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McMurtrie Consulting Engineers

**ROCKHAMPTON REGIONAL COUNCIL**

**APPROVED PLANS**

These plans are approved subject to the current conditions of approval associated with

**Development Permit No.:** D/182-2023

**Dated:** 19 April 2024

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# Technical Memorandum

| To: | From |
|---|---|
| Sophie Muggeridge<br>Planning Officer<br>Rockhampton Regional Council<br>general.enquiries@rrc.qld.gov.au | Chris Hewitt<br>Associate Director/Principal Traffic Engineer<br>RPEQ 05141<br>McMurtrie Consulting Engineers<br>chris@mcmengineers.com |

## 1 RRC Request for Information Response

The following responses are provided to the nominated items of the Request for Information.

**Item 2.1**

**Request:** *The traffic generation rates for the proposed use appears to be under-estimated given the observations made for similar uses within Rockhampton. It is acknowledged that there is little information on the traffic generation for a drive-through coffee shop within Australian-based resource materials however it would be prudent to carry out surveys on existing similar uses to provide some certainty to the rates provided.*

*Given the traffic impacts other drive-through coffee shops in Rockhampton have had, please provide further justification as to how the traffic generation rates provided are appropriate for the use. This may require peak hour surveys of existing similar uses for comparison and revision of the SIDRA analysis as necessary.*

**Response:** Reference is made to Bitzios *Trip Generation Drive Through Coffee Outlets Data and Analysis Report with Appendices*, which provides recommended traffic generation rates for drive through coffee shops based on surveys conducted at a number of sites across NSW. In accordance with the recommended range of 70-130 trips in the AM peak hour, and with consideration that the proposed use is in a regional area, a revised traffic generation rate in the AM peak hour of 70 trips/hr has been adopted. Based on the surveyed PM peak hour generation rate being on average ~25% of the AM peak hour generation rate, a conservative 35 trips/hr in the PM peak has been adopted, which represents 50% of the AM peak rate.

**Item 2.2**

**Request:** *The 2018 traffic survey figures used to inform the Traffic Impact Assessment do not appear to have considered the recently constructed Child Care Centre opposite the subject site, or the recently approved take away restaurant adjacent to the site. As such, Council has concerns that the background traffic volumes have been underestimated for the purposes of the analysis.*

*Please confirm whether the traffic generation associated with these sites have been considered within the SIDRA analysis and amend the Traffic Impact Assessment where necessary.*

**Response:** The traffic generated by the proposed Hungry Jacks facility, in accordance with the approved GFA and traffic generation rate (Approval Reference D48-2022) has been applied to the revised Traffic Impact Assessment – refer to the Revision B Traffic Impact Assessment. It is noted that the Child Care Centre adjacent the site has been operational since at least 7 April 2017 (refer to Figure 1), and the intersection counts were carried out on 22 March 2018. Therefore, it is seen that the traffic generated by the Child Care Centre has already been included in the intersection counts used for the assessment.

Figure 1 – 7 April 2017 Aerial Imagery (Source: QLD Globe)

**Item 2.3**

**Request:** *It is noted that the average delay for the 2024 PM post development scenario for the John Street leg is slightly less than that of the pre-development scenario, for the same cycle time.*

*Please advise how this been achieved?*

**Response:** The change noted is due to the redistribution of traffic on the intersection as a result of the drop in trip assumptions and does not represent a tangible change to the performance of the intersection.

# 2 TMR Request for Information Response

The following responses are provided to the nominated items of the Request for Information.

**Item 1**

**Request:** *The following issues were identified with the Traffic Impact Assessment (TIA) prepared by McMurtrie Consulting Engineers, dated 15 December 2023, reference R002-23-24/012:*

*(a) SARA considers the figure of 45 trips per hour to below the traffic generation rates for similar drive thru facilities across the Rockhampton region. In lieu of this, Rockhampton and surrounding townships are currently experiencing a number of traffic concerns from similar drive thru facilities. In particular, the constant queue spill-over out of premises from drive thru facilities that compromise the safety and operational efficiency of the surrounding road network.*

*(b) The TIA has not considered the cumulative traffic impacts resulting from the approved Hungry Jack's (located on the balance of the subject site) and the Child Care Centre across the road, and how this may impact the safety and efficiency of the Lawrie Street / John Street intersection.*

*Please provide an amended TIA which addresses the following matters:*

*a) undertake a traffic survey on a similar drive thru facility (for example, the existing Zarraffa's drive thru Coffee Shop located on Musgrave Street, Berserker and/or the Gus's drive thru Coffee Shop on Homemaker Drive, Yeppoon) and provide updated traffic generation rates reflecting the results of this traffic survey.*

*b) provide an assessment of the cumulative traffic impacts from the proposed development which considers traffic generated from the approved Hungry Jack's facility and the Child Care Centre located across the road and how this impacts the safety and operational efficiency of the Lawrie Street / John Street intersection.*

**Response:**

(a) Both the existing Zarraffa's on Musgrave Street and the Gus's Coffee on Homemaker Drive are sites with known issues stemming from a lack of queue length (~21m and ~13m respectively, measured from the order point to the nearest conflict point). The proposed development will provide approximately 43m of queue length, which is a significant improvement on both sites recommended to complete a survey upon. It is seen that surveying a site with known issues would provide a skewed traffic generation rate. In lieu of this, reference is made to Bitzios *Trip Generation Drive Through Coffee Outlets Data and Analysis Report with Appendices*, which provides recommended traffic generation rates for drive through coffee shops based on surveys conducted at a number of sites across NSW. In accordance with the recommended range of 70-130 trips in the AM peak hour, and with consideration that the proposed use is in a regional area, a revised traffic generation rate in the AM peak hour of 70 trips/hr has been adopted. Based on the surveyed PM peak hour generation rate being on average ~25% of the AM peak hour generation rate, a conservative 35 trips/hr in the PM peak has been adopted, which represents 50% of the AM peak rate.

(b) The traffic generated by the proposed Hungry Jacks facility, in accordance with the approved GFA and traffic generation rate (Approval Reference D48-2022) has been applied to the revised Traffic Impact Assessment – refer to the updated Revision B Traffic Impact Assessment. It is noted that the Child Care Centre adjacent the site has been operational since at least 7 April 2017 (refer to Figure 1), and the intersection counts were carried out on 22 March 2018. Therefore, it is seen that the traffic generated by the Child Care Centre has already been included in the intersection counts used for the assessment.

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# Zarraffas Drive Through at 6 Lawrie St, Gracemere 4702 (Lot 604 on R2642)

Traffic Impact Assessment

**DATE**
16 February 2024

**REF**
R002-23-24/012

**CLIENT**
Gracemere Retail Pty (as trustee) Gracemere Retail Trust

**COMMERCIAL IN CONFIDENCE**

Engineering reimagined.

## Contact Information


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## Document Information

| | |
|---|---|
| **Prepared for** | Gracemere Retail Pty (as trustee) Gracemere Retail Trust |
| **Document Name** | Traffic Impact Assessment |
| **Job Reference** | R002-23-24/012 |
| **Revision** | B |

## Document History

| Revision | Date | Description of Revision | Prepared by | Approved by | | |
|---|---|---|---|---|---|---|
| | | | | Name | Signature | RPEQ No |
| A | 15/12/2023 | Original Issue | R. Crouch | L. McMurtrie | | 15243 |
| B | 16/02/2024 | RFI Response | R. Crouch | C. Hewitt | | 05141 |
| | | | | | | |
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# Appendices



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# 1 Introduction

## 1.1 Project Background

Gracemere Retail Pty (as trustee) Gracemere Retail Trust are proposing to establish a Zarraffas Coffee Drive Through at 6 Lawrie St, Gracemere 4702, on land described as Lot 604 on R2642. The drive through is expected to cater for south-east bound passing traffic on the adjacent section of Lawrie St, with site access being located on John St and providing parking facilities for light vehicles.

The site is subject to a previous approval (D/48-2022), which allowed for various Food and Drink outlets on the site, namely a Hungry Jacks drive through.

## 1.2 Scope and Study Area

McMurtrie Consulting Engineers (MCE) have been commissioned by Gracemere Retail Pty (as trustee ) for Gracemere Retail Trust to undertake a Traffic Impact Assessment (TIA) for the proposed Coffee Drive Through.

This Traffic Impact Assessment (TIA) was carried out to determine the level of potential impacts of the project on the operation of the surrounding road network. The outcomes of the TIA will be used in support of the Development Application which will be assessed by Department of Transport and Main Roads (TMR) and Rockhampton Regional Council (RRC)

The assessment methodology adopted for this TIA is summarised in the key tasks listed below.

- Broadly identify the existing transport infrastructure which is of relevance to the project.
- Estimate traffic generation associated with the project and the distribution of this development traffic on the identified road network.
- Assess the potential impact of the project on the surrounding transport infrastructure.
- Identify potential mitigation and management strategies to be implemented to offset the impact of the proposed project (if required).

The process allows for the assessment of the traffic impacts of the project in terms of road safety, access requirements, road link capacity and other transport infrastructure. Following this, if required, potential mitigation and/or management measures would be formulated to address the potential traffic impacts caused by the proposed Project.

### 1.2.1 Study Area

As previously identified, the proposed Zarraffas Coffee Drive Through is proposed to be located at 6 Lawrie St, Gracemere 4702, on land described as Lot 604 on R2642. The site is located along John St near the intersection with Lawrie St.

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# 2 Existing Conditions

## 2.1 Surrounding Road Network Links

**Lawrie Street**

Lawrie Street links the intersection of Mclaughlin St and Old Capricorn Highway with Gavial Gracemere Road in Gracemere, Queensland. Lawrie Street intersects with John Street at a four-way intersection, with Russell Street comprising the opposing approach. This intersection was previously a roundabout but has been updated to a signalised intersection by the Department of Transport and Main Roads in approximately 2023.

**John Street**

John St is typically a two-way, one lane road with an (unposted) speed limit of 50km/h, generally with direct access to properties fronting the route. The northbound and southbound lanes along John St were unseparated, allowing vehicles to pass and turn into the opposite lane.

Adjacent the proposed development site, the speed limit is 50km/hr, and the road is currently classified as a Major Urban Collector.

Access to John Street for the proposed development will be from the northbound direction as indicated in Figure 1 below and will be left & right in/out only given the undivided nature of John St. Refer to Appendix A for the development layout plan.


Figure 1 - Study area – 6 Lawrie St, Gracemere QLD

## 2.2 Traffic Volumes

### 2.2.1 Road Link Volumes

The traffic volumes for the relevant section of road network were established from turning movement surveys, referenced from the existing approval (D/48-2022), for Lawrie/John/Russell St intersection from 6:00am to 6:00pm on Thursday, 22 March 2018. Relevant data for the peak periods of the assessed intersection are shown below in Table 1. Which the calculated volumes representative of all the vehicular movements throughout the intersection during the peak hour periods.

Table 1: Intersection Attributes

| Attribute | Morning Peak (Weekday) | Evening Peak (Weekday) |
|---|---|---|
| **Peak Hour** | 8:00am - 9:00am | 3:00pm - 4:00pm |
| **Volume (VPH)** | 1610 | 1710 |
| **% HV** | 2.20% | 4.20% |
| **Peak Flow Factor** | 100% | 100% |

## 2.3 Intersection Operations

### 2.3.1 Intersection Parameters

Due to the development's proximity to the Lawrie/John/Russell Street signalised intersection a series of SIDRA analyses were conducted to quantify the current traffic conditions. The analysis was based on the traffic count data, as obtained from the existing approval (D/48-2022), with the attributes determined in Table 1 and appropriate as-constructed signal phasing/cycle times.

The results are displayed as Degree of Saturation (DOS), 95$^{th}$ percentile vehicle queues and the Critical Movement at the designed intersection. DOS for movement is specified as the ratio of traffic demand to the capacity of movement. Also, Critical Movement correlates to the approach or movement with the greatest Degree of Saturation. The Operational Rating and Level of Service (LOS) for all intersection types can be seen in Table 2 below.

Table 2: SIDRA Intersection Ratings

| Level of Service (LOS) | Signalised | Roundabout | Priority |
|---|---|---|---|
| LOS A | x ≤ 60% | x ≤ 60% | x ≤ 60% |
| LOS B | 60% < x ≤ 70% | 60% < x ≤ 70% | 60% < x ≤ 70% |
| LOS C | 70% < x ≤ 90% | 70% < x ≤ 85% | 70% < x ≤ 80% |
| LOS D | 90% < x ≤ 95% | 85% < x ≤ 95% | 80% < x ≤ 90% |
| LOS E | 95% < x ≤ 100% | 95% < x ≤ 100% | 90% < x ≤ 100% |
| LOS F | 100% < x | 100% < x | 100% < x |

### 2.3.2 SIDRA Layout and Results

The adopted signalised intersection SIDRA layout for the Lawrie/John/Russell St intersection is shown in Figure 2

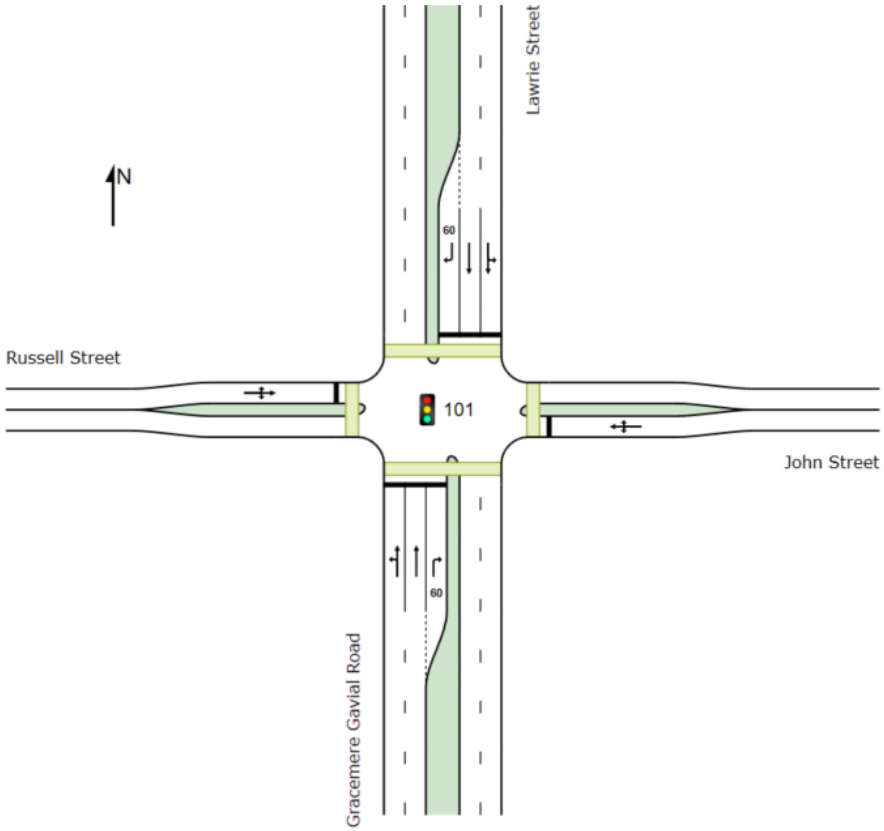


Figure 2: Lawrie/John/Russell Street Intersection

The results from SIDRA for the Lawrie/John/Russell St intersection analysis are summarised in Table 3 and Appendix C. From the acquired results the intersection displays a LOS C operations with the current weekday morning/evening peak hour specifications.

Table 3: Lawrie/John/Russell Street Intersection Operations

| Peak Hour | Cycle Time | DOS | Critical Movement Delay | 95% Queue | Critical Approach |
|---|---|---|---|---|---|
| Weekday AM | 100s | 66% | 29.6s | 18.3 Veh | Gracemere Gavial Rd |
| Weekday PM | 100s | 62% | 16.7s | 12.5 Veh | Lawrie St |

## 2.4 Road Safety Issues

### 2.4.1 Existing Site Conditions

A desktop review of the existing traffic conditions on the relevant road network was undertaken by Lachlan McMurtrie (RPEQ/Road Safety Auditor) on Wednesday 22 November 2023. No obvious safety issues were identified.

### 2.4.2 Road Crash History Review

A review of the road crash history at the Lawrie/John/Russell Street intersection was undertaken using the road crash data available from Queensland Globe Database, with the assessment completed from data from the past nine years (January 2015 – November 2023).

The results of this assessment identified two crashes within the proximity of the intersection, within the selected timeframe. However, it is noted that this data is historic in nature as it relates to the previous roundabout configuration and not the upgraded signalised layout. This change in layout limits the value of the crash history data in terms of future evaluation.

Table 4: Summary of Road Crash History (2015-2023)

| Crash Ref. No. | Crash Year | Crash Severity | Crash Type | DCA Code | Crash Description |
|---|---|---|---|---|---|
| **Lawrie/John/Russell Street Intersection** | | | | | |
| 256611 | 2017 | Hospitalisation | Multi-Vehicle | 303 | Veh'S Same Direction: Right Rear |
| 256626 | 2018 | Minor Injury | Multi-Vehicle | 301 | Veh'S Same Direction: Right Rear |

The results above indicate that the increased traffic generated by the proposed development, can't be considered a specific safety risk. With only two crashes recorded in the vicinity of the proposed site over the last nine years (2015-2023) and the site configuration being updated from a roundabout to a signalised intersection. It is noted that both of these incidents were prior to the signalisation of the intersection.

## 2.5 Site Access

There is currently no site access to the lot. Historically the lot maintained unhindered access to John Street for the majority of the frontage.

## 2.6 Active and Public Transport

### 2.6.1 Pedestrian & Cyclists

Regarding the proposed development site, pedestrian footpaths are provided on both sides of Lawrie Street. Along with a footpath present on John Street extending to the northern boundary of 4 John Street (Lot 505 R2642). The Lawrie/John/Russell Street signalised intersection has pedestrian crossings present for all approaches.

Additionally, there is currently on-road cyclist lanes on Lawrie Street and John Street and present on all approaches for the Lawrie/John/Russell St signalised intersection.

### 2.6.2 Public Transport

Public transport routes are present along both sides of Lawrie Street, with public bus stops located within 200m of the proposed development lot. These bus stops are serviced by Young's Bus Service and comprise bus route 21 & 22, running between Gracemere, Rockhampton, Bouldercombe and Mt Morgan. With approximately one bus serviced in each direction per hour during operational hours along the routes on weekdays and weekends.

# 3 Proposed Development Details

## 3.1 Operational Details

The proposed development is a Coffee Drive Through, which will occupy the northern half of Lot 604 on R2642 shown in the site plan included as Appendix A. The proposed development represents the final form of the site, and no further development is expected.

The development will provide a drive through service with outdoor seating along with six (6) spaces for onsite parking. Vehicular access is proposed via a left and right in/out access intersection with John St, while the largest design vehicle anticipated to require access to the site is a Medium Rigid Vehicle for delivery and waste collection. It is expected that the hours of collection for waste will be outside the peak period of operation.

The proposed Drive Through building has an area of 64m² GFA (with approximately 42m² of seating area), with parking spaces provided for cars parking near the building. The traffic elements of the proposed development are discussed further in the following sections.

## 3.2 Proposed Access and Parking

### 3.2.1 Site Access

As previously identified, vehicular access to the Drive Through development is proposed to be provided via a left and right in/out access intersection with John St catering for vehicles in the northbound and southbound lanes. A second left and right out only access is proposed to service the drive-through facility, which is required by the confined nature of the lot.

It is acknowledged that the requirement for two accesses will result in the loss of up to 6 on-street parking spaces on John Street. In order to offset this impact, the number of off-street parking spaces has been maximised as discussed in Section 3.2.2.1. Three additional off-street parking spaces will be provided in addition to the minimum amount required by the Planning Scheme, meaning half of the loss will be mitigated.

It is therefore seen as reasonable to allow two accesses on the basis that the actual impact, having been halved, is effectively the same as if the development only had one access.

Furthermore, given the function of the second access being for exit only movements, it is considered that interaction between the two accesses will be minimised, maintaining the safety of road users and pedestrians.

### 3.2.2 Internal Site Facilities

To assess the adequacy of the internal traffic facilities, reference has been made to the Access, Parking and Transport Code within the Rockhampton Region Planning Scheme, as well as the relevant Australian Standards.

Compliance with the requirements of these documents is discussed in the following sections.

#### 3.2.2.1 Car Parking

Table 9.3.1.3.2: Parking requirements of RRC's Planning Scheme stipulates that for food and drink outlets a car parking requirement of 1 space for each 15 m2 of GFA for seating areas (including outdoor seating areas), with on-site queuing for at least 10 vehicles where involving a drive through facility. Given the proposed Drive Through has approximately 42m² GFA of seating area, namely the area shown as 'outdoor seating area' on the layout plans, and no internal seating area provision, the recommended parking provisions for the development is therefore 3 parking spaces (minimum). As shown on the site plan (included in Appendix A), a total of 6 parking spaces are proposed on site, including 1 PWD Bay for Persons with Disabilities.

All parking spaces proposed for light vehicles (cars) are generally 5.4m long and 2.6m wide and are accessed by a parking aisle exceeding 6.6m width, which meets the requirements stipulated in AS2890.1 for short term, high turnover parking, while the provision of 1 PWD bay for the proposal aligns with the general PWD bay provision rate of between 1-2% of the overall parking bays on site.

### 3.2.2.2 Queuing and Vehicle Circulation

As shown in the Site Plan (refer Appendix A) the proposed site layout nominates one-way traffic flow (clockwise) for vehicles through the drive through. Vehicle swept paths have also been undertaken which confirm the ability of a light vehicle to travel along the drive through, with a copy of the relevant swept paths for the proposal included for reference in Appendix A. As per Table 9.3.1.3.2: Parking requirements of RRC's Planning Scheme, this Coffee Drive Through meets the requirement to contain an on-site queuing space for a minimum of 10 vehicles.

