	Soil: Screening for VOCs at a minimum of each metre using a photo ionisation detector (PID). Groundwater: Screening for LNAPL using an interface probe and confirmed with a transparent bailer, field measurement of pH, Redox, Temperature, Conductivity and total dissolved solids (TDS).	
Laboratory to be used	NATA accredited laboratory: ALS Environmental	
Relevant Risk Assessment Criteria	<i>Environmental Management and Pollution Control Act 1994 (EMPCA)</i> <i>The National Environment Protection (Assessment of Site Contamination) Amendment Measure 2013 (NEPM)</i> . The NEPM is state policy in Tasmania for the assessment of site contamination. <i>CRC Care (2011)</i> , Health Screening Levels for Petroleum Hydrocarbons in Soil and Groundwater. Technical Report No. 10, Part 2: Application Document. CRC Care (2013), Petroleum hydrocarbon vapour intrusion assessment: Australian guidance, Technical Report No.23, CRC for Contamination Assessment and Remediation of the Environment, Adelaide, Australia.	

8. ASSESSMENT CRITERIA

The adopted environmental assessment criteria are detailed in Tables 8.0a and 8.0b below.

Table 8.0a Site Assessment Adopted Soil Investigation Levels

	Criteria	Land Use Scenario	Relevant for Assessment	Application
SOIL	Health Based Investigation Levels			
	Health Investigation Levels	HIL A	No	The soil assessment extent has been contained within the site boundary, as such HIL D criteria has been selected, based on land use at the assessment point
		HIL B	No	
		HIL C	No	
		HIL D	Yes	Assessment locations are situated on an operating service station, which is consistent with a commercial/ industrial land use.
	Health Screening Levels for Vapour Intrusion	HSL A & HSL B	No	The soil assessment extent has been contained within the site boundary, which is an active petroleum sales outlet.
		HSL C	No	
		HSL D	Yes	Appropriate, however it is expected that the exposure onsite receptors are likely to be subject to through the operation of the fuel outlet, is likely to significantly outweigh any exposure due to petroleum vapour intrusion from potentially contaminated soil.
		IMW	Yes	It has been identified that intrusive maintenance works could foreseeably occur at the site within the investigation area.
	Health Screening Levels for Direct Contact	HSL A	No	Site is completely covered with concrete, as such direct contact HSLs are not applicable.
		HSL B	No	
		HSL C	No	
		HSL D	No	
		IMW	Yes	It has been identified that intrusive maintenance works could foreseeably occur at the site within the investigation area.
	Ecology Based Investigation Levels			
	Ecological Investigation and Screening Levels	Areas of ecological significance	No	The soil assessment extent has been contained within the site boundary and as such, Commercial and Industrial criteria are most appropriate for assessment.
		Urban residential and public open space	No	
		Commercial and industrial	Yes	Site is within defined land use setting.
	Management Limits and Aesthetic Investigation Levels			
	Soil Management Limits for Petroleum Hydrocarbons	Residential, parkland and public open space	No	The soil assessment extent has been contained within the site boundary and as such, Commercial and Industrial criteria are most appropriate for assessment.
		Commercial and industrial	Yes	Assessment locations are situated on an operating service station, which is consistent with a commercial/ industrial land use.
	Aesthetic Considerations	All	No	The soil assessment extent has been contained within the site boundary, within an operating service station. The site is covered entirely with concrete and therefore aesthetic soil considerations are not expected to require assessment.



Table 8.0b Site Assessment Adopted Groundwater Investigation Levels

	Criteria	Land Use Scenario	Relevant for Assessment	Application
Groundwater	Health Based Investigation Levels			
	Health Screening Levels for Vapour Intrusion	HSL A & HSL B	No	Receptor not identified within assessment area.
		HSL C	No	Receptor not identified within assessment area.
		HSL D	Yes	Assessment locations are situated within the site boundary, within an operating service station, indicating that HSL D would be the most applicable screening level for onsite assessment. In addition, as COPC within groundwater are relatively mobile, adjacent land use screening levels have been adopted to identify potential unacceptable levels of risk that may be posed to neighbouring occupants.
		IMW	Yes	It has been identified that intrusive maintenance works could foreseeably occur at the site within the investigation area.
	Drinking water	Human Potable Supply	No	Not appropriate based on the lack of registered groundwater extraction systems identified. Unlikely to be relevant for future uses due to the observed TDS and the reticulated supply in the area.
	Recreational water	High Use Area	No	Not appropriate due to frequency of use of the receiving environment for recreational purposes.
		Low - Moderate Use Area	Yes	Appropriate due to the level of use of the receiving environment for recreational purposes.
	Ecology Based Investigation Levels			
	Marine Ecosystem Protection GILs	High Conservation/Ecological Value (99%)	No	Not appropriate due to anthropogenic activity in the area.
		Slightly-Moderately Disturbed Ecosystems (95%)	Yes	Appropriate due to the human development within the area.
		Highly Disturbed Ecosystems (90-80%)	No	Not appropriate due to lack of degradation of the receiving marine ecosystem.
	Freshwater Ecosystem Protection GILs	High Conservation/Ecological Value (99%)	No	Receptor not identified within assessment area.
		Slightly-Moderately Disturbed Ecosystems (95%)	No	Receptor not identified within assessment area.
		Highly Disturbed Ecosystems (90-80%)	No	Receptor not identified within assessment area.



9. ESA WORKSCOPE

The following work scope was completed to meet the assessment objective.

9.1.1. Soil Assessment

Mobilisation of the EM&C Environmental Contractor and nominated subcontractors to site to drill five soil bores, designated MW01 – MW05, all drilling locations are shown on attached Figure 2. The completed work scope comprised of:

- Logging of soil profile during and the field screening of soil samples from each completed soil bore at regular depth intervals and changes in soil type for the presence of VOCs using a photo ionisation detector (PID).
- The collection and laboratory analysis of thirteen primary discrete soil samples:
 - Screening and collection of samples at changes in soil type, areas of visible staining, common relative depths and approximate water level.
 - In order to identify hot spots, samples destined for analysis were selected based on where the level of contamination was expected to be the most significant.
 - The collection and laboratory analysis of the following field QA/QC samples:
 - One blind duplicate sample designated QCP_3/7/18.
 - Collection of samples into sterile glass jars and placement of these jars into a chilled and insulated esky.
 - Transportation of samples to a NATA-accredited laboratory for analysis of Total hydrocarbons, reported as TRH and TPH fractions, benzene, toluene, ethylbenzene, xylenes, naphthalene (BTEXN), polycyclic aromatic hydrocarbons (PAHs) and lead.

9.1.2. Groundwater Assessment

Completion of a groundwater-monitoring event (GME) on 18 July 2018 on all five installed groundwater-monitoring wells (designated MW01 – MW05. Well locations shown on Figure 2). The completed GME work scope comprised:

- The gauging of depth to water within wells MW01 - MW05.
- The collection and laboratory analysis of groundwater samples from all accessible wells containing water (MW01-05):
 - Collection of 'grab samples' using a Hydrasleeve after gauging.
 - Recording of groundwater characteristic observations and groundwater quality parameters (dissolved oxygen, pH, temperature, electro-conductivity, oxidation/reduction potential and TDS) after collection of grab sample.
 - Placing samples in appropriately preserved bottles within a chilled esky.
 - Transportation of samples to a NATA-accredited laboratory for analysis of total



hydrocarbons, reported as TRH and TPH fractions, benzene, toluene, ethylbenzene, xylenes, naphthalene (BTEXN), polycyclic aromatic hydrocarbons (PAHs) and lead.

- The collection and laboratory analysis of the following field QA/QC samples:
 - One blind duplicate sample designated QCP_18/78/18.
 - One equipment rinsate sample designated RB_18/78/18.
 - One trip blank sample designated TB_18/78/18.



10. RESULTS

The following section presents field observations, measurements and laboratory results. Laboratory results have been presented relative to NEPM Tier 1 assessment criteria for identified potential receptors at the site. Further elaboration on the significance of these results is presented in the Conceptual Site Model (CSM, see Section 11). 'Sand' has been selected conservatively as the soil texture group² most representative of the site's confining geology. Assessment drill logs are included within Appendix B.

Soil Field Observations

In samples collected for subsequent laboratory analysis, measurable concentrations of VOCs were detected in four samples: MW01_0.3-0.4: 166.0 ppm, MW01_3.6_3.7: 2.3 ppm, MW02_0.2-0.3: 18.3 ppm and MW03_0.5-0.6: 0.7ppm.

Field observations made during the investigation indicate the potential for hydrocarbon-impacted soil to be present below the vertical extent of (laboratory) analysed soil in soil bores MW01 and MW02. This observation relates to a review of field screened VOC results from disturbed samples collected during air hammer drilling:

- Field PID readings revealed slightly elevated levels of VOCs at ~7mBGS in MW01 (MW01_7.0-7.1: 7.5ppm) and at ~6.5mBGS in MW02 (MW02_6.5-6.6: 10.7 ppm).

10.1. Soil Analytical Results

Summarised soil sample results assessing Contaminants of Potential Concern (COPC) are presented below and in attached Table 1. Laboratory certificates of analysis are included within Appendix D.

- No exceedance of the NEPM Health Investigation Levels for a 'commercial/industrial' land use (HIL D).
- No exceedance of the NEPM Health Screening Levels (HSLs) for a 'commercial/industrial' land use (HSL D).
- No exceedance of the CRC CARE Direct Contact HSLs for a 'commercial/industrial' land use was reported.
- No exceedance of CRC CARE intrusive maintenance worker (IMW) HSLs for either direct contact or vapour intrusion were found.
- No exceedance of the NEPM Soil Management Limits for 'commercial and industrial' land use.
- No exceedance of the NEPM Environmental Investigation Levels (EILs) for a 'commercial/industrial' land use (HSL D).
- No exceedance of the NEPM Environmental Screening Levels (ESLs) for a 'commercial/industrial' land use (HSL D).

² Reference to soil texture groups as defined by United States Department of Agriculture (USDA)



10.2. Groundwater Assessment

10.2.1. Gauging Results & Observations

Summarised groundwater gauging results from 18 July 2018 are presented below and detailed further within attached Table 2. Collected groundwater purging data is shown within attached Table 3. Groundwater monitoring event field logs are included within Appendix B. Groundwater elevation contours for the 18 July 2018 gauging event are shown in attached Figure 3.

- Groundwater was gauged at between 5.340 and 5.644 metres below ground surface (mBGS).
- The direction of groundwater flow beneath the site generally follows the topography, with a fall towards the east at an approximate average hydraulic gradient across the site of 0.030.
- A hydrocarbon odour was observed within groundwater sampled from MW02.

10.2.2. Groundwater Analytical Results

A summary of groundwater analytical results is provided within attached Table 4, and discussed below. Laboratory certificates of analysis are included within Appendix D.

- No reported exceedance of the NEPM vapour intrusion Health Screening Levels (HSLs) for a 'commercial/industrial' land use (HSL D).
- No reported exceedance of vapour intrusion HSLs for the protection of intrusive maintenance workers (IMW).
- No reported exceedance of the theoretical solubility limit.
- No reported exceedance of Groundwater Investigation Levels (GILs).

10.3. QA/QC Results

Field QA/QC analytical results are presented in attached Tables 6a and 6b. Copies of the NATA endorsed laboratory reports, including internal QA/QC results and chain-of-custody documentation for the primary and secondary laboratories are included within Appendix D.

The findings of the projects precision, accuracy, representativeness, comparability and completeness data quality indicators (DQIs) are summarised within this section. In addition a DQI checklist has been attached in Appendix F.

10.3.1. Comparability

- An appropriately experienced person - in accordance with EM&C's Assessment Procedure and requirements detailed within the SAQP outlined in Section 7, collected all samples.



- The laboratories used were NATA-accredited for the requested analytes and provided documented methods of analysis.

10.3.2. Precision

Assessment of quality control data revealed:

- Field duplicates reported COPC concentrations within the assessment relative percentage difference (RPD) criteria³ for all duplicate/triplicate samples taken.
- Non-conformity was observed within the following laboratory standards, calibration blanks and verifications. Internal Quality Control (QCI) reports are supplied within Appendix D
 - EM1811515: Laboratory internal duplicate sample frequency was not within the analysing laboratories specified frequency.
 - EP071 & EP071-SV: Intra Lab Quality Control Sample Frequency Outliers exist. Not enough duplicate sample bottles provided for intra lab duplicate and/or QC matrix spike testing. This result has been following up with the assessing laboratory. This reported sample frequency outlier is not specifically attributed to EM&C's supplied assessment samples as it relates to the broader multi-project laboratory batching and analysis QA/QC procedures. This results in isolation is considered to compromise the quality of the assessment dataset.

10.3.3. Accuracy

All field equipment was calibrated prior to use. See calibration certificates provided within Appendix B.

10.3.4. Representativeness

- All media identified in the project's SAQP in Section 7 have been sampled.
- All samples were put into containers provided by a NATA-accredited laboratory, stored in a chilled esky (soil and groundwater) and transported to each laboratory within holding times. See Appendix D for laboratory sample receipt notices.
- Target analytes were not detected in trip blank or equipment rinsate blank samples.
- As mentioned in Section 10.3.1 above, not all soil samples were collected using the same method of sample collection.
- No inconsistencies have been identified in laboratory methods.

³ Which is calculated based on the primary result, relative to the primary laboratory LOR



10.3.5. Completeness

- All samples locations have been sampled in accordance with the SAQP.
- All samples were sent to each laboratory within technical holding times and with accurately completed documentation.
- EM&C considers the collected dataset sufficiently complete to be relied upon to support the assessments data quality objectives.



11. CONCEPTUAL SITE MODEL

A conceptual site model (CSM) organises site information in a clear, methodical way to help understand site environmental issues and to identify data gaps. A CSM includes identifying land use, past and current potential contamination sources, contaminants of potential concern, potential receptors and other site information available to simplify assessment planning and decisions. The CSM development is a dynamic process and the model should be reviewed and refined during all stages of an assessment (NEPC, 2013).

11.1. Identified Contaminating Industry/Activity

The site's UPSS is categorised as a potential contaminating activity in accordance with:

- AS 4482.1-2005 within the defined category "Service stations and fuel storage facilities" (AS 4482.1, 2005).
- EPA's published list of potentially contaminating industries within the category "Petroleum product or oil storage".

11.2. Contaminants Of Potential Concern

The list of Contaminants Of Potential Concern (COPC) associated with the site's former storage of both leaded, unleaded petrol, kerosene and diesel comprised:

- Petroleum Hydrocarbons.
- Benzene, Toluene, Ethylbenzene, Xylenes and Naphthalene (BTEXN).
- Polycyclic Aromatic Hydrocarbons (PAHs).
- Lead.

11.3. Potential On-site Primary Sources of Contamination

The remaining underground petroleum storage system (UPSS) includes USTs T1 T2 and T3, along with the associated pipework and pumps are all potential on-site primary sources of contamination. Details and locations of the site UPSS infrastructure is shown on attached Figure 2 and described within Section 6 of this report.

The on-site workshop has potential to also be another on-site primary sources of hydrocarbon contamination due to the use of oils, lubricants, solvents and stored fuel within vehicles under repair.

11.4. Potential Off-site Primary Sources of Contamination

The Cooper Automotive site is bordered to the north, south and west by residential properties with unknown site histories. To the east is Main Rd Claremont. None of the current adjoining properties have or contain potentially contaminating industries as defined by the two published lists mentioned in Section 11.1 above.

11.5. On-site Secondary Source(s) of Contamination

The following secondary sources of contamination have been identified within the site boundary:

Hydrocarbon Impacted Soil



No significant hydrocarbon soil impact has been identified in this assessment. All assessed soil samples have been reported below assessment criteria and in most instances also below the laboratories limit of reporting.

Lead Impacted Soil

No exceedance of the nominated investigation criteria for lead was reported.

Trace level impact was reported in samples analysed for lead.

Hydrocarbon Impacted Groundwater

No detectable concentration of COPC was reported in either MW03 or MW05.

Hydrocarbon levels below the adopted criteria were reported in MW01, MW02 and MW04.

Lead Impacted Groundwater

No detectable concentration of lead reported in any assessed groundwater sample.

11.6. Contamination Exposure Pathways

Potential contamination pathways (requiring assessment) include:

- Migration of vapours from contamination sources into the atmosphere and/or enclosed spaces;
- Inhalation of vapour contamination;
- Direct contact with contaminated soil and groundwater;
- Migration of soil contamination into groundwater; and
- Migration of dissolved phase contamination in groundwater to offsite users.
- Uptake of contaminants within the root zone of plants.

Contamination pathways deemed unlikely and not requiring detailed assessment include:

- Migration of contaminated vapour and groundwater through fill-zones and utility trenches in close proximity to the contamination source.
 - Depth to water measurements across the site indicate that groundwater (the dominant transport mechanism) lies at approximately 5mBGS, below the likely depth of utility trenching.
- Extraction and potential ingestion of contaminated groundwater due to the absence of any identified groundwater extractive use within an approximate 1.0 km radius of the site.

11.7. Receptor Identification

For the purposes of this section EM&C has relied upon the definitions contained within the NEPM generic risk assessment model to identify receptors at risk of exposure to contamination, save for the definition of “intrusive maintenance workers” (or IMW) which is contained within the CRC CARE generic risk assessment model.



11.7.1. On-Site Human Receptors

The human receptors on the site have been identified as “commercial/industrial” site workers.

It has been identified that uncontrolled excavations and subsurface work can be undertaken at the site. These receptors are identified as IMWs. No unacceptable level of risk has been identified to this either on-site service station workers or clients to IMWs.

11.7.2. Ecological Receptors

The site’s ecological receptors have been identified as “commercial/industrial”. There is no identified risk to on-site ecological receptors.

Further (off-site) assessment is required to delineate both the lateral and vertical extent of reported on-site contamination to inform an assessment the potential risk to potential off-site ecological receptors.

11.7.3. Aquatic Ecosystems

The nearest year-round surface water body down hydraulic gradient of the site is Windermere Bay in the Derwent River, situated approximately 200m to the east of the site.

EM&C have selected “marine water” as the aquatic ecosystem type to be protected.

Further (off-site) assessment is required to delineate both the lateral and vertical extent of reported on-site contamination to inform a more comprehensive assessment of the potential risk posed by contamination beneath the site to identified off-site aquatic ecosystems.



12. CONCLUSIONS

At the completion of the Environmental Site Assessment (ESA) at 8-10 Main Rd Claremont, Tasmania (the 'site'), and subject to the report statement of limitations (Section 13), EM&C concludes the site **is suitable for on-going 'commercial/industrial' use** without an unacceptable level of risk⁴ posed to either:

- The human health of site workers or customers; or
- To the surrounding environment.

The report conclusions are made against the existing commercial/industrial land use. Further assessment may be required if a change to a more sensitive land use is proposed.

⁴ Term 'acceptable risk' as defined within the NEPM risk assessment framework as a 1×10^{-5} incremental lifetime risk of developing cancer arising from single or multiple underlying carcinogens.



13. STATEMENT OF LIMITATIONS

This report has been prepared in accordance with the scope of services described in the contract or agreement between Environmental Management & Consulting Pty Ltd (EM&C) and the Client. The report relies upon data, surveys, measurements and results taken at or under the particular times and conditions specified herein. Any findings, conclusions or recommendations only apply to the aforementioned circumstances and no greater reliance should be assumed or drawn by the Client. Furthermore, the report has been prepared solely for use by the Client and EM&C accepts no responsibility for its use by other parties. The client agrees that EM&C's report or associated correspondence will not be used or reproduced in full or in part for promotional purposes and cannot be used or relied upon in any prospectus or offering.

No warranties express or implied are made. Subject to the Scope of Work, EM&C's assessment is limited strictly to identifying typical environmental conditions associated with the subject property and does not include evaluation of the structural conditions of any buildings on the subject property or any other issues. Additionally unless otherwise stated EM&C did not conduct soil, air, wastewater or other matrix analyses including asbestos or perform contaminated sampling of any kind. Nor did EM&C investigate any waste material from the property that may have been disposed of off the site, nor related waste management practices.

The results of this assessment are based upon site inspection conducted by EM&C personnel, information from interviews with people who have knowledge of site conditions and information provided by regulatory agencies. All conclusions and recommendations regarding the property are the professional opinions of the EM&C personnel involved with the project, subject to the qualifications made above.

While normal assessments of data reliability have been made, EM&C assumes no responsibility or liability for errors in any data obtained from regulatory agencies, statements from sources outside of EM&C, or developments resulting from situations outside the scope of this project.

EM&C is not engaged in environmental auditing and /or reporting of any kind for the purpose of advertising sales promoting, or endorsement of any clients' interests, including raising investment capital, recommending investment decisions, or other publicity purposes. EM&C assumes no responsibility or liability for errors in any data obtained from regulatory agencies, statements from sources outside of EM&C, or developments resulting from situations outside the scope of this project.

Information relating to soil, groundwater, waste, air or other matrix conditions in this document is considered to be accurate at the date of issue. Surface, subsurface and atmospheric conditions can vary across a particular site or region, which cannot be wholly defined by investigation. As a result, it is unlikely that the results and estimations presented in this report will represent the extremes of conditions within the site that may exist. Subsurface conditions including contaminant concentrations can change in a limited period of time and typically have a high level of spatial heterogeneity.

From a technical perspective, there is a high degree of uncertainty associated with the assessment of subsurface, aquatic and atmospheric environments. They are prone to be heterogeneous, complex environments, in which small subsurface features or changes in geologic conditions or other environmental anomalies can have substantial impact on water, air and chemical movement.

Major uncertainties can also occur with source characterization assessment of chemical fate and transport in the environment, assessment of exposure risks and health effects, and remedial action performance. These factors make uncertainty an inherent feature of potentially impacted sites. Technical uncertainties are characteristically several orders of magnitude greater at impacted sites than for other kinds of projects.

EM&C's professional opinions are based upon its professional judgment, experience, and training. These opinions are also based upon data derived from the limited testing and analysis described in this report. It is possible that additional testing and analysis might produce different results and/or different opinions or other opinions. EM&C has limited its investigation(s) to the scope agreed upon with its client. EM&C believes that its opinions are reasonably supported by the testing and analysis that has been undertaken (if any), and that those opinions have been developed according to the professional standard of care for the environmental consulting profession in this area at this time. Other opinions and interpretations may be possible. That standard of care may change and new methods and practices of exploration, testing and analysis may develop in the future, which might produce different results.

EM&C is not in the business of providing legal advice.