### 3.2.2.3 Service Vehicle Access, Circulation and Loading

RRC's Planning Scheme doesn't specify a design vehicle for food and drink outlets. However, based on the approximate size and nature of the proposed development its likely only to be serviced by a Medium Rigid (MRV) vehicle or smaller. Thus, a delivery/refuse zone sized for a Medium Rigid Vehicle has been proposed on the south of the building. Vehicle swept paths have also been undertaken which confirm the ability of a MRV to travel into the site for delivery/waste collection purposes, with a copy of the relevant swept paths for the proposal included for reference in Appendix A.

### 3.2.2.4 Pedestrians

The pedestrian access to the proposed development is via dedicated pedestrian access entrances, which are separate from the driveways, along John St frontage.

AS2890.1 requires that 2.0m wide x 2.5m long pedestrian sight splays be provided on the egress side of adjacent driveways to ensure sufficient visibility between drivers exiting the site and pedestrians using the footpath. The proposed Coffee Drive Through layout complies with these requirements, with no obstructions currently present on the egress of both driveways.

### 3.2.2.5 Cyclists

The *Austroads 'Cycling Aspects of Austroads Guides'* states that a bicycle parking rate for Take aways of one per 100m$^2$ GFA for staff use and 1 per 50m$^2$ per GFA for customers. It is recommended that these spaces be provided for use prior to commencement of operational works. Consequently, it is recommended that bicycle parking for the proposed Coffee Drive Through be provided as:

- Staff: One space
- Customers: Two Spaces

# 4 Development Traffic

## 4.1 Traffic Generation

To determine the traffic generation of the proposed service development, reference has been made to Bitzios *Trip Generation Drive Through Coffee Outlets Data and Analysis Report with Appendices*, which provides recommended traffic generation rates for drive through coffee shops based on surveys conducted at a number of sites across NSW. In accordance with the recommended range of 70-130 trips in the AM peak hour, and with consideration that the proposed use is in a regional area, a revised traffic generation rate in the AM peak hour of 70 trips/hr has been adopted. Based on the surveyed PM peak hour generation rate being on average ~25% of the AM peak hour generation rate, a conservative 35 trips/hr in the PM peak has been adopted, which represents 50% of the AM peak rate.

It is also standard practice to consider undiverted trips for Coffee Drive throughs (i.e., accounting for the trips already present on the road network). To remain consistent with this, it has been assumed that 50% of the trips associated with the development would be classified as undiverted "drop-in" trips.

## 4.2 Traffic Distribution

Given the proposed development is a Coffee Drive Through, it is anticipated that most trips generated by the proposed development (if not all) will be undiverted "drop-in" trips undertaken by vehicles travelling past on Lawrie St.

However, with a view to maintaining a conservative approach, it has been assumed that 50% of trips generated by the Coffee Drive Through during the peak hours will be destination (i.e. new) trips, with a summary of the expected distribution of traffic from the development provided in Table 5 below.

Table 5 - Proposed development traffic distribution

| AM Peak | PM Peak |
|---|---|
| **Arrival/Departure Split** | |
| – 50% traffic inbound to development; and<br>– 50% traffic outbound from development. | – 50% traffic inbound to development; and<br>– 50% traffic outbound from development. |
| **"New" Trip Distribution (50% Overall Trips)** | |
| **Inbound**<br>– 60% from Gavial Gracemere Road (South-East)<br>– 5% from Russell Street (South-West)<br>– 25% from Lawrie Street (North-West)<br>– 10% from John Street (North)<br>**Outbound**<br>– 10% to John Street (North)<br>– 60% to Lawrie Street (North-West)<br>– 5% to Russell Street (South-West)<br>– 25% from Gavial Gracemere Road (South-East) | **Inbound**<br>– 25% from Gavial Gracemere Road (South-East)<br>– 5% from Russell Street (South-West)<br>– 60% from Lawrie Street (North-West)<br>– 10% from John Street (North)<br>**Outbound**<br>– 10% to John Street (North)<br>– 60% to Lawrie Street (North-West)<br>– 5% to Russell Street (South-West)<br>– 25% from Gavial Gracemere Road (South-East) |
| **"Drop-In" Trip Distribution (50% Overall Trips)** | |
| **Inbound**<br>– 60% from Gavial Gracemere Road (South-East)<br>– 30% from Lawrie Street (North-West)<br>– 10% from John Street (North)<br>**Outbound**<br>– 10% to John Street (North)<br>– 60% to Lawrie Street (North-West)<br>– 30% from Gavial Gracemere Road (South-East) | **Inbound**<br>– 30% from Gavial Gracemere Road (South-East)<br>– 60% from Lawrie Street (North-West)<br>– 10% from John Street (North)<br>**Outbound**<br>– 10% to John Street (North)<br>– 30% to Lawrie Street (North-West)<br>– 60% from Gavial Gracemere Road (South-East) |

## 4.3 Development Traffic Volumes on the Network

The distribution of the development related traffic on the current road network has been estimated based on the directional split inherent in the supplied traffic surveys and expectations regarding the origins and destinations of the proposed use given its convenience nature. The resultant distribution of the development traffic for the "new" trips and "drop-in" trips are shown in the figures below.

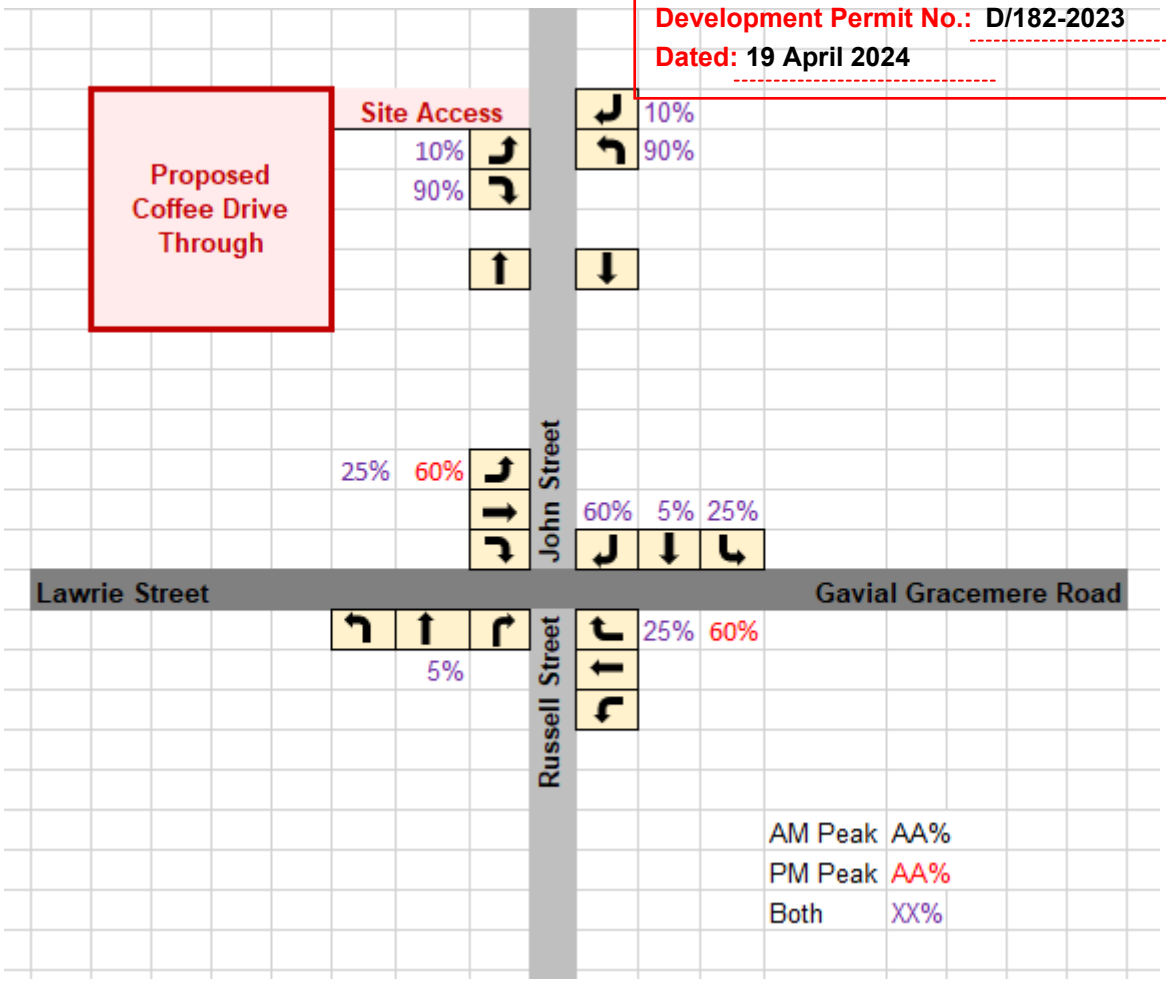


Figure 3: Development Distribution of "New" Trips

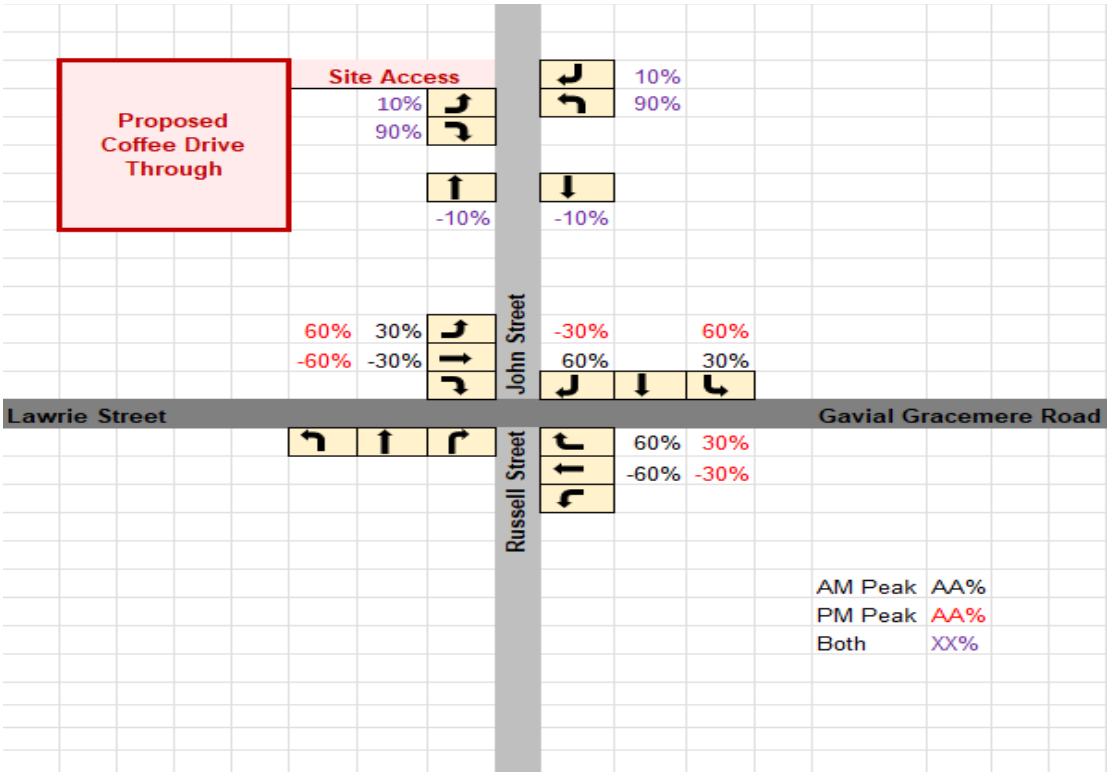


Figure 4: Development Distribution of "Drop-In" Trips

## 4.4 Development Staging

### 4.4.1 Timing

In the practice of analysing the future year traffic operations, it is standard to adopt a 10-year design period for the year of full operational commencement. Therefore, the subsequent development stages will be assumed:

- Traffic Counts: 2018
- Development Application: 2023
- Construction and Occupation: 2024
- Occupation Plus 10yrs: 2034

### 4.4.2 Assessment Scenarios

Due to the location of the proposed development the site doesn't have direct access to the state-controlled road network, thus the following assessment scenarios have been adopted:

- Opening Year (2024) Pre-Development Scenario
- Opening Year (2024) Post-Development Scenario
- Occupation Plus 10yrs: 2034 (For Accesses)

### 4.4.3 Traffic Counts Background Traffic Growth

Based on the 10-year growth in Average Annual Daily Traffic (AADT) as reported by TMR for Lawrie St, the background traffic growth for the impact assessment has been established. The background growth rate of 3% per annum has been assumed.

# 5 Impact Assessment and Mitigation

Based on the information provided above, it was determined that the critical elements of the surrounding road network in terms of the potential impact of the proposed Coffee Drive Through development was the Lawrie/John/Russell Street intersection. Further details of the assessment of the impact of the development on the road network is provided in the following sections.

## 5.1 With and Without Development Traffic Volumes

### 5.1.1 Road Link Volumes

As previously discussed, given the proposed development is a Coffee Drive Through it is anticipated that most trips generated by the proposed development will be undiverted drop-in trips.

Whilst the development is predicted to generate in the order of 35 vehicle trips (entry and exit) in the AM and 18 vehicle trips (entry and exit) during the PM peak hours, at least 50% of these trips are expected to be undiverted drop-in trips by vehicles travelling past the proposed site on Lawrie St.

### 5.1.2 Intersection Operations

The probable impact of the proposed Coffee Drive Through development on the AM/PM peak hour operations of the surrounding road network have been assessed using SIDRA. This analysis is based on the peak hour turning movement forecasts shown in Appendix B.

#### 5.1.2.1 Lawrie/John/Russell Street Intersection

The results from the SIDRA intersection analysis for Lawrie/John/Russell Street intersection as shown in Appendix C and summarised in Table 6. The results are based on the SIDRA representation of the proposed intersection shown in Figure 2. These results show that the intersection is expected to experience LOS D (or better) during the AM/PM peak hours, under the 2024 pre and post development conditions. The additional development traffic generated by the proposed Coffee Drive Through isn't expected to impose significant adverse conditions on the intersection operations.

Table 6: Lawrie/John/Russell St Intersection SIDRA Summary

| Peak Hour | DOS | Critical Movement Delay | 95% Queue | LOS | Critical Approach |
|---|---|---|---|---|---|
| **Weekday AM** | | | | | |
| 2024 Pre-Development | 76% | 37.6s | 26.9 Veh | D | Russell St |
| 2024 Post Development | 78% | 39.8s | 27.8 Veh | D | Russell St |
| **Weekday PM** | | | | | |
| 2024 Pre-Development | 71% | 27.9s | 19.7 Veh | C | John St |
| 2024 Post Development | 73% | 29.1s | 20.6 Veh | C | Lawrie St |

### 5.1.3 Intersection Delay

In accordance with the procedure outlined in the Department of Transport and Main Roads' GTIA, an assessment on the impact of the proposed development on the cumulative delay at the affected intersection. The expected net change in delay has been calculated for the Lawrie/John/Russell Street signalised intersection, as indicated in Table 7 and 8.

Table 7: Cumulative Delays Assessment – 2024 AM Peak

| Movement | 2024 AM Peak | | | | |
|---|---|---|---|---|---|
| | Pre Dev Vols | Pre Dev Movement Avg Delay | Pre Dev Total Delay | Post Dev Movement Avg Delay | Post Dev Total Delay |
| **Gracemere Gavial Rd** | | | | | |
| Left | 7 | 39.3 | 275 | 41.9 | 293 |
| Through | 1050 | 38.4 | 40320 | 41.3 | 43365 |
| Right | 40 | 41.4 | 1656 | 42.8 | 1712 |
| **John St** | | | | | |
| Left | 37 | 55.0 | 2035 | 54.9 | 2031 |
| Through | 9 | 50.4 | 454 | 50.3 | 453 |
| Right | 239 | 55.0 | 13145 | 54.8 | 13097 |
| **Lawrie St** | | | | | |
| Left | 54 | 26.6 | 1436 | 28.1 | 1517 |
| Through | 500 | 22.1 | 11050 | 23.5 | 11750 |
| Right | 50 | 33.0 | 1650 | 32.9 | 1645 |
| **Russell St** | | | | | |
| Left | 66 | 71.1 | 4693 | 71.6 | 4726 |
| Through | 9 | 66.6 | 599 | 67.1 | 604 |
| Right | 7 | 71.1 | 498 | 71.6 | 501 |
| | | **Total** | **77811** | **Total** | **81695** |
| | | **% Difference Pre and Post Development** | | | **4.99%** |

Table 8: Cumulative Delays Assessment – 2024 PM Peak

| Movement | 2024 PM Peak | | | | |
|---|---|---|---|---|---|
| | Pre Dev Vols | Pre Dev Movement Avg Delay | Pre Dev Total Delay | Post Dev Movement Avg Delay | Post Dev Total Delay |
| **Gracemere Gavial Rd** | | | | | |
| Left | 18 | 32.8 | 590 | 33.5 | 603 |
| Through | 755 | 28.2 | 21291 | 28.9 | 21820 |
| Right | 45 | 33.7 | 1517 | 34.0 | 1530 |
| **John St** | | | | | |
| Left | 39 | 61.4 | 2395 | 59.2 | 2309 |
| Through | 6 | 56.8 | 341 | 54.6 | 328 |
| Right | 127 | 61.3 | 7785 | 59.1 | 7506 |
| **Lawrie St** | | | | | |
| Left | 64 | 24.5 | 1568 | 25.9 | 1658 |
| Through | 1017 | 19.9 | 20238 | 21.5 | 21866 |
| Right | 62 | 31.0 | 1922 | 31.8 | 1972 |
| **Russell St** | | | | | |
| Left | 29 | 67.3 | 1952 | 67.3 | 1952 |
| Through | 8 | 62.7 | 502 | 62.7 | 502 |
| Right | 11 | 67.3 | 740 | 67.3 | 740 |
| | | **Total** | **60840** | **Total** | **62783** |
| | | **% Difference Pre and Post Development** | | | **3.19%** |

Table 7 and 8 shows that the additional development traffic generated by the proposed Coffee Drive Through would result in a 4.99 and 3.19% increase in delay for the AM and PM Peaks, which equates to an average delay of 4% for the post-development traffic. Therefore, the presence of the additional traffic generated by the proposed development doesn't warrant mitigation works.

## 5.2 Access and Frontage Impact Assessment and Mitigation

The proposed site access ingress and egress will be provided as per Appendix A. Access visibility from both driveways requires a SISD of 114m based upon the 60km/h operational speed and other geometric parameters. Based on the SISD in Appendix A, one roadside parking space (between the driveways) will need to be removed to allow for adequate SISD for incoming vehicular movement. With this parking space removed:

- The main entry will be able to sight an oncoming vehicle comfortably with 155m from the left (northern end of John St) and 75m from the right (southern end on John St).
- The drive through exit will also be able to sight an oncoming vehicle comfortably with 120m from the left (northern end of John St) and 110m from the right (southern end on John St).

Forecast through road and access turn volumes based on Figure 15 and 16 (Appendix B) in conjunction with a compound growth rate of 3% for through traffic are shown in Figure 5 and 6 below for the opening year of 2024 and the 10-year design horizon of 2034.

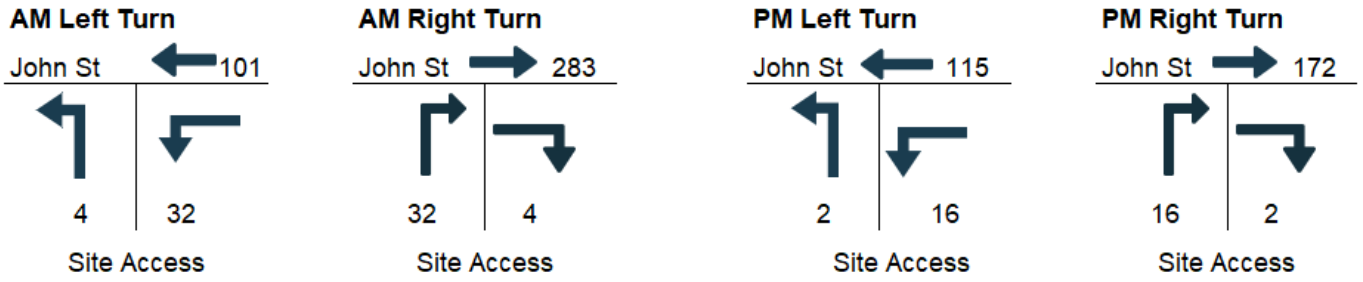


Figure 5: Development Volumes 2024

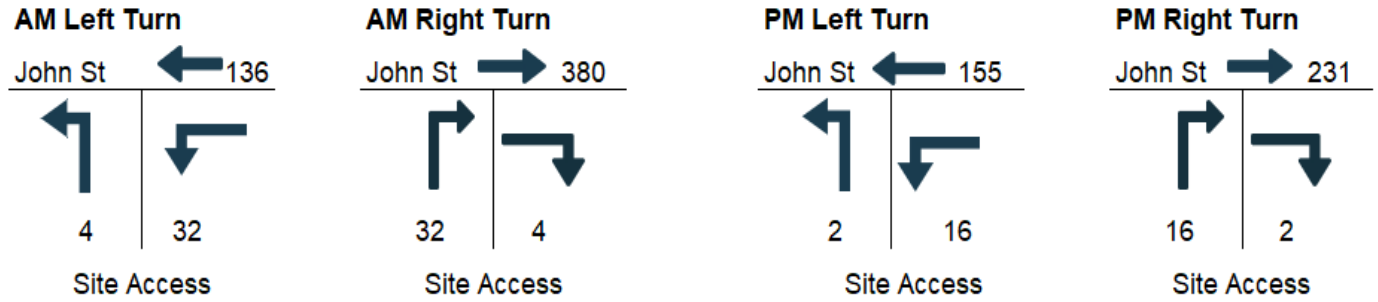


Figure 6: Development Volumes 2034

A turn warrants assessment was undertaken for the proposed site access intersection with John Street based on the forecast post development traffic volumes from the proposed Coffee Drive Through as identified in Figure 5 and Figure 6 above. The assessment was completed using Figure 2.26b of Austroads Guide to Traffic Management Part 6: Intersections, Interchanges and Crossings.