14. REFERENCES

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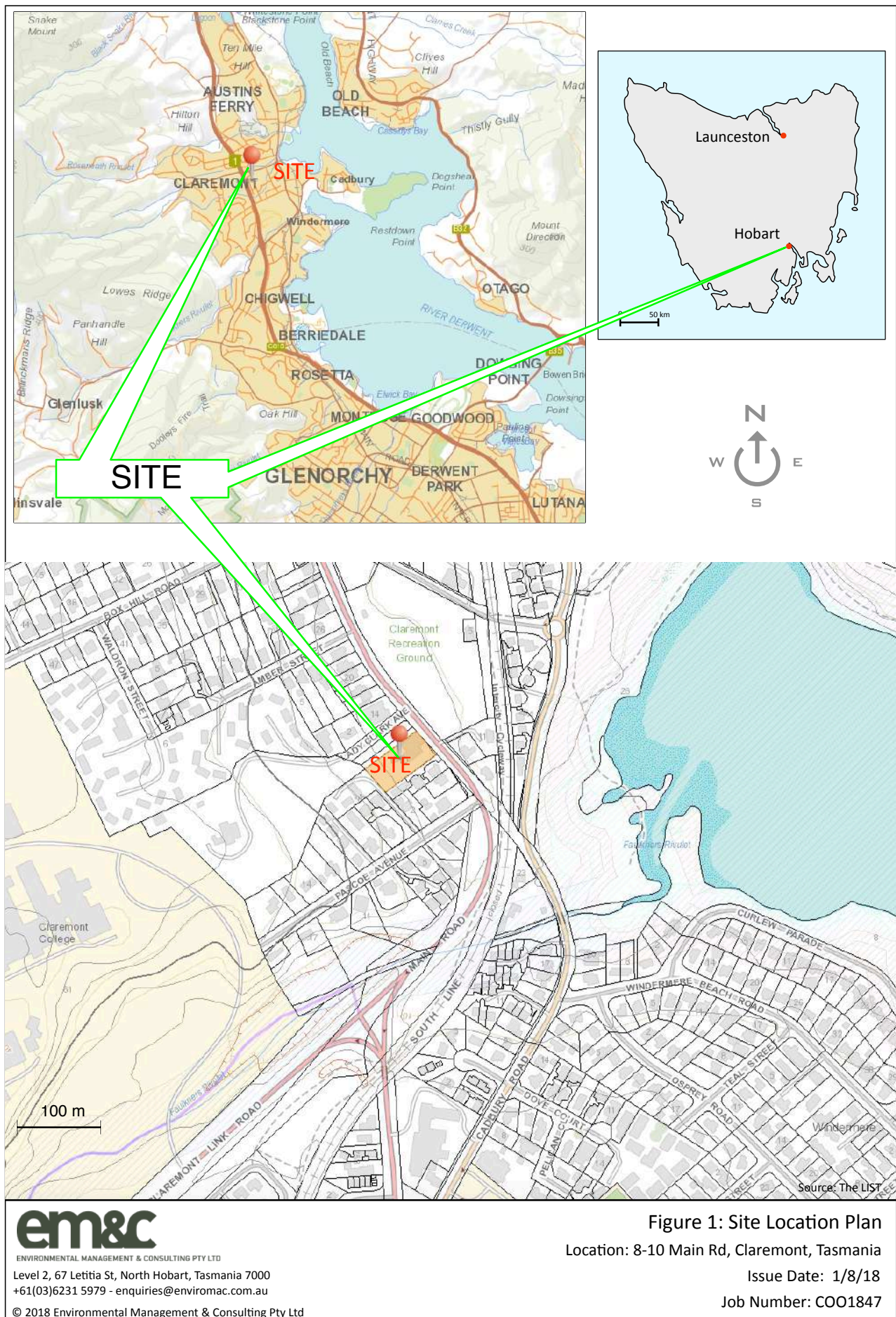
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FIGURES





em&c

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Cooper Automotive, 8-10 Main Rd Claremont

Issue Date: 1/8/18

Job Number: COO1847



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Figure 3: Groundwater Contours and Groundwater Assessment Results

Cooper Automotive, 8-10 Main Rd Claremont

Issue Date: 1/8/18

Job Number: COO1847



TABLES

Table 1
 Soil Results

Total Recoverable Hydrocarbons, Benzene, Toluene, Ethylbenzene, Xylenes, Naphthalene, Polycyclic Aromatic Hydrocarbons and Lead																					
Sample ID_Depth (m)	Sample Date	PID Results (ppm)	Soil Moisture Content	Land Use	Confining Geology (USDA Soil Texture Group)	Total Recoverable Hydrocarbons (mg/kg)					Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylenes (mg/kg)	Naph-thalene ⁴ (mg/kg)	Polycyclic Aromatic Hydrocarbons (mg/kg)			Carcinogenic PAHs as Bap TEQ ⁵ (mg/kg)	Lead (mg/kg)	
						C6 - C10	F1 C6 - C10 less BTEX	>C10 - C16	F2 >C10 - C16 less Naphthalene	F3 >C16 - C34						F4 >C34 - C40	Naph-thalene ⁴	Benzo(a)pyrene			Total PAHs
MW1_0.3-0.4	3/7/18	166	16.4	Com./ Ind.	SAND: 0 - <1m	141	141	50	50	<100	<100	<0.2	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	18
MW1_2.5-2.6	3/7/18	0.0	24.7	Com./ Ind.	SAND: 2 - <4 m	<10	<10	<50	<50	<100	<100	<0.2	<0.5	<0.5	<0.5	<1	-----	-----	-----	-----	
MW1_3.6-3.7	3/7/18	2.3	23.4	Com./ Ind.	SAND: 2 - <4 m	<10	<10	<50	<50	<100	<100	<0.2	<0.5	<0.5	<0.5	<1	-----	-----	-----	-----	
MW2_0.2-0.3	3/7/18	18.3	20.3	Com./ Ind.	SAND: 0 - <1m	<10	<10	300	300	240	<100	<0.2	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	6
MW2_3.5-3.6	3/7/18	0.0	17.8	Com./ Ind.	SAND: 2 - <4 m	<10	<10	<50	<50	<100	<100	<0.2	<0.5	<0.5	<0.5	<1	-----	-----	-----	-----	
MW3_0.5-0.6	3/7/18	0.7	22.1	Com./ Ind.	SAND: 0 - <1m	<10	<10	<50	<50	<100	<100	<0.2	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	8
MW3_2.0-2.1	3/7/18	0.0	17.7	Com./ Ind.	SAND: 2 - <4 m	<10	<10	<50	<50	<100	<100	<0.2	<0.5	<0.5	<0.5	<1	-----	-----	-----	-----	
MW3_4.0-4.1	3/7/18	0.0	20.9	Com./ Ind.	SAND: 4 m +	<10	<10	<50	<50	<100	<100	<0.2	<0.5	<0.5	<0.5	<1	-----	-----	-----	-----	
MW4_0.4-0.5	4/7/18	0.0	18.4	Com./ Ind.	SAND: 0 - <1m	<10	<10	<50	<50	<100	<100	<0.2	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	6
MW4_0.8-0.9	4/7/18	0.0	15.2	Com./ Ind.	SAND: 0 - <1m	<10	<10	<50	<50	<100	<100	<0.2	<0.5	<0.5	<0.5	<1	-----	-----	-----	-----	
MW4_5.0-5.1	4/7/18	0.0	15.6	Com./ Ind.	SAND: 4 m +	<10	<10	<50	<50	<100	<100	<0.2	<0.5	<0.5	<0.5	<1	-----	-----	-----	-----	
MW5_2.5-2.6	4/7/18	0.0	11.3	Com./ Ind.	SAND: 2 - <4 m	<10	<10	<50	<50	<100	<100	<0.2	<0.5	<0.5	<0.5	<1	<0.5	<0.5	2.5	<0.5	12
MW5_3.3-3.4	4/7/18	0.0	10.0	Com./ Ind.	SAND: 2 - <4 m	<10	<10	<50	<50	<100	<100	<0.2	<0.5	<0.5	<0.5	<1	-----	-----	-----	-----	
Limit of Reporting Soil						10	10	50	50	100	100	0.2	0.5	0.5	0.5	1.0	0.5	0.5	0.5	0.5	5

(1) NEPM HIL: D ¹ - Commercial/ Industrial	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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Tables Notes:

- Assessment criteria are obtained from National Environment Protection (Assessment of Site Contamination) Amendment Measure 2013 (NEPC, 1999)
 - Assessment criteria are obtained from CRC CARE Technical Report no. 10: Health screening levels for petroleum hydrocarbons in soil and groundwater (Friebel & Nadebaum 2011)
 - ESL criteria have been established for protection of plant root zones and are applicable in non-arid areas for assessment of soil within the 0-2mBS5 depth range.
 - Laboratory analysis of naphthalene is conducted using two separate methods, EP080: extracting sample for semi-volatiles. The naphthalene concentration from EP080 is used for F2 calculation.
 - HIL is based on the 8 carcinogenic PAHs and their TEFs (potency relative to B[a]P adopted by CCME 2008 (refer Schedule B7). The B[a]P TEQ is calculated by multiplying the concentration of each carcinogenic PAH in the sample by its B[a]P TEF and summing these products.
- "-" denotes analyte not tested by laboratory, or no criteria available.
- Bold values are concentrations reported above laboratory limit of reporting
- Highlighted values exceed nominated investigation criteria.

Table Abbreviations

NEPM: National Environment Protection (Assessment of Site Contamination) Amendment Measure 2013	HIL: Health Investigation Level	IMM: Intrusive Maintenance Worker
CRC CARE: Cooperative Research Centre for Contamination Assessment and Remediation of the Environment	ESL: Environmental Screening Level	PID: Photo-Ionisation Detection
HSL: Health Screening Level	EIL: Environmental Investigation Level	

Table 2
GME Well Gauging Log - 18 July 2018

Well ID	*TOC Elevation (~mAHD)	Ground Surface Elevation (~mAHD)	Well Depth (mBTC)	Well Screen Interval (mBTC)	Depth to LNAPL (mBTC)	Depth To Water (mBTC)	Depth To Water (mBGS)	LNAPL Thickness (m)	Reduced Standing Water Level (~mAHD)	Comments: Condition of well and repairs required
MW01	13.000	13.100	6.95	2.5-7.0	-	5.352	5.452	-	7.648	Well in good condition
MW02	12.669	12.809	8.39	4.0-8.5	-	5.200	5.340	-	7.469	Well in good condition
MW03	13.259	13.390	8.45	4.0-8.5	-	5.513	5.644	-	7.746	Well in good condition
MW04	13.088	13.238	8.45	4.0-8.5	-	5.451	5.601	-	7.637	Well in good condition
MW05	14.060	14.159	7.97	3.5-8.0	-	5.484	5.583	-	8.576	Well in good condition

Table Notes

Well TOC survey undertaken by em&c on 18/7/2018, using a Dual Grade GL700 Series Laser Level

*TOC elevation for MW01 estimate at ~13.0mAHD based on review of www.thelist.tas.gov.au/listmap (5m elevation contour layer + List spot heights layer)

Table Abbreviations

mBTC: meters below Top of Casing

LNAPL: Light Nonaqueous Phase Liquid

mAHD: meters above Australian Height Datum



Table 3
Groundwater Purging Data Summary - 18 July 2018

Well ID	Date	Field Measured Physical Parameters						Post Purging Subjective Physical Description				Well Screen Interval (mBTC)
		DO (mg/L)	Conductivity (mS/cm)	pH	Redox (mV)	Temperature (°C)	TDS (mg/L)	Colour	Odour	Turbidity	Sheen	
MMW01	18-Jul-18	4.13	1.96	7.28	246	14.9	1272	l.brown	No	2	No	2.5-7.0
MMW02	18-Jul-18	2.26	1.60	7.07	35	14.9	1041	l.brown	HC	3	No	4.0-8.5
MMW03	18-Jul-18	9.59	1.40	7.33	332	15.0	910	l.brown	No	2	No	4.0-8.5
MMW04	18-Jul-18	1.70	1.71	7.13	-157	13.5	1113	clear	No	1	No	4.0-8.5
MMW05	18-Jul-18	7.30	2.15	6.99	361	14.8	1397	clear	No	1	No	3.5-8.0

Table Abbreviations

- TDS: Total Dissolved Solids
- DO: Dissolved Oxygen
- DTW: Depth To Water
- HC: Hydrocarbon
- H2S: Hydrogen Sulfide

Table 4
Groundwater Results - 18 July 2018

Total Recoverable Hydrocarbons, Benzene, Toluene, Ethylbenzene and Xylenes, Polycyclic Hydrocarbons and Lead

Sample ID	Sample Date	Depth To Water (mTOC)	Land Use	Confining Geology (USDA Soil Texture Group)	Total Recoverable Hydrocarbons (mg/L)				Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	m & p - Xylenes (mg/L)	o - Xylenes (mg/L)	Xylenes (mg/L)	Naphthalene ² (mg/L)	Polycyclic Aromatic Hydrocarbons (mg/L)			Carcinogenic PAHs as Bap TEQ ³ (mg/L)	Lead (mg/L)
					F1 C6 - C10 less BTEX	F2 >C10 - C16 less Naphthalene	F3 >C16 - C34	F4 >C34 - C40								Naphthalene ²	Naphthalene ²	Benzo (a) pyrene	Total PAHs	
MMW01	18-Jul-18	5.452	Com./Ind.	SAND	0.07	0.13	0.2	<0.1	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.001	<0.0005	<0.0005	<0.0005	<0.001
MMW02	18-Jul-18	5.340	Com./Ind.	SAND	0.06	2.7	1.58	<0.1	<0.001	<0.002	<0.002	0.002	0.003	0.005	<0.005	<0.001	<0.0005	0.0094	<0.0005	<0.001
MMW03	18-Jul-18	5.644	Com./Ind.	SAND	<0.02	<0.1	<0.1	<0.1	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.001	<0.0005	<0.0005	<0.0005	<0.001
MMW04	18-Jul-18	5.304	Com./Ind.	SAND	0.03	0.47	0.28	<0.1	<0.001	<0.002	<0.002	0.002	0.006	0.008	<0.005	<0.001	<0.0005	0.0019	<0.0005	<0.001
MMW05	18-Jul-18	5.583	Com./Ind.	SAND	<0.02	<0.1	<0.1	<0.1	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.001	<0.0005	<0.0005	<0.0005	<0.001
Limit of Reporting - Water ALS Laboratory					0.02	0.1	0.1	0.1	0.001	0.002	0.002	0.002	0.002	0.002	0.005	0.001	0.0005	0.0005	0.0005	0.001
NOMINATED GENERIC INVESTIGATION CRITERIA																				

Table 5

Soil Assessment QA/QC Results

Total Recoverable Hydrocarbons, Benzene, Toluene, Ethylbenzene, Xylenes, Polycyclic Aromatic Hydrocarbons and Lead

Sample ID / Depth (m)	Sample Date	Total Recoverable Hydrocarbons (mg/kg)						Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylenes (mg/kg)	Naphthalene ¹ (mg/kg)
		C6 - C10	F1 C6 - C10 less BTEX	>C10 - C16	F2 >C10 - C16 less Naphthalene	F3 C34	F4 >C34 - C40					
Duplicate Samples (all soil results in mg/kg)												
Initial Soil Assessment October 2017												
MMW01_3.6-3.7	03-Jul-18	<10	<10	<50	<50	<100	<100	<0.2	<0.5	<0.5	<0.5	<1
QCP_3/7/18	Primary laboratory	<10	<10	<50	<50	<100	<100	<0.2	<0.5	<0.5	<0.5	<1
Relative % Difference	Duplicate of MMW01_3.6-3.7 and QCP_3/7/18	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	RPD criteria	NO LIMIT	NO LIMIT	NO LIMIT	NO LIMIT	NO LIMIT	NO LIMIT	NO LIMIT	NO LIMIT	NO LIMIT	NO LIMIT	NO LIMIT
	Pass/Fail	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass
Limit of Reporting (LOR) - Soil Samples (mg/kg)												
Limit of Reporting ALS (Primary)		10	10	50	50	100	100	0.2	0.5	0.5	0.5	1.0

Table 6
Water Assessment QA/QC Results

Total Recoverable Hydrocarbons (TRH), Benzene, Toluene, Ethylbenzene, Xylene and Naphthalene (BTXN)

Sample ID	Sample Date	Total Recoverable Hydrocarbons (mg/L)				Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)	Naphthalene ² (mg/L)
		F1 - C10 less BTX	C6 F2 >C10 - C16 less Naphthalene	F3 >C16 - C34	F4 >C34 - C40					
Duplicate Samples (all results in mg/L)										
Initial Groundwater Assessment - October 2017										
MMW2	18-Jul-18	0.06	2.70	1.58	<0.1	<0.001	<0.002	<0.002	0.005	<0.005
QCP_18/7/18	Primary LAB Duplicate of MMW2	0.09	2.28	1.28	<0.1	<0.001	<0.002	<0.002	0.003	<0.005
Relative % Difference	MMW2 and QCP_18/7/18	40%	17%	21%	N/A	N/A	N/A	N/A	50%	N/A
	RPD criteria	NO LIMIT	NO LIMIT	NO LIMIT	NO LIMIT	NO LIMIT	NO LIMIT	NO LIMIT	NO LIMIT	NO LIMIT
	Pass/Fail	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass
Rinseate Blank (mg/L)										
RB_18/7/18	18-Jul-18	<0.02	<0.1	<0.1	<0.1	<0.001	<0.002	<0.002	<0.002	<0.005
Equipment Rinseate sample										
Trip Blank Samples										
TB_18/7/18	18-Jul-18	<0.02	<0.1	<0.1	<0.1	<0.001	<0.002	<0.002	<0.002	<0.005
Trip Blank										
Limit of Reporting QA/QC - Water (Primary Lab)		0.02	0.1	0.1	0.1	0.001	0.002	0.002	0.002	5.0
Tables Notes:										

Tables Notes:

1) Sample media: Water; results reported in mg/L

2) Laboratory analysis of naphthalene is conducted using two separate methods, EP080: extracting sample for volatiles and EP075(SIM)B: extracting sample for semi-volatiles. The naphthalene concentration from EP080 is used for F2 calculation.
 "- " denotes analyte not tested by laboratory, or no criteria available.

QC-Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable, and have been adopted for this assessment:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Table Abbreviations

NEPM: National Environment Protection (Assessment of Site Contamination) Amendment Measure 2013	HIL: Health Investigation Level	IMW: Intrusive Maintenance Worker
CRC CARE: Cooperative Research Centre for Contamination Assessment and Remediation of the Environment	ESL: Environmental Screening Level	PID: Photo-Ionisation Detection
HSL: Health Screening Level	ELI: Environmental Investigation Level	



APPENDIX A

Workplace Standards Tasmania Records

Department of Justice
WORKPLACE STANDARDS TASMANIA

Phone 03 6233 8353
Email Leza.Wardlaw@justice.tas.gov.au



File Note

Subject:	Hazardous Chemicals Storage – underground storage tanks 8-10 Main Road, Claremont
Date:	26/03/2013
From:	Jonathon Jones
File:	1965

Hazardous Chemical storage – Underground storage tanks

We received a 'return to sender' letter and after investigation it cannot be determined whether the tanks are still in situ so this information is to be passed to EPA for their consideration. As discussed with Peter Davis the tanks are to be considered inactive so the file can be closed.

Jonathon Jones
Senior Inspector
Dangerous Substances Unit



APPENDIX B

Field Records



Soil Investigation

Soil Bore Logs

Attachments - Glenorchy Planning Authority - 13 December 2023

Attachments - Glenorchy Planning Authority - 13 December 2023

Attachments - Glenorchy Planning Authority - 13 December 2023

Attachments - Glenorchy Planning Authority - 13 December 2023

Bore ID: 85		Site Name: Cooper Automot		Site Address: 8-10 Main Rd Claremont		EM&C	
Job No: EMC1861		Method of abandoning soil bore		Logged by: Tom Latham		Date: 17/18	
Method and Auger	Depth (m)	Backfill with drill cuttings and compact	Resurface with concrete	Install monitoring well	Initial soil vapour point	Backfilled with virgin material	
0.2	0.2-1.2						
1.8	1.2-3.4						
3.4	4.6-8.0						
4.6							
5.0							
5.4							
5.8							
6.2							
6.6							
7.0							
7.4							
7.8							
8.2							
8.6							
9.0							
9.4							
9.8							
10.2							
10.6							
11.0							
11.4							
11.8							
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13.0							
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91.0							
91.4							
91.8							
92.2							
92.6							
93.0							
93.4							
93.8							
94.2							
94.6							
95.0							
95.4							
95.8							



Groundwater Gauging Observations

[illegible]



**Groundwater Physical Parameters &
Well Development Records**



Turbidity Scale:	1 (clear)	2	3	4	5 (y. silty)
------------------	-----------	---	---	---	--------------

Well No: MW01	Sample Method: Hydrasleeve sampler	Sampler volume: 1.0	Weather: fine
Time/date sampler deployed:	11:25	Pre-deployment DTW (mBTOC): 5.200	Sample depth Range (mBTOC):
Time/date sampler retrieved:	1:10	Pre deployment DTP (mBTOC): —	

[illegible]

Collected Sample Groundwater Observations	
Odour: HC - strong	Turbidity: 3
Colour: 1 - brown	Sheen: No

GCP-18/7/18

mBTC: metres below top of well casing

HC: Hydrocarbon

Turbidity Scale:	1 (clear)	2	3	4	5 (v. silty)
------------------	-----------	---	---	---	--------------

Field Measurements - To Be Recorded Post Retrieval at sample depth (mBTC):

Water Quality Model/Serial Number:	\$marTroll - 27
------------------------------------	-----------------

Collected Sample Groundwater Observations	
Odour: No	Turbidity: 2
Colour: 1.5 pcu	Sheen: No

QA/QC Samples

HC: Hydrocarbon

Attachments - Glenorchy Planning Authority - 13 December 2023

Field Measurements - To Be Recorded Post Retrieval at sample depth (mBTC):

Water Quality Model/Serial Number:	SmartTroll —27
------------------------------------	----------------

Collected Sample Groundwater Observations	
Odour: No	Turbidity: 1
Colour: clear	Sheen: No

QA/QC Samples

HC: Hydrocarbon

Attachments - Glenorchy Planning Authority - 13 December 2023

Field Measurements - To Be Recorded Post Retrieval at sample depth (mBTC):

Collected Sample Groundwater Observations

QA/QC Samples

mBTOC: metres below top of well casing

HC: Hydrocarbon

Turbidity Scale:	1 (clear)	2	3	4	5 (v. silty)
------------------	-----------	---	---	---	--------------



Field Instrument Calibration Certificates

RENTALS

Equipment Certification Report – In-situ SmarTroll Water Quality Meter

This Water Quality Meter has been performance checked and calibrated as follows:

Sensor	Concentration	Span 1	Span 2	Traceability Lot #	Pass?
pH	pH 7.00 / pH 4.00	7.00 pH	4.00 pH	318336/301911	☒
Conductivity	2760 uS/cm	0.0 uS/cm	2760 uS/cm	313082	☒
Dissolved Oxygen	Sodium Sulphite / Air	0.0 % In Sodium Sulphite	100 % Saturation in Air	5253	☒
Redox (ORP) *	Electrode operability test	240mV +/- 10%	232 mV	314147/ 311902	☒

☒ Battery Status 100 %
☒ Electrical Safety Tag attached (AS/NZS 3760)

☒ Temperature 21.3 °C
☒ Electrodes Cleaned and checked

Tag No: 000566

Valid to: 4/8/18

Date: 6th July 2018

Signed: 

Please check that the following items are received and that all items are cleaned and decontaminated before return. A minimum \$30 cleaning / service / repair charge may be applied to any unclean or damaged items. Items not returned will be billed for at the full replacement cost.