The resultant graphs from the assessment for the post development (2024) and the 10-year design horizon (2034) traffic conditions is provided in Figure 7 and 8 below.

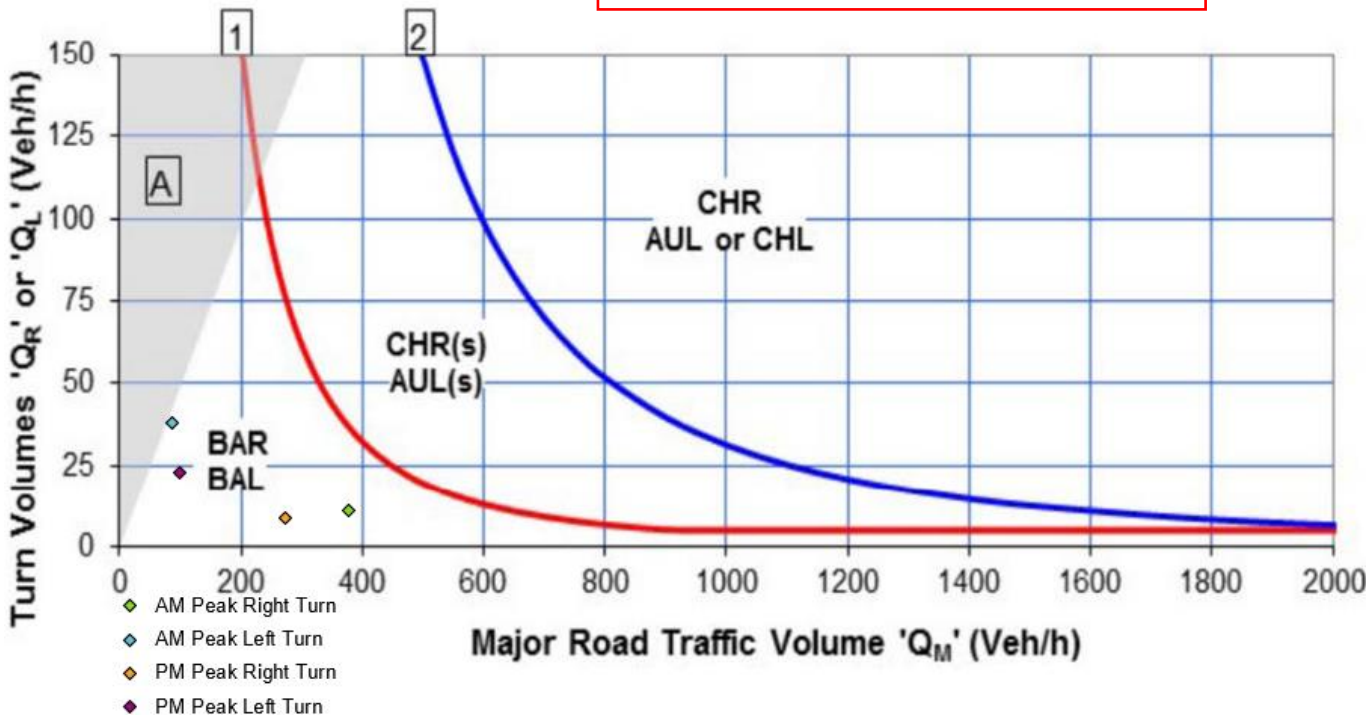


Figure 7: Post Development (2024) Warrant Graph

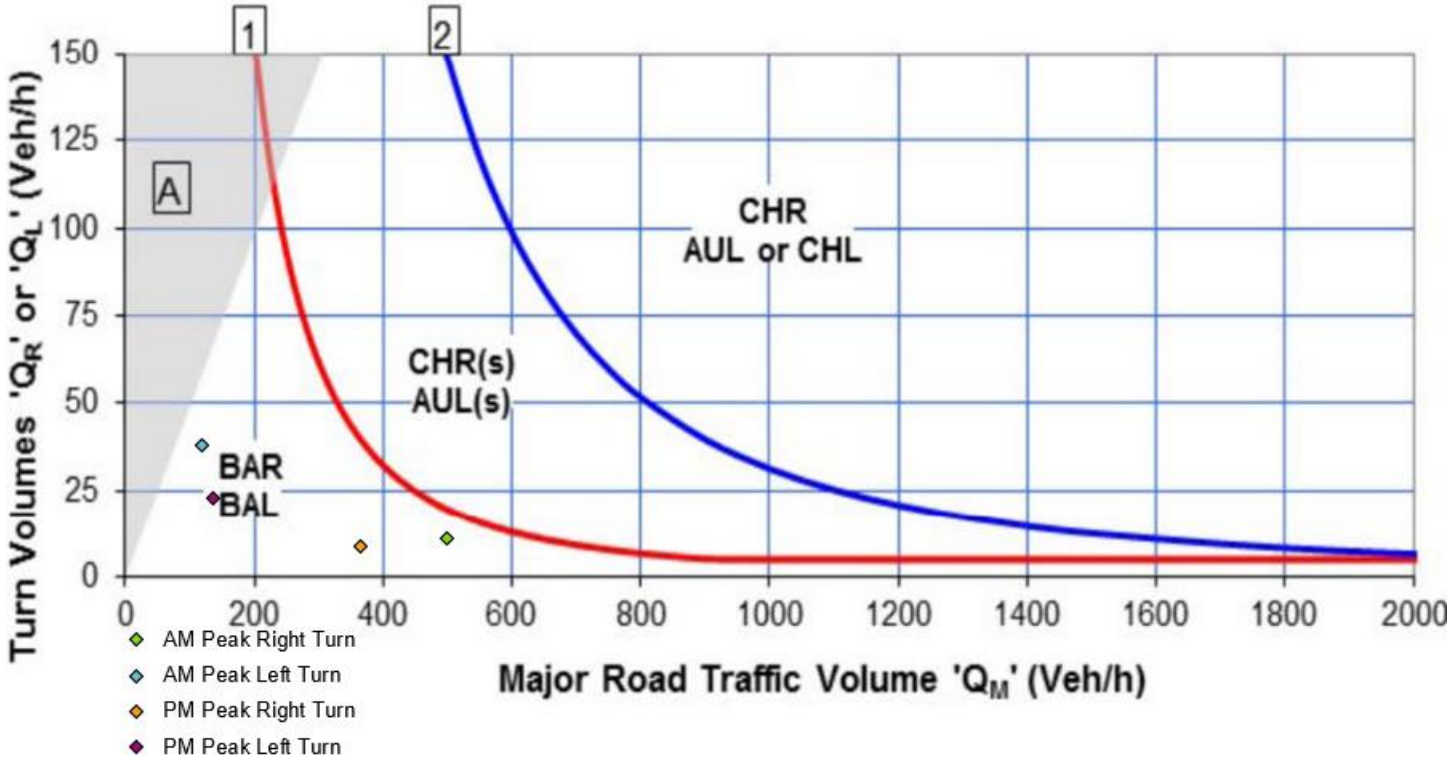


Figure 8: 10-Year Design Horizon (2034) Turn Warrant

The results of the turn warrants assessment indicate that the recommended turn treatments at the site access intersection of the John Street/site access intersection for the post development traffic volume scenario was a BAL treatment.

As a result of this, no further treatments are proposed to the existing intersection of John Street and the site access.

## 5.3 Pavement Impact Assessment and Mitigation

Given that the proposed development is a Coffee Drive Through and that the proposed development construction period will be completed in a short number of months, it is not expected to generate a significant number of new heavy vehicle movements under typical operation, no pavement mitigation works are deemed warranted or required because of the proposal.

**ROCKHAMPTON REGIONAL COUNCIL**

**APPROVED PLANS**

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**Development Permit No.:** **D/182-2023**

**Dated:** **19 April 2024**

# 6 Conclusions and Recommendations

## 6.1 Summary of Impacts and Mitigation Measures Proposed

### 6.1.1 Internal Facilities

The traffic elements of the proposed plan of development have been designed generally in accordance with the requirements of AS2890 and Table 9.3.1.3.2: Parking requirements of RRC's Planning Scheme

The proposed on-site parking provision a total of 6 parking spaces, including 1 PWD Bay for Persons with Disabilities is considered adequate to cater for the parking demand expected to be generated by the development. The design of the car parking area is in accordance with the requirements outlined in the relevant standards and guidelines and is supportable from a traffic engineering perspective.

The proposed pedestrian footpath within the verge along John Street is anticipated to adequately cater for the pedestrian travel associated with the proposed development, and suitable connect to the existing pathway network in the area.

In addition, the swept paths for vehicles using the drive through and of the largest vehicle entering the site for delivery and waste removal are shown to comfortably be able to enter the site.

### 6.1.2 Traffic Impacts

The turn warrants assessment undertaken based on the estimated post development traffic volumes (2034) indicated that the recommended turn treatments for the site access intersection of John Street/site access was a BAL treatment. As such no treatments are proposed.

The results of capacity analyses of the Lawrie/John/Russell Street intersection indicate that the proposed development will have minimal impact upon the operation of the Lawrie/John/Russell Street intersection at the proposed opening year (2024), with a minimal change in the operation between the pre and post development scenarios. Further to this, the results also indicate that the intersection is expected to operate within acceptable limits under all development scenarios assessed.

Lastly, it was also noted that the proposed development would have no impact upon the physical facilities or operation of the existing public transport and active transport facilities in the vicinity of the site.

### 6.1.3 Recommendations

A minimum of three (3) bicycle parking spaces should be provided for the development to comply with *Austroads 'Cycling Aspects of Austroads Guides'*. Also, one (1) roadside parking space (between the driveways) will need to be removed to allow for adequate SISD.

Considering the information provided above, it is concluded that the proposed development will have a negligible impact on the adjacent road network and can therefore be recommended to be approved from a traffic engineering perspective.

## 6.2 Certification Statement and Authorisation

A copy of the RPEQ certification and authorisation statement covering this assessment of the proposed Coffee Drive Through development located at 6 Lawrie St, Gracemere 4702, on land described as Lot 604 on R2642 is included as reference in Appendix C.

**ROCKHAMPTON REGIONAL COUNCIL**

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**Dated:** 19 April 2024

# Appendix A: Site Layout Plan and Swept Paths

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**Dated:** **19 April 2024**

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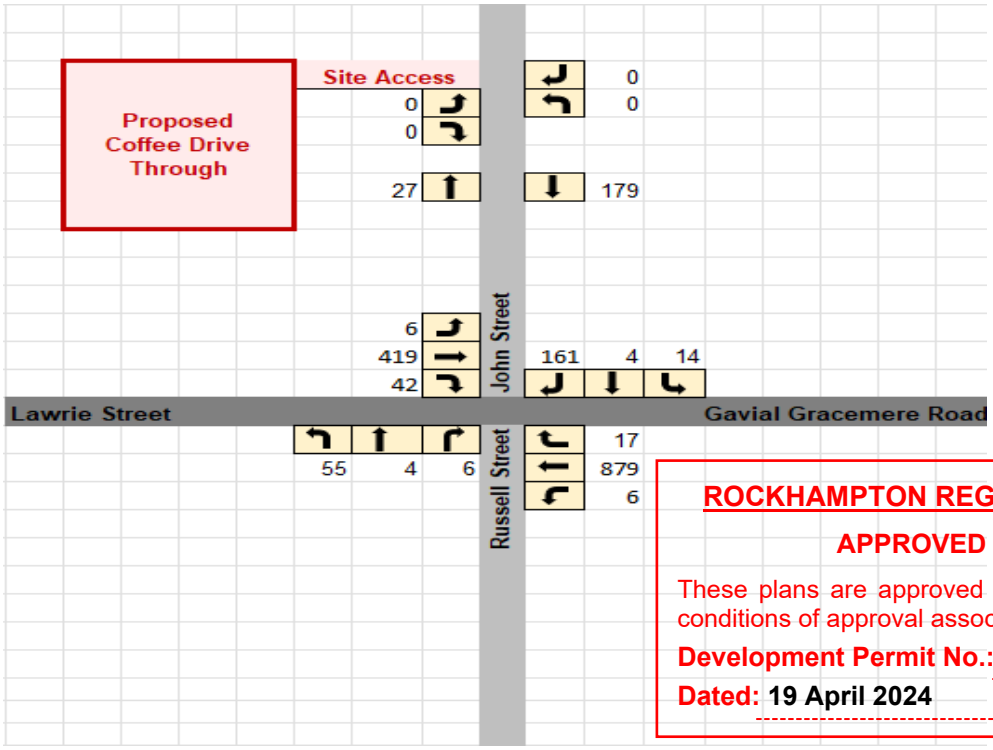
# Appendix B: Turning Movement Forecasts

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**Dated:** 19 April 2024

Figure 9: 2018 Existing AM Peak Hour

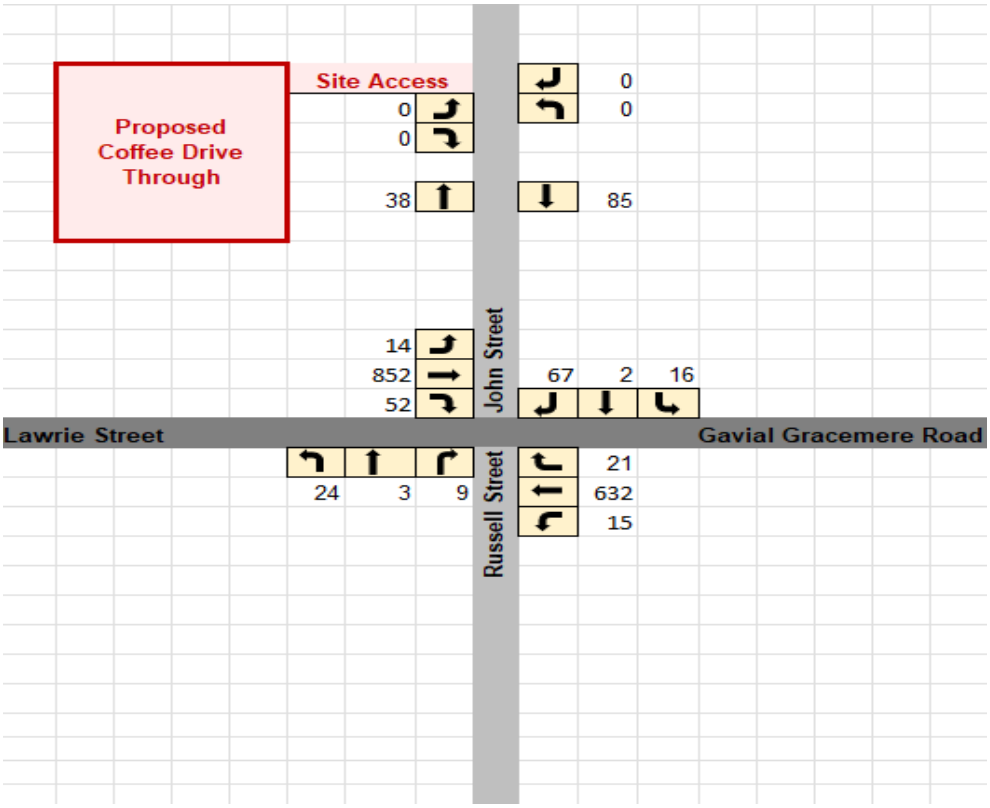
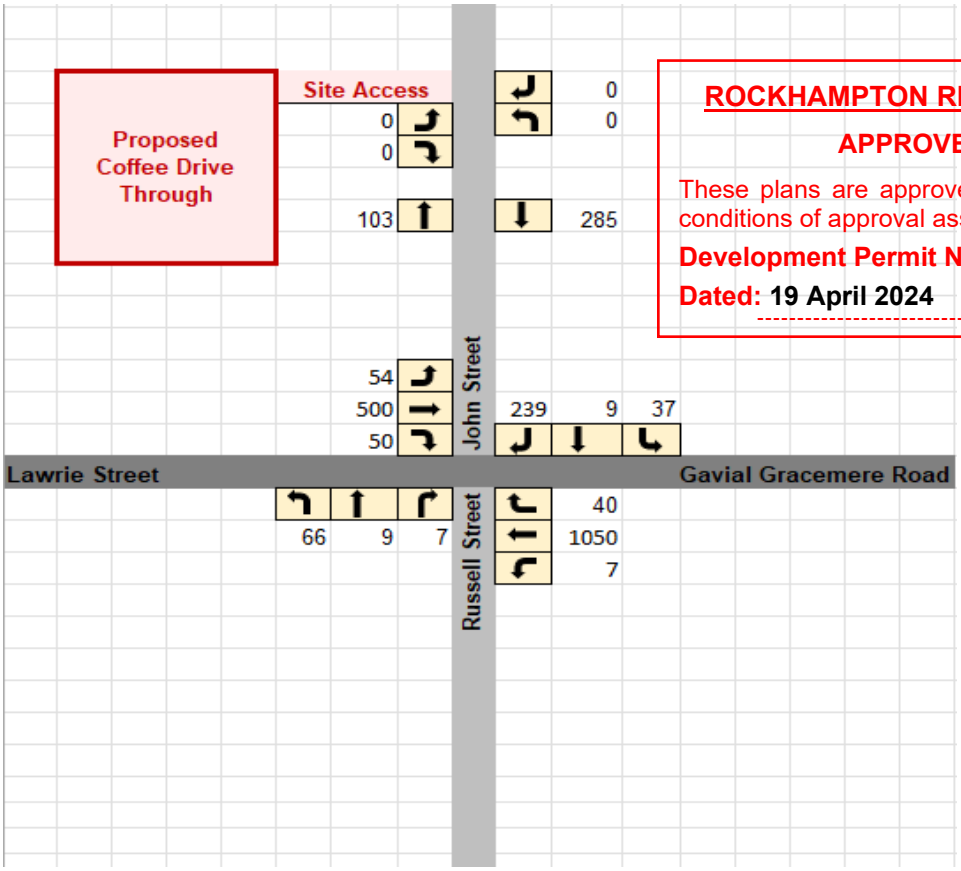