Sent	Returned	Item
☒	☐	iPod Touch 5 with waterproof casing
☒	☐	pH sensor/Redox (ORP) sensor
☒	☐	Conductivity/TDS sensor
☒	☐	Dissolved oxygen sensor
☒	☐	Red caps for probe and Bluetooth battery pack
☒	☐	Connector cable <u>4.6m</u>
☒	☐	Bluetooth Battery Pack Serial #: <u>454863</u>
☒	☐	Spare 4 AA batteries
☒	☐	AC charger with USB cable
☒	☐	Car charger with USB cable
☒	☐	Instruction Manual
☒	☐	Quick Guide
☒	☐	Calibration cup with vented cap and sponge
☒	☐	Storage cap with sponge
☒	☐	SS Protective Shroud
☒	☐	SmarTROLL MP Flow Cell
☒	☐	Check to confirm electrical safety (tag must be valid)
☒	☐	<u>Spare bluetooth S/N: 514375</u>

Date: 9/7/18

Signed: 

TFS Reference	<u>LM010058</u>	Return Date:	<u>1 / 1</u>
Customer Reference	<u>BPA GME 2018</u>	Return Time:	
Equipment ID	<u>SMART-27</u>	Condition on return:	
Equipment Serial No.			

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	Brisbane Branch Unit 2/2 Ross St, Newstead 4058	Perth Branch 121 Berrington Ave, Manning 6150



APPENDIX C

Assessment Photo Log



Drilling of MW02



Push tube sample from MW01 1.8-3.8 mBGS showing shallow sandy CLAYS moving into clayey SAND with gravel. Note that the top of core at the top left of image and the bottom at the bottom right.



Push tube sample from MW02 1.1-3.6 mBGS. Note the SAND dominant material is shallower than in MW01 and that the top of core is at the top left of the image and the bottom at the bottom right.



MW01-MW03 installed (bollards denote installed well locations)



APPENDIX D

NATA - Accredited Laboratory Certificates of Analysis



Drilling Program

Soil Results



Environmental

CERTIFICATE OF ANALYSIS

Work Order	: EM1810778	Page	: 1 of 9
Client	: ENVIRONMENTAL MANAGEMENT & CONSULTING P/L	Laboratory	: Environmental Division Melbourne
Contact	: MR SIMON CHISLETT	Contact	: Customer Services EM
Address	: LEVEL 2 BIGGENS BUILDING 67 LETTITA STREET NORTH HOBART TASMANIA, AUSTRALIA 7000	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: +61 0408 391 738	Telephone	: +61-3-8549 9600
Project	: 1847	Date Samples Received	: 05-Jul-2018 12:15
Order number	: ---	Date Analysis Commenced	: 05-Jul-2018
C-O-C number	: ---	Issue Date	: 09-Jul-2018 13:07
Sampler	: TOM LATHAM		
Site	: Cooper Automotive		
Quote number	: EN/222/17		
No. of samples received	: 14		
No. of samples analysed	: 14		



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. 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
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	21C Organic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	21C Organic Chemist	Melbourne Organics, Springvale, VIC

Page : 2 of 9
 Work Order : EM1810778
 Client : ENVIRONMENTAL MANAGEMENT & CONSULTING P/L
 Project : 1847



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by 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

∅ = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

- Benz(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 Benz(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b-f) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1,2,3-cd)pyrene (0.1), Dibenzo(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 0.6ng/Kg and 1.2ng/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)		Client sample ID		MMW1_0.3-0.4	MMW1_2.5-2.6	MMW1_3.6-3.7	MMW2_0.2-0.3	MMW2_3.5-3.6
		Client sampling date / time		03-Jul-2018 00:00	03-Jul-2018 00:00	03-Jul-2018 00:00	03-Jul-2018 00:00	03-Jul-2018 00:00
Compound	CAS Number	LOR	Unit	EM1810778-001	EM1810778-002	EM1810778-003	EM1810778-004	EM1810778-005
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content		---	1.0	%	16.4	24.7	23.4	20.3
EG005T: Total Metals by ICP-AES								
Lead		7439-92-1	5	mg/kg	18	---	---	6
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	---
Benz(b+h)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	---	---	<0.5	---
Benz(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	---	---	<0.5	---
Benz(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	---
Benz(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	---	---	<0.5	---
Sum of polycyclic aromatic hydrocarbons				<0.5	---	---	<0.5	---
^ Benzol(a)pyrene TEQ (zero)		---	0.5	mg/kg	<0.5	---	<0.5	---
^ Benzol(a)pyrene TEQ (half LOR)		---	0.5	mg/kg	0.6	---	0.6	---
^ Benzol(a)pyrene TEQ (LOR)		---	0.5	mg/kg	1.2	---	1.2	---
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction		---	10	mg/kg	109	<10	<10	<10
C10 - C14 Fraction		---	50	mg/kg	80	<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	80	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction		C6_C10	10	mg/kg	141	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)		C6_C10-BTEX	10	mg/kg	141	<10	<10	<10

Page : 4 of 9
 Work Order : EM1810778
 Client : ENVIRONMENTAL MANAGEMENT & CONSULTING P/L
 Project : 1847



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)		Client sample ID	MW1_0.3-0.4	MW1_2.5-2.6	MW1_3.6-3.7	MW2_0.2-0.3	MW2_3.5-3.6
Compound	CAS Number LOR Unit	Client sampling date / time	Result	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued							
>C10 - C16 Fraction	50 mg/kg		50	<50	<50	300	<50
>C16 - C34 Fraction	100 mg/kg		<100	<100	<100	240	<100
>C34 - C40 Fraction	100 mg/kg		<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	50 mg/kg		50	<50	<50	540	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	50 mg/kg		50	<50	<50	300	<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 %		92.0	---	---	94.7	---
2-Chlorophenol-D4	93951-73-6 0.5 %		97.0	---	---	101	---
2,4,6-Tribromophenol	118-79-6 0.5 %		89.4	---	---	82.7	---
EP075(SIM)T: PAH Surrogates							
2-Fluorobiphenyl	321-60-8 0.5 %		106	---	---	119	---
Anthracene-d10	1719-06-8 0.5 %		112	---	---	122	---
4-Terphenyl-d14	1718-51-0 0.5 %		116	---	---	128	---
EP080S: TPH(V)/BTEX Surrogates							
1,2-Dichloroethane-D4	17060-07-0 0.2 %		61.9	67.8	66.9	61.6	66.6
Toluene-D8	2037-26-5 0.2 %		68.0	70.4	71.1	69.0	71.1
4-Bromofluorobenzene	460-00-4 0.2 %		95.2	102	98.7	96.7	97.0



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)		Client sample ID		Client sampling date / time		MW3_2.0-2.1		MW3_0.5-0.6		MW3_4.0-4.1		MW4_0.4-0.5		MW4_0.8-0.9	
Compound	CAS Number	LOR	Unit	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)															
Moisture Content		1.0	%	17.7	22.1	20.9	18.4	15.2							
EG005T: Total Metals by ICP-AES															
Lead	7439-92-1	5	mg/kg	---	8	---	6	---							
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	---							
Benz(b+)fluoranthene	205-99-2	0.5	mg/kg	---	<0.5	---	<0.5	---							
Benz(k)fluoranthene	207-08-9	0.5	mg/kg	---	<0.5	---	<0.5	---							
Benz(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	---							
Benz(g,h,i)perylene	191-24-2	0.5	mg/kg	---	<0.5	---	<0.5	---							
Sum of polycyclic aromatic hydrocarbons															
^ Benzol(a)pyrene TEQ (zero)		0.5	mg/kg	---	<0.5	---	<0.5	---							
^ Benzol(a)pyrene TEQ (half LOR)		0.5	mg/kg	---	0.6	---	0.6	---							
^ Benzol(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							



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)		Client sample ID	MW3_2.0-2.1	MW3_0.5-0.6	MW3_4.0-4.1	MW4_0.4-0.5	MW4_0.8-0.9
Compound		Client sampling date / time	03-Jul-2018 00:00	03-Jul-2018 00:00	03-Jul-2018 00:00	04-Jul-2018 00:00	04-Jul-2018 00:00
CAS Number	LOR	Unit	EM1810778-006	EM1810778-007	EM1810778-008	EM1810778-009	EM1810778-010
Result							
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued							
>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
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	<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
EP075(SIM)S: Phenolic Compound Surrogates							
Phenol-d6	13127-88-3	0.5	%	93.9	---	88.3	---
2-Chlorophenol-D4	93951-73-6	0.5	%	100	---	93.2	---
2,4,6-Tribromophenol	118-79-6	0.5	%	65.5	---	59.5	---
EP075(SIM)T: PAH Surrogates							
2-Fluorobiphenyl	321-60-8	0.5	%	122	---	116	---
Anthracene-d10	1719-06-8	0.5	%	123	---	117	---
4-Terphenyl-d14	1718-51-0	0.5	%	121	---	111	---
EP080S: TPH(V)/BTEX Surrogates							
1,2-Dichloroethane-D4	17060-07-0	0.2	%	69.4	64.5	62.1	64.5
Toluene-D8	2037-26-5	0.2	%	70.0	68.6	66.5	67.6
4-Bromofluorobenzene	460-00-4	0.2	%	102	98.3	96.4	94.6



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)		Client sample ID		MW5_2.5-2.6	MW5_3.3-3.4	MW4_5.0-5.1	QCP_3/7/18	
		Client sampling date / time		04-Jul-2018 00:00	04-Jul-2018 00:00	04-Jul-2018 00:00	03-Jul-2018 00:00	
Compound	CAS Number	LOR	Unit	EM1810778-011	EM1810778-012	EM1810778-013	EM1810778-014	
				Result	Result	Result	Result	
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content		1.0	%	11.3	10.0	15.6	23.3	
EG005T: Total Metals by ICP-AES								
Lead	7439-92-1	5	mg/kg	12				
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	1.1				
Anthracene	120-12-7	0.5	mg/kg	<0.5				
Fluoranthene	206-44-0	0.5	mg/kg	0.8				
Pyrene	129-00-0	0.5	mg/kg	0.6				
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5				
Chrysene	218-01-9	0.5	mg/kg	<0.5				
Benz(b+g)fluoranthene	205-99-2	0.5	mg/kg	<0.5				
Benz(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5				
Benz(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				
Benz(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5				
Sum of polycyclic aromatic hydrocarbons				2.5				
^ Benzol(a)pyrene TEQ (zero)				<0.5				
^ Benzol(a)pyrene TEQ (half LOR)				0.6				
^ Benzol(a)pyrene TEQ (LOR)				1.2				
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction		10	mg/kg	<10		<10		
C10 - C14 Fraction		50	mg/kg	<50		<50		
C15 - C28 Fraction		100	mg/kg	<100		<100		
C29 - C36 Fraction		100	mg/kg	<100		<100		
^ C10 - C36 Fraction (sum)				<50		<50		
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10		<10		
^ C6 - C10 Fraction minus BTEX (F1)				C6_C10-BTEX	10	mg/kg	<10	

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Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)		Client sample ID	MW5_2.5-2.6	MW5_3.3-3.4	MW4_5.0-5.1	QCP_3/7/18	
Client sampling date / time		04-Jul-2018 00:00	04-Jul-2018 00:00	04-Jul-2018 00:00	03-Jul-2018 00:00		
Compound	CAS Number LOR Unit	EM1810778-011	EM1810778-012	EM1810778-013	EM1810778-014		
Result		Result	Result	Result	Result		
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued							
>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 %	85.2					
2-Chlorophenol-D4	93951-73-6 0.5 %	95.6					
2,4,6-Tribromophenol	118-79-6 0.5 %	64.7					
EP075(SIM)T: PAH Surrogates							
2-Fluorobiphenyl	321-60-8 0.5 %	112					
Anthracene-d10	1719-06-8 0.5 %	122					
4-Terphenyl-d14	1718-51-0 0.5 %	121					
EP080S: TPH(V)/BTEX Surrogates							
1,2-Dichloroethane-D4	17060-07-0 0.2 %	59.7	61.9	58.5	63.4		
Toluene-D8	2037-26-5 0.2 %	71.6	71.1	65.7	80.2		
4-Bromofluorobenzene	460-00-4 0.2 %	96.7	96.2	89.1	104		

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Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP075(SIMS): 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(SIMS): PAH Surrogates			
2-Fluorobiphenyl	321-60-8	61	125
Anthracene-d10	1719-06-8	62	130
4-Terphenyl-d14	1718-51-0	67	133
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



Environmental

QUALITY CONTROL REPORT

Work Order

EM1810778

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Client

ENVIRONMENTAL MANAGEMENT & CONSULTING P/L

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Environmental Division Melbourne

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Project

1847

Date Samples Received

05-Jul-2018

Order number

Date Analysis Commenced

05-Jul-2018

C-O-C number

Issue Date

09-Jul-2018

Sampler

TOM LATHAM

Site

Cooper Automotive

Quote number

EN/222/17

No. of samples received

14

No. of samples analysed

14

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. 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

Dilant Fernando

Senior Inorganic Chemist

Melbourne Inorganics, Springvale, VIC

Nancy Wang

2IC Organic Chemist

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



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General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by 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

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 QWL-EN38 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: SOL

Laboratory sample ID	Client sample ID	Method/Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 1781921)									
EM1810778-001	MW1_0.3-0.4	EA055: Moisture Content	----	0.1	%	16.4	16.8	2.18	0% - 50%
EM1810778-011	MW5_2.5-2.6	EA055: Moisture Content	----	0.1	%	11.3	11.9	4.53	0% - 50%
EG005T: Total Metals by ICP-AES (QC Lot: 1781127)									
EM1810778-001	MW1_0.3-0.4	EG005T: Lead	7439-92-1	5	mg/kg	18	18	0.00	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1781171)									
EM1810778-001	MW1_0.3-0.4	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benz(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			205-82-3						
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benz(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Indeno(1,2,3-cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Dibenzo(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1781155)									
EM1810778-002	MW1_2.5-2.6	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit

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 Client : ENVIRONMENTAL MANAGEMENT & CONSULTING P/L
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Sub-Matrix: SOIL			Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1781155) - continued									
EM1810778-013	MW4_5.0-5.1	EP080: C6 - C9 Fraction	---	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1781172)									
EM1810778-011	MW5_2.5-2.6	EP071: C15 - C28 Fraction	---	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C29 - C36 Fraction	---	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C10 - C14 Fraction	---	50	mg/kg	<50	<50	0.00	No Limit
		EP071: C10 - C36 Fraction (sum)	---	50	mg/kg	<50	<50	0.00	No Limit
EM1810778-001	MW1_0.3-0.4	EP071: C15 - C28 Fraction	---	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C29 - C36 Fraction	---	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C10 - C14 Fraction	---	50	mg/kg	80	80	0.00	No Limit
		EP071: C10 - C36 Fraction (sum)	---	50	mg/kg	80	80	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1781155)									
EM1810778-002	MW1_2.5-2.6	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
EM1810778-013	MW4_5.0-5.1	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1781172)									
EM1810778-011	MW5_2.5-2.6	EP071: >C16 - C34 Fraction	---	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C34 - C40 Fraction	---	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C10 - C16 Fraction	---	50	mg/kg	<50	<50	0.00	No Limit
		EP071: >C10 - C40 Fraction (sum)	---	50	mg/kg	<50	<50	0.00	No Limit
EM1810778-001	MW1_0.3-0.4	EP071: >C16 - C34 Fraction	---	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C34 - C40 Fraction	---	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C10 - C16 Fraction	---	50	mg/kg	50	<50	0.00	No Limit
		EP071: >C10 - C40 Fraction (sum)	---	50	mg/kg	50	<50	0.00	No Limit
EP080: BTEXN (QC Lot: 1781155)									
EM1810778-002	MW1_2.5-2.6	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EM1810778-013	MW4_5.0-5.1	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit



Method Blank (MB) and Laboratory Control Spike (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 Spike (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**

Sub-Matrix: SOIL									
Method: Compound				Method Blank (MB)		Laboratory Control Spike (LCS) Report			
EG005T: Total Metals by ICP-AES (QCLOt: 1781127)				Report Result	Spike Concentration	Spike Recovery (%)			Recovery Limits (%)
CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High		
EG005T: Lead									
7439-92-1	5	mg/kg	<5	40 mg/kg	90.5	78	106		
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLOt: 1781171)									
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	3 mg/kg	97.0	75	131	
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	3 mg/kg	93.3	70	132	
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	3 mg/kg	112	80	128	
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	3 mg/kg	120	70	128	
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	3 mg/kg	112	80	128	
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	1.7 mg/kg	106	72	126	
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	3 mg/kg	118	70	128	
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	3 mg/kg	115	80	125	
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	3 mg/kg	108	70	130	
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	3 mg/kg	112	80	126	
EP075(SIM): Benzo(b+)fluoranthene	205-99-2	0.5	mg/kg	<0.5	3 mg/kg	100	71	124	
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	3 mg/kg	111	75	125	
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	3 mg/kg	92.0	70	125	
EP075(SIM): Indeno(1,2,3-cd)pyrene	193-39-5	0.5	mg/kg	<0.5	3 mg/kg	104	71	128	
EP075(SIM): Dibenzo(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	3 mg/kg	106	72	126	
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	3 mg/kg	101	68	127	
EP080/071: Total Petroleum Hydrocarbons (QCLOt: 1781155)									
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	36 mg/kg	99.8	70	127	
EP080/071: Total Petroleum Hydrocarbons (QCLOt: 1781172)									
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	806 mg/kg	107	80	120	
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	3006 mg/kg	115	84	115	
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	1584 mg/kg	107	80	112	
EP071: C10 - C36 Fraction (sum)	----	50	mg/kg	<50	-----	-----	-----	-----	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLOt: 1781155)									
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	45 mg/kg	97.3	68	125	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLOt: 1781172)									
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	1160 mg/kg	109	83	117	
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	3978 mg/kg	113	82	114	
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	313 mg/kg	100	73	115	
EP071: >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	-----	-----	-----	-----	
EP080: BTEXN (QCLOt: 1781155)									



Sub-Matrix: SOIL

Sub-Matrix: SOIL					Method Blank (MB) Report				
Method: Compound	CAS Number	LOR	Unit	Result	Spike Concentration	Laboratory Control Spike (LCS) Report			
						Spike Recovery (%)	Low	High	
EP080: BTEXN (QCLot: 1781155) - continued									
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	2 mg/kg	87.2	74	124	
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	2 mg/kg	98.3	77	125	
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	2 mg/kg	96.0	73	125	
EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	4 mg/kg	104	77	128	
	106-42-3								
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	2 mg/kg	104	81	128	
EP080: Naphthalene	91-20-3	1	mg/kg	<1	0.5 mg/kg	88.5	66	130	

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

Sub-Matrix: SOIL		Matrix Spike (MS) Report						
		Spike		Recovery Limits (%)				
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High	
EG005T: Total Metals by ICP-AES (QCLot: 1781127)								
EM1810778-004	MMW2_0.2-0.3	EG005T: Lead	7439-92-1	50 mg/kg	93.8	76	124	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1781171)								
EM1810778-004	MMW2_0.2-0.3	EP075(SIM): Acenaphthene	83-32-9	3 mg/kg	109	67	117	
		EP075(SIM): Pyrene	129-00-0	3 mg/kg	127	52	148	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1781155)								
EM1810778-012	MMW5_3.3-3.4	EP080: C6 - C9 Fraction	----	28 mg/kg	83.3	42	131	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1781172)								
EM1810778-002	MMW1_2.5-2.6	EP071: C10 - C14 Fraction	----	806 mg/kg	98.9	53	123	
		EP071: C15 - C28 Fraction	----	3006 mg/kg	108	70	124	
		EP071: C29 - C36 Fraction	----	1584 mg/kg	98.7	64	118	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1781155)								
EM1810778-012	MMW5_3.3-3.4	EP080: C6 - C10 Fraction	C6_C10	33 mg/kg	82.3	39	129	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1781172)								
EM1810778-002	MMW1_2.5-2.6	EP071: >C10 - C16 Fraction	----	1160 mg/kg	100	65	123	
		EP071: >C16 - C34 Fraction	----	3978 mg/kg	105	67	121	
		EP071: >C34 - C40 Fraction	----	313 mg/kg	91.7	44	126	
EP080: BTEXN (QCLot: 1781155)								
EM1810778-012	MMW5_3.3-3.4	EP080: Benzene	71-43-2	2 mg/kg	86.6	50	136	
		EP080: Toluene	108-88-3	2 mg/kg	100	56	139	



Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EM1810778	Page	: 1 of 6
Client	: ENVIRONMENTAL MANAGEMENT & CONSULTING P/L	Laboratory	: Environmental Division Melbourne
Contact	: MR SIMON CHISLETT	Telephone	: +61-3-8549 9600
Project	: 1847	Date Samples Received	: 05-Jul-2018
Site	: Cooper Automotive	Issue Date	: 09-Jul-2018
Sampler	: TOM LATHAM	No. of samples received	: 14
Order number	:	No. of samples analysed	: 14

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

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

Summary of Outliers

Outliers : Quality Control Samples

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

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

Outliers : Analysis Holding Time Compliance

- NO Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- NO Quality Control Sample Frequency Outliers exist.