Figure 10: 2018 Existing PM Peak Hour

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Dated: 19 April 2024

Figure 11: 2024 Pre-Development AM Peak Hour

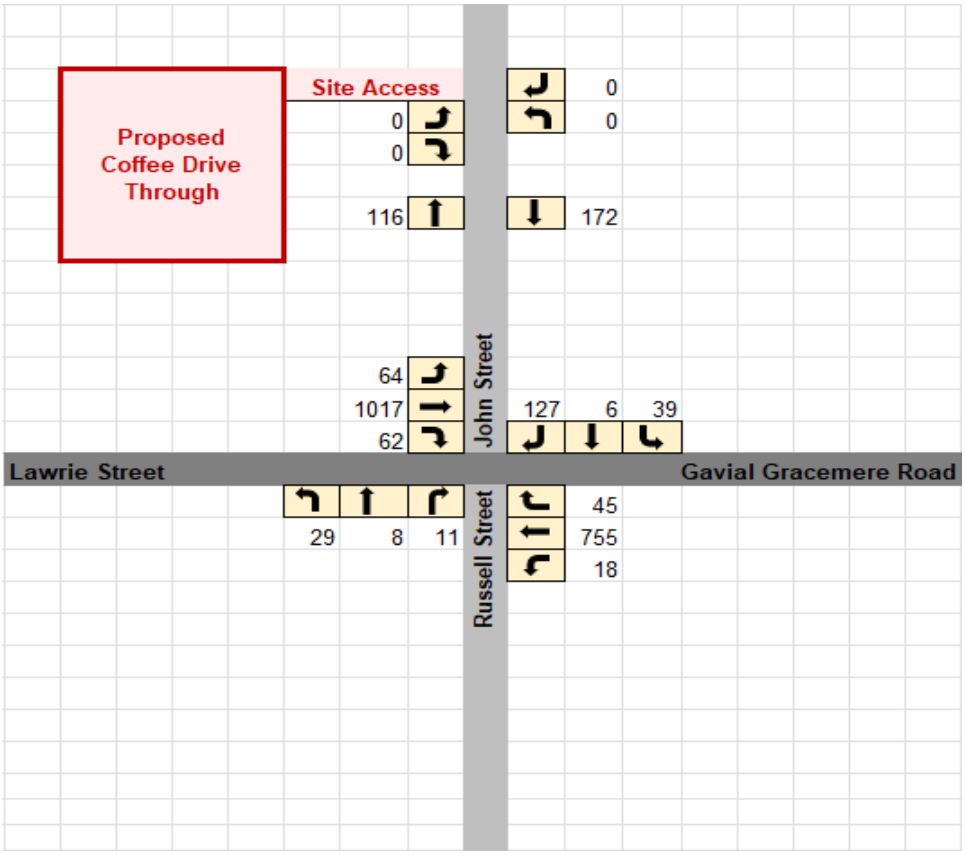


Figure 12: 2024 Pre-Development PM Peak Hour

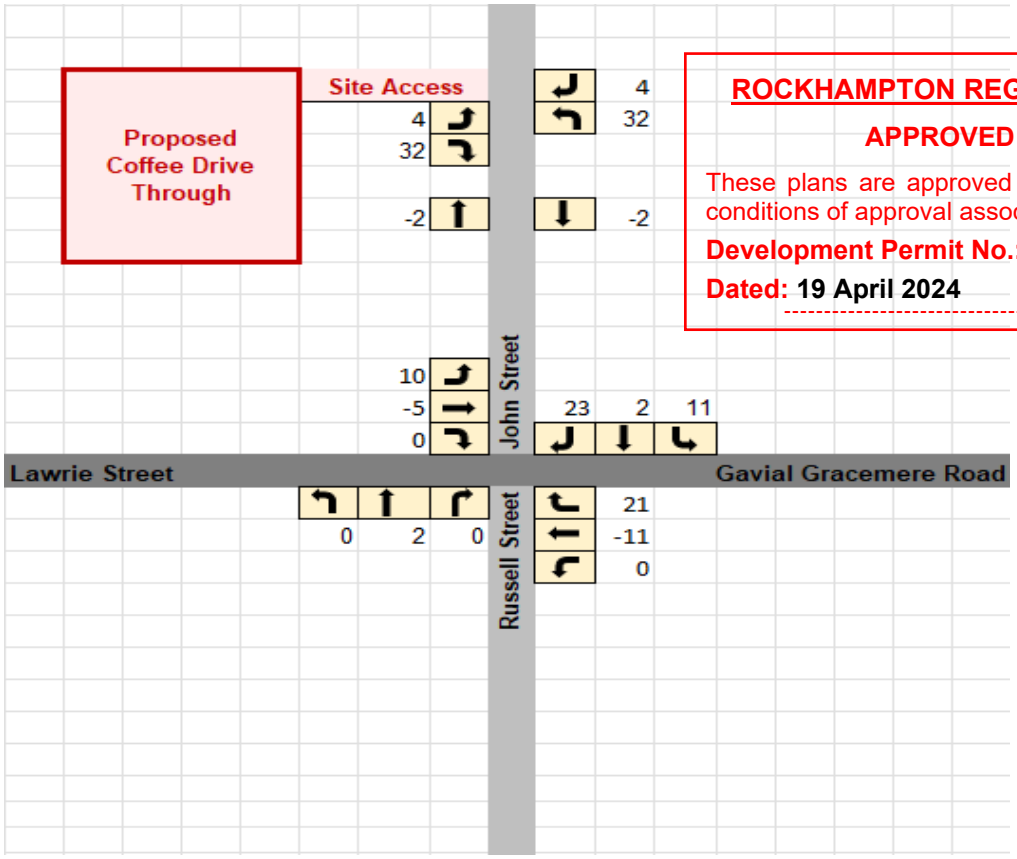


Figure 13: Development Traffic Generation – AM Peak Hour

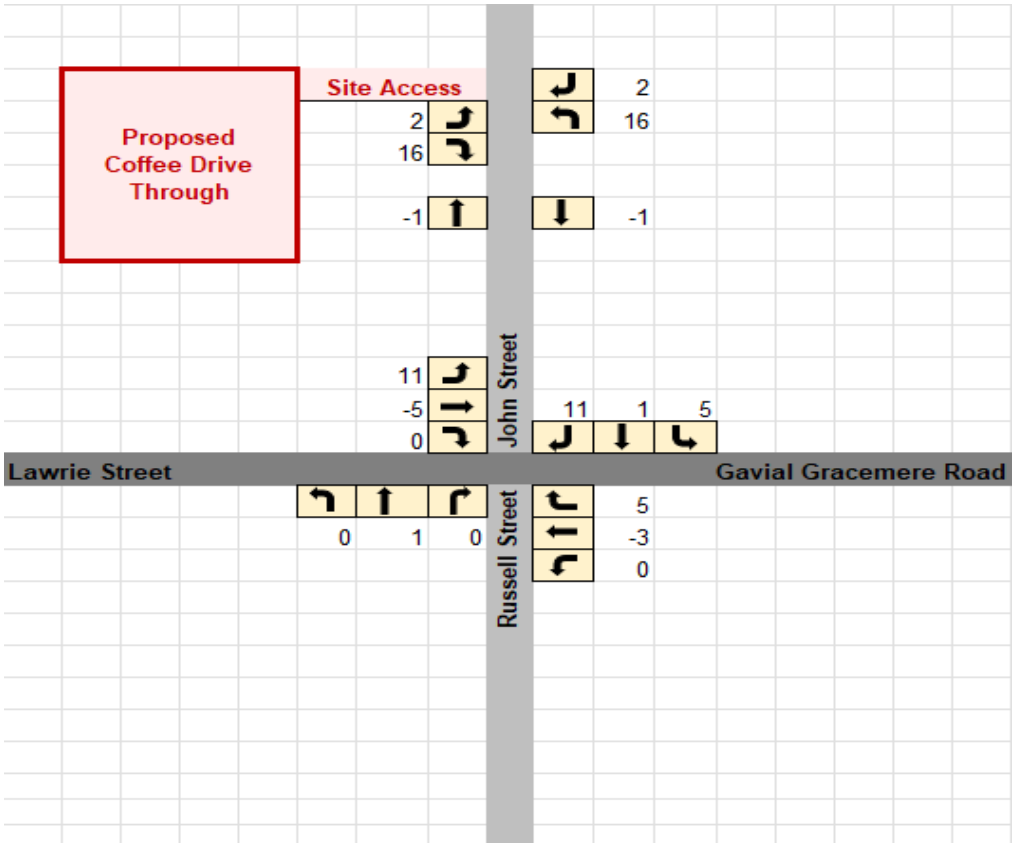


Figure 14: Development Traffic Generation – PM Peak Hour

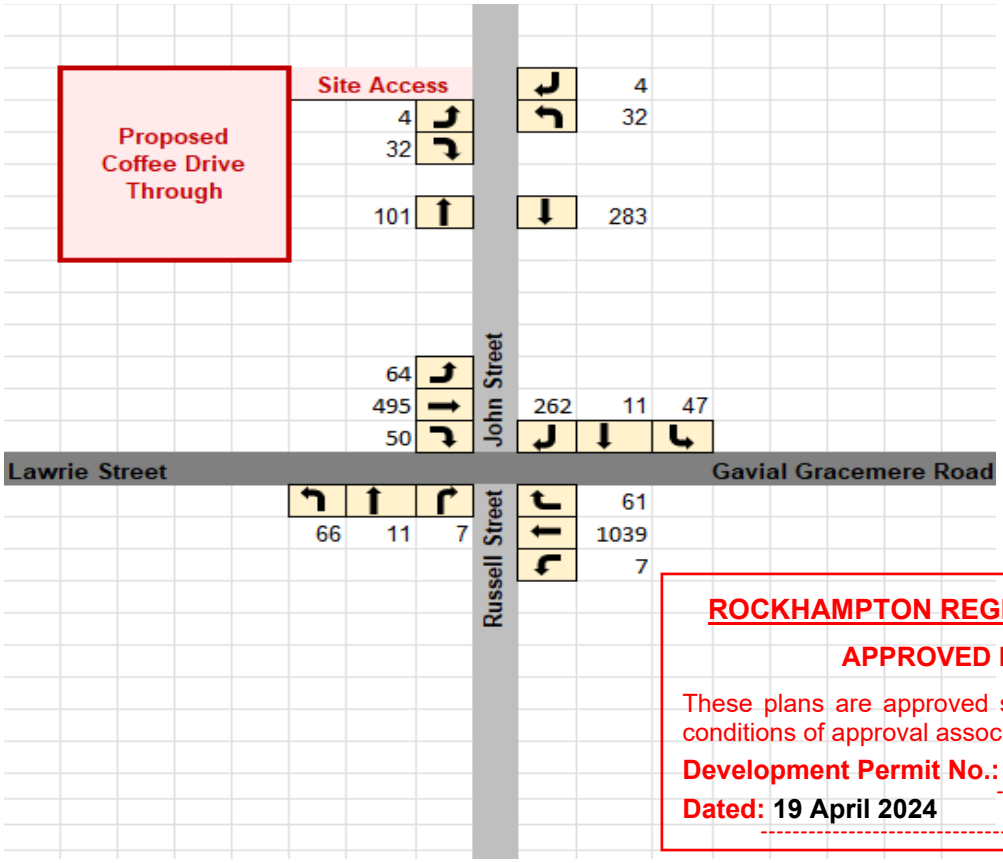




Figure 15: 2024 Post-Development AM Peak Hour

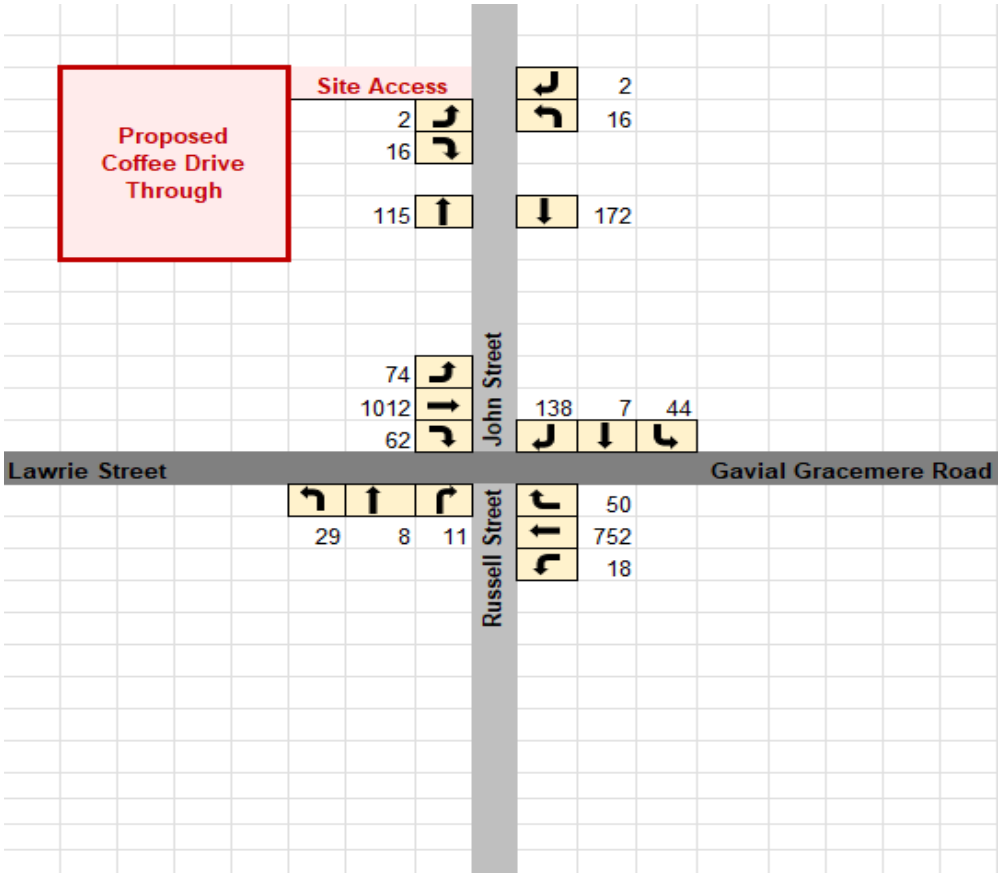


Figure 16: 2024 Post-Development PM Peak Hour

# Appendix C: Intersection Analysis

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**ROCKHAMPTON REGIONAL COUNCIL**

**APPROVED PLANS**

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**Development Permit No.:** D/182-2023

**Dated:** 19 April 2024

# MOVEMENT SUMMARY

## Site: 101 [2018 AM Existing (Site Folder: General)]

**Output produced by SIDRA INTERSECTION Version: 9.1.5.224**

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated  Cycle Time = 100 seconds (Site Optimum Cycle Time - Minimum Delay)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

**Vehicle Movement Performance**

| Mov ID | Turn | Mov Class | Demand Flows [ Total veh/h | HV ] % | Arrival Flows [ Total veh/h | HV ] % | Deg. Satn v/c | Aver. Delay sec | Level of Service | 95% Back Of Queue [ Veh. veh | Dist ] m | Prop. Que | Eff. Stop Rate | Aver. No. of Cycles | Aver. Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Gracemere Gavial Road | | | | | | | | | | | | | | | |
| 1 | L2 | All MCs | 6 | 2.2 | 6 | 2.2 | 0.658 | 34.2 | LOS C | 18.3 | 130.4 | 0.90 | 0.79 | 0.90 | 34.9 |
| 2 | T1 | All MCs | 879 | 2.2 | 879 | 2.2 | *0.658 | 29.6 | LOS C | 18.3 | 130.5 | 0.90 | 0.79 | 0.90 | 35.5 |
| 3 | R2 | All MCs | 17 | 2.2 | 17 | 2.2 | 0.077 | 27.9 | LOS C | 0.5 | 3.4 | 0.92 | 0.68 | 0.92 | 35.6 |
| Approach | | | 902 | 2.2 | 902 | 2.2 | 0.658 | 29.6 | LOS C | 18.3 | 130.5 | 0.90 | 0.79 | 0.90 | 35.5 |
| East: John Street | | | | | | | | | | | | | | | |
| 4 | L2 | All MCs | 14 | 2.2 | 14 | 2.2 | 0.652 | 49.7 | LOS D | 8.6 | 61.4 | 0.99 | 0.83 | 1.03 | 29.4 |
| 5 | T1 | All MCs | 4 | 2.2 | 4 | 2.2 | *0.652 | 45.1 | LOS D | 8.6 | 61.4 | 0.99 | 0.83 | 1.03 | 29.8 |
| 6 | R2 | All MCs | 161 | 2.2 | 161 | 2.2 | 0.652 | 49.7 | LOS D | 8.6 | 61.4 | 0.99 | 0.83 | 1.03 | 29.4 |
| Approach | | | 179 | 2.2 | 179 | 2.2 | 0.652 | 49.6 | LOS D | 8.6 | 61.4 | 0.99 | 0.83 | 1.03 | 29.4 |
| North: Lawrie Street | | | | | | | | | | | | | | | |
| 7 | L2 | All MCs | 6 | 2.2 | 6 | 2.2 | 0.369 | 23.3 | LOS C | 6.1 | 43.8 | 0.83 | 0.69 | 0.83 | 38.9 |
| 8 | T1 | All MCs | 419 | 2.2 | 419 | 2.2 | *0.369 | 18.7 | LOS B | 6.2 | 43.9 | 0.83 | 0.69 | 0.83 | 39.8 |
| 9 | R2 | All MCs | 43 | 2.2 | 43 | 2.2 | *0.181 | 27.0 | LOS C | 1.1 | 7.7 | 0.92 | 0.72 | 0.92 | 35.9 |
| Approach | | | 468 | 2.2 | 468 | 2.2 | 0.369 | 19.5 | LOS B | 6.2 | 43.9 | 0.84 | 0.69 | 0.84 | 39.3 |
| West: Russell Street | | | | | | | | | | | | | | | |
| 10 | L2 | All MCs | 55 | 2.2 | 55 | 2.2 | 0.506 | 56.2 | LOS E | 3.3 | 23.3 | 1.00 | 0.76 | 1.00 | 27.9 |
| 11 | T1 | All MCs | 4 | 2.2 | 4 | 2.2 | *0.506 | 51.6 | LOS D | 3.3 | 23.3 | 1.00 | 0.76 | 1.00 | 28.3 |
| 12 | R2 | All MCs | 6 | 2.2 | 6 | 2.2 | 0.506 | 56.2 | LOS E | 3.3 | 23.3 | 1.00 | 0.76 | 1.00 | 28.0 |
| Approach | | | 65 | 2.2 | 65 | 2.2 | 0.506 | 55.9 | LOS E | 3.3 | 23.3 | 1.00 | 0.76 | 1.00 | 28.0 |
| All Vehicles | | | 1614 | 2.2 | 1614 | 2.2 | 0.658 | 30.0 | LOS C | 18.3 | 130.5 | 0.90 | 0.76 | 0.90 | 35.3 |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* Critical Movement (Signal Timing)

**Pedestrian Movement Performance**

| Mov ID | Crossing | Input Vol. ped/h | Dem. Flow ped/h | Aver. Delay sec | Level of Service | AVERAGE BACK OF QUEUE [ Ped ped | Dist ] m | Prop. Que | Eff. Stop Rate | Travel Time sec | Travel Dist. m | Aver. Speed m/sec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Gracemere Gavial Road | | | | | | | | | | | | |
| P1 | Full | 1 | 1 | 44.2 | LOS E | 0.0 | 0.0 | 0.94 | 0.94 | 198.0 | 200.0 | 1.01 |
| East: John Street | | | | | | | | | | | | |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| P2 Full | 1 | 1 | 25.6 | LOS C | 0.0 | 0.0 | 0.88 | 0.88 | 179.5 | 200.0 | 1.11 |
| North: Lawrie Street | | | | | | | | | | | |
| P3 Full | 1 | 1 | 44.2 | LOS E | 0.0 | 0.0 | 0.94 | 0.94 | 198.0 | 200.0 | 1.01 |
| West: Russell Street | | | | | | | | | | | |
| P4 Full | 3 | 3 | 44.2 | LOS E | 0.0 | 0.0 | 0.94 | 0.94 | 198.0 | 200.0 | 1.01 |
| All Pedestrians | 6 | 6 | 41.1 | LOS E | 0.0 | 0.0 | 0.93 | 0.93 | 194.9 | 200.0 | 1.03 |

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.


Organisation: MCMURTRIE CONSULTING ENGINEERS PTY LTD | Licence: PLUS / 1PC | Processed: Friday, 15 December 2023 1:50:31 PM
Project: C:\Users\Rhien\OneDrive - McMurtrie Consulting Engineers\Documents\MCM\TIA\Gracemere Zarraffas\SIDRA\Test Variation_TL_70VPH & HJ 2.sip9

**ROCKHAMPTON REGIONAL COUNCIL**

**APPROVED PLANS**

These plans are approved subject to the current conditions of approval associated with

**Development Permit No.: D/182-2023**

**Dated: 19 April 2024**

# MOVEMENT SUMMARY

## Site: 101 [2018 PM Existing (Site Folder: General)]

**Output produced by SIDRA INTERSECTION Version: 9.1.5.224**

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated  Cycle Time = 100 seconds (Site Optimum Cycle Time - Minimum Delay)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

### Vehicle Movement Performance

| Mov ID | Turn | Mov Class | Demand Flows [ Total veh/h | HV ] % | Arrival Flows [ Total veh/h | HV ] % | Deg. Satn v/c | Aver. Delay sec | Level of Service | 95% Back Of Queue [ Veh. veh | Dist ] m | Prop. Que | Eff. Stop Rate | Aver. No. of Cycles | Aver. Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Gracemere Gavial Road | | | | | | | | | | | | | | | |
| 1 | L2 | All MCs | 15 | 4.2 | 15 | 4.2 | 0.449 | 29.5 | LOS C | 11.8 | 85.4 | 0.80 | 0.69 | 0.80 | 36.5 |
| 2 | T1 | All MCs | 632 | 4.2 | 632 | 4.2 | 0.449 | 24.9 | LOS C | 11.8 | 85.6 | 0.80 | 0.69 | 0.80 | 37.2 |
| 3 | R2 | All MCs | 21 | 4.2 | 21 | 4.2 | *0.097 | 27.5 | LOS C | 0.6 | 4.0 | 0.92 | 0.69 | 0.92 | 35.7 |
| Approach | | | 668 | 4.2 | 668 | 4.2 | 0.449 | 25.1 | LOS C | 11.8 | 85.6 | 0.80 | 0.69 | 0.80 | 37.2 |
| East: John Street | | | | | | | | | | | | | | | |
| 4 | L2 | All MCs | 16 | 4.2 | 16 | 4.2 | 0.589 | 55.8 | LOS E | 4.3 | 31.1 | 1.00 | 0.80 | 1.05 | 28.0 |
| 5 | T1 | All MCs | 2 | 4.2 | 2 | 4.2 | *0.589 | 51.2 | LOS D | 4.3 | 31.1 | 1.00 | 0.80 | 1.05 | 28.4 |
| 6 | R2 | All MCs | 67 | 4.2 | 67 | 4.2 | 0.589 | 55.8 | LOS E | 4.3 | 31.1 | 1.00 | 0.80 | 1.05 | 28.0 |
| Approach | | | 85 | 4.2 | 85 | 4.2 | 0.589 | 55.7 | LOS E | 4.3 | 31.1 | 1.00 | 0.80 | 1.05 | 28.0 |
| North: Lawrie Street | | | | | | | | | | | | | | | |
| 7 | L2 | All MCs | 14 | 4.2 | 14 | 4.2 | 0.617 | 21.3 | LOS C | 12.5 | 90.7 | 0.87 | 0.75 | 0.87 | 39.7 |
| 8 | T1 | All MCs | 852 | 4.2 | 852 | 4.2 | *0.617 | 16.7 | LOS B | 12.5 | 90.8 | 0.87 | 0.75 | 0.87 | 40.6 |
| 9 | R2 | All MCs | 52 | 4.2 | 52 | 4.2 | *0.170 | 25.5 | LOS C | 1.4 | 9.9 | 0.89 | 0.72 | 0.89 | 36.4 |
| Approach | | | 918 | 4.2 | 918 | 4.2 | 0.617 | 17.3 | LOS B | 12.5 | 90.8 | 0.87 | 0.75 | 0.87 | 40.3 |
| West: Russell Street | | | | | | | | | | | | | | | |
| 10 | L2 | All MCs | 24 | 4.2 | 24 | 4.2 | 0.284 | 55.1 | LOS E | 1.8 | 12.8 | 0.98 | 0.73 | 0.98 | 28.2 |
| 11 | T1 | All MCs | 3 | 4.2 | 3 | 4.2 | *0.284 | 50.5 | LOS D | 1.8 | 12.8 | 0.98 | 0.73 | 0.98 | 28.6 |
| 12 | R2 | All MCs | 9 | 4.2 | 9 | 4.2 | 0.284 | 55.1 | LOS E | 1.8 | 12.8 | 0.98 | 0.73 | 0.98 | 28.2 |
| Approach | | | 36 | 4.2 | 36 | 4.2 | 0.284 | 54.7 | LOS D | 1.8 | 12.8 | 0.98 | 0.73 | 0.98 | 28.2 |
| All Vehicles | | | 1707 | 4.2 | 1707 | 4.2 | 0.617 | 23.1 | LOS C | 12.5 | 90.8 | 0.85 | 0.73 | 0.85 | 37.9 |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* Critical Movement (Signal Timing)

### Pedestrian Movement Performance

| Mov ID | Crossing | Input Vol. ped/h | Dem. Flow ped/h | Aver. Delay sec | Level of Service | AVERAGE BACK OF QUEUE [ Ped ped | Dist ] m | Prop. Que | Eff. Stop Rate | Travel Time sec | Travel Dist. m | Aver. Speed m/sec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Gracemere Gavial Road | | | | | | | | | | | | |
| P1 | Full | 1 | 1 | 44.2 | LOS E | 0.0 | 0.0 | 0.94 | 0.94 | 198.0 | 200.0 | 1.01 |
| East: John Street | | | | | | | | | | | | |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P2 | Full | 1 | 1 | 23.8 | LOS C | 0.0 | 0.0 | 0.88 | 0.88 | 177.6 | 200.0 | 1.13 |
| North: Lawrie Street | | | | | | | | | | | | |
| P3 | Full | 1 | 1 | 44.2 | LOS E | 0.0 | 0.0 | 0.94 | 0.94 | 198.0 | 200.0 | 1.01 |
| West: Russell Street | | | | | | | | | | | | |
| P4 | Full | 18 | 18 | 44.2 | LOS E | 0.0 | 0.0 | 0.94 | 0.94 | 198.1 | 200.0 | 1.01 |
| All Pedestrians | | 21 | 21 | 43.2 | LOS E | 0.0 | 0.0 | 0.94 | 0.94 | 197.1 | 200.0 | 1.01 |

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.




**ROCKHAMPTON REGIONAL COUNCIL**

**APPROVED PLANS**

These plans are approved subject to the current conditions of approval associated with

**Development Permit No.: D/182-2023**

**Dated: 19 April 2024**

# MOVEMENT SUMMARY

## Site: 101 [2024 AM Pre Dev (Site Folder: General)]

**Output produced by SIDRA INTERSECTION Version: 9.1.5.224**

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated  Cycle Time = 120 seconds (Site Optimum Cycle Time - Minimum Delay)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

### Vehicle Movement Performance

| Mov ID | Turn | Mov Class | Demand Flows [ Total veh/h | HV ] % | Arrival Flows [ Total veh/h | HV ] % | Deg. Satn v/c | Aver. Delay sec | Level of Service | 95% Back Of Queue [ Veh. veh | Dist ] m | Prop. Que | Eff. Stop Rate | Aver. No. of Cycles | Aver. Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Gracemere Gavial Road | | | | | | | | | | | | | | | |
| 1 | L2 | All MCs | 7 | 2.2 | 7 | 2.2 | 0.740 | 39.3 | LOS D | 26.9 | 191.6 | 0.93 | 0.83 | 0.93 | 33.2 |
| 2 | T1 | All MCs | 1050 | 2.2 | 1050 | 2.2 | *0.740 | 38.4 | LOS D | 26.9 | 191.6 | 0.93 | 0.82 | 0.93 | 33.8 |
| 3 | R2 | All MCs | 40 | 2.2 | 40 | 2.2 | 0.219 | 41.4 | LOS D | 1.4 | 9.6 | 0.95 | 0.72 | 0.95 | 33.5 |
| Approach | | | 1097 | 2.2 | 1097 | 2.2 | 0.740 | 38.5 | LOS D | 26.9 | 191.6 | 0.93 | 0.82 | 0.93 | 32.7 |
| East: John Street | | | | | | | | | | | | | | | |
| 4 | L2 | All MCs | 37 | 2.2 | 37 | 2.2 | 0.747 | 55.0 | LOS D | 16.3 | 116.4 | 1.00 | 0.88 | 1.06 | 28.2 |
| 5 | T1 | All MCs | 9 | 2.2 | 9 | 2.2 | *0.747 | 50.4 | LOS D | 16.3 | 116.4 | 1.00 | 0.88 | 1.06 | 28.6 |
| 6 | R2 | All MCs | 239 | 2.2 | 239 | 2.2 | 0.747 | 55.0 | LOS D | 16.3 | 116.4 | 1.00 | 0.88 | 1.06 | 28.2 |
| Approach | | | 285 | 2.2 | 285 | 2.2 | 0.747 | 54.8 | LOS D | 16.3 | 116.4 | 1.00 | 0.88 | 1.06 | 28.2 |
| North: Lawrie Street | | | | | | | | | | | | | | | |
| 7 | L2 | All MCs | 54 | 2.2 | 54 | 2.2 | 0.434 | 26.6 | LOS C | 9.8 | 69.7 | 0.83 | 0.72 | 0.83 | 37.3 |
| 8 | T1 | All MCs | 500 | 2.2 | 500 | 2.2 | *0.434 | 22.1 | LOS C | 9.9 | 70.4 | 0.83 | 0.71 | 0.83 | 38.2 |
| 9 | R2 | All MCs | 50 | 2.2 | 50 | 2.2 | *0.252 | 33.0 | LOS C | 1.5 | 10.9 | 0.95 | 0.73 | 0.95 | 33.9 |
| Approach | | | 604 | 2.2 | 604 | 2.2 | 0.434 | 23.4 | LOS C | 9.9 | 70.4 | 0.84 | 0.71 | 0.84 | 37.7 |
| West: Russell Street | | | | | | | | | | | | | | | |
| 10 | L2 | All MCs | 66 | 2.2 | 66 | 2.2 | 0.765 | 71.1 | LOS E | 5.2 | 37.2 | 1.00 | 0.90 | 1.24 | 25.1 |
| 11 | T1 | All MCs | 9 | 2.2 | 9 | 2.2 | *0.765 | 66.6 | LOS E | 5.2 | 37.2 | 1.00 | 0.90 | 1.24 | 25.4 |
| 12 | R2 | All MCs | 7 | 2.2 | 7 | 2.2 | 0.765 | 71.1 | LOS E | 5.2 | 37.2 | 1.00 | 0.90 | 1.24 | 25.1 |
| Approach | | | 82 | 2.2 | 82 | 2.2 | 0.765 | 70.6 | LOS E | 5.2 | 37.2 | 1.00 | 0.90 | 1.24 | 25.2 |
| All Vehicles | | | 2068 | 2.2 | 2068 | 2.2 | 0.765 | 37.6 | LOS D | 26.9 | 191.6 | 0.91 | 0.80 | 0.93 | 32.9 |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* Critical Movement (Signal Timing)

### Pedestrian Movement Performance

| Mov ID | Crossing | Input Vol. ped/h | Dem. Flow ped/h | Aver. Delay sec | Level of Service | AVERAGE BACK OF QUEUE [ Ped ped | Dist ] m | Prop. Que | Eff. Stop Rate | Travel Time sec | Travel Dist. m | Aver. Speed m/sec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Gracemere Gavial Road | | | | | | | | | | | | |
| P1 | Full | 1 | 1 | 54.2 | LOS E | 0.0 | 0.0 | 0.95 | 0.95 | 208.0 | 200.0 | 0.96 |
| East: John Street | | | | | | | | | | | | |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P2 | Full | 1 | 1 | 34.5 | LOS D | 0.0 | 0.0 | 0.90 | 0.90 | 188.4 | 200.0 | 1.06 |
| North: Lawrie Street | | | | | | | | | | | | |
| P3 | Full | 1 | 1 | 54.2 | LOS E | 0.0 | 0.0 | 0.95 | 0.95 | 208.0 | 200.0 | 0.96 |
| West: Russell Street | | | | | | | | | | | | |
| P4 | Full | 3 | 3 | 54.2 | LOS E | 0.0 | 0.0 | 0.95 | 0.95 | 208.0 | 200.0 | 0.96 |
| All Pedestrians | | 6 | 6 | 50.9 | LOS E | 0.0 | 0.0 | 0.94 | 0.94 | 204.7 | 200.0 | 0.98 |

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

**ROCKHAMPTON REGIONAL COUNCIL**

**APPROVED PLANS**

These plans are approved subject to the current conditions of approval associated with

**Development Permit No.: D/182-2023**

**Dated: 19 April 2024**

# MOVEMENT SUMMARY

## Site: 101 [2024 PM Pre Dev (Site Folder: General)]

**Output produced by SIDRA INTERSECTION Version: 9.1.5.224**

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site Optimum Cycle Time - Minimum Delay)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

**Vehicle Movement Performance**

| Mov ID | Turn | Mov Class | Demand Flows [ Total veh/h | HV ] % | Arrival Flows [ Total veh/h | HV ] % | Deg. Satn v/c | Aver. Delay sec | Level of Service | 95% Back Of Queue [ Veh. veh | Dist ] m | Prop. Que | Eff. Stop Rate | Aver. No. of Cycles | Aver. Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Gracemere Gavial Road | | | | | | | | | | | | | | | |
| 1 | L2 | All MCs | 18 | 4.2 | 18 | 4.2 | 0.499 | 32.8 | LOS C | 16.7 | 120.8 | 0.80 | 0.70 | 0.80 | 35.3 |
| 2 | T1 | All MCs | 755 | 4.2 | 755 | 4.2 | 0.499 | 28.2 | LOS C | 16.7 | 121.1 | 0.80 | 0.70 | 0.80 | 36.0 |
| 3 | R2 | All MCs | 45 | 4.2 | 45 | 4.2 | *0.250 | 33.7 | LOS C | 1.4 | 10.4 | 0.96 | 0.73 | 0.96 | 33.6 |
| Approach | | | 818 | 4.2 | 818 | 4.2 | 0.499 | 28.6 | LOS C | 16.7 | 121.1 | 0.80 | 0.70 | 0.80 | 35.9 |
| East: John Street | | | | | | | | | | | | | | | |
| 4 | L2 | All MCs | 39 | 4.2 | 39 | 4.2 | 0.714 | 61.4 | LOS E | 10.2 | 73.7 | 1.00 | 0.86 | 1.08 | 26.9 |
| 5 | T1 | All MCs | 6 | 4.2 | 6 | 4.2 | *0.714 | 56.8 | LOS E | 10.2 | 73.7 | 1.00 | 0.86 | 1.08 | 27.3 |
| 6 | R2 | All MCs | 127 | 4.2 | 127 | 4.2 | 0.714 | 61.3 | LOS E | 10.2 | 73.7 | 1.00 | 0.86 | 1.08 | 26.9 |
| Approach | | | 172 | 4.2 | 172 | 4.2 | 0.714 | 61.2 | LOS E | 10.2 | 73.7 | 1.00 | 0.86 | 1.08 | 26.9 |
| North: Lawrie Street | | | | | | | | | | | | | | | |
| 7 | L2 | All MCs | 64 | 4.2 | 64 | 4.2 | 0.700 | 24.5 | LOS C | 19.6 | 142.0 | 0.89 | 0.79 | 0.89 | 38.3 |
| 8 | T1 | All MCs | 1017 | 4.2 | 1017 | 4.2 | *0.700 | 19.9 | LOS B | 19.7 | 142.8 | 0.89 | 0.79 | 0.89 | 39.2 |
| 9 | R2 | All MCs | 62 | 4.2 | 62 | 4.2 | *0.229 | 31.0 | LOS C | 2.0 | 14.4 | 0.92 | 0.74 | 0.92 | 34.5 |
| Approach | | | 1143 | 4.2 | 1143 | 4.2 | 0.700 | 20.7 | LOS C | 19.7 | 142.8 | 0.89 | 0.78 | 0.89 | 38.8 |
| West: Russell Street | | | | | | | | | | | | | | | |
| 10 | L2 | All MCs | 29 | 4.2 | 29 | 4.2 | 0.453 | 67.3 | LOS E | 2.9 | 21.0 | 1.00 | 0.75 | 1.00 | 25.8 |
| 11 | T1 | All MCs | 8 | 4.2 | 8 | 4.2 | *0.453 | 62.7 | LOS E | 2.9 | 21.0 | 1.00 | 0.75 | 1.00 | 26.2 |
| 12 | R2 | All MCs | 11 | 4.2 | 11 | 4.2 | 0.453 | 67.3 | LOS E | 2.9 | 21.0 | 1.00 | 0.75 | 1.00 | 25.9 |
| Approach | | | 48 | 4.2 | 48 | 4.2 | 0.453 | 66.6 | LOS E | 2.9 | 21.0 | 1.00 | 0.75 | 1.00 | 25.9 |
| All Vehicles | | | 2181 | 4.2 | 2181 | 4.2 | 0.714 | 27.9 | LOS C | 19.7 | 142.8 | 0.87 | 0.76 | 0.87 | 36.1 |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* Critical Movement (Signal Timing)

**Pedestrian Movement Performance**

| Mov ID | Crossing | Input Vol. ped/h | Dem. Flow ped/h | Aver. Delay sec | Level of Service | AVERAGE BACK OF QUEUE [ Ped ped | Dist ] m | Prop. Que | Eff. Stop Rate | Travel Time sec | Travel Dist. m | Aver. Speed m/sec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Gracemere Gavial Road | | | | | | | | | | | | |
| P1 | Full | 1 | 1 | 54.2 | LOS E | 0.0 | 0.0 | 0.95 | 0.95 | 208.0 | 200.0 | 0.96 |
| East: John Street | | | | | | | | | | | | |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P2 | Full | 1 | 1 | 31.8 | LOS D | 0.0 | 0.0 | 0.90 | 0.90 | 185.6 | 200.0 | 1.08 |
| North: Lawrie Street | | | | | | | | | | | | |
| P3 | Full | 1 | 1 | 54.2 | LOS E | 0.0 | 0.0 | 0.95 | 0.95 | 208.0 | 200.0 | 0.96 |
| West: Russell Street | | | | | | | | | | | | |
| P4 | Full | 18 | 18 | 54.2 | LOS E | 0.1 | 0.1 | 0.95 | 0.95 | 208.0 | 200.0 | 0.96 |
| All Pedestrians | | 21 | 21 | 53.1 | LOS E | 0.1 | 0.1 | 0.95 | 0.95 | 207.0 | 200.0 | 0.97 |

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.


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# MOVEMENT SUMMARY

## Site: 101 [2024 AM Post Dev (Site Folder: General)]

**Output produced by SIDRA INTERSECTION Version: 9.1.5.224**

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site Optimum Cycle Time - Minimum Delay)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

### Vehicle Movement Performance

| Mov ID | Turn | Mov Class | Demand Flows [ Total veh/h | HV ] % | Arrival Flows [ Total veh/h | HV ] % | Deg. Satn v/c | Aver. Delay sec | Level of Service | 95% Back Of Queue [ Veh. veh | Dist ] m | Prop. Que | Eff. Stop Rate | Aver. No. of Cycles | Aver. Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Gracemere Gavial Road | | | | | | | | | | | | | | | |
| 1 | L2 | All MCs | 7 | 2.2 | 7 | 2.2 | 0.769 | 41.9 | LOS D | 27.8 | 198.0 | 0.95 | 0.86 | 0.97 | 32.5 |
| 2 | T1 | All MCs | 1039 | 2.2 | 1039 | 2.2 | *0.769 | 41.3 | LOS D | 27.8 | 198.0 | 0.95 | 0.86 | 0.97 | 33.0 |
| 3 | R2 | All MCs | 61 | 2.2 | 61 | 2.2 | *0.334 | 42.8 | LOS D | 2.2 | 15.4 | 0.97 | 0.74 | 0.97 | 33.2 |
| Approach | | | 1107 | 2.2 | 1107 | 2.2 | 0.769 | 41.4 | LOS D | 27.8 | 198.0 | 0.95 | 0.85 | 0.97 | 31.9 |
| East: John Street | | | | | | | | | | | | | | | |
| 4 | L2 | All MCs | 47 | 2.2 | 47 | 2.2 | 0.777 | 54.9 | LOS D | 18.6 | 132.3 | 1.00 | 0.90 | 1.08 | 28.2 |
| 5 | T1 | All MCs | 11 | 2.2 | 11 | 2.2 | *0.777 | 50.3 | LOS D | 18.6 | 132.3 | 1.00 | 0.90 | 1.08 | 28.7 |
| 6 | R2 | All MCs | 262 | 2.2 | 262 | 2.2 | 0.777 | 54.8 | LOS D | 18.6 | 132.3 | 1.00 | 0.90 | 1.08 | 28.3 |
| Approach | | | 320 | 2.2 | 320 | 2.2 | 0.777 | 54.7 | LOS D | 18.6 | 132.3 | 1.00 | 0.90 | 1.08 | 28.3 |
| North: Lawrie Street | | | | | | | | | | | | | | | |
| 7 | L2 | All MCs | 64 | 2.2 | 64 | 2.2 | 0.462 | 28.1 | LOS C | 10.2 | 72.8 | 0.85 | 0.73 | 0.85 | 36.7 |
| 8 | T1 | All MCs | 495 | 2.2 | 495 | 2.2 | *0.462 | 23.5 | LOS C | 10.3 | 73.7 | 0.85 | 0.72 | 0.85 | 37.6 |
| 9 | R2 | All MCs | 50 | 2.2 | 50 | 2.2 | 0.252 | 32.9 | LOS C | 1.5 | 10.5 | 0.95 | 0.73 | 0.95 | 33.9 |
| Approach | | | 609 | 2.2 | 609 | 2.2 | 0.462 | 24.7 | LOS C | 10.3 | 73.7 | 0.86 | 0.73 | 0.86 | 37.2 |
| West: Russell Street | | | | | | | | | | | | | | | |
| 10 | L2 | All MCs | 66 | 2.2 | 66 | 2.2 | 0.782 | 71.6 | LOS E | 5.4 | 38.3 | 1.00 | 0.91 | 1.27 | 25.0 |
| 11 | T1 | All MCs | 11 | 2.2 | 11 | 2.2 | *0.782 | 67.1 | LOS E | 5.4 | 38.3 | 1.00 | 0.91 | 1.27 | 25.4 |
| 12 | R2 | All MCs | 7 | 2.2 | 7 | 2.2 | 0.782 | 71.6 | LOS E | 5.4 | 38.3 | 1.00 | 0.91 | 1.27 | 25.1 |
| Approach | | | 84 | 2.2 | 84 | 2.2 | 0.782 | 71.0 | LOS E | 5.4 | 38.3 | 1.00 | 0.91 | 1.27 | 25.1 |
| All Vehicles | | | 2120 | 2.2 | 2120 | 2.2 | 0.782 | 39.8 | LOS D | 27.8 | 198.0 | 0.93 | 0.82 | 0.97 | 32.2 |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* Critical Movement (Signal Timing)

### Pedestrian Movement Performance

| Mov ID | Crossing | Input Vol. ped/h | Dem. Flow ped/h | Aver. Delay sec | Level of Service | AVERAGE BACK OF QUEUE [ Ped ped | Dist ] m | Prop. Que | Eff. Stop Rate | Travel Time sec | Travel Dist. m | Aver. Speed m/sec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Gracemere Gavial Road | | | | | | | | | | | | |
| P1 | Full | 1 | 1 | 54.2 | LOS E | 0.0 | 0.0 | 0.95 | 0.95 | 208.0 | 200.0 | 0.96 |
| East: John Street | | | | | | | | | | | | |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P2 | Full | 1 | 1 | 34.5 | LOS D | 0.0 | 0.0 | 0.90 | 0.90 | 188.4 | 200.0 | 1.06 |
| North: Lawrie Street | | | | | | | | | | | | |
| P3 | Full | 1 | 1 | 54.2 | LOS E | 0.0 | 0.0 | 0.95 | 0.95 | 208.0 | 200.0 | 0.96 |
| West: Russell Street | | | | | | | | | | | | |
| P4 | Full | 3 | 3 | 54.2 | LOS E | 0.0 | 0.0 | 0.95 | 0.95 | 208.0 | 200.0 | 0.96 |
| All Pedestrians | | 6 | 6 | 50.9 | LOS E | 0.0 | 0.0 | 0.94 | 0.94 | 204.7 | 200.0 | 0.98 |

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.