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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 analyses 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 analyses 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)							
MW1_0.3-0.4,	03-Jul-2018	----	-----	-----	06-Jul-2018	17-Jul-2018	✔
MW1_3.6-3.7,							
MW2_3.5-3.6,							
MW3_0.5-0.6,							
QCP_3/7/18							
Soil Glass Jar - Unpreserved (EA055)							
MW4_0.4-0.5,	04-Jul-2018	----	-----	-----	06-Jul-2018	18-Jul-2018	✔
MW5_2.5-2.6,							
MW4_5.0-5.1							
EG005T: Total Metals by ICP-AES							
Soil Glass Jar - Unpreserved (EG005T)							
MW1_0.3-0.4,	03-Jul-2018	06-Jul-2018	30-Dec-2018	✔	06-Jul-2018	30-Dec-2018	✔
MW3_0.5-0.6							
Soil Glass Jar - Unpreserved (EG005T)							
MW4_0.4-0.5,	04-Jul-2018	06-Jul-2018	31-Dec-2018	✔	06-Jul-2018	31-Dec-2018	✔
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved (EP075(SIM))							
MW1_0.3-0.4,	03-Jul-2018	06-Jul-2018	17-Jul-2018	✔	06-Jul-2018	15-Aug-2018	✔
MW3_0.5-0.6							
Soil Glass Jar - Unpreserved (EP075(SIM))							
MW4_0.4-0.5,	04-Jul-2018	06-Jul-2018	18-Jul-2018	✔	06-Jul-2018	15-Aug-2018	✔

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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
EP080/071: Total Petroleum Hydrocarbons								
Soil Glass Jar - Unpreserved (EP080)								
MW1_0.3-0.4,	MW1_2.5-2.6,	03-Jul-2018	05-Jul-2018	17-Jul-2018	✔	06-Jul-2018	17-Jul-2018	✔
MW1_3.6-3.7,	MW2_0.2-0.3,							
MW2_3.5-3.6,	MW3_2.0-2.1,							
MW3_0.5-0.6,	MW3_4.0-4.1							
Soil Glass Jar - Unpreserved (EP080)								
MW1_0.3-0.4,	MW1_2.5-2.6,	03-Jul-2018	06-Jul-2018	17-Jul-2018	✔	06-Jul-2018	17-Jul-2018	✔
MW1_3.6-3.7,	MW2_0.2-0.3,							
MW2_3.5-3.6,	MW3_2.0-2.1,							
MW3_0.5-0.6,	MW3_4.0-4.1							
Soil Glass Jar - Unpreserved (EP080)								
MW1_0.3-0.4,	MW1_2.5-2.6,	03-Jul-2018	06-Jul-2018	17-Jul-2018	✔	06-Jul-2018	17-Jul-2018	✔
MW1_3.6-3.7,	MW2_0.2-0.3,							
MW2_3.5-3.6,	MW3_2.0-2.1,							
MW3_0.5-0.6,	MW3_4.0-4.1,							
QCP_3/7/18								
Soil Glass Jar - Unpreserved (EP080)								
MW4_0.4-0.5,	MW4_0.8-0.9,	04-Jul-2018	05-Jul-2018	18-Jul-2018	✔	06-Jul-2018	18-Jul-2018	✔
MW5_2.5-2.6								
Soil Glass Jar - Unpreserved (EP080)								
MW4_0.4-0.5,	MW4_0.8-0.9,	04-Jul-2018	06-Jul-2018	18-Jul-2018	✔	06-Jul-2018	18-Jul-2018	✔
MW5_2.5-2.6,	MW5_3.3-3.4,							
MW4_5.0-5.1								
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Soil Glass Jar - Unpreserved (EP080)								
MW1_0.3-0.4,	MW1_2.5-2.6,	03-Jul-2018	05-Jul-2018	17-Jul-2018	✔	06-Jul-2018	17-Jul-2018	✔
MW1_3.6-3.7,	MW2_0.2-0.3,							
MW2_3.5-3.6,	MW3_2.0-2.1,							
MW3_0.5-0.6,	MW3_4.0-4.1							
Soil Glass Jar - Unpreserved (EP080)								
MW1_0.3-0.4,	MW1_2.5-2.6,	03-Jul-2018	06-Jul-2018	17-Jul-2018	✔	06-Jul-2018	17-Jul-2018	✔
MW1_3.6-3.7,	MW2_0.2-0.3,							
MW2_3.5-3.6,	MW3_2.0-2.1,							
MW3_0.5-0.6,	MW3_4.0-4.1,							
QCP_3/7/18								
Soil Glass Jar - Unpreserved (EP080)								
MW4_0.4-0.5,	MW4_0.8-0.9,	04-Jul-2018	05-Jul-2018	18-Jul-2018	✔	06-Jul-2018	18-Jul-2018	✔
MW5_2.5-2.6								
Soil Glass Jar - Unpreserved (EP080)								
MW4_0.4-0.5,	MW4_0.8-0.9,	04-Jul-2018	06-Jul-2018	18-Jul-2018	✔	06-Jul-2018	18-Jul-2018	✔
MW5_2.5-2.6,	MW5_3.3-3.4,							
MW4_5.0-5.1								

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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
EP080: BTEXN						
Soil Glass Jar - Unpreserved (EP080)	03-Jul-2018	05-Jul-2018	17-Jul-2018	06-Jul-2018	17-Jul-2018	
MW1_0.3-0.4,			✔			✔
MW1_3.6-3.7,						
MW2_3.5-3.6,						
MW3_0.5-0.6,						
MW3_4.0-4.1						
Soil Glass Jar - Unpreserved (EP080)	03-Jul-2018	06-Jul-2018	17-Jul-2018	06-Jul-2018	17-Jul-2018	✔
QCP_3/7/18			✔			
Soil Glass Jar - Unpreserved (EP080)	04-Jul-2018	05-Jul-2018	18-Jul-2018	06-Jul-2018	18-Jul-2018	✔
MW4_0.4-0.5,			✔			✔
MW5_2.5-2.6						
Soil Glass Jar - Unpreserved (EP080)	04-Jul-2018	06-Jul-2018	18-Jul-2018	06-Jul-2018	18-Jul-2018	✔
MW5_3.3-3.4,			✔			✔
MW4_5.0-5.1						

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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	2	20	10.00	10.00	✓		NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	1	5	20.00	10.00	✓		NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	5	20.00	10.00	✓		NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	14	14.29	10.00	✓		NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	15	13.33	10.00	✓		NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)								
PAH/Phenols (SIM)	EP075(SIM)	1	5	20.00	5.00	✓		NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	5	20.00	5.00	✓		NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	14	7.14	5.00	✓		NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	15	6.67	5.00	✓		NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)								
PAH/Phenols (SIM)	EP075(SIM)	1	5	20.00	5.00	✓		NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	5	20.00	5.00	✓		NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	14	7.14	5.00	✓		NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	15	6.67	5.00	✓		NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)								
PAH/Phenols (SIM)	EP075(SIM)	1	5	20.00	5.00	✓		NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	5	20.00	5.00	✓		NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	14	7.14	5.00	✓		NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	15	6.67	5.00	✓		NEPM 2013 B3 & ALS QC Standard
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 (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
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 (2013) Schedule B(3)
TRH - Semivolatile Fraction	EP071	SOIL	In house: Referenced to USEPA SW 846 - 8015A. Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40. Compliant with NEPM amended 2013.
PAH/Phenols (SIM)	EP075(SIM)	SOIL	In house: Referenced to USEPA SW 846 - 8270D. 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 (2013) Schedule B(3) (Method 502 and 507)
TRH Volatiles/BTEX	EP080	SOIL	In house: Referenced to USEPA SW 846 - 8260B. Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. Compliant with NEPM amended 2013.
Preparation Methods	Method	Matrix	Method Descriptions
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 (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils for Purge and Trap	ORG16	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids	ORG17	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.

Chain of Custody and Analysis Request

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Client Name: Cooper Automotive Job Number: TBC Order By: Tom Latham 0488 515 991 Job:	Client: Environmental Management and Consulting Pty Ltd Quote Number: MESQ13715 Project Manager: Simon Chittatt 0428 288 258 INVOICES TO: info@emc.com.au	Primary Laboratory: AUS Laboratory Group 2-4 Merial Rd Springvale, VIC 3171 Phone: 03 85499600	Secondary Laboratory: Eurofins MGI 2-5 Kingston Town Close Doolittle, VIC 3168 Phone: 03 9564 7055
RESULTS: Results required by: Same day Address: 1000 4006 4006 4006 4006 Simon Chittatt Email: sinfo@emc.com.au Phone: 0428 288 258 Allen Lombard Email: allen@emc.com.au Phone: 0428 288 258 Tom Latham Email: Tom@emc.com.au Phone: 0488 515 991			
Please ensure all samples are analysed within the same QC lot			

Inventory Sample ID	Field Sample ID	Date Collected	Sample Type		Preservation Method				Type & Number of Containers		S-21 TRH (C6-C40)/BTEXN/PAH plus Pb	S-4 TPH/TRH (C6-C36 or 40)/BTEXN, F1, F2	Analyses Required						Comments (Mention if samples are for QCMs, Filtered or Not)
			Soil	Water	Ice	Acid	None	gases	Plastic										
1	MMV1_03.0.4	3/7/18	X	-	X	-	-	-	1	-	X	-							
2	MMV1_25.2.6	3/7/18	X	-	X	-	-	-	1	-	X	-							
3	MMV1_36.3.7	3/7/18	X	-	X	-	-	-	1	-	X	-							
4	MMV2_02.0.3	3/7/18	X	-	X	-	-	-	1	-	X	-							
5	MMV2_35.3.6	3/7/18	X	-	X	-	-	-	1	-	X	-							
6	MMV3_20.2.1	3/7/18	X	-	X	-	-	-	2	-	X	-							
7	MMV3_05.0.5	3/7/18	X	-	X	-	-	-	1	-	X	-							
8	MMV3_40.4.1	3/7/18	X	-	X	-	-	-	1	-	X	-							
9	MMV4_04.0.5	4/7/18	X	-	X	-	-	-	1	-	X	-							
10	MMV4_08.0.9	4/7/18	X	-	X	-	-	-	1	-	X	-							
11	MMV5_25.2.6	4/7/18	X	-	X	-	-	-	1	-	X	-							
12	MMV5_33.3.4	4/7/18	X	-	X	-	-	-	1	-	X	-							
13	MMV4_50.5.1	4/7/18	X	-	X	-	-	-	1	-	X	-							
14	QCP_3/7/18	3/7/18	X	-	X	-	-	-	1	-	X	-							

Initiated By: *Tom L* Date: *24/7/18*

Time: *7:00pm* Signature: _____

Received By: *Simon Chittatt* Date: *5/8*

Time: *12:15* Signature: _____

Temp (C) on Receipt: _____



Environmental Division
Melbourne
Work Order Reference
EM1810778

FREIGHT



Groundwater Assessment

Water Results



Environmental

CERTIFICATE OF ANALYSIS

Work Order	: EM1811515	Page	: 1 of 6
Client	: ENVIRONMENTAL MANAGEMENT & CONSULTING P/L	Laboratory	: Environmental Division Melbourne
Contact	: MR SIMON CHISLETT	Contact	: Customer Services EM
Address	: LEVEL 2 BIGGENS BUILDING 67 LETTITA STREET NORTH HOBART TASMANIA, AUSTRALIA 7000	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: +61 0408 391 738	Telephone	: +61-3-8549 9600
Project	: CPR1856	Date Samples Received	: 19-Jul-2018 12:20
Order number	:	Date Analysis Commenced	: 19-Jul-2018
C-O-C number	: ----	Issue Date	: 24-Jul-2018 11:07
Sampler	: TL		
Site	: Cooper Automotive Claremont		
Quote number	: EN/222/18		
No. of samples received	: 8		
No. of samples analysed	: 8		



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. 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
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	21C Organic Chemist	Melbourne Organics, Springvale, VIC

Page : 2 of 6
 Work Order : EM181515
 Client : ENVIRONMENTAL MANAGEMENT & CONSULTING P/L
 Project : CPR1856



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by 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

Δ = 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) 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: Benzo(a)anthracene (0.1), Chrysene (0.01), Benzo(b)fluoranthene (0.1), Benzo(k)fluoranthene (0.1), Indeno(1,2,3-cd)pyrene (0.1), Dibenzo(a,h)anthracene (1.0), Benzo(g,h,i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.

Page : 3 of 6
 Work Order : EM181515-15
 Client : ENVIRONMENTAL MANAGEMENT & CONSULTING P/L
 Project : CPR1856



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)		Client sample ID		Client sampling date / time		MW01		MW02		MW03		MW04		MW05	
Compound	CAS Number	LOR	Unit	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
EG020F: Dissolved Metals by ICP-MS															
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
EP075(S)M)B: Polynuclear Aromatic Hydrocarbons															
Naphthalene	91-20-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Acenaphthene	83-32-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Fluorene	86-73-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Phenanthrene	85-01-8	1.0	µg/L	<1.0	9.4	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Anthracene	120-12-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Fluoranthene	206-44-0	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Pyrene	129-00-0	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Benz(e)anthracene	56-55-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chrysene	218-01-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Benzol(b+)fluoranthene	205-99-2 205-82-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Benzol(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Benzol(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1,2,3-cd)pyrene	193-39-5	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Dibenz(a,h)anthracene	53-70-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Benzol(g,h,i)perylene	191-24-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Sum of polycyclic aromatic hydrocarbons		0.5	µg/L	<0.5	9.4	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Sum of polycyclic aromatic hydrocarbons TEQ (zero)		0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
EP080/071: Total Petroleum Hydrocarbons															
C6 - C9 Fraction		20	µg/L	80	40	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
C10 - C14 Fraction		50	µg/L	120	1790	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
C15 - C28 Fraction		100	µg/L	170	2600	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
C29 - C36 Fraction		50	µg/L	60	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
Sum of C10 - C36 Fraction (sum)		50	µg/L	350	4390	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions															
C6 - C10 Fraction		20	µg/L	70	70	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
Sum of C6 - C10 Fraction minus BTEX (F1)		20	µg/L	70	60	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
C10 - C16 Fraction		100	µg/L	130	2700	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
C16 - C34 Fraction		100	µg/L	200	1580	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
C34 - C40 Fraction		100	µg/L	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
Sum of C10 - C40 Fraction (sum)		100	µg/L	330	4280	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100

Page : 4 of 6
 Work Order : EM181515
 Client : ENVIRONMENTAL MANAGEMENT & CONSULTING P/L
 Project : CPR1856



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)		Client sample ID	MW01	MW02	MW03	MW04	MW05
Compound	CAS Number	Client sampling date / time	18-Jul-2018 00:00	18-Jul-2018 00:00	18-Jul-2018 00:00	18-Jul-2018 00:00	18-Jul-2018 00:00
		LOR	Unit	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued							
^ >C10 - C16 Fraction minus Naphthalene (F2)		100	µg/L	130	2700	<100	470
EP080: BTEXN							
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2
^ Total Xylenes	---	2	µg/L	<2	<2	<2	<2
^ Sum of BTEX	---	1	µg/L	<1	<1	<1	<1
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5
EP075(SIM): Phenolic Compound Surrogates							
Phenol-d6	13127-88-3	1.0	%	31.5	33.2	26.4	29.6
2-Chlorophenol-D4	93951-73-6	1.0	%	72.7	84.0	71.4	78.3
2,4,6-Tribromophenol	118-79-6	1.0	%	80.6	109	71.7	102
EP075(SIM): PAH Surrogates							
2-Fluorobiphenyl	321-60-8	1.0	%	80.0	87.8	75.6	92.7
Anthracene-d10	1719-06-8	1.0	%	86.1	94.5	85.2	96.2
4-Terphenyl-d14	1718-51-0	1.0	%	94.4	104	94.9	108
EP080S: TPH(V)/BTEX Surrogates							
1,2-Dichloroethane-D4	17060-07-0	2	%	91.4	93.6	86.6	92.3
Toluene-D8	2037-26-5	2	%	81.2	96.9	85.5	91.7
4-Bromofluorobenzene	460-00-4	2	%	88.6	114	84.6	110



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)		Client sample ID		QCP_18/7/18	TB_18/7/18	RB_18/7/18		
Compound		Client sampling date / time	Unit	18-Jul-2018 00:00 EM181515-006 Result	18-Jul-2018 00:00 EM181515-007 Result	18-Jul-2018 00:00 EM181515-008 Result		
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	20	µg/L		60	<20	<20		
C10 - C14 Fraction	50	µg/L		1480		<50		
C15 - C28 Fraction	100	µg/L		2160		<100		
C29 - C36 Fraction	50	µg/L		<50		<50		
^ C10 - C36 Fraction (sum)	50	µg/L		3640		<50		
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	20	µg/L		90	<20	<20		
^ C6 - C10 Fraction minus BTEX (F1)	20	µg/L		90	<20	<20		
>C10 - C16 Fraction	100	µg/L		2280		<100		
>C16 - C34 Fraction	100	µg/L		1280		<100		
>C34 - C40 Fraction	100	µg/L		<100		<100		
^ >C10 - C40 Fraction (sum)	100	µg/L		3560		<100		
^ >C10 - C16 Fraction minus Naphthalene (F2)	100	µg/L		2280		<100		
EP080: BTEXN								
Benzene	71-43-2	1	µg/L	<1	<1	<1		
Toluene	108-88-3	2	µg/L	<2	<2	<2		
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2		
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2		
ortho-Xylene	95-47-6	2	µg/L	3	<2	<2		
^ Total Xylenes		2	µg/L	3	<2	<2		
^ Sum of BTEX		1	µg/L	3	<1	<1		
Naphthalene	91-20-3	5	µg/L	<5	<5	<5		
EP080S: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	2	%	98.9		93.2		
Toluene-D8	2037-26-5	2	%	94.6		84.2		
4-Bromofluorobenzene	460-00-4	2	%	112		87.9		

Page : 6 of 6
 Work Order : EM1811515
 Client : ENVIRONMENTAL MANAGEMENT & CONSULTING P/L
 Project : CPR1856



Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP075(SIMS): Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	46
2-Chlorophenol-D4	93951-73-6	23	104
2,4,6-Tribromophenol	118-79-6	28	130
EP075(SIMS): PAH Surrogates			
2-Fluorobiphenyl	321-60-8	36	114
Anthracene-d10	1719-06-8	51	119
4-Terphenyl-d14	1718-51-0	49	127
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	73	129
Toluene-D8	2037-26-5	70	125
4-Bromofluorobenzene	460-00-4	71	129



Environmental

QUALITY CONTROL REPORT

Work Order

EM1811515

Page

1 of 4

Client

ENVIRONMENTAL MANAGEMENT & CONSULTING P/L

Laboratory

Environmental Division Melbourne

Contact

MR SIMON CHISLETT

Contact

Customer Services EM

Address

LEVEL 2 BIGGENS BUILDING 67 LETTITA STREET
NORTH HOBART TASMANIA, AUSTRALIA 7000

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4 Westall Rd Springvale VIC Australia 3171

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Project

CPR1856

Date Samples Received

19-Jul-2018

Order number

Date Analysis Commenced

19-Jul-2018

C-O-C number

Issue Date

24-Jul-2018

Sampler

TL

Site

Cooper Automotive Claremont

Quote number

EN/222/18

No. of samples received

8

No. of samples analysed

8



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. 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

Dilani Fernando
Nancy Wang

Senior Inorganic Chemist
ZIC Organic Chemist

Melbourne Inorganics, Springvale, VIC
Melbourne Organics, Springvale, VIC

Page : 2 of 4
 Work Order : EM1811515
 Client : ENVIRONMENTAL MANAGEMENT & CONSULTING P/L
 Project : CPR1856



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by 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

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 QWL-EN38 and are dependent on the magnitude of results in comparison to the level of reporting. Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: WATER

Laboratory sample ID	Client sample ID	Method/Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG020F: Dissolved Metals by ICP-MS (QC Lot: 1816886)									
EM1811478-016	Anonymous	EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
EM1811545-003	Anonymous	EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1814972)									
EM1811504-061	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EM1811515-003	MMW03	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1814972)									
EM1811504-061	Anonymous	EP080: C6 - C10 Fraction	C6, C10	20	µg/L	<20	<20	0.00	No Limit
EM1811515-003	MMW03	EP080: C6 - C10 Fraction	C6, C10	20	µg/L	<20	<20	0.00	No Limit
EP080: BTEXN (QC Lot: 1814972)									
EM1811504-061	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit
		EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit
EM1811515-003	MMW03	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit

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 Work Order : EM1811515
 Client : ENVIRONMENTAL MANAGEMENT & CONSULTING P/L
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Method Blank (MB) and Laboratory Control Spike (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 Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

Sub-Matrix: WATER									
Method/Compound				Method Blank (MB) Report		Laboratory Control Spike (LCS) Report			
	CAS Number	LOR	Unit	Result	Spike Concentration	Spike Recovery (%)	LCS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLOt: 1816686)									
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L		91.7	83	105
EP075(SIM): Polynuclear Aromatic Hydrocarbons (QCLOt: 1814643)									
EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	5 µg/L		103	48	110
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	5 µg/L		102	49	124
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	5 µg/L		101	53	117
EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	5 µg/L		101	54	118
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	5 µg/L		97.1	57	119
EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	5 µg/L		101	51	113
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	5 µg/L		101	59	123
EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	5 µg/L		99.7	58	123
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	5 µg/L		104	52	126
EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	5 µg/L		102	55	123
EP075(SIM): Benzo(b+)fluoranthene	205-99-2	1	µg/L	<1.0	5 µg/L		108	52	131
	205-82-3								
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	5 µg/L		106	57	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L		103	56	126
EP075(SIM): Indeno(1,2,3 cd)pyrene	193-39-5	1	µg/L	<1.0	5 µg/L		103	53	123
EP075(SIM): Dibenzo(a,h)anthracene	53-70-3	1	µg/L	<1.0	5 µg/L		101	53	125
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	1	µg/L	<1.0	5 µg/L		104	53	125
EP080/071: Total Petroleum Hydrocarbons (QCLOt: 1814645)									
EP071: C10 - C14 Fraction	----	50	µg/L	<50	4331 µg/L		87.0	58	134
EP071: C15 - C28 Fraction	----	100	µg/L	<100	16952 µg/L		95.3	60	133
EP071: C29 - C36 Fraction	----	50	µg/L	<50	8695 µg/L		95.0	54	137
EP080/071: Total Petroleum Hydrocarbons (QCLOt: 1814972)									
EP080: C6 - C9 Fraction	----	20	µg/L	<20	360 µg/L		85.9	68	125
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLOt: 1814645)									
EP071: >C10 - C16 Fraction	----	100	µg/L	<100	6292 µg/L		89.1	58	122
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	22143 µg/L		95.2	56	132
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	1677 µg/L		96.0	58	137
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLOt: 1814972)									
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	450 µg/L		82.7	66	123
EP080: BTEXN (QCLOt: 1814972)									
EP080: Benzene	71-43-2	1	µg/L	<1	20 µg/L		92.1	74	123
EP080: Toluene	108-88-3	2	µg/L	<2	20 µg/L		94.1	77	128



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Method Blank (MB) Report				Laboratory Control Spike (LCS) Report			
Method: Compound	CAS Number	LOR	Unit	Result	Spike Concentration			Spike Recovery (%)			
										Low	High
EP080: BTEXN (QCLot: 1814972) - continued											
EP080: Ethylbenzene	100-41-4	2	µg/L	<2		20 µg/L	89.4		73	126	
EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2		40 µg/L	91.8		72	131	
	106-42-3										
EP080: ortho-Xylene	95-47-6	2	µg/L	<2		20 µg/L	95.0		74	131	
EP080: Naphthalene	91-20-3	5	µg/L	<5		5 µg/L	86.8		74	124	

Matrix Spike (MS) Report

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

Sub-Matrix: **WATER**

Sub-Matrix: WATER		Matrix Spike (MS) Report						
		Spike Concentration	SpikeRecovery(%)	MS	Low	High		
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration				
EG020F: Dissolved Metals by ICP-MS (QCLot: 1816686)								
EM1811478-016	Anonymous	EG020A-F: Lead	7439-92-1	0.2 mg/L	85.7		75	133
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1814972)								
EM1811504-062	Anonymous	EP080: C6 - C9 Fraction	-----	280 µg/L	62.4		43	125
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1814972)								
EM1811504-062	Anonymous	EP080: C6 - C10 Fraction	C6_C10	330 µg/L	58.1		44	122
EP080: BTEXN (QCLot: 1814972)								
EM1811504-062	Anonymous	EP080: Benzene	71-43-2	20 µg/L	87.2		68	130
		EP080: Toluene	108-88-3	20 µg/L	88.9		72	132


Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EM1811515	Page	: 1 of 5
Client	: ENVIRONMENTAL MANAGEMENT & CONSULTING P/L	Laboratory	: Environmental Division Melbourne
Contact	: MR SIMON CHISLETT	Telephone	: +61-3-8549 9600
Project	: CPR1856	Date Samples Received	: 19-Jul-2018
Site	: Cooper Automotive Claremont	Issue Date	: 24-Jul-2018
Sampler	: TL	No. of samples received	: 8
Order number	:	No. of samples analysed	: 8

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

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

Summary of Outliers

Outliers : Quality Control Samples

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

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

Outliers : Analysis Holding Time Compliance

- NO Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

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



Outliers : Frequency of Quality Control Samples

Matrix: WATER

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
PAH/Phenols (GC/MS - SIM)	0	5	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	7	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
PAH/Phenols (GC/MS - SIM)	0	5	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	7	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 of Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: WATER

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG020F: Dissolved Metals by ICP-MS								
Clear Plastic Bottle - Filtered; Lab-acidified (EG020A-F)								
MMW01,		18-Jul-2018	---	----	----	20-Jul-2018	14-Jan-2019	✔
MMW03,								
MMW05								
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP075(SIM))								
MMW01,		18-Jul-2018	19-Jul-2018	25-Jul-2018	✔	20-Jul-2018	28-Aug-2018	✔
MMW03,								
MMW05								
EP080/071: Total Petroleum Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP071)								
MMW01,		18-Jul-2018	19-Jul-2018	25-Jul-2018	✔	20-Jul-2018	28-Aug-2018	✔
MMW03,								
MMW05,								
RB_18/7/18								
Amber VOC Vial - Sulfuric Acid (EP080)								
MMW01,		18-Jul-2018	19-Jul-2018	01-Aug-2018	✔	20-Jul-2018	01-Aug-2018	✔
MMW03,								
MMW05,								
TB_18/7/18,								

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**Matrix: WATER**

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
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Amber Glass Bottle - Unpreserved (EP071)							
MMW01, MMW03, MMW05, RB_18/7/18	18-Jul-2018	19-Jul-2018	25-Jul-2018	✔	20-Jul-2018	28-Aug-2018	✔
Amber VOC Vial - Sulfuric Acid (EP080)							
MMW01, MMW03, MMW05, TB_18/7/18	18-Jul-2018	19-Jul-2018	01-Aug-2018	✔	20-Jul-2018	01-Aug-2018	✔
EP080: BTEXN							
Amber VOC Vial - Sulfuric Acid (EP080)							
MMW01, MMW03, MMW05, TB_18/7/18	18-Jul-2018	19-Jul-2018	01-Aug-2018	✔	20-Jul-2018	01-Aug-2018	✔

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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: **WATER**

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

Quality Control Sample Type			Count			Rate (%)		Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation		
Laboratory Duplicates (DUP)								
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	15	13.33	10.00	✓		NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	5	0.00	10.00	✗		NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	7	0.00	10.00	✗		NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	20	10.00	10.00	✓		NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)								
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	15	6.67	5.00	✓		NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	5	20.00	5.00	✓		NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	7	14.29	5.00	✓		NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✓		NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)								
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	15	6.67	5.00	✓		NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	5	20.00	5.00	✓		NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	7	14.29	5.00	✓		NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✓		NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)								
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	15	6.67	5.00	✓		NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	5	0.00	5.00	✗		NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	7	0.00	5.00	✗		NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	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
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house. Referenced to APHA 3125, USEPA SW846 - 6020, ALS QWL/ENEG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
TRH - Semivolatile Fraction	EP071	WATER	In house. Referenced to USEPA SW 846 - 8015A. The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	In house. Referenced to USEPA SW 846 - 8270D. Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
TRH Volatiles/BTEX	EP080	WATER	In house. Referenced to USEPA SW 846 - 8260B. Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GC/MS analysis. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
Preparation Methods			
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house. Referenced to USEPA SW 846 - 3510B. 100 mL of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3). ALS default excludes sediment which may be resident in the container.
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for sparging.

Chain of Custody and Analysis Request										Page: 1 of 1					
Site Name: Cooper Automotive Disposal Project Number: CPH1856 Sampled By: Tom Latham Phone: 0488 515 991			Client: Environmental Management and Consulting Pty Ltd Quote Number: AEMC/23716 Project Manager: Simon Chibret Phone: 0438 238 238 INVOICES TO: scchi@emcgroup.com.au			em&c Primary Laboratory AUS Laboratory Group 2-4 Myer Rd Springvale, VIC 3172 Phone: (03) 95498600			Secondary Laboratory Eurofins Met 35 Kingston Town Close Oakleigh, VIC 3166 Phone: (03) 9561 7055						
RESULTS: Results Required By: Same day 24hrs 48hrs 3 days 5 days other: _____ Additional fee: +100% +40% +20% +10% Send Results & Copy of COC to: Simon Chibret Alex Lovellbond Tom Latham Email: simon@emcgroup.com.au Email: alex@emcgroup.com.au Email: tom@emcgroup.com.au Phone: 0438 238 238 Phone: 0439 305 677 Phone: 0488 515 991															
Please ensure all samples are analysed within the same QC lot Laboratory Repeate Water VOC BATCH: SM1705562 -Z Laboratory Repeate Water VOC BATCH: 220718 Laboratory Repeate Trip Blank BATCH: SM1705876 -S															
Laboratory Sample ID	Field Sample ID	Date Collected	Sample Type		Preservation Method				Type & Number of Containers		W-21 - TRH (C6-C40)/BTEXN/PAH, Pb*	W-4 - TPH/TRH (C6-C38 or 40)/BTEXN plus F1 & F2	Analysis Required	Comments (mention if samples are for QC/MS, filtered or not)	
			Soil	Water	Ice	Acid	None	Glass	Plastic						
1	MM01	18/7/18	-	X	3	2	-	-	3	1	X	-			
2	MM02	18/7/18	-	X	3	2	-	-	3	1	X	-			
3	MM03	18/7/18	-	X	3	2	-	-	3	1	X	-			
4	MM04	18/7/18	-	X	3	2	-	-	3	1	X	-			
5	MM05	18/7/18	-	X	3	2	-	-	3	1	X	-			
6	QC 18/7/18	18/7/18	-	X	3	2	-	-	3	0	-	X			
7	TR 18/7/18	18/7/18	-	X	3	2	-	-	3	0	-	X			
8	RL 18/7/18	18/7/18	-	X	3	2	-	-	3	0	-	X			
FREIGHT															
Environmental Division Melbourne Work Order Reference EM18151515  © Environmental Management and Consulting Pty Ltd 2018															
Requisitioned By: Tom Latham Date: 18/7/18 Confirmed By: _____ Date: _____ Signature: <i>[Signature]</i> Time: 14:30 Signature: _____ Time: _____ Received By: Simon Chibret Date: 19/7/18 Signature: <i>[Signature]</i> Time: 14:30															
Temp (°C) on Receipt: _____															



APPENDIX E

Tasmanian GIAP Groundwater Features Detailed Report

The Groundwater Information Access Portal
Department of Primary Industries, Parks, Water and Environment

Search criteria: Details | Symbolism | Legend

Locality:

Date drilled (dd/mm/yyyy)
From: 06/08/1960 To: 06/08/19

Depth (metres)
Greater than: Less than:

Total yield (litres per second)
Greater than: Less than:

Feature number(s): E.g. 1, 4, 6-9

Search area co-ordinates:
Lower left X: 519550 Lower left Y: 5261292
Upper right X: 521942 Upper right Y: 5263210

Search: Clear search criteria

Map layers:

Feature View:

Executing your query ...

No results
There are no features matching your search criteria.



APPENDIX F

Assessment Data Quality Indicator (DQI) Checklist

Data Quality Indicators Checklist



ENVIRONMENTAL MANAGEMENT & CONSULTING PTY LTD

List the laboratory batch numbers in the reporting period to which this DQI checklist relates								
Report ID	Report Description					Report Issue Date		
EM1810778	Soil assessment					9/7/18		
EM1811515	GME					24/7/18		
						Yes	No	NA
Are all laboratory reports included within EM&C report as an appendix?						☒	☐	☐
Comments: SRN, CoA, QC, QCI and CoC supplied								
Comparability (the confident expressed qualitatively that data may be considered to be equivalent for each sampling and analytical event)								
						Yes	No	NA
Was the EM&C Standard Operating Procedure for sampling used?						☒	☐	☐
Comments:								
Were consistent sample types collected according to SAQP?						☒	☐	☐
Comments: During the soil assessment phase, the method of drilling and hence the method of sample collection was changed as the hole was advanced. A discussion of this is provided within the report document. Where the sample collection method is different, an footnote is placed adjacent to the sample ID within relevant Tables.								
Who was conducting the sampling?								
Comments: Soil sampling was conducted by Tom Latham. Water sampling was conducted by Tom Latham.								
Was the same laboratory and laboratory method used?						☒	☐	☐
Comments:								
Have the same units of measurement been used?						☐	☒	☐
Comments: In some cases, µg/L may be used instead of mg/L, however values have been converted to ensure comparability of results								
Were climate conditions recorded? (if relevant)						☐	☐	☒
Comments:								
Precision (a quantitative measure of the variability (or reproducibility) of data)								
						Yes	No	NA
Is the blind duplicate/split ID generic and does it not reveal the reference sample ID?						☒	☐	☐
Comments:								
Is RPD within 0-50% for samples with concentrations >10*LOR and within 100% for samples with concentration <10*LOR:						☒	☐	☐
Comments: See Tables 5a and 5b for full RPD analysis								
Has the Primary laboratory QA/QC reported any anomalies?						☒	☐	☐
Comments: Where outliers exist, comments will be provided below the report ID								
	Intra Lab QCS					Analysis Holding Time	Frequency of Intra Lab QC Samples	
Report ID	Lab Method Blank	Lab Control	Matrix Spike	Lab Duplicate	Surrogate Recovery	Holding Time breach	Frequency Breach	Report Issue Date
EM1811515	No	No	No	No	No	No	Yes	24/7/18

Data Quality Indicators Checklist



ENVIRONMENTAL MANAGEMENT & CONSULTING PTY LTD

EP071 and EP075 (SIM): Intra Lab Quality Control Sample Frequency Outliers exist. Not enough duplicate sample bottles provided for intra lab duplicate and/or QC matrix spike testing. This result may be due to standard laboratory practice of running samples through in grouped project 'analytical lots'. This practise may involve splitting EM&Cs submitted samples over multiple analytical lots. EM&C have no control over the number of intra lab duplicates in which their samples are analysed, other than providing additional sample bottles at the specified frequency (a practise that was observed in this instance). Even when this practice is observed, the splitting of EM&Cs sample bottles over multiple 'analytical lots' may result in a non compliance, due to a lack of frequency of quality control samples provided to the laboratory. This reported QSC breach considered minor and not significant enough to compromise the integrity of specific batch ID.

EM1810778	No	No	No	No	No	No	No	9/7/18
-----------	----	----	----	----	----	----	----	--------

Accuracy (a quantitative measure of the closeness of the reported data to the true value)

	Yes	No	NA
Was the field equipment calibrated?	☒	☐	☐
Comments:			
Have trip, field and rinsate samples been collected?	☒	☐	☐
Comments: Rinsate and trip blanks were utilised for the GME but not for soil sampling due to field time restrictions. EM&C do not believe this affects the reliability of the data. A field blank sample was deemed to be unrequired by EM&C.			

Representativeness (the confidence expressed qualitatively that are representative of each media type present on the site under investigation)

	Yes	No	NA
Has the appropriate media been sampled and analysed in accordance with the SAQP?	☒	☐	☐
Comments:			
Has all media identified in the SAQP been sampled?	☒	☐	☐
Comments:			
Have Chain of Custodies been completed?	☒	☐	☐
Comments:			
Have the samples been collected in the appropriate containers?	☒	☐	☐
Comments:			
Have the samples been stored, preserved and handled appropriately and received at the laboratory at acceptable temperature?	☒	☐	☐
Comments:			
Has any contamination been identified in blank samples?	☐	☒	☐
Comments:			
Have any uncertainties been identified in:			
Sampling methods	☐	☒	☐
Comments: As mentioned above, the method of soil sampling was not identical, as dictated by the required drilling method. An explanation of this is provided within the report body.			
Laboratory Methods	☐	☒	☐
Comments:			
Groundwater well integrity or network	☐	☒	☐
Comments:			
Soil vapour bore integrity	☐	☐	☒
Comments:			

Cooper Automotive, 8-10 Main Rd Claremont

Data Quality Indicators Checklist



ENVIRONMENTAL MANAGEMENT & CONSULTING PTY LTD

Completeness (a measure of the amount of usable data contributing to the entire data set)			
	Yes	No	NA
Have all critical site locations been sampled in accordance with the SAQP?	☐	☐	☐
Comments:			
Has the Technical Holding Times been met?	☐	☐	☐
Comments:			
Is field and laboratory documentation correct, legible and authorised by signature and date?	☐	☐	☐
Comments:			

☐	Acceptable
☐	Acceptable, irregularities has been noted
☐	Not acceptable



Appendix G

SEMF Preliminary Environmental Site Report (2007)

SULTAN HOLDINGS Pty

**Former Ampol Service Station
8-10 Main Road, Claremont**

Preliminary Environmental Site Assessment Report

Project No. 2120.001
June 2007
Revision 0



**S C I E N T I S T S
E N G I N E E R S
M A N A G E R S &
F A C I L I T A T O R S**

SEM F Pty Ltd

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ACN 117 492 814 ABN 24 117 492 814

FORMER AMPOL SERVICE STATION
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1.0 EXECUTIVE SUMMARY

A Preliminary Environmental Site Assessment (ESA) was undertaken at the rear of the former Ampol Service Station located at 8-10 Main Road, Claremont (the 'site') in May 2007. The objective of the preliminary ESA was to provide information regarding the contamination status of the soil at the rear of the Service Station building prior to subdividing and re-developing the site. The assessment was limited to sampling of the soil at the rear of the property behind the Service Station building and has made no allowances for contamination issues that may be present at the front of the site or in the vicinity of the underground storage tanks (UST's - located on the front half of the property). The results of the preliminary ESA will provide an initial assessment of potential soil impacts associated with the former use of the front portion of the property as a service station and the presence of fuels in UST's at the site.

A total of five test pit investigations were undertaken within the 1,400m² investigation area at the rear of the site and soil samples were obtained at varying depths. Sample sites were selected to ensure that areas of potential contamination at the rear of the sites were included. No groundwater investigations were undertaken at the site as part of this preliminary ESA.

The key aspect of the assessment involves the comparison of the sampling analytical results with the appropriate guideline levels. If the contaminant levels are below the thresholds, no further investigation is considered necessary for the proposed subdivision and redevelopment of the rear of the site. However, if the contaminant levels are above the thresholds, it may be necessary to advise Glenorchy City Council and/or DTAE's Director of Environmental Management of the potential for environmental nuisance or harm. Also, further investigation may be required to determine the extent of contamination and a risk assessment and/or remediation plan may need to be developed.

Given that this investigation has been limited to the rear of the site, further soil sampling and/or groundwater assessment will be required on the front portion of the site, particularly in the vicinity of the UST's and associated infrastructure. In addition, soil sampling will be required at the time of tank decommissioning.

The results of the recent soil sampling at the rear of the former Ampol Service Station, 8-10 Main Road, Claremont site (1,400m² approx. investigation area) suggest that there is currently no indication of hydrocarbon contamination evident in the samples collected. Test pits were located to determine the contamination status of the soil at the rear of the Service Station buildings prior to subdividing and re-developing the site. Given the analytical results were below the NEPM Health Investigation Levels for residential use, it is considered that the site can be subdivided and the rear half of the site is suitable for re-development for all land uses including residential with garden/accessible soil (the most sensitive development).

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Regardless of whether or not the front of the site is to cease operation as a service station a number of recommendations have been made for assessment (soil and groundwater) of the front half of the site. These recommendations are detailed in Section 15 of this report.

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REPORT ISSUE AUTHORISATION

PROJECT: Former Ampol Service Station, 8-10 Main Road, Claremont – Preliminary Environmental Site Assessment

Project No: 2120.001

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Date	Purpose of Issue/Nature of Revision	Rev	Reviewed by	Issue Authorised by
13/06/07	Report issued to Client	0	MLJ	MLJ

This report is based specifically on confidential briefing information provided by the Client and is not intended for use by unauthorised persons or parties. No warranties are made to any unauthorised persons or parties in respect of the contents of this report.

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APPENDICES

Appendix A –Department of Primary Industries, Water and the Environment Analytical Services Tasmania Laboratory: <i>Laboratory Report 22519</i>
Appendix B – Analytical Services Tasmania: Soil Sampling Chain of Custody Form
Appendix C – Analytical Services Tasmania: Soil Sampling Laboratory Report

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2.0 INTRODUCTION

A Preliminary Environmental Site Assessment (ESA) was undertaken at the rear of the former Ampol Service Station located at 8-10 Main Road, Claremont (the 'site') in May 2007. The objective of the preliminary ESA was to provide information regarding the contamination status of the soil at the rear of the Service Station building prior to subdividing and re-developing the site. The assessment was limited to sampling of the soil at the rear of the property behind the Service Station building and has made no allowances for contamination issues that may be present at the front of the site or in the vicinity of the underground storage tanks (UST's - located on the front half of the property). The results of the preliminary ESA will provide an initial assessment of potential soil impacts associated with the former use of the front portion of the property as a service station and the presence of fuels in UST's at the site.

At the request of SEMF Pty. Ltd. (SEMF), Kerry Vince Builders and Earthmoving were engaged on behalf of Sultan Holdings, to excavate five test pits at the rear of the former Ampol Service Station within the 1,400m² (approximate) investigation area. No groundwater investigations were conducted as part of this ESA.

2.1 Environmental Site Assessment Details

DATE OF SOIL SAMPLING:

Thursday 24 May 2007

ASSESSMENT TEAM:

Carly Harington, Environmental & Safety Scientist - SEMF Pty. Ltd.
--

SITE LOCATION:

8-10 Main Road, Claremont

3.0 SCOPE OF WORK

Information for the ESA was provided through the collection and analysis of soil samples obtained from test pits excavated on the site in May 2007 by SEMF. A total of five test pit investigations were undertaken within the 1,400m² investigation area at the rear of the site and soil samples were obtained at varying depths. The test pits were advanced using an excavator with soil samples selected for analysis based on any major changes in subsurface substrates (i.e. fill material, significant variation in soil types etc.) or where anything unusual like staining or odour was observed. Sample sites were selected to ensure that areas of potential contamination at the rear of the site were included.

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Prior to drilling, site services were established in the presence of Archer's Underground Service Locations (AUSL). AUSL were engaged to determine the location of surrounding Telstra, Council and Aurora infrastructure using a radio-detector. The use of the cable locator ensured the safety of people working in the area and protected the surrounding infrastructure during excavation of the test pits.

To achieve this purpose, the environmental site assessment included the following work:

- Brief Site History Investigation based on information contained in the Dangerous Goods File held at Workplace Standards Tasmania (WST);
- Soil sampling in five locations at the rear of the site;
- Review and interpretation of analytical results; and
- Production of a report containing background information on the site, assessment methodology, summary and discussion of results and conclusions and recommendations for any further site management and/or remediation as necessary.

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4.0 BACKGROUND INFORMATION

4.1 Previous Site Investigations

In June 2004, eight soil samples were collected from four locations (C1, C2, C3 & C4) at the 8-10 Main Road Claremont site. The objective of this assessment is not known and it has been assumed that the investigation was conducted to determine the level of soil contamination (if any) at the site.

The report is attached in Appendix A however due to the absence of a site plan showing the sample locations the findings of the report have not been discussed in detail as part of this preliminary ESA. Results of the investigation found that all samples were below the NEPM Health Investigation Limits (HIL's) for standard residential use with garden/accessible soil for the individual parameters analysed.

4.2 Site History

The following site history for the former Ampol Service Station located at 8-10 Main Road, Claremont has been developed from the Dangerous Goods file relating to the site held by Workplace Standards Tasmania (WST). The information relating to the number, capacity and contents of the UST's that have been located on the site, as identified in the Dangerous Goods file, are summarised in Table 1.

The site has been operated as a service station from 1939 until recently and the Dangerous Goods Licence for the site is still current. Many changes to the infrastructure have occurred over the 68-year history of the service station, the most notable of which is the abandonment of seven UST's on the site. There are no records indicating whether or not these tanks were decommissioned in accordance with relevant guidelines and it has been assumed that a number of them may still be on site.

The current Dangerous Goods Licence indicates the storage on site is one 5kL Distillate UST, one 15kL Unleaded Petrol UST, one 27.5kL Unleaded Petrol UST and three LPG cylinders. A visual assessment of the fill points indicated that there is one Super UST, one Unleaded Petrol UST and one Diesel UST. Although the tanks are no longer in operation, due to the closure of the service station in 2006, the volume of fuel in each tank is not known.

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Table 1: Summary of Dangerous Goods Records for 8-10 Main Road Claremont

Document Date	Document Description
01/11/39	- First record on file. - Application made to licence 2,000 gallons of Mineral Spirits.
08/06/53	- Site Plan indicates: 2 x 1,000 gallon tanks; and 2 x 500 gallon tanks.
19/03/56	- Site Plan indicates: 2 x 1,000 gallon tanks; and 2 x 500 gallon tanks.
18/08/59	- Site Plan indicates: 2 x 1,000 gallon tanks; 2 x 500 gallon tanks; and 1 x 500 gallon tank (proposed).
21/08/59	Permission granted for the installation of one additional 500 gallon tank.
04/09/61	- Site Plan indicated: - Existing tanks to be abandoned (2 x 1,000 & 2 x 500 gallon); - Proposed installation of 1 x 2,000 and 1 x 3,000 gallon tanks.
06/09/61	Approval granted for the above.
29/03/72	- Site Plan indicates: 1 x 3,000 gallon Super UST; 1 x 2,000 gallon Standard UST; and 1 x 500 gallon Kerosene UST.
10/04/72	Approval granted for the relocation of one single electric pump and the installation of one dual electric pump.
26/09/73	- Site Plan indicates: 1 x 3,000 gallon Super UST; 1 x 2,000 gallon Shell UST; 1 x 500 gallon Kerosene UST; and 1 x 6,000 gallon Super UST (proposed).
28/09/73	Approval granted for the installation of one 6,000 gallon Super UST.
09/01/74	- Application made to licence: 11,000 gallons of Inflammable Liquid Class A; and 500 gallons of Inflammable Liquid Class B.
09/01/74	- Inspection Report indicates: 1 x 6,000 gallon tank of Class A; 1 x 3,000 gallon tank of Class A; 1 x 2,000 gallon tank of Class A; and 1 x 500 gallon tank of Class B.
02/04/84	- Inspection Report indicates: 50.11kL of Petrol; and 2.27kL of Distillate. - Kerosene UST was converted to Distillate.
22/02/88	- Site Plan indicates: 1 x 25kL Super UST; 1 x 12kL Super UST; 1 x 8kL UST; and 1 x 4.5kL Diesel UST; - Existing 2.27kL Diesel UST to be filled, sealed, vent removed and capped.