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**ROCKHAMPTON REGIONAL COUNCIL**

**APPROVED PLANS**

These plans are approved subject to the current conditions of approval associated with

**Development Permit No.: D/182-2023**

**Dated: 19 April 2024**

# MOVEMENT SUMMARY

## Site: 101 [2024 PM Post Dev (Site Folder: General)]

**Output produced by SIDRA INTERSECTION Version: 9.1.5.224**

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site Optimum Cycle Time - Minimum Delay)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

### Vehicle Movement Performance

| Mov ID | Turn | Mov Class | Demand Flows [ Total veh/h | HV ] % | Arrival Flows [ Total veh/h | HV ] % | Deg. Satn v/c | Aver. Delay sec | Level of Service | 95% Back Of Queue [ Veh. veh | Dist ] m | Prop. Que | Eff. Stop Rate | Aver. No. of Cycles | Aver. Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Gracemere Gavial Road | | | | | | | | | | | | | | | |
| 1 | L2 | All MCs | 18 | 4.2 | 18 | 4.2 | 0.508 | 33.5 | LOS C | 16.8 | 122.0 | 0.81 | 0.71 | 0.81 | 35.0 |
| 2 | T1 | All MCs | 752 | 4.2 | 752 | 4.2 | 0.508 | 28.9 | LOS C | 16.9 | 122.3 | 0.81 | 0.71 | 0.81 | 35.7 |
| 3 | R2 | All MCs | 50 | 4.2 | 50 | 4.2 | *0.277 | 34.0 | LOS C | 1.6 | 11.8 | 0.96 | 0.73 | 0.96 | 33.6 |
| Approach | | | 820 | 4.2 | 820 | 4.2 | 0.508 | 29.4 | LOS C | 16.9 | 122.3 | 0.82 | 0.71 | 0.82 | 35.6 |
| East: John Street | | | | | | | | | | | | | | | |
| 4 | L2 | All MCs | 44 | 4.2 | 44 | 4.2 | 0.697 | 59.2 | LOS E | 11.0 | 79.5 | 1.00 | 0.85 | 1.05 | 27.3 |
| 5 | T1 | All MCs | 7 | 4.2 | 7 | 4.2 | *0.697 | 54.6 | LOS D | 11.0 | 79.5 | 1.00 | 0.85 | 1.05 | 27.7 |
| 6 | R2 | All MCs | 138 | 4.2 | 138 | 4.2 | 0.697 | 59.1 | LOS E | 11.0 | 79.5 | 1.00 | 0.85 | 1.05 | 27.4 |
| Approach | | | 189 | 4.2 | 189 | 4.2 | 0.697 | 59.0 | LOS E | 11.0 | 79.5 | 1.00 | 0.85 | 1.05 | 27.4 |
| North: Lawrie Street | | | | | | | | | | | | | | | |
| 7 | L2 | All MCs | 74 | 4.2 | 74 | 4.2 | 0.734 | 25.9 | LOS C | 20.5 | 148.6 | 0.91 | 0.81 | 0.91 | 37.7 |
| 8 | T1 | All MCs | 1012 | 4.2 | 1012 | 4.2 | *0.734 | 21.5 | LOS C | 20.6 | 149.4 | 0.91 | 0.81 | 0.91 | 38.6 |
| 9 | R2 | All MCs | 62 | 4.2 | 62 | 4.2 | 0.243 | 31.8 | LOS C | 2.0 | 14.2 | 0.93 | 0.74 | 0.93 | 34.4 |
| Approach | | | 1148 | 4.2 | 1148 | 4.2 | 0.734 | 22.4 | LOS C | 20.6 | 149.4 | 0.91 | 0.80 | 0.91 | 38.2 |
| West: Russell Street | | | | | | | | | | | | | | | |
| 10 | L2 | All MCs | 29 | 4.2 | 29 | 4.2 | 0.453 | 67.3 | LOS E | 2.9 | 21.0 | 1.00 | 0.75 | 1.00 | 25.8 |
| 11 | T1 | All MCs | 8 | 4.2 | 8 | 4.2 | *0.453 | 62.7 | LOS E | 2.9 | 21.0 | 1.00 | 0.75 | 1.00 | 26.2 |
| 12 | R2 | All MCs | 11 | 4.2 | 11 | 4.2 | 0.453 | 67.3 | LOS E | 2.9 | 21.0 | 1.00 | 0.75 | 1.00 | 25.9 |
| Approach | | | 48 | 4.2 | 48 | 4.2 | 0.453 | 66.6 | LOS E | 2.9 | 21.0 | 1.00 | 0.75 | 1.00 | 25.9 |
| All Vehicles | | | 2205 | 4.2 | 2205 | 4.2 | 0.734 | 29.1 | LOS C | 20.6 | 149.4 | 0.89 | 0.77 | 0.89 | 35.6 |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* Critical Movement (Signal Timing)

### Pedestrian Movement Performance

| Mov ID | Crossing | Input Vol. ped/h | Dem. Flow ped/h | Aver. Delay sec | Level of Service | AVERAGE BACK OF QUEUE [ Ped ped | Dist ] m | Prop. Que | Eff. Stop Rate | Travel Time sec | Travel Dist. m | Aver. Speed m/sec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Gracemere Gavial Road | | | | | | | | | | | | |
| P1 | Full | 1 | 1 | 54.2 | LOS E | 0.0 | 0.0 | 0.95 | 0.95 | 208.0 | 200.0 | 0.96 |
| East: John Street | | | | | | | | | | | | |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P2 | Full | 1 | 1 | 32.3 | LOS D | 0.0 | 0.0 | 0.90 | 0.90 | 186.2 | 200.0 | 1.07 |
| North: Lawrie Street | | | | | | | | | | | | |
| P3 | Full | 1 | 1 | 54.2 | LOS E | 0.0 | 0.0 | 0.95 | 0.95 | 208.0 | 200.0 | 0.96 |
| West: Russell Street | | | | | | | | | | | | |
| P4 | Full | 18 | 18 | 54.2 | LOS E | 0.1 | 0.1 | 0.95 | 0.95 | 208.0 | 200.0 | 0.96 |
| All Pedestrians | | 21 | 21 | 53.1 | LOS E | 0.1 | 0.1 | 0.95 | 0.95 | 207.0 | 200.0 | 0.97 |

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.


Organisation: MCMURTRIE CONSULTING ENGINEERS PTY LTD | Licence: PLUS / 1PC | Processed: Friday, 9 February 2024 11:51:02 AM
Project: C:\Users\Rhien\OneDrive - McMurtrie Consulting Engineers\Documents\MCM\TIA\Gracemere Zarraffas\SIDRA\Test Variation_TL_70VPH & HJ 2.sip9

# Appendix D: RPEQ Certification

**Certification of Traffic Impact Assessment Report**

**Registered Professional Engineer Queensland**

for

| | |
|---|---|
| **Project Title:** | Zarraffas Drive Through Gracemere |

As a professional engineer registered by the Board of Professional Engineers of Queensland pursuant to the *Professional Engineers Act 2002* as competent in my areas of nominated expertise, I understand and recognise:

- the significant role of engineering as a profession, and that
- the community has a legitimate expectation that my certification affixed to this engineering work can be trusted, and that
- I am responsible for ensuring its preparation has satisfied all necessary standards, conduct and contemporary practice.

As the responsible RPEQ, I certify:

i. I am satisfied that all submitted components comprising this traffic impact assessment, listed in the following table, have been completed in accordance with the Guide to Traffic Impact Assessment published by the Queensland Department of Transport and Main Roads and using sound engineering principles, and

ii. where specialised areas of work have not been under my direct supervision, I have reviewed the outcomes of the work and consider the work and its outcomes as suitable for the purposes of this traffic impact assessment, and that

iii. the outcomes of this traffic impact assessment are a true reflection of results of assessment, and that

iv. I believe the strategies recommended for mitigating impacts by this traffic impact assessment,

v. embrace contemporary practice initiatives and will deliver the desired outcomes.

| | | | |
|---|---|---|---|
| **Name:** | Chris Hewitt | **RPEQ No:** | 05141 |
| **RPEQ Competencies:** | Civil | | |
| **Signature:** |  | **Dated:** | 06/02/2024 |
| **Postal Address:** | PO Box 2149 Wandal QLD 4700 | | |
| **Email:** | chris@mcmengineers.com | | |

| Traffic impact assessment components to which this certification applies | ✓ |
|---|---|
| **1. Introduction** | |
| Background | ✓ |
| Scope and study area | ✓ |
| Pre-lodgement meeting notes | ✓ |
| **2. Existing Conditions** | |
| Land use and zoning | N/A |
| Adjacent land uses / approvals | N/A |
| Surrounding road network details | ✓ |
| Traffic volumes | ✓ |
| Intersection and network performance | ✓ |
| Road safety issues | ✓ |
| Site access | ✓ |
| Public transport (if applicable) | ✓ |
| Active transport (if applicable) | ✓ |
| Parking (if applicable) | ✓ |
| Pavement (if applicable) | N/A |
| Transport infrastructure (if applicable) | N/A |
| **3. Proposed Development Details** | |
| Development site plan | ✓ |
| Operational details (including year of opening of each stage and any relevant catchment / market analysis) | ✓ |
| Proposed access and parking | ✓ |
| **4. Development Traffic** | |
| Traffic generation (by development stage if relevant and considering light and heavy vehicle trips) | ✓ |
| Trip distribution | ✓ |
| Development traffic volumes on the network | ✓ |
| **5. Impact Assessment and Mitigation** | |
| With and without development traffic volumes | ✓ |
| Construction traffic impact assessment and mitigation (if applicable) | N/A |
| Road safety impact assessment and mitigation | ✓ |
| Access and frontage impact assessment and mitigation | ✓ |
| Intersection delay impact assessment and mitigation | ✓ |
| Road link capacity assessment and mitigation | N/A |
| Pavement impact assessment and mitigation | N/A |
| Transport infrastructure impact assessment and mitigation | ✓ |
| Other impacts assessment relevant to the specific development type / location (if applicable) | N/A |
| **6. Conclusions and Recommendations** | |
| Summary of impacts and mitigation measures proposed | ✓ |
| Certification statement and authorisation | ✓ |

MELIORA
CONSULTING ENGINEERS

# 6 Lawrie Street, Gracemere

# STORMWATER MANAGEMENT PLAN (SMP)

## (Quantity and Quality)

| | |
|---|---|
| CLIENT: | Ray Group PTY LTD |
| SITE ADDRESS: | 6 Lawrie Street, Gracemere |
| MCE No: | 23118 |
| DATE: | January 2024 |

**ROCKHAMPTON REGIONAL COUNCIL**

**APPROVED PLANS**

These plans are approved subject to the current conditions of approval associated with

**Development Permit No.: D/182-2023**

**Dated: 19 April 2024**

## DOCUMENT CONTROL

DOCUMENT TITLE:

**Stormwater Management Plan (SMP)**

MELIORA JOB No:

23118

CLIENT:

Ray Group PTY LTD

AUTHOR:

SM

AUTHORISED:

MB (BEng, CPEng, NER, RPEQ, MIEAust, MIPWEAQ)

SPERO MELIORA ENTERPRISES P/L
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Herston
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Australia

T: 0429970345
E: info@meliorace.com

| Rev No | Date | Issue Details | By | Certified By RPEQ |
|---|---|---|---|---|
| 01 | 21.12.23 | Issued for Information | SN | **No. 21258** |
| | | | | |
| | | | | |

A person using Meliora Engineering documents or data accepts the risk of:

*a) Using hard copy or PDF documents and data without requesting and checking against latest revision applicable to the project*
*b) Using documents and data within for any purpose or site not agreed to in writing by Meliora Engineering*

# 1 EXECUTIVE SUMMARY

Meliora Engineering has been engaged by Ray Group PTY LTD to prepare a Stormwater Management Plan (SMP) suitable for submission to Rockhampton Regional Council in support of Operational Works for a site located at 6 Lawrie Street, Gracemere. The Application proposes a MCU proposes a café (Zarraffa's drive-through coffee).

The purpose of this Stormwater Management Plan (SMP) is to provide commentary and relevant calculations required to service the proposed development stormwater drainage management (quality and quality) as documented within Schematic Civil Drawings shown within Appendix B.

The assessment has been carried out in accordance with Rockhampton City Council Planning Scheme Policies and the proposed works described herein will be subject to any associated DA & OPW Approval Conditions to be provided by Council.

Meliora Engineering civil schematic sketches addressing stormwater management arrangement and catchment areas are shown within Appendix B – Schematic Civil Drawings.

A summary of civil engineering advice is as follows:

- The site is not affected by sources of flooding (including river, creek nor overland flow). No further flood study or analysis is considered necessary.
- The development proposes to capture roof water & runoff from the site in under-ground pit/pipe network before discharging to John Street, which is proposed as the sites lawful point of discharge. Catchment C1 will be detained within under-ground pipes and as shallow ponding within the pavement surface totalling a minimum 20kL storage to achieve non-worsening of flows in the post-development case. Further details of the detention system are specified in the report below.
- The proposal, featuring a lot less than 2500m$^2$ does not trigger the SPP's Post-Development Stormwater Management (Water Quality) Design Objectives and therefore no permanent treatment solutions/devices are proposed.

Information discussed in this report is inferred from several sources including authority databases, DBYD records, site survey and design documents received from the client.

All relevant standards and guidelines are addressed in this report including criteria from:

- RCC Planning Scheme Policy
- Australian Rainfall and Runoff Guideline (ARR)
- Queensland Urban Drainage Manual (QUDM) 2013
- Plumbing and Drainage Code AS3500.3
- State Planning Policy (SPP)
- International Erosion Control Association of Australasia (IECA)

This report has demonstrated that the proposed development does not present any.
civil related engineering issues which would prevent the development from proceeding as proposed.

# 2 SITE CHARACTERISTICS

## 2.1 LOCATION & TITLES/EASEMENTS

Refer to below figures and tables for locality plan and specific title information for the property to be developed.

N


Figure 1 - Site Location (as accessed from Google Maps 8/01/2024)

Table 1 - Property Details

| | |
|---|---|
| **Lot Information** | Lot 604 on RP2642 |
| **Street Address** | 6 Lawrie Street, Gracemere |
| **Site Area** | 977m$^2$ |
| **Existing Easements** | No |

**ROCKHAMPTON REGIONAL COUNCIL**

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**Dated: 19 April 2024**

# 3 PROPOSED CIVIL ENGINEERING WORKS

Meliora Engineering accepts no responsibility for the accuracy of information supplied to them by second and third parties, including survey, authority mapping data and geotechnical testing information which may have been relied on to inform the civil engineering opinions and calculations presented within the advice below.

Consider that the assessment addresses the requirements for development of the subject site at the time the study was undertaken. If these conditions are known to change, the results of this assessment should be reviewed and amended as required.

The assessment has been carried out in accordance with the relevant Council Planning Scheme Policies and the proposed works described herein will be subject to the conditions attached to the Development Approval to be provided by Council and any nominated referral agencies.

## 3.1 DESCRIPTION OF WORKS

The Application proposes a MCU proposes a café (Zarraffa's drive-through coffee).

Please refer to Appendix A – Architectural Drawings for architectural layout plans.

## 3.2 SITE-BASED STORMWATER DRAINAGE MANAGEMENT - QUANTITY

Refer to Appendix F – Code Response Table for the Rockhampton Regional Council Stormwater Management Code & responses.

### 3.2.1 ON-SITE DRAINAGE & RUNOFF QUANTITY TREATMENT OBJECTIVE

the stormwater management objectives that apply to the site have been derived from QUDM, State Planning Policy (2017), BCC Planning Scheme Policy and BCC Land Development Guidelines. The key stormwater parameters and desired outcomes are:

- Minimisation of storm-related nuisance to the public.
- Minimisation of legal disputes between neighbouring landowners and communities.
- Flood control & resilience to flooding in excess of nominated design events.
- Pedestrian and vehicular safety
- Integrate stormwater management infrastructure carefully in the urban and natural landscape, promoting retention of natural drainage system and protection/restoration of environmental values.

Subsequently, the objectives of Stormwater Runoff Quantity Management for the subject site are;

1. Provide a stormwater conveyance system for minor (10% AEP) and major (2% AEP) storm events to discharge to the nominated Lawful Point of Discharge
2. Limit flooding of public and private property, both within the catchment and downstream, to acceptable levels.
3. To provide convenience and safety for pedestrians and traffic in frequent stormwater flows by controlling those flows within prescribed velocity/depth limits.

### 3.2.2 EXISTING DRAINAGE REGIME

A site survey documenting existing services within and surrounding the development site was performed by CMi and is shown within Appendix C – Survey plan. The survey highlights the following existing features related to drainage:

- In-ground drainage infrastructure, notably an existing gully pit at northern corner of the property which discharges into John St corridor
- Sheet flow discharges towards the north direction
- The site grades towards the north direction at an approximate slope of 3.20%

The site is in a local high point in the surrounding land, and there are no upstream contributing catchments discharge into the site, assisted by runoff being diverted away from the site by John Street Road corridor infrastructure.

#### 3.2.2.1 EXISTING LAWFUL POINT OF DISCHARGE

The site discharges to the existing gully pit at the site's northern corner, which is the existing Lawful Point of Discharge.

Further information on existing Council Stormwater Infrastructure in the area of the site was received via a BYDA search and a Council Mapping search.

### 3.2.3 PROPOSED DRAINAGE REGIME

#### 3.2.3.1 PROPOSED LAWFUL POINT OF DISCHARGE

In the case of the proposed development, and as per further commentary in the below section, the site DOES alter the site's stormwater discharge characteristics and there is a risk of nuisance flow during the post-development case. Detention storage will be provided to ensure non-worsening, though ultimately the new on-site network will continue to discharge to the existing pit in the northern corner which is proposed as the sites lawful point of discharge in the post-development case as well.

#### 3.2.3.2 TAILWATER LEVELS

The tailwater level circumstance considered within the drainage analysis assumes water levels 300mm below surface in the existing pit.

#### 3.2.3.3 PROPOSED DRAINAGE NETWORK

Stormwater generated from the development will be conveyed through a pit and pipe network for minor stormwater events (10% AEP) and a combination of pits and pipes and overland flow for major storm events (1% AEP).

All stormwater drainage will be designed in accordance with the requirements of QUDM 2016.

Generally, the application proposes internal private pit and pipe infrastructure to capture all site runoff and discharge flows to the existing stormwater gully at northern corner of the site.

### 3.2.4 CATCHMENT HYDROLOGY

#### 3.2.4.1 FLOW ESTIMATION METHODS & MODELLING

The choice of hydrologic method must be appropriate to the type of catchment and the required degree of accuracy.

As per Council's Infrastructure PSP flow estimations using Rational method is recognised. For this small-scale development Rational method was deemed suitable for use to estimate peak flows for catchments under existing and developed conditions. The Rational Method Calculations are summarised below.

However, a DRAINS model has also been developed in order to accurately model the detention arrangement. Results can be seen in Section 3.2.5 below.

#### 3.2.4.2 RAINFALL DATA

Catchment hydrology has been estimated using rainfall specific for the site at 6 Lawrie Street, Gracemere. This is derived from the Bureau of Meteorology (BOM) Design Rainfall Data System (2016) using the following Latitude, Longitude:

- Latitude -23.436223, Longitude 150.456415

### 3.2.4.3 EXISTING CATCHMENTS DESCRIPTION

The existing catchment within the site discharging to the LPOD at northern corner.

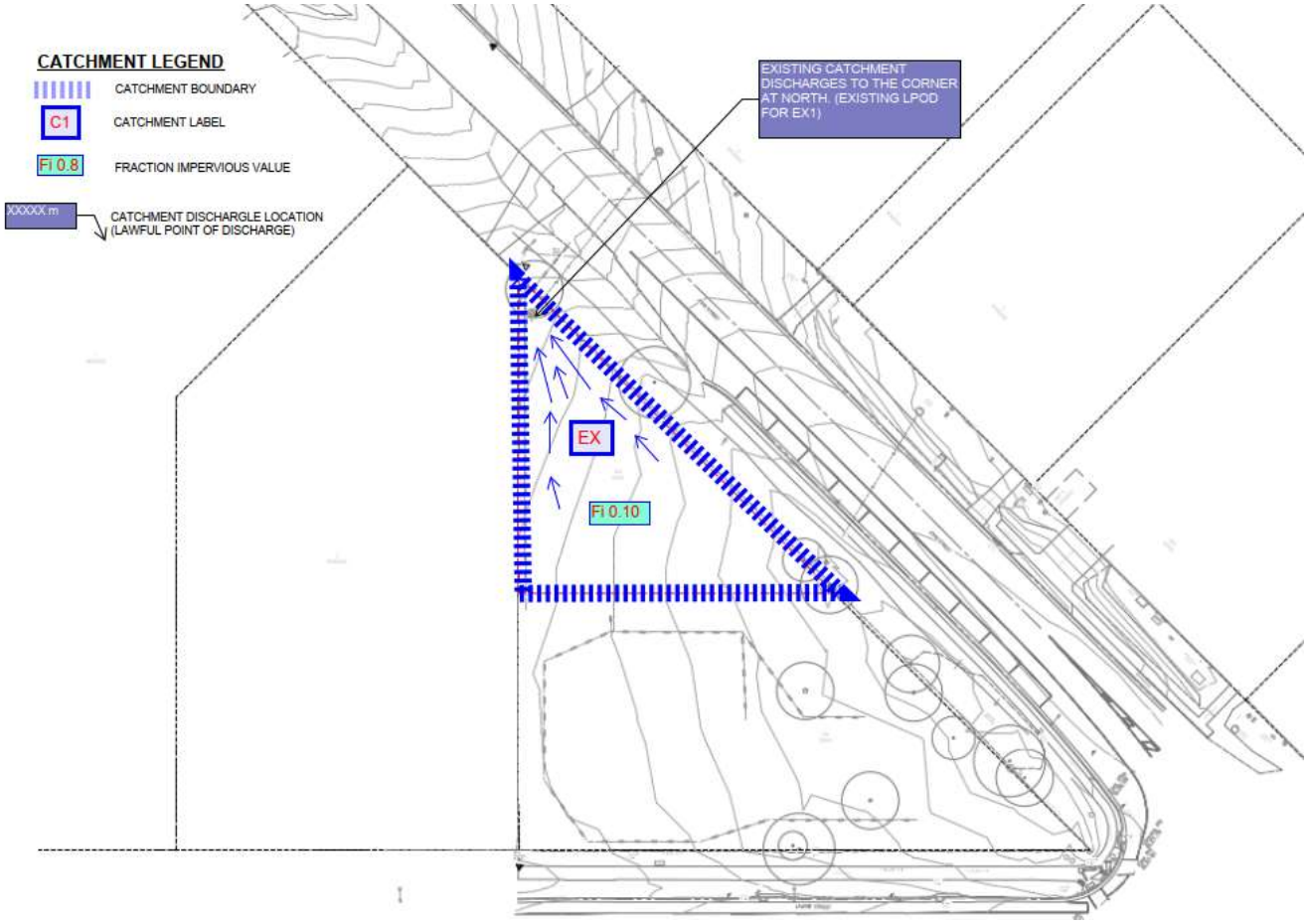


Figure 2 – Existing Catchments

**ROCKHAMPTON REGIONAL COUNCIL**

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**Dated: 19 April 2024**

#### 3.2.4.4 PROPOSED CATCHMENTS DESCRIPTION

Post–development, the run-off from proposed C2 discharges to the existing pit in northern corner before discharge to John Street. C1 discharges to pit/pipe infrastructure and allows for shallow ponding in pavement before discharge to John Street.