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Document Date	Document Description
14/03/88	Approval granted for the installation of one 4.5kL Distillate UST.
04/05/88	- Inspection Report indicates: 1 x 25kL Super UST; 1 x 13.5kL Super UST; 1 x 9kL Unleaded Petrol UST; and 1 x 4.5kL Diesel UST.
07/08/90	- Site Plan indicates: 1 x 27.5kL Super UST; 1 x 14kL Super UST (to be removed); 1 x 11kL Unleaded Petrol UST (to be removed); 1 x 5kL Diesel UST; and 3 x 45kg LP Gas cylinders. - Proposed installation of 1 x Type 15 Unleaded Petrol UST.
14/08/90	Approval granted for the installation of 16.4kL (Type 15) Unleaded Petrol UST in accordance with AS1940.
24/08/90	- Inspection Report indicates: 1 x 27.5kL Premium Unleaded Petrol UST; 1 x 14kL Premium Unleaded Petrol UST; 1 x 11kL Unleaded Petrol UST; 1 x 5kL Diesel UST; and 3 x 88L LPG Cylinders.
01/07/02 to 30/06/03	- Dangerous Goods Licence indicates: 5.0000kL Petrol; 0.3300kL LP Gas; 15.0000kL Petrol; and 27.5000kL Petrol.
01/07/06 to 30/06/07	- Dangerous Goods Licence indicates: 5.000kL Petrol; 0.330kL LP Gas; 15.000kL Petrol; and 27.500kL Petrol.

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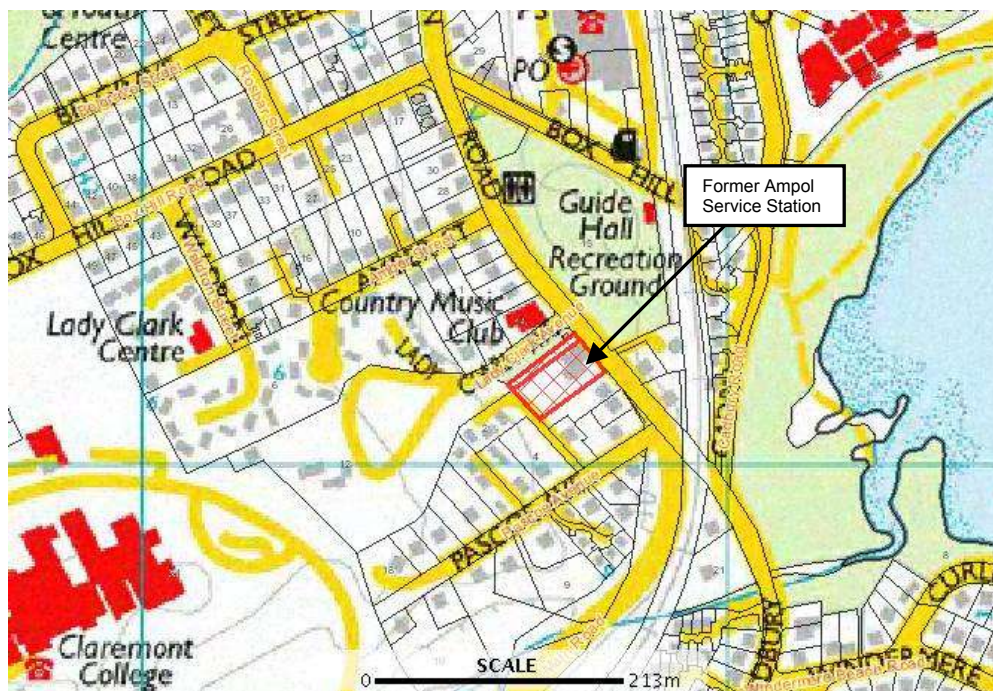
5.0 REGIONAL SETTING

The former Ampol Service Station at 8-10 Main Road, Claremont is located just north of the Hobart metropolitan area. The site is located on the western side of Main Road on relatively flat land that slopes gently towards Main Road to the east.

The 1,400m² service station property is bounded to the north by Lady Clark Avenue and Main Road Claremont to the east. A number of residential properties surround the site with a sports ground immediately to the north-east. Main Road Claremont carries a considerable amount of traffic being a main access route to the Claremont business centre.

The former Ampol Service Station site location is illustrated in Figure 1.

Figure 1 – Site Location: Former Ampol Service Station, 8-10 Main Road, Claremont



(Map Source: The LIST, DPIW 2007)

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6.0 ASSESSMENT METHODOLOGY

6.1 Sample Collection

Soil sampling conducted for the purpose of this report has been undertaken in accordance with the SEMF ISO 9001 quality procedures "Soil Sampling for Chemical Analysis", the National Environment Protection (Assessment of Site Contamination) Measure 1999, *Schedule B (2) Guideline on Data Collection, Sample Design and Reporting* and the Australian Standard AS 4482:2005 *Guide to the sampling and investigation of potentially contaminated soil – Part 1: Non-volatile and semi-volatile compounds*.

Each test pit was advanced using an excavator on the 24 May 2007. Disturbed soil samples were obtained at varying depths at all test pit locations. Any build-up of clay or soil was removed from the excavator bucket between each test pit. Test Pit locations are illustrated in Figure 2.

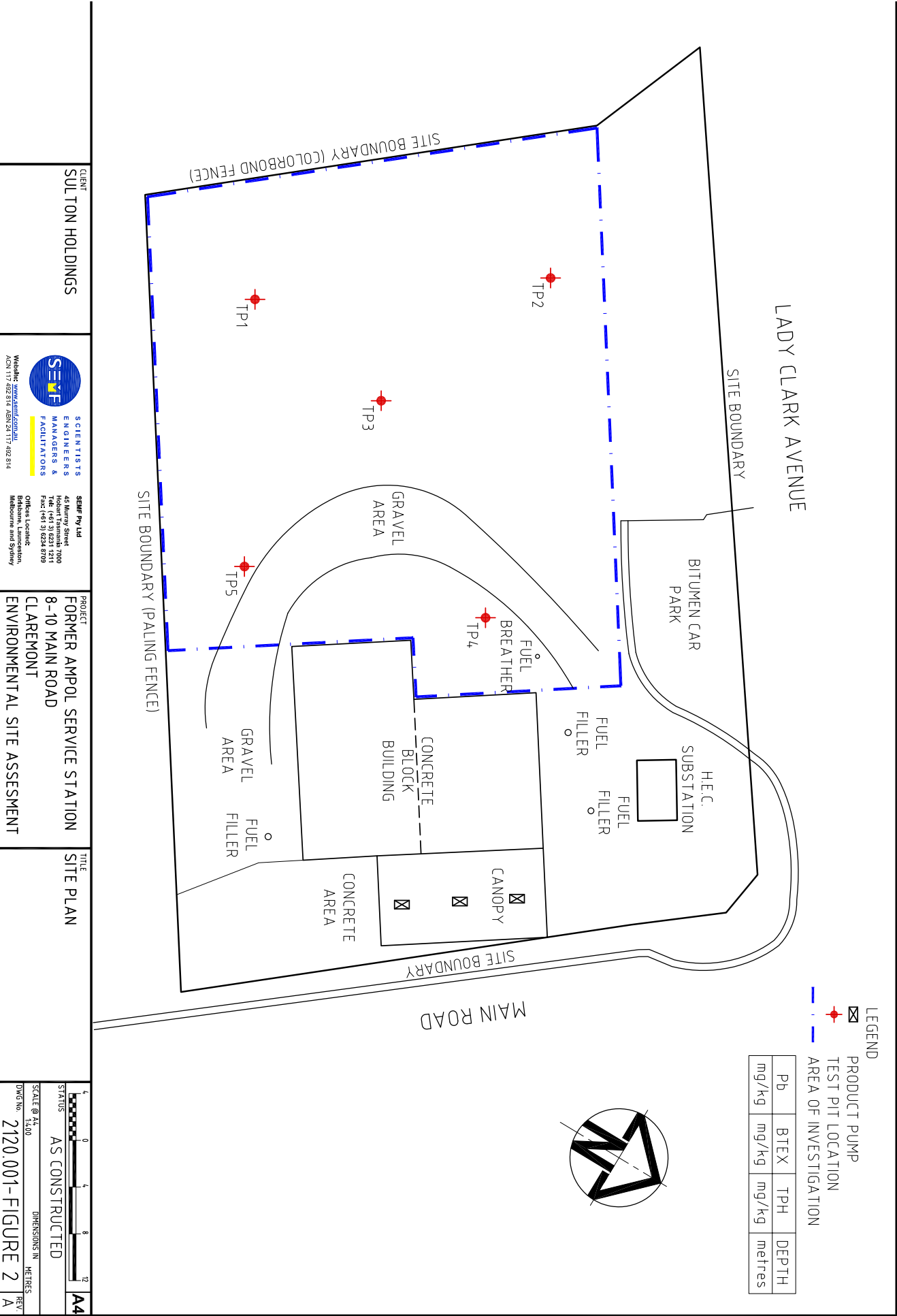
Two soil samples were obtained from each test pit with sample depth selected for analysis based on any major changes in subsurface substrates (i.e. fill material, significant variation in soil types etc.) or where anything unusual like staining or odour was observed. The soil profile observed in each test pit is described in Table 2. Soil samples were submitted to the Analytical Services Tasmania (AST) Laboratory. The Chain of Custody form is attached in Appendix B with the analytical report attached in Appendix C.

6.2 Sample Analysis

6.2.1 Soil

Soil samples were analysed by the Department of Tourism, Arts and Environment (DTAE), NATA accredited Analytical Services Tasmania (AST) Laboratory, utilising NATA certified methodology. Soil samples were analysed for;

- Volatile Monocyclic Aromatic Hydrocarbons [Benzene (B), Toluene (T), Ethyl benzene (E) and o, m & p Xylene (X); commonly referred to as BTEX] by GC-FID;
- Total Petroleum Hydrocarbons (TPH) by GC-FID; and
- Lead by APHA Method 3030/3120.



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Table 2: Soil Profile Description and Soil Sample Information

Depth (m)	Description	Sample No.
Test Pit No. 1		
<i>Located in the south-western corner of the site.</i>		
0.00-0.10	Slightly moist, grass and brown gravelly soil. No odour.	
0.10-0.50	Slightly moist, dark yellowish brown (10YR4/4) hard, smooth clay with slight tan mottling. No odour.	TP1-1@0.5m
0.50-0.70	Slightly moist, sandy coloured hard, smooth clay. No odour.	
0.70-1.10	Slightly moist, yellowish brown (10YR5/6) fine soil with small rock mottling. No odour.	TP1-2@1.1m
(test pit terminated)		
Test Pit No. 2		
<i>Located in the north-western corner of the site.</i>		
0.00-0.15	Slightly moist, grass and mid brown/dark brown clay/soil. No odour.	
0.15-0.45	Slightly moist, yellowish brown (10YR5/6) fine soil with gravel and white mottling. No odour.	TP2-1@0.45m
0.45-0.75	Slightly moist, sandy coloured hard, smooth clay. No odour.	
0.75-1.05	Slightly moist, yellowish brown (10YR5/6) fine soil with small rock mottling. No odour.	TP2-2@1.05m
(test pit terminated)		
Test Pit No. 3		
<i>Located in the centre of the rear half of the site.</i>		
0.00-0.15	Slightly moist, brown clay with white and brown gravel mottling. No odour.	
0.15-0.55	Slightly moist, very dark greyish brown (10YR3/2) hard, smooth clay with black mottling. No odour.	TP3-1@0.55m
0.55-0.70	Slightly moist, sandy coloured clay with shale rock. No odour.	
0.70-0.95	Slightly moist, yellowish brown (10YR5/6) fine soil with rocky mottling. No odour.	TP3-2@0.95m
(test pit terminated)		
Test Pit No. 4		
<i>Located in the north-eastern corner of the rear half of the site, behind the service station building.</i>		
0.00-0.10	Slightly moist, gravel and hard smooth clay. No odour.	
0.10-0.35	Slightly moist, dark yellowish brown (10YR4/4) hard, smooth clay. No odour.	TP4-1@0.35m
0.35-0.65	Slightly moist, sandy coloured smooth, hard clay with shale rock. No odour.	
0.65-0.95	Slightly moist, yellowish brown (10YR5/6) fine soil with small rock mottling. No odour.	TP4-1@0.95m
(test pit terminated)		

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Test Pit No. 5	<i>Located in the south-eastern corner of the rear half of the site behind the workshop building.</i>	
0.00-0.20	Slightly moist, dark brown hard clay/soil. No odour.	
0.20-0.40	Slightly moist, very dark greyish brown (10YR3/2) hard, smooth clay with black mottling. No odour.	TP5-1@0.40m
0.40-0.60	Slightly moist, yellow/brown smooth, hard clay with shale rock. No odour.	
0.60-1.00	Slightly moist, dark yellowish brown (10YR4/6) fine, gravely soil with rock mottling. No odour.	TP5-2@1.00m
(test pit terminated)		

7.0 SITE GEOLOGY AND HYDROLOGY

The Land Systems of Tasmania (Davies, J. 1988) indicates that the geology of the area is Jurassic Dolerite. Surface texture is described as light clay. Subsoil is deep heavy black (2.5YR2/0) clay to very dark greyish brown (10YR3/2) gradational soil, with yellow brown (10YR5/8) mottle.

This area has an annual rainfall of 500-625mm per year.

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8.0 ENVIRONMENTAL INVESTIGATION LEVELS

Environmental investigation limits for soil are outlined in Tables 3 & 4. The requirement for further investigation is based on limits set in Tasmanian and National Guidelines.

8.1 Soil Investigation Levels

Soil samples were assessed primarily against the Health Investigation Limits (HIL's) outlined the National Environment Protection Measure (Assessment of Site Contamination) Schedule B(1) *Guideline on the Investigation Levels for Soil and Groundwater*, with reference also made to the NSW EPA Threshold Soil Concentrations for sensitive land use and the DTAE Information Bulletin No. 109 *Underground Storage Tank Decommissioning Guidelines*.

Table 3: Summary of Soil BTEX and TPH Investigation Levels

LIMITS (mg/kg)	Benzene	Toluene	Ethyl- benzene	o, m & p Xylene	Total BTEX	C ₆ -C ₉	C ₁₀ -C ₁₄	C ₁₅ -C ₂₈	C ₂₉ +	Total TPH
NSW EPA Threshold soil concentrations for <u>sensitive land use</u> ¹	1	130	50	25	NA	65	1000			NA
Dutch Intervention Levels 2000 ²	1	130	50	25	NA	5000				NA
DTAE 2006 Further Investigation Thresholds ³	1	1.4	3.1	14	NA	65	1000			NA

References

- 1 NSW EPA (2002) Soil Threshold Concentration for Sensitive Lands Uses from Contaminated Sites: Guidelines for Assessing Service Station Sites.
- 2 . Dutch Intervention Levels (2000) Target Values and Intervention Values for Soil Remediation.
- 3 DTAE (2006) Information Bulletin No. 109: Underground Storage Tank Decommissioning Guidelines.

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Table 4: Summary of Soil Heavy Metal Investigation Levels

LIMITS (mg/kg)	As	Cd	Co	Cr(VI)	Cu	Mn	Ni	Pb	Zn
NEPM Guidelines ¹ : HIL Residential 'A'	100	20	100	100	1000	1500	600	300	7000
NEPM Guidelines ¹ : HIL Residential 'D'	400	80	400	400	4000	6000	2400	1200	28000
NEPM Guidelines ¹ : Parks/Recreational Open Space	200	40	200	200	2000	3000	600	600	14000
NEPM Guidelines ¹ : Commercial/Industrial	500	100	500	500	5000	7500	3000	1500	35000
2006 DTAE ² Further Investigation Thresholds	-	-	-	-	-	-	-	300	-

References

1 NEPC. 1999. NEPM. National Environment Protection Measure (Assessment of Site Contamination): Schedule B (1) Guideline on the Investigation Levels for Soil and Groundwater. National Environment Protection Council.

2 Department of Tourism, Arts & Environment Information Bulletin No. 109 Underground Storage Tank Decommissioning Guidelines, August 2006.

HIL – Health Investigation Level

'A' Residential – 'Standard' residential with garden/accessible soil

'D' Residential – Residential with minimal opportunities for soil access: includes dwellings with fully and permanently paved yard space

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9.0 RESULTS OF ASSESSMENT

9.1 Soil

Soil sampling results are summarised in Tables 5 & 6. The appropriate regulatory guidelines and levels (where they exist) are given in the top section of each table. Appendix B contains the soil sampling "Chain of Custody" form and Appendix C contains the laboratory analytical reports from the NATA registered 'Analytical Services Tasmania' laboratory.

Table 5: Summary of Soil TPH and BTEX Analytical Results

LIMITS (mg/kg)	Benzene	Toluene	Ethyl- benzene	o, m & p Xylene	Total BTEX	C ₆ -C ₉	C ₁₀ -C ₁₄	C ₁₅ -C ₂₈	C ₂₉ +	Total TPH
NSW EPA Threshold soil concentrations for sensitive land use ¹	1	130	50	25	NA	65	1000			NA
Dutch Intervention Levels 2000 ²	1	130	50	25	NA	5000				NA
DTAE 2006 Further Investigation Thresholds ³	1	1.4	3.1	14	NA	65	1000			1000
TEST PIT SAMPLES: 24 May 2007 (mg/kg)										
TP1-1	<1	<1	<1	<2	<5	<5	<5	<5	<5	<20
Dup	<1	<1	<1	<2	<5	<5	<5	<5	<5	<20
TP1-2	<1	<1	<1	<2	<5	<5	<5	<5	<5	<20
TP2-1	<1	<1	<1	<2	<5	<5	<5	<5	<5	<20
TP2-2	<1	<1	<1	<2	<5	<5	<5	<5	<5	<20
TP3-1	<1	<1	<1	<2	<5	<5	<5	<5	<5	<20
TP3-2	<1	<1	<1	<2	<5	<5	<5	<5	<5	<20
TP4-1	<1	<1	<1	<2	<5	<5	<5	<5	<5	<20
TP4-2	<1	<1	<1	<2	<5	<5	<5	<5	<5	<20
TP5-1	<1	<1	<1	<2	<5	<5	<5	<5	<5	<20
TP5-2	<1	<1	<1	<2	<5	<5	<5	<5	<5	<20

Key

Bold - indicates in excess of NSW EPA Threshold Soil Concentrations for Sensitive Land Use.

Italics - indicates in excess of DTAE 2006 Further Investigations Levels.

Shaded - indicate in excess of Dutch Intervention Levels (2000).

NA - No Limit Available.

References

1 NSW EPA (2002) Soil Threshold Concentration for Sensitive Lands Uses from Contaminated Sites: Guidelines for Assessing Service Station Sites.

2 Dutch Intervention Levels (2000) Target Values and Intervention Values for Soil Remediation.

3 DTAE (2006) Information Bulletin: Underground Storage Tank Decommissioning Guidelines.

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Table 6: Summary of Soil Heavy Metal Analytical Results

LIMITS (mg/kg)	As	Cd	Co	Cr(VI)	Cu	Mn	Ni	Pb	Zn
NEPM Guidelines ¹ : HIL Residential 'A'	100	20	100	100	1000	1500	600	300	7000
NEPM Guidelines ¹ : HIL Residential 'D'	400	80	400	400	4000	6000	2400	1200	28000
NEPM Guidelines ¹ : Parks/Recreational Open Space	200	40	200	200	2000	3000	600	600	14000
NEPM Guidelines ¹ : Commercial/Industrial	500	100	500	500	5000	7500	3000	1500	35000
2006 DTAE ² Further Investigation Thresholds	-	-	-	-	-	-	-	300	-
TEST PIT SAMPLES: 24 May 2007 (mg/kg)									
TP1-1	5	<1	27	70	59	509	47	8	39
Dup	6	<1	30	75	65	513	53	9	43
TP1-2	4	<1	19	28	69	207	27	3	33
TP2-1	2	<1	21	36	25	94	24	8	22
TP2-2	3	<1	18	56	63	429	23	4	22
TP3-1	2	<1	23	38	28	346	22	10	28
TP3-2	2	<1	25	30	79	314	32	4	26
TP4-1	2	<1	55	45	33	217	31	9	25
TP4-2	2	<1	23	26	65	208	26	4	33
TP5-1	2	<1	34	65	49	466	45	21	36
TP5-2	3	<1	19	25	58	216	25	4	22

Key

Bold - indicates in excess of NEPM HIL Residential A.

Italics - indicates in excess of NEPM HIL Residential D.

Shaded - indicates in excess of NEPM Guidelines for Commercial/ Industrial use.

References

1 NEPC. 1999. NEPM. National Environment Protection Measure (Assessment of Site Contamination): Schedule B (1) Guideline on the Investigation Levels for Soil and Groundwater. National Environment Protection Council.

2 Department of Tourism, Arts & Environment Information Bulletin No. 109 Underground Storage Tank Decommissioning Guidelines, August 2006.

HIL – Health Investigation Level

'A' Residential – 'Standard' residential with garden/accessible soil

'D' Residential – Residential with minimal opportunities for soil access: includes dwellings with fully and permanently paved yard space

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10.0 DISCUSSION OF RESULTS

The key aspect of the assessment involves the comparison of the sampling analytical results with the appropriate guideline levels. If the contaminant levels are below the thresholds, no further investigation is considered necessary for the proposed subdivision and redevelopment of the rear of the site. However, if the contaminant levels are above the thresholds, it may be necessary to advise Glenorchy City Council and/or DTAE's Director of Environmental Management of the potential for environmental nuisance or harm. Also, further investigation may be required to determine the extent of contamination and a risk assessment and/or remediation plan may need to be developed.

Given that this investigation has been limited to the rear of the site, further soil sampling and/or groundwater assessment will be required on the front portion of the site, particularly in the vicinity of the UST's and associated infrastructure. In addition, minimal soil sampling will be required at the time of tank decommissioning.