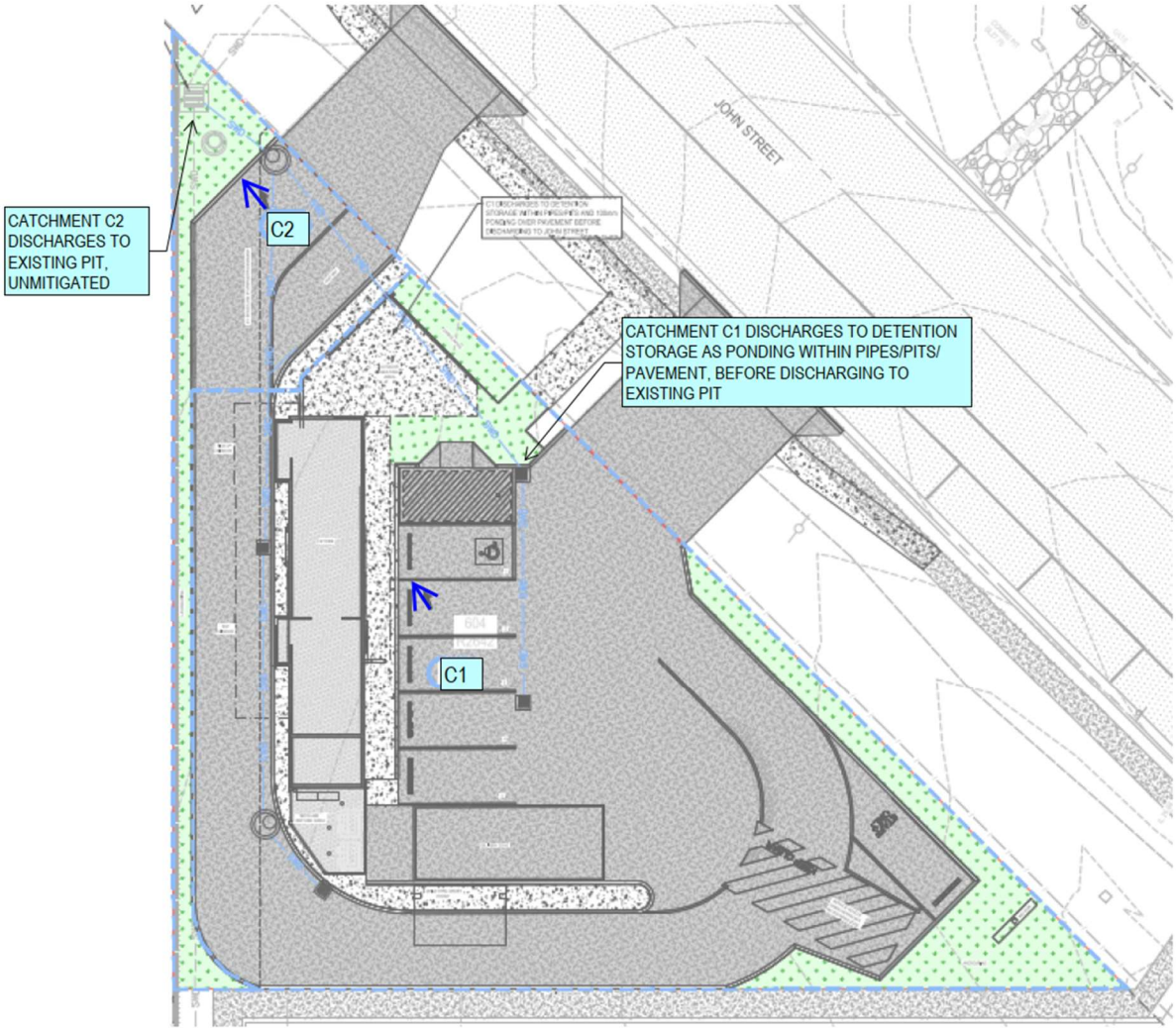


Figure 3 - Proposed Catchments

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### 3.2.4.5 CATCHMENT HYDROLOGY - RATIONAL METHOD CALCULATIONS

**EX1 – The existing catchment within the site discharging to the LPOD at northern corner**

| CATCHMENT NAME | EX1 | Design Storm Event (AEP & ARI) | | | | | | |
|---|---|---|---|---|---|---|---|---|
| RATIONAL METHOD | (units) | 63% (Q1) | 38% (Q2) | 18% (Q5) | 10% (Q10) | 5% (Q20) | 2% (Q50) | 1% (Q100) |
| *Catchment Area* | ha | | | | 0.098 | | | |
| *Time of Concentration* | min | | | | 8.0 | | | |
| *Fraction Impervious* | | | | | 0.10 | | | |
| *Runoff Coefficient (Cy)* | | 0.45 | 0.48 | 0.53 | 0.56 | 0.59 | 0.64 | 0.67 |
| *Rainfall Intensity (Iy)* | mm/hr | 86.87 | 112.57 | 145.25 | 165.54 | 192.72 | 229.89 | 259.30 |
| *Peak Flow* | L/s | 10.6 | 14.5 | 21.0 | 25.2 | 30.8 | 40.2 | 47.3 |

**Post–development, the roof water of proposed and C1 discharges to detention storage before discharge to John Street**

| CATCHMENT NAME | C1 | Design Storm Event (AEP & ARI) | | | | | | |
|---|---|---|---|---|---|---|---|---|
| RATIONAL METHOD | (units) | 63% (Q1) | 38% (Q2) | 18% (Q5) | 10% (Q10) | 5% (Q20) | 2% (Q50) | 1% (Q100) |
| *Catchment Area* | ha | | | | 0.084 | | | |
| *Time of Concentration* | min | | | | 5.0 | | | |
| *Fraction Impervious* | | | | | 0.85 | | | |
| *Runoff Coefficient (Cy)* | | 0.68 | 0.72 | 0.80 | 0.85 | 0.89 | 0.97 | 1.00 |
| *Rainfall Intensity (Iy)* | mm/hr | 103.52 | 134.14 | 173.03 | 197.14 | 229.62 | 273.86 | 308.92 |
| *Peak Flow* | L/s | 16.4 | 22.6 | 32.5 | 39.0 | 47.7 | 62.3 | 72.3 |

**Post–development, the runoff from proposed C2 discharges to the existing pit in northern corner before discharge to John Street**

| CATCHMENT NAME | C2 | Design Storm Event (AEP & ARI) | | | | | | |
|---|---|---|---|---|---|---|---|---|
| RATIONAL METHOD PARAMETERS | (units) | 63% (Q1) | 38% (Q2) | 18% (Q5) | 10% (Q10) | 5% (Q20) | 2% (Q50) | 1% (Q100) |
| *Catchment Area* | ha | | | | 0.013 | | | |
| *Time of Concentration* | min | | | | 5.0 | | | |
| *Fraction Impervious* | | | | | 0.85 | | | |
| *Runoff Coefficient (Cy)* | | 0.68 | 0.72 | 0.80 | 0.85 | 0.89 | 0.97 | 1.00 |
| *Rainfall Intensity (Iy)* | mm/hr | 103.52 | 134.14 | 173.03 | 197.14 | 229.62 | 273.86 | 308.92 |
| *Peak Flow* | L/s | 2.6 | 3.6 | 5.2 | 6.2 | 7.6 | 9.9 | 11.5 |

### 3.2.4.6 PRE vs POST DEVELOPMENT (UNMITIGATED) – RESULTS SUMMARY

The existing catchment contributes circa 47L/s (at 1% AEP event) to the existing gully pit at north corner (the LPOD).

Post–development, catchment C1 will contribute circa 72L/s (at 1% AEP event) and catchment C2 will contribute circa 12L/s (at 1% AEP event) to the nominated LPOD to achieve non-worsening.

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| Total Site Catchment - Unmitigated Discharge Summary | | | | |
|---|---|---|---|---|
| AEP | Predeveloped Flow | Developed (Unmitigated) Flow | Difference | % Increase in Flow |
| | (m3/s) | (m3/s) | (m3/s) | |
| 63% (Q1) | 0.011 | 0.019 | 0.008 | 80 |
| 38% (Q2) | 0.015 | 0.026 | 0.012 | 80 |
| 18% (Q5) | 0.021 | 0.038 | 0.017 | 80 |
| 10% (Q10) | 0.025 | 0.045 | 0.020 | 80 |
| 5% (Q20) | 0.031 | 0.055 | 0.025 | 80 |
| 2% (Q50) | 0.040 | 0.072 | 0.032 | 80 |
| 1% (Q100) | 0.047 | 0.084 | 0.037 | 77 |

The above results indicate that the proposed development results in an increase in the quantity of runoff to the lawful point of discharge.

The development proposes to capture roof water & runoff from the site in under-ground pit/pipe network before discharging to John Street, which is proposed as the sites lawful point of discharge. Catchment C1 will be detained within under-ground pipes and as shallow ponding within the pavement surface totalling a minimum 20kL storage to achieve non-worsening of flows in the post-development case. Further details of the detention system are specified in the report below.

### 3.2.5 'DRAINS' MODEL RESULTS

#### 3.2.5.1 DRAINS MODEL HYDROLOGICAL MODEL PARAMETERS

In order to develop a model of the site drainage in order to inform detention calculations, DRAINS software was used with an ILSAX hydrological model with the following default parameters:

- Impervious area depression storage of 1mm
- Supplementary area depression storage of 1mm
- Pervious area depression storage of 5mm

Rainfall data was sourced via BOM website for the AR&R 2019 Rainfall Ensembles, for the site locality and subsequently input into the software.

For the subject design case (and the associated site size) the following storm durations were modelled, with the 'critical storm' durations information maximum catchment flows and associated detention storage volumes:

- 5 to 45 minutes (increasing by five minute increments) storm bursts
- 1 hour storm burst
- 2 hour storm burst

For each AEP, the 'critical' storm duration informed maximum catchment flows and associated detention storage volumes.

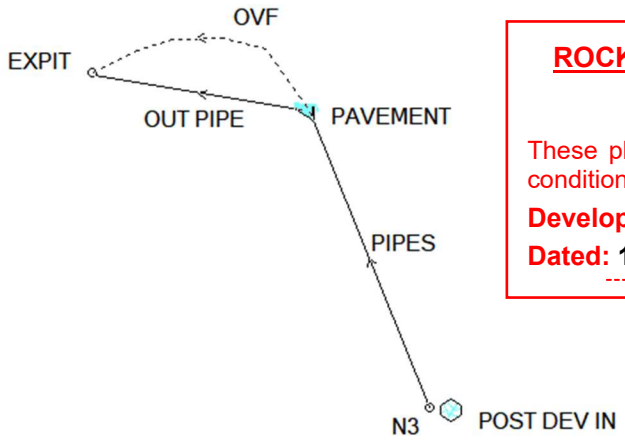
#### 3.2.5.2 DRAINS MODEL EXISTING CASE

As per figure below, the DRAINS model for the existing condition featured a catchment node discharging to the outlet (the north western boundary and ultimately John St).


For the major event storm (1% AEP) the results ($m^3/s$) are shown below in figure.


### 3.2.5.3 DRAINS MODEL DEVELOPED CASE - MITIGATED

As per figure below, the DRAINS model for the developed condition featured a network of catchment nodes, pipes and a storage basin node (as shallow ponding on the pavement surface). The sub-catchments for the roof areas, carpark areas and landscaped areas were combined into a single catchment for the purposes of detention modelling with the fraction impervious representing the breakup of surface types. The post-developed mitigated DRAINS model is shown below in figure.

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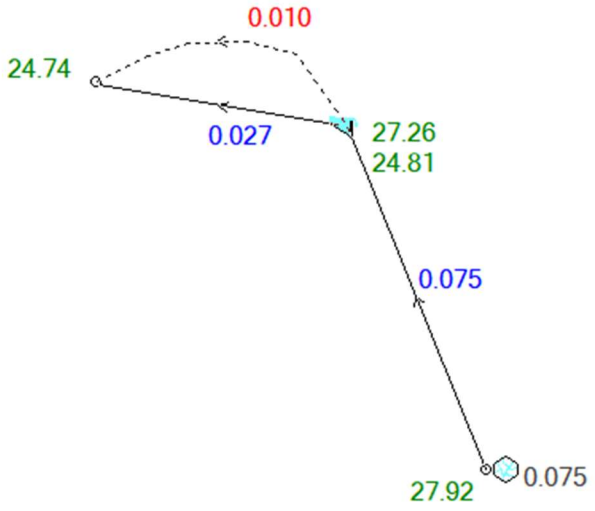
**Dated:** 19 April 2024

The results from the DRAINS model confirm that the mitigated developed case achieves a flow rate of 37L/s during a 1% AEP storm event, which achieves non-worsening.




An 'unmitigated' DRAINs model was also developed, with storage nodes removed. The arrangement is not shown diagrammatically, however the results are shown in the section below.

### 3.2.5.4 DRAINS MODEL DEVELOPED CASE PRE VS POST RESULTS & COMPARISON

Refer to table below for pre vs post flow results (*unmitigated*) and comparison.

| Total Site Catchment - Unmitigated Discharge Summary (for Critical Storm) | | | | |
|---|---|---|---|---|
| Q Event | Predeveloped Flow | Developed (Unmitigated) Flow | Difference | Increase in Flow |
| | L/s | L/s | L/s | % |
| 63% (Q1) (1EY) | 16 | 27 | 11.0 | 69 |
| 38% (Q2) | 21 | 34 | 13.0 | 62 |
| 18% (Q5) | 27 | 41 | 14.0 | 52 |
| 10% (Q10) | 35 | 49 | 14.0 | 40 |
| 5% (Q20) | 43 | 56 | 13.0 | 30 |
| 2% (Q50) | 52 | 67 | 15.0 | 29 |
| 1% (Q100) | 59 | 75 | 16.0 | 27 |

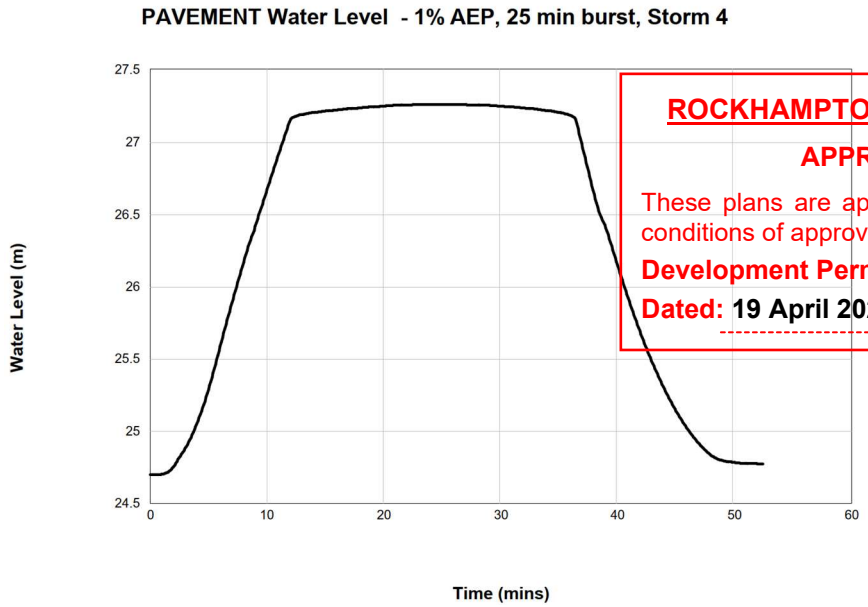
Refer to table below for pre vs post flow results (*mitigated*) and comparison.

| Total Site Catchment - Mitigated Discharge Summary (for Critical Storm) | | | | |
|---|---|---|---|---|
| Q Event | Predeveloped Flow | Developed mitigated) Flow | Difference | Increase in Flow |
| | L/s | L/s | L/s | % |
| 63% (Q1) (1EY) | 16 | 18 | 2.0 | 13 |
| 38% (Q2) | 21 | 22 | 1.0 | 5 |
| 18% (Q5) | 27 | 24 | -3.0 | -11 |
| 10% (Q10) | 35 | 27 | -8.0 | -23 |
| 5% (Q20) | 43 | 27 | -16.0 | -37 |
| 2% (Q50) | 52 | 27 | -25.0 | -48 |
| 1% (Q100) | 59 | 37 | -22.0 | -37 |

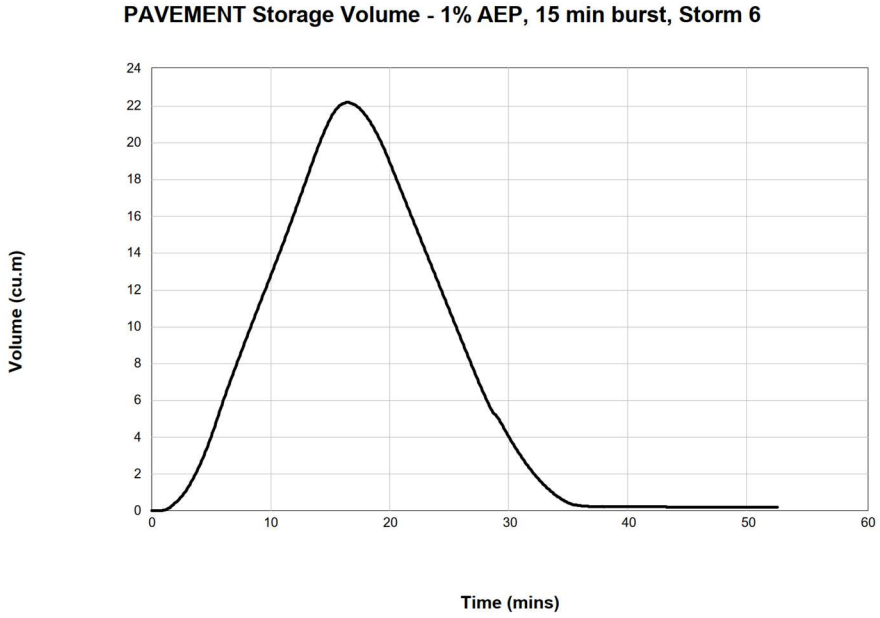
### 3.2.5.5 DRAINS MODEL - SINGLE UNDEGROUND TANK

The required detention storage is proposed to be held within a shallow depth (150mm max) within the pavement surface of the drive-through and car park, to be controlled by an orifice plate in the outlet pit to ensure peak flows from the site are mitigated.
As can be seen above, the post developed flows are effectively mitigated for the 18%- 1% AEP events. The 63% and 38% AEP events does not achieve non-worsening, but the quantum of increase is no more than 2L/s for these frequent events, hence will have a negligible impact on downstream infrastructure.

At the storage node (pavement shallow depth), the water level depths are shown below.




At the storage node (pavement ponding), the storage volumes are shown below.




The underground tank requires sharp-edged orifice plates in a staged arrangement to achieve the performance as shown in the above results. Refer to table below for tank volume, height and outlet arrangement specifications.

| Detention Tank Summary | |
|---|---|
| **Surface Area (m2)** | 300 |
| **Internal Height (m)** | 100mm deep in pavement below weir, then 50mm deep over weir |
| **Volume (m3)** | 20 |
| **Low Flow Outlet (Orifice 1)** | 120mm dia @ outlet pit (IL 24.70) |
| **Emergency Weir** | High point in pavements @ 27.25m |

### 3.2.6 CONSTRUCTION PHASE DRAINAGE INFRASTRUCTURE

During the construction phase of the development, the stormwater management design

objectives for temporary drainage and basin spillways are to reference the Queensland Government State Planning Policy (SPP) 2017 Appendix 2 Table A (Part 1, 2 & 3).

Refer to Section 3.5 for further details on Construction Phase Erosion & Sediment Control details.

### 3.2.7 CONSTRUCTION PHASE DRAINAGE INFRASTRUCTURE

During the construction phase of the development, the stormwater management design objectives for temporary drainage and basin spillways are to reference the Queensland Government State Planning Policy (SPP) 2017 Appendix 2 Table A (Part 1, 2 & 3).

Refer to Section 3.5 for further details on Construction Phase Erosion & Sediment Control details.

## 3.3 SITE BASED STORMWATER DRAINAGE MANAGEMENT - QUALITY

Refer to Appendix F – Code Response Table for the Rockhampton Regional Council Stormwater Management Code & responses.

### 3.3.1 WATER QUALITY TREATMENT OBJECTIVE

Urban stormwater run-off potentially contributes to adverse water quality in waterways, which impact aquatic ecosystems health and limit human water uses. Unless well managed, urban stormwater can release contaminants such as nutrients, sediment and solid waste to waterways. For the post-construction phase, the SPP's stormwater management design objectives require minimum reductions in the mean annual load for key pollutants.

The SPP contains specific assessment benchmarks for the Water quality state interest. The Performance Outcomes (PO) of the SPP apply to the following applications:

(1) a material changes of use for an urban purpose that involves premises 2500m$^2$ or greater in size *and;*

(a) will result in six or more dwellings; *or*

(b) will result in an impervious area greater than 25% of the net developable area; or

(2) reconfiguring a lot for an urban purpose that involves premises 2500m$^2$ or greater in size and will result in six or more lots*; or*

The proposal, featuring a lot less than 2500m$^2$ does not trigger the SPP's Post-Development Stormwater Management (Water Quality) Design Objectives and therefore no permanent treatment solutions/devices are proposed.



### 3.3.2 CONSTRUCTION PHASE STORMWATER QUALITY

During the construction phase of the development, the stormwater management design objectives for temporary water quality & ESC devices, including sediment basins, are to reference the Queensland Government State Planning Policy (SPP) 2017 Appendix 2 Table A (Part 1, 2 & 3).