10.1 Soil

A total of five investigation test pits (TP1, TP2, TP3, TP4 & TP5) were excavated at the rear of the former Ampol Service Station, 8-10 Main Road Claremont site. Details of the soil profiles encountered in the investigation test pits can be found in Table 2.

The parameters analysed in the ten test pit samples (TP1-1, TP1-2, TP2-1, TP2-2, TP3-1, TP3-2, TP4-1, TP4-2, TP5-1 & TP5.2), submitted for analysis were all below the relevant investigation levels. The Soil Impact Plan is shown in Figure 3. No soil vapour analysis was conducted.

10.1.1 BTEX & TPH

Two samples from each of the five test pits (TP1, TP2, TP3, TP4 & TP5) were submitted to the AST laboratory for TPH and BTEX analysis. These samples were selected for analysis based on any major changes in subsurface substrates (i.e. fill material, significant variation in soil types etc.) or where anything unusual like staining or odour was observed. BTEX and TPH analytical results are provided in Table 5.

The results show that all ten samples submitted for analysis were below detection limits for the analytical procedures used and were therefore well below both the NSW EPA threshold soil concentrations for sensitive land use and the DTAE 2006 Further Investigation Thresholds (FIT's).

The land slopes gently towards Main Road Claremont to the east and it is considered unlikely that activities associated with the front half of the property as a previous service station would have affected soil at the rear of the site. This is supported by the analytical results, which were below detection limits for the analytical procedures used, and the absence of odour in all samples.

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A brief discussion of the results is presented below:

- TP1 was located in the south-western corner of the investigation area at the rear of the site. There was no odour or staining of the soil in the vicinity of the test pit and it is considered unlikely that the immediate area has been used in conjunction with the service station in the past. Results suggest that soil in the vicinity of TP1 is uncontaminated, with results below detection limits for BTEX and TPH.
- TP2 was located in the north-western corner of the investigation area at the rear of the site. There was no odour or staining of the soil in the vicinity of the test pit and it is considered unlikely that the immediate area has been used in conjunction with the service station in the past. Results suggest that soil in the vicinity of TP2 is uncontaminated, with results below detection limits for BTEX and TPH.
- TP3 was located in the centre of the investigation area at the rear of the site (south-west of the gravel access road). There was no odour or staining of the soil in the vicinity of the test pit and it is considered unlikely that the immediate area has been used in conjunction with the service station in the past. Results suggest that soil in the vicinity of TP3 is uncontaminated, with results below detection limits for BTEX and TPH.
- TP4 was located in the north-eastern corner of the investigation area at the rear of the site (south-west of the service station building). There was no odour or staining of the soil in the vicinity of the test pit, however it is considered likely that the immediate area may have been used for the storage of oil drums (two 205L oil drums were present at the rear of the building). If contamination is present at the rear of the site it would be expected that it be the vicinity of TP4 and/or TP5 due to the suspected use of these areas in conjunction with former service station activities. Results however, suggest that soil in the vicinity of TP4 is uncontaminated, with results below detection limits for the analytical procedures used.
- TP5 was located in the south-eastern corner of the investigation area at the rear of the site (south of the workshop building). There was no odour or staining of the soil in the vicinity of the test pit, however it is considered likely that the immediate area may have been used for the parking of cars both prior to and post service. If contamination is present at the rear of the site it would be expected that it be the vicinity of TP4 and/or TP5 due to the suspected use of these areas in conjunction with former service station activities. Results however, suggest that soil in the vicinity of TP5 is uncontaminated, with results below detection limits for the analytical procedures used.

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Based on the analytical results, the soil in the vicinity of TP1, TP2, TP3, TP4 & TP5 appeared to be unaffected by the former use of the front half of the site as a service station and the storage of fuels in UST's on the site at the time of this investigation. Based on the analytical results, the rear half of the site (1,400m² approx.) appears to be suitable for re-development for all land uses including residential with garden/accessible soil (the most sensitive development).

10.1.2 Heavy Metal

Two samples from each of the five test pits (TP1, TP2, TP3, TP4 & TP5) were submitted to the AST laboratory for Heavy Metal analysis. Heavy Metal analytical results (standard suit) are provided in Table 6.

The results show that all soil samples submitted for analysis were well below the NEPM Health Investigation Levels (HIL's) for residential use with garden/ accessible soil (the most sensitive guideline values) for all Heavy Metals analysed (As, Cd, Co, Cr, Cu, Mn, Ni, Pb & Zn). In addition, the lead levels in the ten test pit samples were also below the DTAE 2006 Further Investigation Limit of 300 mg/kg for Lead.

Based on the analytical results, the soil in the vicinity of TP1, TP2, TP3, TP4 & TP5 appeared to be unaffected by the past storage of leaded fuels in underground storage tanks (UST's) on the front portion of the site at the time of this investigation. Based on the analytical results, the rear half of the site (1,400m² approx.) appears to be suitable for re-development for all land uses including residential with garden/accessible soil (the most sensitive development).

10.1.3 Summary

Soil sampling in five locations (within the 1,400m² approx. investigation area) at the rear of the former Ampol Service Station, 8-10 Main Road, Claremont site (TP1, TP2, TP3, TP4 & TP5) has assisted in providing information relating to the potential soil impacts from the service station operation and the presence of fuels in UST's at the site. Test pits were located to determine the contamination status of the soil at the rear of the Service Station buildings prior to subdividing and re-developing the site. The soil sampling results indicated that soil contamination, in excess of relevant residential guideline limits, was not present in any of the sampled test pits at the time of this preliminary environmental site assessment (ESA). Based on the analytical results, the site can be subdivided and the rear half of the site appears to be suitable for re-development for all land uses including residential with garden/accessible soil (the most sensitive development).

Given that the site has ceased operation as a service station, the UST's and associated infrastructure on the front half of the property (outside the area of investigation) will need to be decommissioned and removed in accordance with the DTAE Information Bulletin No. 109 *Underground Storage Tank Decommissioning Guidelines* (August 2006). This will involve soil sampling of the tank pits and beneath fuel lines and bowers. In addition, a groundwater assessment will be required given the past storage of fuels in UST's at the site.

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Should any soil contamination be identified as part of the decommissioning process, soil will need to be classified and disposed to an approved landfill in accordance with the DPIWE (now DTAE) Information Bulletin No. 105 *Classification and Management of Contaminated Soil for Disposal*.



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11.0 QUALITY CONTROL AND DATA VALIDATION

One quality control procedure (blind duplicate) was integrated within the sampling plan to indicate the quality of the program. Quality control samples provide information, which ideally discounts any errors due to possible sources of cross-contamination, inconsistencies in sampling and checks on the analytical techniques used.

The blind duplicate sample was obtained from TP1 at a depth of 0.5m (TP1-1 & Dup). Both these samples were submitted to the AST Laboratory for TPH, BTEX and Heavy Metal (standard suit) analysis. The two samples returned identical results for TPH and BTEX and extremely close results for Heavy Metals (As, Cd, Co, Cr, Cu, Mn, Ni, Pb & Zn), indicating that there is no variation in analyte concentration between soil samples collected from the same sampling point and also showed the repeatability of the laboratories analysis.

12.0 FATE AND TRANSPORT

The ESA conducted at the rear of the former Ampol Service Station, 8-10 Main Road, Claremont site found no evidence of soil contamination in excess of relevant guidelines present on the site. Results from the soil-sampling program suggest:

- Although there has been a long history of continuous use of the front portion of the site as a service station and a number of the current UST's may be more than 25 years old, no soil contamination is present at the rear of the site.
- The land slopes gently towards Main Road Claremont to the east of the site and it is considered that any migration of contamination (from the storage of fuels in UST's) would be likely to migrate in this direction, away from the back half of the site.
- No groundwater assessment has been conducted on this site, thus the status of the groundwater remains unknown. No groundwater was detected during the soil sampling event.
- The Dangerous Goods records show there is no other obvious source of the hydrocarbon contamination for this site except from the adjacent underground storage tanks.

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13.0 RISK EVALUATION

The rear of the former Ampol Service Station site (area of investigation) is considered to be a 'low risk' site. This classification is based on the analytical results for the samples (soil), which showed no evidence of hydrocarbon contamination (to a depth of 1.1m), typically associated with the former use of the front of the property as a service station or fuel storage at the time of this investigation. It is considered that, while there is no evidence of soil contamination at this point in time, any loss of hydrocarbon from the UST's on the front portion of the site could be transported to Windermere Bay to the north-east of site and it is recommended that a groundwater assessment be conducted at the time of any tank decommissioning and removal on the front portion of the property (outside the area of this investigation).

14.0 CONCLUSIONS

The results of the recent soil sampling at the rear of the former Ampol Service Station, 8-10 Main Road, Claremont site (1,400m² approx. investigation area) suggest that there is currently no indication of hydrocarbon contamination evident in the samples collected. Test pits were located to determine the contamination status of the soil at the rear of the Service Station buildings prior to subdividing and re-developing the site. Given the analytical results were below the NEPM Health Investigation Levels for residential use, it is considered that the site can be subdivided and the rear half of the site is suitable for re-development for all land uses including residential with garden/accessible soil (the most sensitive development).

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15.0 RECOMMENDATIONS

The release of petroleum hydrocarbons into the environment is a 'notifiable incident' under the *Environmental Management and Pollution Control Act 1994* if the release causes, or may cause 'environmental harm' or environmental nuisance', and regardless of whether the release has ceased or is still occurring.

Since no soil contamination has been identified, further investigation is not required at this time however the following are recommended:

- Given that the site is to cease operation as a service station, the UST's and associated infrastructure on the front half of the property will need to be decommissioned and removed in accordance with the DTAE Information Bulletin No. 109 *Underground Storage Tank Decommissioning Guidelines* (August 2006).
- This will involve soil sampling of the tank pits and beneath fuel lines and bowsers.
- In addition, a groundwater assessment will be required given the past storage of fuels in UST's at the site.
- Should any soil contamination be identified as part of the decommissioning process, soil will need to be classified and disposed to an approved landfill in accordance with the DPIWE (now DTAE) Information Bulletin No. 105 *Classification and Management of Contaminated Soil for Disposal*.
- Should the site continue operation as a service station, it is recommended that tank integrity testing and groundwater sampling be conducted to determine the integrity of the tanks and the groundwater status at the site.

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16.0 REFERENCES

AIP, 1994; *Guideline, Assessment and Management of Contaminated Sites (Service Stations & Distribution Depots)*, Australian Institute of Petroleum Limited, AIP GL3 - 1994.

AS 4482.1-1997 Guide to the Sampling and Investigation of Potentially Contaminated Soil - Part 1: Non-volatile and Semi-volatile Compounds.

DTAE, 2006, Information Bulletin No. 109 *Underground Storage Tank Decommissioning Guidelines*, Department of Tourism, Arts and Environment, August 2006.

DPIWE, 2004, Information Bulletin No. 105 *Classification and Management of Contaminated Soil for Disposal*, Department of Primary Industry, Water and Environment February 2004.

NEPM, 1999: *Guideline on Investigation Levels for Soil and Groundwater, Schedule B (1)*, National Environment Protection (Assessment of Site Contamination) Measure, National Environment Protection Council, 1999.

NEPC, 1999: *Guideline on Data Collection, Sample Design and Reporting Schedule B (2)*, National Environmental Protection Measure (Assessment of Site Contamination), National Environment Protection Council, 1999.

NSW EPA, 1994; *Contaminated Sites, Guidelines for Assessing Service Station Sites*, New South Wales Environmental Protection Agency, December 1994.

ANZECC, 2000, National Water Quality Management Strategy, *Australian and New Zealand Guidelines for Fresh and Marine Water Quality*, Australian and New Zealand Environment and Conservation Council.

Davies, J. (1988) Land Systems of Tasmania Region 6. Tasmanian Department of Agriculture.

DPIWE AST, 2004. *Laboratory Report 22519*. Department of Primary Industries, Water and the Environment Analytical Services Tasmania Laboratory.

Prepared and Published by SEMF Pty. Ltd.

Project No. 2120.001

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17.0 LIMITATIONS STATEMENT

This Preliminary Environmental Site Assessment report has been prepared in accordance with the scope of services set out in letters of agreement between SEMF Pty. Ltd. (SEMF) and the Sultan Holdings ('the Client'). To the best of SEMF's knowledge, the information presented herein represents the Client's requirements at the time of printing of the Report. However, the passage of time, manifestation of latent conditions or impacts of future events may result in findings differing from that described in this Report. In preparing this Report, SEMF has relied upon data, surveys, analyses, designs, plans and other information provided by the Client and other individuals and organisations referenced herein. Except as otherwise stated in this Report, SEMF has not verified the accuracy or completeness of such data, surveys, analyses, designs, plans and other information.

The scope of this study does not allow for the implicit review of every possible soil and groundwater contaminant over the whole area of the site. Soil and Groundwater samples collected from the investigation area are assumed to be representative of the areas from where they were collected and indicative of the contamination status of the site. The conclusions described within this report are based on these samples, the results of their analysis and an assessment of their contamination status.

No responsibility is accepted for use of any part of this report in any other context or for any other purpose by third parties.

This report does not purport to provide legal advice. Readers should engage professional legal advisers for this purpose.

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**Appendix A –Department of Primary Industries, Water and the Environment
Analytical Services Tasmania Laboratory: *Laboratory Report 22519***

SEMF Pty Ltd

June 2007

Appendix

S:\Jobs\2120.001 Ampol Claremont CSA\07 Report\Ampol_Main Road Claremont_ESA.doc

05-JUL-2004 15:35 FROM: AVERY PARTNERS

TO: 62582101

P.04/07

FROM: Coltex Macquarie

PHONE NO.: 0362231430

JUN. 30 2004 05:04PM



Tasmania

DEPARTMENT OF PRIMARY INDUSTRIES.
WATER AND ENVIRONMENT
ANALYTICAL SERVICES TASMANIA

FAKED
30/6/04

Inquiries: Mike Johnson
Telephone: 03 6226 7175
Facsimile: 03 6226 7825
E-mail: mike.johnson@dpiwa.tas.gov.au

Mr Peter McNeil
Liberty Oil
PO Box 57
Kingston
Tas 7050
FAX 62978143
29th June 2004

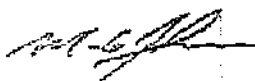
Dear Mr McNeil:

Eight samples were submitted to Analytical Services Tasmania on 1st June 2004 by Dennis King with a request to analyse them for Total Petroleum Hydrocarbons (TPH), Benzene, Toluene, Ethylbenzene and Toluene (BTEX) and Lead (Pb). The samples were labelled C1-1m, C1-3m, C2-1m, C2-3m, C3-1m, C3-3m, C4-1m and C4-3m. The samples were assigned laboratory numbers 59149-59156 respectively. The samples were analysed and results reported on Laboratory Report number 22519.

All results for all samples were below the Standard Residential Health Investigation Levels set down in the Guideline on the Investigation Levels for Soil and Groundwater which forms part of the National Environment Protection (Assessment of Site Contamination) Measure 1999.

The Standard Residential Levels are the most stringent levels set in the guidelines.

Yours sincerely


M. G. Johnson
MANAGER

Analytical Services Tasmania
C/- School Of Chemistry, Uni of Tas.
Private Bag 75, Hobart TAS 7001
Ph (03) 62267175 Fax (03) 62267825

Analytical Services Tasmania
20 St Johns Avenue,
New Town TAS 7008
Ph (03) 62785690 Fax (03) 62785693

05/07 '04 15:31

TX/RX NO. 7259

P04

05-JUL-2004 15:33 FROM: ALBERT FRANKERS
FROM: Colleen Macauley

TO: 62662101
PHONE NO.: 0362231430

P.05/07
JUN 28 2004 05:05PM



ANALYTICAL SERVICES TASMANIA
Sandy Bay Laboratory
c/- Chemistry Department University of Tasmania
Sandy Bay Tasmania 7005
Telephone: (03) 6226 7175 Fax: (03) 6226 7825
Email: ast.sandybay@dpw.tas.gov.au



NATA Accreditation
Number: 5589

Laboratory Report

Report No: 22519 Issue No: 1 Final Report
Submitted By: Dennis King
Client: King, Dennis
Site Description:
Received: 01-Jun-04 Client Order No:
Report Date: 03-Jun-2004 17:28
Report To: Dennis King
Address: PO Box 167 Kingston TAS 7051

Test Method(s):	Test Date
Chemical Testing	
2301-Soil	Metals in Soil, Sediment Dust by ICPAES 02-Jun-2004
2403-Soil	TEX and BTEX in Soil by GC-FID 01-Jun-2004



NATA Accreditation
Number 5589

The tests, calibrations or measurements covered by this document have been performed in accordance with NATA requirements which include the requirements of ISO/IEC 17025 and are traceable to national standards of measurement.

This document shall not be reproduced, except in full.
Samples analysed as received.

Mike Johnson
Mike Johnson
Chemical Testing

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05/07 '04 15:31

TX/RX NO. 7259

P05

P.06/07

JUN. 22 2024 05:25PM



Report Date: 03-Jun-2001 17:28

Report No: 22519

Lab No.:		59149	59150	59151	59152	59153	59154	59155	59156
Sample ID.:		CL-1a	CL-2a	CL-1a	CL-1a	CL-1a	CL-1a	CL-1a	CL-1a
PH	mg/kg DM	14	14	103	9	16	10	32	20
Benzene	mg/kg DM	<1	<1	<1	<1	<1	<1	<1	<1
Chlorobenzene	mg/kg DM	<1	<1	<1	<1	<1	<1	<1	<1
o-cresol Xylene	mg/kg DM	<2	<2	<2	<2	<2	<2	<2	<2
Toluene	mg/kg DM	<1	<1	<1	<1	<1	<1	<1	<1
Toluene XTEX	mg/kg DM	<5	<5	<5	<5	<5	<5	<5	<5
IPH	mg/kg DM	<20	<20	<20	<20	<20	<20	<20	<20
IPH C15-C18	mg/kg DM	<5	<5	<5	<5	<5	<5	<5	<5
IPH C19-C14	mg/kg DM	<5	<5	<5	<5	<5	<5	<5	<5
IPH C15-C28	mg/kg DM	<5	0	11	<5	<1	<5	<5	<5
IPH C29-C38	mg/kg DM	<5	<5	6	<5	0	<5	<5	<5

Page 2 of 4

05-JUL-2004 15:35 FROM: HARRY PHILLIPS

TO: 62602101

P:17/107

FROM: Caltex Macquarie

PHONE NO.: 0362231430

JUL 30 2004 05:05PM

Table 5-A - Soil Investigation Levels (mg/kg)

Substances	Health Investigation Levels (HILs)						Ecological Investigation Levels (EILs)		Background Ranges*
	A1	B1	C1	D	E	F	REIL*	Interim Urban*	
HEAVY METALS									
Arsenic (total)	100			400	200	500		20	1 - 50
Barium								300	200 - 3000
Beryllium	20			60	30	100			
Cadmium	20			60	30	100		3	1
Chromium (III)	120			480	240	600		400	
Chromium (VI)	100			400	200	500		1	
Chromium (Total)**									5 - 1000
Cobalt	100			400	200	500			1 - 100
Copper	1000			4000	2000	5000		100	2 - 1000
Lead	300			1200	600	1500		600	2 - 300
Manganese	1600			6000	3000	7500		500	800
Methyl mercury	10			40	20	50			
Mercury (inorganic)	15			60	30	75		1	0.05
Nickel	600			2400	1200	3000		60	5 - 500
Vanadium								50	20 - 300
Zinc	7000			28000	14000	35000		300	10 - 500
ORGANICS									
Aldrin + Dieldrin	10			40	20	50			
Chlordane	50			200	100	250			
DDT + DDD + DDE	200			800	400	1000			
Heptachlor	10			40	20	50			
Polycyclic aromatic hydrocarbons (PAHs)	20			80	40	100			
Benzo(a)pyrene	1			4	2	5			
Phenol	9500			38000	19000	47500			
PCBs (Total)	25			100	50	125			
Petroleum Hydrocarbon Compounds (constituents):									
- >C10 - C20	90			360	180	450			
- Aromatics									
- >C10 - C20	3000			12000	6000	15000			
- Aliphatics									
- >C20 all aromatics	14000			56000	28000	70000			
OTHER									
Boron	3000			12000	6000	15000			
Cyanides (Cumulative)	500			2000	1000	2500			
Cyanides (Etil)	250			1000	500	1250			
Phosphorus								2000	
Sulfur								500	
Sulfate*								2000	

- Human exposure settings based on land use have been established for HILs (see Taylor and Langley 1998). There are:
- Standard residential with garden/accessible soil (home-grown produce contributing less than 10% of vegetable and fruit intake; no poultry); the category includes children's day-care centres, kindergartens, preschools and primary schools.
 - Residential with substantial vegetable garden (contributing 10% or more of vegetable and fruit intake) and/or poultry providing any egg or poultry meat dietary intake.
 - Residential with substantial vegetable garden (contributing 10% or more of vegetable and fruit intake); poultry excluded.
 - Residential with minimal opportunities for soil access; includes dwellings with fully and permanently paved yard space such as high-rise apartments and flats.
 - Parks, recreational open space and playing fields; includes secondary schools.
 - Commercial/industrial (includes services such as shops and offices as well as factories and industrial sites).
- * For details on derivation of HILs for human exposure settings based on land use, consult the EPA's "Guidelines on Investigation Levels for Soil and Groundwater" (2001).
- Soil and groundwater specific to site sampling is the preferred approach for estimating plant uptake. Exposure estimates may then be compared to the relevant HILs, REILs and EILs.
- Site and groundwater specific to site sampling is the preferred approach for estimating plant uptake. Exposure estimates may then be compared to the relevant HILs, REILs and EILs.
- These will be developed for regional areas by jurisdictions as required.
- Interim HILs for the urban setting are based on considerations of phytochemistry, ANZECC B levels, and soil survey data from urban residential properties in four Australian capital cities.
- Phytochemical ranges where HILs or EILs are not taken from the Plant Chemistry Manual, compiled by D.A. Sutherland, Third Edition 1999, Publisher: The Australian Institute of Marine and Technology. This publication contains phytochemical data from 1000 plant species from 100 families in 1000 families. Another source of information is Consultation Site Information No. 4, Third Edition Concentrations in Soils from Rural and Urban Areas of Australia, 1998, South Australian Institute of Land Use Research.
- Values (rate not distinguished) - expected as Cr (III).
- * Soil survey number is an "equivalent" value based on a method that standardises exposure to heavy metals. It is a method used by some analytical laboratories to report mean numbers for chemicals evaluated on a "total" point (e.g., cadmium).
- For protection of health structures.

Schedule B (1) - Guidelines on Investigation Levels for Soil and Groundwater

TOTAL P.10

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P07

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Appendix B – Analytical Services Tasmania: Soil Sampling Chain of Custody Form

[illegible]

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Appendix C – Analytical Services Tasmania: Soil Sampling Laboratory Report

**ANALYTICAL SERVICES TASMANIA****Sandy Bay Laboratory**

c/- Chemistry Department University of Tasmania

Sandy Bay Tasmania 7005

Telephone: (03) 6226 7175 Fax: (03) 6226 7825

Email: astproduction@environment.tas.gov.au

Laboratory Report

Report No: 32060**Issue No:** 1**Report Date** 08-Jun-2007 14:35**Status:** Full Report**Site Description:** Ampol Claremont CSA**Received:** 24-May-07**Submitted to:** Sandy Bay Laboratory**Submitted By:** Carly Harington (SEMF Pty Ltd)**Client Order No:** T-03073**Report To:** Carly Harington**Client:** SEMF Pty Ltd**Address:** GPO Box 897 HOBART TAS 7001

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ANALYTICAL SERVICES TASMANIA

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Method	Analyte	Lab.No.:		Sample Id.:		Units / Sampled On :		24/05/07 09:30		24/05/07 09:41		24/05/07 09:49		24/05/07 09:55		24/05/07 10:03		24/05/07 10:08		24/05/07 10:14	
		108472		108473		108474		108475		108476		108477		108478							
2301-Soil	As	TP1-1		TP1-2		TP2-1		TP2-2		TP3-1		TP3-2		TP4-1							
		5		4		2		3		2		2		2						2	
	Cd	<1		<1		<1		<1		<1		<1		<1		<1		<1		<1	
	Co	27		19		21		18		23		25		55						55	
	Cr	70		28		36		56		38		30		45						45	
	Cu	59		69		25		63		28		79		33						33	
	Mn	509		207		94		429		346		314		217						217	
	Ni	47		27		24		23		22		32		31						31	
	Pb	8		3		8		4		10		4		9						9	
	Zn	39		33		22		22		28		26		25						25	
	Benzene	<1		<1		<1		<1		<1		<1		<1		<1		<1		<1	
	Ethyl benzene	<1		<1		<1		<1		<1		<1		<1		<1		<1		<1	
2403-Soil	o,m&p Xylene	<2		<2		<2		<2		<2		<2		<2		<2		<2		<2	
	Toluene	<1		<1		<1		<1		<1		<1		<1		<1		<1		<1	
	Total BTEX	<5		<5		<5		<5		<5		<5		<5		<5		<5		<5	
	TPH	<20		<20		<20		<20		<20		<20		<20		<20		<20		<20	
	TPH C06-C09	<5		<5		<5		<5		<5		<5		<5		<5		<5		<5	
	TPH C10-C14	<5		<5		<5		<5		<5		<5		<5		<5		<5		<5	
	TPH C15-C28	<5		<5		<5		<5		<5		<5		<5		<5		<5		<5	
	TPH C29-C36	<5		<5		<5		<5		<5		<5		<5		<5		<5		<5	

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Method	Analyte	Lab.No.:				Units / Sampled On :
		Sample Id.:	TP4-2	TP5-1	TP5-2	Dup
2301-Soil	As	108479	2	2	3	6
	Cd	108480	<1	<1	<1	<1
	Co	108481	23	34	19	30
	Cr	24/05/07 10:19	26	65	25	75
	Cu	24/05/07 10:24	65	49	58	65
	Mn	24/05/07 10:28	208	466	216	513
	Ni	24/05/07	26	45	25	53
	Pb		4	21	4	9
	Zn		33	36	22	43
	Benzene		<1	<1	<1	<1
	Ethyl benzene		<1	<1	<1	<1
	o,m&p Xylene		<2	<2	<2	<2
	Toluene		<1	<1	<1	<1
	Total BTEX		<5	<5	<5	<5
2403-Soil	TPH		<20	<20	<20	<20
	TPH C06-C09		<5	<5	<5	<5
	TPH C10-C14		<5	<5	<5	<5
	TPH C15-C28		<5	<5	<5	<5
	TPH C29-C36		<5	<5	<5	<5

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Test Method(s) :**Test Date****Inorganic Testing**

2301-Soil: Metals in Soil, Sediment & Dust by ICPAES
Work Conducted at: Sandy Bay

04-Jun-2007

Authorised By:

Damien Norman
Section Head - Inorganic

Organic and Nutrient Testing

2403-Soil: TPH and BTEX in Soil by GC-FID
Work Conducted at: New Town

30-May-2007

Authorised By:

Neil Kerr
Chemist



Accreditation No. 5589

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Appendix H

Relevant Risk Assessment Criteria Summary



1. Generic Land Use Scenarios – Soil, Groundwater and Soil Vapour

The following land use settings are provided to allow assessors to compare relevant published guideline values to site specific data.

1.1 Human Health Exposure Scenarios

Exposure scenarios applicable for Health Investigation Levels (HILs) and Health Screening Levels (HSLs)⁵ are described in the subsections below.

HILs are risk based guidance levels for soil, which are designed to be used in the first stage of the human health risk assessment process. The HILs are intended to be a generic Tier 1 assessment criteria used to assess chronic exposure to contaminants through a multitude of human contact scenarios. Additional assessment criteria are available, aiming to assess either individual or grouped human uptake scenarios.

HSLs for petroleum vapour intrusion have been developed to assess the risk posed to the nominated receptor by intrusive petroleum hydrocarbon vapour origination from either soil or groundwater through respiration.

Direct contact HSLs have been developed as a means to assess the amalgamated exposure risk through dermal contact, incidental oral ingestion and dust inhalation from soil contamination sources.

1.1.1. Residential land use scenario with garden/accessible soil – HIL A and HSL A

Residential land use includes a variety of building densities, ranging from separate low-density dwellings to high-density unit blocks. The residential land use scenario considered in the derivation of the HIL A values is low-density residential, including a sizeable garden (referring to the presence of sufficiently large areas of soil in a garden that may be accessible on a daily basis by young children and adults).

The HIL A values are also applicable to the preliminary assessment of potential risks at sites where children are likely to be the most sensitive human receptors, including childcare centers, kindergartens, preschools and primary schools and their integral playgrounds. The scenario is designed to represent a typical residential land use. The HIL A values will also be protective of circumstances where less exposure to soil would be likely (for example, older people, or without fruit and vegetable gardens).

HSL A also includes the exposure scenario described in HIL B below.

⁵ Generic land use scenarios are described within Schedule B7 – Guideline on Health-Based Investigation Levels (NEPC 2013). Intrusive Maintenance Worker exposure scenario is taken from CRC CARE 2011. Italicised text is quoted from the relevant document or schedule.



1.1.2. Residential scenario with minimal opportunities for soil access – HIL B

The residential land use scenario considered for the HIL B values is high-density residential, not including a private garden. This land use scenario assumes typical residential unit blocks, consisting of multistory buildings where living areas are on the ground floor (constructed on a ground level slab or above subsurface structures including basement car parks or storage areas).

Occupants of the buildings considered in the development of the HIL B values have access to yard spaces that are largely covered by permanent paving, with some small areas of landscaping or lawns. Opportunities for direct access to soil by residents of these buildings are therefore minimal but there may be some potential for residents to inhale, ingest or come into direct dermal contact with dust (particulates) derived from the soil on the site. Landscaped/playground (including sandpit) areas used for recreation within a high-density development should be assessed on the basis of the more conservative HIL C values.

1.1.3. Public open space scenario – HIL C and HSL C

Public open space land use includes a variety of exposure scenarios such as parks and playgrounds (including sandpits), recreational areas and playing fields that are fully accessible to the public and where the public may potentially spend a significant amount of time.

This land use scenario assumes that the open space areas are in areas where young children may have supervised access and use the area outside of the home environment for frequent short periods of time (up to 2 hours a day, 7 days a week). Other users may include older children and adults who may visit the area frequently for a range of recreational purposes. These open space areas may contain lawns, gardens, vegetated areas and walkways, with some limited areas of hardstand and some areas of exposed soil. The open space areas may contain buildings such as amenity blocks, but individuals who visit these areas are considered to spend the majority of their time outdoors where the exposure is limited to outdoor soil.

Scenario HIL C does not directly apply to non-recreational open spaces, such as road reserves, where the potential for exposure (and frequency of exposure) is lower and which should be subject to a site-specific assessment (where appropriate). A common approach for risk assessment is to utilise an adjacent land use that is easily definable and appropriately conservative.

1.1.4. Commercial/ industrial scenario – HIL D and HSL D

The land use scenario considered for the HIL D values is commercial/industrial, which assumes typical commercial or light industrial properties, consisting of single or multistory buildings where work areas are on the ground floor (constructed on a ground level slab) or above subsurface structures (such as basement car parks or storage areas).



The land use scenario does not include more sensitive uses that may be permitted under relevant commercial or industrial zonings. These more sensitive uses include childcare, educational facilities, caretaker residences and hotels and hostels, etc. Information on uses permitted under local council zoning schemes for commercial/industrial land use can be obtained from local council planning zones/schemes. Should these more sensitive uses be permitted, then HIL A or HIL B values should be considered.

It should be noted that whilst consistent with the land use, the use of HSLs for petroleum vapour intrusion at active retail petroleum outlets is not appropriate. Further advice is provided within CRC Care 2013, regarding vapour intrusion at active service stations:

At active service stations vapour exposures derived from subsurface sources are often relatively insignificant when compared to those derived from emissions associated with the operation and maintenance of the service station.

The above statement indicates that PVI is relatively insignificant compared to service station staff likely encountered daily exposure arising from working around a forecourt, and that assessing subsurface conditions to determine actual exposure is unrealistic.

1.1.5. Intrusive Maintenance Workers – HSL IMW

HSLs have been derived for utility workers involved in shallow trenches (maximum trench depth of 1 m). Maintenance workers involved in subsurface works (also referred to in this report as ‘intrusive maintenance workers’) may be exposed to contamination inside trenches. Deep trench works (such as deep sewer) have not been included in the development of HSLs. These works usually require health and safety procedures to be followed for protection in confined space situations.⁶

1.2. Ecological Exposure Scenarios - Soil

Exposure scenarios applicable for Ecological Investigation Levels (EILs) and Ecological Screening Levels (ESLs)⁷ are described below. It should be noted that EILs are not applicable to agricultural soils, which typically require species specific consideration.

The EILs are derived for specified levels of percentage species protection depending on land use. The approach is analogous to the methodology used for derivation of the Australian water quality guidelines (ANZECC & ARMCANZ 2000).

⁶ CRC CARE 2011

⁷ Land use scenarios described within Schedule B1 – Guideline on Investigation Levels for Soil and Groundwater (NEPC 2013).
Italicised text is quoted from the relevant document or schedule



EILs and ESLs are intended to apply to the top 2m of soil in most applications, which is intended to be representative of the root and habitation zone of many species. In arid zones where these zones are expected to penetrate deeper, the ESLs and EILs may be applicable at a greater depth.

1.2.1. Areas of Ecological Significance

An area of ecological significance is one where the planning provisions or land use designation is for the primary intention of conserving and protecting the natural environment. This would include national parks, state parks, wilderness areas and designated conservation areas. The nominated protection level for this land use setting is 99%.

1.2.2. Urban Residential Areas and Public Open Space

Urban residential/public open space is broadly equivalent to the HIL A, HIL B and HIL C land use scenarios (see above). The nominated protection level for this land use setting is 80%.

1.2.3. Commercial and Industrial Land Uses

No description of the land use scenario is provided within the guideline source document, however it is reasonable to assume that the exposure scenario is analogous with the setting described for HIL D. The nominated protection level for this land use setting is 60%.



1.3. Soil Management Limits and Aesthetics

1.3.1. Management Limits

Petroleum hydrocarbon 'management limits' are limited to petroleum hydrocarbon compounds. They are maximum values that should remain in a site following evaluation of human health and ecological risks and risks to groundwater resources and apply to all soil depths based on site-specific considerations. These limits are to consider the formation of light non aqueous phase liquids, fire and explosion risks and damage to buried infrastructure.

Application of the management limits will require consideration of site-specific factors such as the depth of building basements and services and depth to groundwater, to determine the maximum depth to which the limits should apply. The management limits may have less relevance at operating industrial sites (including mine sites) which have no or limited sensitive receptors in the area of potential impact. When the management limits are exceeded, further site-specific assessment and management may enable any identified risk to be addressed.

Soil management limits are applied based on two factors, soil texture and land use described below.

- Soil texture:
 - **Coarse** – This includes sandy soils
 - **Fine** – Silts and clays (liquid limit <50%)
 - Where doubt exists in selecting the appropriate soil texture, the assessor should either select the more conservative soil texture (coarse) offering a lower protection level to the receptor, or perform a particle size distribution analysis to determine the soil type. Following analysis, soil texture selection can be made based on the definitions provided within CRC CARE 2011.
- Land Use:
 - Residential, parkland and public open space
 - No description is provided within the source documentation regarding the definition of this land use, however it can be assumed to be consistent with the scenarios provided within HIL A, HIL B and HIL C.
 - Commercial and industrial
 - As mentioned above, no implicit description is provided within the source documentation, however it can be assumed that this land use is analogous with the HIL D land use scenario.



1.3.2. Aesthetic Considerations

Aesthetic issues generally relate to the presence of low-concern or non-hazardous inert foreign material (refuse) in soil or fill resulting from human activity. Sites that have been assessed as being acceptable from a human health and environmental perspective may still contain such foreign material.

Other sites may have some soil discolouration from relatively inert chemical waste (for example, ferric metals) or residual odour (for example, natural sulphur odour).

There are no specific numeric aesthetic guidelines, however site assessment requires balanced consideration of the quantity, type and distribution of foreign material or odours in relation to the specific land use and its sensitivity. For example, higher expectations for soil quality would apply to residential properties with gardens compared with industrial settings.

General assessment considerations include:

- That chemically discoloured soils or large quantities of various types of inert refuse, particularly if unsightly, may cause ongoing concern to site users;*
- The depth of the materials, including chemical residues, in relation to the final surface of the site; and*
- The need for, and practicality of, any long-term management of foreign material.*

In some cases, documentation of the nature and distribution of the foreign material may be sufficient to address concerns relating to potential land use restrictions. In arriving at a balanced assessment, the presence of small quantities of non-hazardous inert material and low odour residue (for example, weak petroleum hydrocarbon odours) that will decrease over time should not be a cause of concern or limit the use of a site in most circumstances. Similarly, sites with large quantities of well-covered known inert materials that present no health hazard such as brick fragments and cement wastes (for example, broken cement blocks) are usually of low concern for both non-sensitive and sensitive land uses.

1.4. Groundwater Investigation Levels – GILs

Investigation Levels for groundwater are a series of contaminant concentration levels, above which further investigation is required. The GILs published within Site Contamination NEPM (NEPC, 2013) are derived from the Australian Water Quality Guidelines (referred to as the AWQG) (ANZECC, 2000) and the Australian Drinking Water Guidelines (referred to as the ADWG) (NHMRC, 2011) and are applicable for assessing human health and ecological risks from direct contact, which includes the consumption of groundwater.

As part of the site-specific assessment, EM&C have considered the receptors described below.



1.4.1. Marine and Freshwater Ecosystem Protection GILs⁸

The GILs for protection of freshwater and marine water ecosystems were derived using a statistical distribution method and were calculated at four different protection levels, where the data permitted, and are applied according to the ecosystem condition. The aquatic ecosystem protection GILs presented in Table 1C of Schedule B1 are applicable to 'slightly - moderately disturbed' ecosystems.

It should be noted that the presented GILs within Table 1C of Schedule B1 are not applicable for all assessment situations and site specific data should be considered when determining the ecosystem protection setting.

The investigation or 'trigger' published within the AWQG were determined using the statistical distribution method and were calculated at four different protection levels, 99%, 95%, 90% and 80%. The percentage references the percentage of species that are expected to be protected by the adopted value. Each ecosystem protection value is discussed below⁹.

1.4.1.1 High Conservation/Ecological Value

The highest protection level (99%) has been chosen as the default value for ecosystems with high conservation value, pending collection of local chemical and biological monitoring data. The 99% protection levels can also be used as default values for slightly–moderately disturbed systems where local data are lacking on bioaccumulation effects or where it is considered that the 95% protection level fails to protect key test species.

1.4.1.2 Slightly–Moderately Disturbed Ecosystems

In most cases, the 95% protection level trigger values (as adopted by the NEPM) should apply to ecosystems that could be classified as slightly–moderately disturbed, although a higher protection level could be applied to slightly disturbed ecosystems where the management goal is no change in biodiversity.

1.4.1.3 Highly Disturbed Ecosystems

For ecosystems that can be classified as highly disturbed, the 95% protection trigger values can still apply. However, depending on the state of the ecosystem, the management goals and the approval of the appropriate state or regional authority in consultation with the community, it can be appropriate to apply a less stringent guideline trigger value, say protection of 90% of species, or perhaps even 80%. These values are provided as intermediate targets for water quality improvement. Urban aquatic systems (rivers, streams, wetlands,

⁸ Discussion regarding the selection of baseline GILs provided within Schedule B1 of the ASC NEPM 2013 is provided within Schedule B6 - Guideline on The Framework for Risk-Based Assessment of Groundwater Contamination. Italicised text is quoted from the schedule

⁹ ANZECC, 2000. Italicised text is quoted from the guidelines.



estuaries) are a case in point. For most of these, the hydrology in particular has been so markedly changed that at best a somewhat modified ecosystem can be achieved.

1.4.2. Drinking Water Protection GILs

Drinking water quality protection levels provided within Schedule B1 of the ASC NEPM 2013 are sourced from the Australian Drinking Water Guidelines (NHMRC, 2011) and are intended to be contamination thresholds, above which further assessment should be performed.

While investigation levels are provided within the ADWG and the ASC NEPM, consideration of physiochemical parameters is required in determining the applicability of the drinking water protection GILs. In some instances, the quantity of dissolved solids, referred to as total dissolved solids, or TDS can make the groundwater unpalatable or unacceptable for human consumption.

Evidence suggests that while unpalatable, there are no health effects directly attributable to the consumption of water with an elevated concentration of dissolved solids¹⁰. This suggests that elevated TDS within a groundwater supply may reduce the likelihood of extraction for a potable supply, but the elevated TDS in itself will not cause any adverse health effects.

Determining the applicability (and likelihood) of groundwater as a potable resource through the evaluation of measured TDS values can be made utilising benchmark values provided within the ADWG, referencing World Health Organisation 2004 guidelines¹¹:

- | | |
|---------------------------|---|
| • TDS values 0-600mg/L | Good palatability |
| • TDS Values 600-900 mg/L | Fair palatability |
| • TDS values 900-1200mg/L | Poor palatability |
| • TDS values >1200mg/L | Unacceptable/unpalatable for potable supply |

EM&C have adopted these referenced values to determine the likelihood of the aquifer providing a useable resource for potable supply.

Following the assessment of the aquifers ability to provide a palatable and acceptable potable resource, the likelihood of extraction for potable supply needs to be considered. As mentioned previously, the Department of Primary Industries, Parks, Water and the Environment maintains a database for registered groundwater bores within Tasmania, allowing an assessor to identify beneficial groundwater users within the area of investigation. Following identification, the likely use of the identified groundwater bores should be considered for a risk based assessment. Contextual information such as the existence of a reticulated water supply in the area could suggest two things to the risk assessor:

¹⁰ Australian Drinking water Guidelines (NHMRC, 2011)

¹¹ *ibid*



- Identified registered groundwater bores are unlikely to provide drinking water; and
- The likelihood of unregistered groundwater bores providing a potable supply is very low.

1.4.3. Recreational Water Protection GILs

Recreational water quality GILs are discussed within the ASC NEPM within Schedule B6, citing the *Guidelines for managing risk in recreational water* (GMRRW) (NHMRC 2008) as the source of relevant GILs for a Tier 1 ESA. These guidelines supersede the previous guidelines provided within the AWQG for recreational and aesthetic water quality.

Recreational exposure pathways examined by the GMRRW Guidelines include:

- **Direct Surface Contact** – which is typically encountered through absorption through the skin, eyes and mucous membranes such as the nose and sinus. The use of wetsuits enhance dermal uptake of many contaminants, trapping water close to the skin
- **Inhalation** – is encountered through both naturally occurring sea spray and man made sources such as splashing and waterskiing.
- **Ingestion** - typically occurs when partially or fully immersed in the water. While adults ingest relatively small quantities of water during immersion activities, children have been found to ingest significantly more water whilst playing in the water. The guidelines note that data on the quantities of water ingested during water sports and activities is difficult to obtain.

The GMRRW Guidelines state that: *recreational water users are unlikely to come into contact with sufficiently high concentrations of most contaminants to suffer adverse effects from a single exposure. Even repeated (chronic) exposure is unlikely to result in adverse effects at the concentrations of contaminants typically found in water and with the exposure patterns of most recreational water users.*

The ASC NEPM drawing on information provided within the GMRRW guidelines suggests that the GILs for recreational water quality can be calculated by multiplying the drinking water guideline presented within the ADWG by a factor of 10-20.

Application of the rationale utilised when determining the multiplication factor for recreational waters is helpful to fully understand and comprehend the values, as well as to determine a suitable multiplication factor relevant to the recreational water use.

The GMRRW guidelines reference a 1984 study from the United Kingdom performed by Mance et. al.¹² which suggests that recreational water quality should be based on drinking water quality. It was suggested within the

¹² Mance G, Musselwhite C and Brown VM (1984). Proposed Environmental Quality Standards for List II Substances in Water. Arsenic. Technical Report TR 212, Water Research Centre, Medmenham, United Kingdom.



study that 10% of an adults daily water intake could be satisfied by swimming in the recreational water. The GMRRW guidelines concluded that adopting a 10 fold increase in contaminant concentrations provided within the ADWG will provide a sufficient level of protection for receptors who swim in and subsequently ingest, absorb and inhale 10% of their daily water intake from the recreational water body.

In response to the suggested drinking water guideline adaption as suggested within the ASC NEPM and the suggested multipliers contained within the GMRRW, EM&C have adopted two levels of recreational water protection. These are expanded upon below:

High Recreational Use Area

Adopting values suggested within the GMRRW, the drinking water guidelines presented in the ADWG (and subsequently endorsed by the ASC NEPM) have been multiplied by a factor of ten. Adopting this value assumes that a receptor will receive 10% of their daily water intake from the receiving environment in which they perform recreational activities every day of the year.

EM&C consider an exposure scenario such as this to include: popular swimming beaches, rivers and lakes where receptors are likely to use the area on a daily basis.

Moderate to Low Use Area

The ASC NEPM suggests that a 10-fold increase may not be applicable for all recreational water use scenarios, instead indicating that multiplying the guideline values from the ADWG by 20 is appropriate. Adopting this value assumes that a receptor will receive 10% of their recommended daily water intake every second day from the recreational water.

EM&C consider an exposure scenario such as this to include: most swimming beaches, rivers and lakes where receptors are likely to use the area on a frequent basis.