## 3.4 STORMWATER DRAINAGE INFRASTRUCTURE MAINTENANCE

The landowner is responsible for the ongoing operation and maintenance of all privately-owned stormwater management assets & devices to ensure the drainage facility continues to meet its design performance and are maintained for the life of the approved development and may be liable for damages as a result of drainage system malfunction caused by lack of proper maintenance.

Roof-water drainage systems and detention arrangements/infrastructure are classified as private drains with the responsibility for maintenance lying with the property owners.

## 3.5 SEDIMENT & EROSION CONTROL

Healthy Waterways have identified that the large and increasing amount of sediment entering our waterways is one of the major issues affecting waterway health across south-east Queensland. Sediment is a contaminant that can seriously degrade water quality and starve marine life of oxygen, leading to fish kills and damage to aquatic ecosystems.

During the construction phase of the development, the stormwater management design objectives for temporary water quality & ESC devices, including sediment basins, are to reference the Queensland Government State Planning Policy (SPP) 2017 Appendix 2 Table A (Part 1, 2 & 3).

IECA 2008 Best Practice Erosion and Sediment Control (as amended) is to be referenced for details on the application of the Construction Phase requirements.

For the construction phase, the SPP's stormwater management design objectives require that developments apply best practice erosion and sediment control. These objectives are derived from International Erosion Control Association of Australasia (IECA) 2008 Best Practice Erosion and Sediment Control.

All sediment and erosion controls will be designed in the detailed design phase to meet the relevant design objectives and Council policies, and will be RPEQ'd.

# 4 SUMMARY & CONCLUSIONS

## 4.1 WORKS SUMMARY AND ENGINEERING RECOMMENDATION

Meliora Engineering has been engaged by Ray Group PTY LTD to prepare a Stormwater Management Plan (SMP) suitable for submission to Rockhampton Regional Council in support of Operational Works for a site located at 6 Lawrie Street, Gracemere. The Application proposes a MCU proposes a café (Zarraffa's drive-through coffee).

The purpose of this Stormwater Management Plan (SMP) is to provide commentary and relevant calculations required to service the proposed development stormwater drainage management (quality and quality) as documented within Schematic Civil Drawings shown within Appendix B.

The assessment has been carried out in accordance with Rockhampton City Council Planning Scheme Policies and the proposed works described herein will be subject to any associated DA & OPW Approval Conditions to be provided by Council.

Meliora Engineering civil schematic sketches addressing stormwater management arrangement and catchment areas are shown within Appendix B – Schematic Civil Drawings.

A summary of civil engineering advice is as follows:

- The site is not affected by sources of flooding (including river, creek nor overland flow). No further flood study or analysis is considered necessary.
- The development proposes to capture roof water & runoff from the site in under-ground pit/pipe network before discharging to John Street, which is proposed as the sites lawful point of discharge. Catchment C1 will be detained within under-ground pipes and as shallow ponding within the pavement surface totalling a minimum 20kL storage to achieve non-worsening of flows in the post-development case. Further details of the detention system are specified in the report below.
- The proposal, featuring a lot less than 2500m$^2$ does not trigger the SPP's Post-Development Stormwater Management (Water Quality) Design Objectives and therefore no permanent treatment solutions/devices are proposed.

Information discussed in this report is inferred from several sources including authority databases, DBYD records, site survey and design documents received from the client.

The assessment has been carried out in accordance with the relevant Council Planning Scheme Policies and the proposed works described herein will be subject to the conditions attached to the Development Application and Pre-Operational Works approval to be provided by Council and any nominated referral agencies.

This report has demonstrated that the proposed development does not present any stormwater management related engineering issues which would prevent the development from proceeding as proposed.

## 4.2 LIMITATIONS

Meliora Engineering accept no responsibility for the accuracy of information supplied to them by second and third parties, including survey, authority mapping data and geotechnical testing information which may have been relied on to inform the civil engineering opinions and calculations presented within this report.

We consider that the study addresses the requirements for development of the subject site at the time the study was undertaken. If these conditions are known to change, the results of this study should be reviewed.

This Civil Engineering Report has been prepared under the direct supervision of a Registered Professional Engineer of Queensland generally in accordance relevant guidelines and standards.

**ROCKHAMPTON REGIONAL COUNCIL**

**APPROVED PLANS**

These plans are approved subject to the current conditions of approval associated with

**Development Permit No.:** D/182-2023

**Dated:** 19 April 2024

# 5 APPENDIX

## 5.1 APPENDIX A – ARCHITECTURAL DRAWINGS

**ROCKHAMPTON REGIONAL COUNCIL**

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**Dated:** 19 April 2024

## 5.2 APPENDIX B – SCHEMATIC CIVIL DRAWINGS

**ROCKHAMPTON REGIONAL COUNCIL**

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**Dated:** 19 April 2024

# PROPOSED ZARRAFFA'S DRIVE-THROUGH
# 6 LAWRIE ST, GRACEMERE, QLD
## DA CIVIL ENGINEERING PACKAGE FOR FOR RAY GROUP PTY LTD


LOCALITY PLAN

EXTRACTED FROM GOOGLE MAPS © 2023
NOT TO SCALE

| LOT DATA | |
|---|---|
| 604 | RP 2642 |

MELIORA ENGINEERING ACCEPTS NO RESPONSIBILITY FOR THE ACCURACY OF EXISTING UNDERGROUND SERVICES WHICH ARE PLOTTED FROM AUTHORITY RECORDS BY THE SURVEYOR. DOCUMENTED DESIGNS MAY BE SUBJECT TO ONGOING CHANGES UNTIL RECEIPT AND REVIEW OF MINIMUM QUALITY 'LEVEL A' EXISTING SERVICE LOCATION RESULTS ALONG FULL LENGTH OF PROPOSED MAIN ALIGNMENTS. MELIORA WILL NOT BE HELD LIABLE FOR COST INCREASES OR TIME EXTENSION RESULTING FROM NECESSARY DESIGN CHANGES TO ACHIEVE AUTHORITY CODE COMPLIANCE.

## DRAWING SCHEDULE

| DRAWING No. | DRAWING TITLE |
|---|---|
| | |
| SK00 | COVER, LOCALITY, SCHEDULE & GENERAL NOTES |
| SK05 | PRELIMINARY STORMWATER DRAINAGE LAYOUT PLAN |
| SK07 | PRELIMINARY CIVIL DRAINAGE CATCHMENT PLAN |

### MANDATORY REFERENCE DOCUMENTATION

ALL WORKS TO BE CARRIED OUT IN ACCORDANCE WITH THE CURRENT COUNCIL (LOCAL AUTHORITY) DEVELOPMENT (DA) CONDITIONS), AS WELL AS THE WATER AUTHORITY CONDITIONS. ALL RELEVANT AUTHORITY APPROVALS AND CONDITIONS ARE TO BE REVIEWED (AND REQUESTED IF NOT ALREADY RECEIVED) BY CONTRACTOR PRIOR TO CONSTRUCTION.

READ THESE DRAWINGS IN CONJUNCTION WITH ARCHITECTURAL AND OTHER ENGINEERING DRAWING, SPECIFICATIONS AND WITH ALL OTHER WRITTEN INSTRUCTIONS ISSUED. REFER TO ARCHITECTURAL DRAWINGS FOR SETTING OUT AND DETAIL DIMENSIONS. IN CASE OF DISCREPANCY, PRECEDENCE IS GIVEN TO DRAWINGS, THEN NOTES, THEN SPECIFICATION. REFER DISCREPANCIES TO SUPERINTENDENT BEFORE PROCEEDING WITH WORK.

FURTHER, ALL WORKS TO BE CARRIED OUT IN ACCORDANCE WITH
1. COUNCIL (LOCAL AUTHORITY) GUIDELINES, PLANNING SCHEME POLICIES (PSPs), SPECIFICATIONS AND STANDARD DRAWINGS
2. RELEVANT LEGISLATION INCLUDING (BUT NOT LIMITED TO):
   - 2.1. WORK HEALTH & SAFETY ACT 2011
   - 2.2. ENVIRONMENTAL PROTECTION & BIODIVERSITY ACT 1999
   - 2.3. BIOSECURITY ACT 2015. REFER TO WWW.DAF.QLD.GOV.AU
   - 2.4. SUSTAINABLE PLANNING ACT 1999
3. RELEVANT AUSTRALIAN STANDARDS INCLUDING (BUT NOT LIMITED TO):
   - 3.1. AS3500.3-2018 (PLUMBING & DRAINAGE)
   - 3.2. AS2865-2009 (CONFINED SPACES)
   - 3.3. AS3798-2007 (EARTHWORKS)
   - 3.4. AS/NZS 2890.1-2004 (PARKING FACILITIES)
   - 3.5. AS1742.3-2019 (SIGNAGE & LINE MARKING) - SS BY MUTCD
   - 3.6. AS4049.2-2005 (PAVEMENT MARKING MATERIALS)
4. INTERNATIONAL EROSION CONTROL AUTHORITY (IECA) & STANDARD DRAWINGS
5. AUSTROADS DESIGN MANUALS & STANDARD DRAWINGS
6. MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD)
7. SOUTH EAST QUEENSLAND WATER SUPPLY AND SEWERAGE DESIGN AND CONSTRUCTION CODE (OR THE SEQ CODE)

### PRELIMINARY!

ALL CIVIL WORKS AS SHOWN ON MELIORA DA PLANS IS PRELIMINARY AND IS SUBJECT TO FURTHER DETAILED DESIGN AND COORDINATION POST DEVELOPMENT APPLICATION APPROVAL AND PRIOR TO CONSTRUCTION COMMENCING

### CONTOURS LEGEND

- DESIGN/FINISHED SURFACE CONTOURS — 18.0
- EXISTING SURFACE CONTOURS — 18.0

### BOUNDARIES LEGEND

- PROPOSED LOT BOUNDARIES
- PROPOSED EASEMENT

### EXISTING FEATURES LEGEND

- EXISTING PROPERTY BOUNDARY
- EXISTING BOUNDARY ADJACENT
- EXISTING EASEMENT
- EARTHWORKS EXISTING BATTER TOE
- EARTHWORKS EXISTING BATTER TOP
- BUILDING EXISTING
- BUILDING EXISTING ROOF/EAVE
- MISC FENCE / GATE EXISTING
- ROAD EXISTING KERB
- ROAD EXISTING CENTERLINE
- ROAD EXISTING EDGE BITUMEN
- COMMUNICATIONS EXISTING — C
- DRAINAGE EXISTING CENTERLINE — SWD
- DRAINAGE EXISTING TEXT — dSWD
- ELECTRICAL EXISTING OVERHEAD — OE
- ELECTRICAL EXISTING UNDERGROUND — E
- ELECTRICAL EXISTING CENTERLINE DBYD — dE
- GAS EXISTING — G
- GAS EXISTING CENTERLINE DBYD — dG
- SEWER EXISTING CENTERLINE — S
- SEWER EXISTING RISING MAIN — RM
- SEWER EXISTING CENTERLINE DBYD — dS
- SEWER RISING MAIN EXISTING CENTERLINE DBYD — dSRM
- TELECOMMUNICATIONS EXISTING — T
- TELECOMMUNICATIONS EXISTING CENTERLINE DBYD — dT
- FIBER OPTIC CABLES EXISTING CENTERLINE DBYD — dOF
- WATER EXISTING CENTERLINE — W
- WATER EXISTING CENTERLINE DBYD — dW
- ABANDONED SERVICES
- EXISTING RETAINING WALL - BOULDER
- EXISTING RETAINING WALL - BLOCK
- EARTHWORKS EXISTING DRAIN
- EARTHWORKS EXISTING DRAIN CONCRETE
- EXISTING VEGETATION

**ROCKHAMPTON REGIONAL COUNCIL**

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**Dated: 19 April 2024**

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Zero Damage - Zero Harm

NOTE
ALL PLANS TO BE READ IN CONJUNCTION WITH ALL INFORMATION AND NOTES ON DRG. No. C01 AND ALL RELEVANT SPECIFICATIONS

PRELIMINARY

| REV | DESCRIPTION | DATE | DRAWN | APPR. |
|---|---|---|---|---|
| 01 | ISSUE FOR APPROVAL | 18.12.23 | SD | MB |

NORTH POINT

SCALE BAR(S)

DRAWN: DECEMBER 2023
DESIGNED: DECEMBER 2023
APPROVED: MBLYTH RPEQ SIGNATURE
RPEQ No. 21258
DATE: DECEMBER 2023


MELIORA CONSULTING ENGINEERS
ABN 46 153 772 813
E: INFO@MELIORACE.COM
21 McLEOD STREET
HERSTON, QLD 4006
PHONE: 0429970345




CLIENT: RAY GROUP PTY LTD

PROJECT: 6 LAWRIE ST, GRACEMERE, QLD 4702

DRAWING TITLE: LOCALITY, SCHEDULE & GENERAL NOTES EXISTING FEATURES LEGEND

MELIORA JOB No. 23118

DWG No SK00

REVISION 01

SITE DISCHARGES INTO EXISTING DRAINAGE IN NORTHERN CORNER OF SITE, WHICH FLOWS TO JOHN STREET

OUTLET PIPE CAPACITY AT DEPTH RESTRICTED TO PRE-DEVELOPMENT FLOW RATES, WITH MIN 12kL STORAGE ACHIEVED WITHIN PIPE NETWORK AND MAX 100mm DEPTH PONDING WITHIN PAVEMENT

PROPOSED uPVC SN8 DRAINAGE PIPE

RL 27.25m WEIR IN DRIVEWAY, ALLOWS 100mm MAX PONDING OVER PITS IN DRIVE-THROUGH PAVEMENT

RL 27.25m WEIR IN DRIVEWAY, ALLOWS 100mm MAX PONDING OVER PITS IN CAR PARK PAVEMENT

PROPOSED TYPE D GRATED INLET PITS. TOP OF GRATE RL 27.15

INDICATIVE PONDING AREA OVER SAG PITS (DETENTION STORAGE WITHIN PAVEMENTS, MAX 100mm DEPTH IN 1% AEP STORM EVENT - ALLOWS MIN 15kL STORAGE UNDER WEIR, 22.5kL TO 50mm DEPTH OF FLOW OVER WEIRS

ALLOW LANDSCAPE STRIP 200mm BELOW MIN TOP OF KERB LEVELS TO ENSURE EMERGENCY OVERLAND FLOW PATH FROM HUNGRY JACKS TO JOHN STREET

JOHN STREET

JOHN STREET

## LEGEND

- PROPOSED NOMINAL FACE KERB
- PROPOSED DRAINAGE (PIPE) — SWD
- PROPOSED WEIR LOCATION
- PROPOSED SEWER MAIN/CONNECTIONS — S — S
- PROPOSED WATER MAIN/SERVICE AND METERS — W
- PROPOSED FIELD INLET PIT
- PROPOSED CONCRETE PAVEMENT/CROSSOVERS
- PROPOSED FOOTPATHS
- PROPOSED BUILDINGS
- PROPOSED TURF OR LANDSCAPING AREA
- EXISTING EXTERNAL ROAD PAVEMENT
- INDICATIVE DETENTION STORAGE PONDING

NOTE: FOR CONTOURS, BOUNDARIES & EXISTING FEATURES LEGEND REFER TO DRG No. SK00

## PRELIMINARY ROADWORKS AND DRAINAGE NOTES

1. ALL WORKS SHALL BE UNDERTAKEN IN ACCORDANCE WITH CURRENT COUNCIL STANDARD SPECIFICATIONS AND DRAWINGS, UNLESS NOTED OTHERWISE
2. CONTRACTOR TO CONDUCT A DIAL BEFORE YOU DIG SEARCH PRIOR TO COMMENCEMENT OF WORKS AND CONFIRM THE LOCATION OF ALL EXISTING SERVICES PRIOR TO ANY EXCAVATION SHOULD ANY OF THE PROPOSED SERVICES CLASH WITH THE IDENTIFIED EXISTING SERVICES, CONSULT ENGINEER FOR ADVICE
3. CONTRACTOR TO ENSURE ALL EXISTING SERVICES ARE PROTECTED DURING THE COURSE OF CONSTRUCTION IN ACCORDANCE WITH LOCAL AUTHORITY REQUIREMENTS, ANY DAMAGE TO EXISTING SERVICES IS TO BE REINSTATED AT THE CONTRACTORS EXPENSE.
4. ALL WORKS TO BE UNDERTAKEN IN ACCORDANCE WITH COUNCILS EROSION AND SEDIMENT CONTROL GUIDELINES
5. ALL TRENCH EXCAVATION AND CONSTRUCTION SHALL COMPLY WITH THE REQUIREMENTS OF THE QUEENSLAND WORKPLACE HEALTH AND SAFETY ACT 2011
6. CONTRACTOR TO REINSTATE DAMAGE TO ANY EXISTING INFRASTRUCTURE (KERB AND CHANNEL, ASPHALT, FOOTPATH, VERGE ETC) TO COUNCIL SATISFACTION
7. CONTRACTOR TO ENSURE ADJOINING PROPERTIES AND ROADS ARE PROTECTED FROM PONDING OR NUISANCE FROM STORMWATER RUNOFF AS A RESULT OF THE PROPOSED WORKS
8. CONTRACTOR TO REMOVE ANY REDUNDANT DRAINAGE OUTLETS FROM THE KERB AND CHANNEL INCLUDING ANY ASSOCIATED PIPEWORK ACROSS THE FOOTWAY AND REINSTATE THE KERB AND CHANNEL AND THE FOOTWAY AREA IN ACCORDANCE WITH COUNCIL'S INFRASTRUCTURE GUIDELINES

## PRELIMINARY GENERAL CIVIL WORKS NOTES

1. ALL PROPOSED WORK IS TO BE DESIGNED & CONSTRUCTED IN ACCORDANCE WITH REQUIREMENTS OF ALL RELEVANT DEVELOPMENT APPROVAL CONDITIONS
2. RETAIN AND PROTECT TREES ON SITE OR WITHIN STREET AS PER N.A.L.L. (OR ANY OTHER RELEVANT VEGETATION MANAGEMENT PLAN) REQUIREMENTS U.N.O.
3. MINIMISE ON SITE EROSION AND RELEASE OF SEDIMENT AND SEDIMENT LADEN STORMWATER FROM THE SITE AT ALL TIMES IN ACCORDANCE WITH BEST PRACTICE ESC METHODS.
4. SERVICES AUTHORITIES (INCLUDING ELECTRICITY, COMMUNICATIONS, GAS, NBN) CONNECTION APPLICATIONS TO BE FACILITATED BY OTHERS WITH CONDUIT/ CONNECTION DESIGNS TO BE COORDINATED WITH CIVIL INFRASTRUCTURE AS REQUIRED
5. ENSURE SEWER AND WATER WORKS APPROVAL IS GRANTED BY THE RELEVANT WATER AUTHORITY PRIOR TO COMMENCING CONSTRUCTION OF CIVIL WORKS
6. NEW WORK MUST NOT DAMAGE OR COMPROMISE THE WORKING ABILITY OF EXISTING INFRASTRUCTURE. PROTECT EXISTING INFRASTRUCTURE AT ALL TIMES DURING CONSTRUCTION

**ROCKHAMPTON REGIONAL COUNCIL**

**APPROVED PLANS**

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**Dated: 19 April 2024**

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NOTE
ALL PLANS TO BE READ IN CONJUNCTION WITH ALL INFORMATION AND NOTES ON DRG. No. C01 AND ALL RELEVANT SPECIFICATIONS

PRELIMINARY

| REV | DESCRIPTION | DATE | DRAWN | APPR. |
|---|---|---|---|---|
| 01 | ISSUE FOR APPROVAL | 18.12.23 | SD | MB |

NORTH POINT

SCALE BAR(S)
0 2 4 6m
SCALE 1:100 @ A1

DRAWN: DECEMBER 2023
DESIGNED: DECEMBER 2023
APPROVED: MBLYTH
RPEQ No. 21258
DATE: DECEMBER 2023
RPEQ SIGNATURE

MELIORA CONSULTING ENGINEERS
ABN 46 153 772 813
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21 McLEOD STREET
HERSTON, QLD 4006
PHONE: 0429970345



CLIENT: RAY GROUP PTY LTD
PROJECT: 6 LAWRIE ST, GRACEMERE, QLD 4702

DRAWING TITLE: PRELIMINARY STORMWATER DRAINAGE LAYOUT PLAN

MELIORA JOB No. 23118
DWG No SK05
REVISION 01

C2 DISCHARGES TO EXISTING PIT IN NORTHERN CORNER BEFORE DISCHARGING TO JOHN STREET

C1 DISCHARGES TO DETENTION STORAGE WITHIN PIPES/PITS AND 100mm PONDING OVER PAVEMENT BEFORE DISCHARGING TO JOHN STREET

JOHN STREET

LEGEND

POST DEVELOPMENT CATCHMENT BOUNDARY

PROPOSED CATCHMENT FLOW DIRECTION

C1 CATCHMENT LABEL

NOTE: FOR CONTOURS, BOUNDARIES & EXISTING FEATURES LEGEND REFER TO DRG No. SK00

**ROCKHAMPTON REGIONAL COUNCIL**

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NOTE

ALL PLANS TO BE READ IN CONJUNCTION WITH ALL INFORMATION AND NOTES ON DRG. No. C01 AND ALL RELEVANT SPECIFICATIONS

PRELIMINARY

| REV | DESCRIPTION | DATE | DRAWN | APPR. |
|---|---|---|---|---|
| 01 | ISSUE FOR APPROVAL | 18.12.23 | SD | MB |

NORTH POINT

SCALE BAR(S)

0 2 4 6m

SCALE 1:100 @ A1

DRAWN: DECEMBER 2023

DESIGNED: DECEMBER 2023

APPROVED: MBLYTH RPEQ SIGNATURE

RPEQ No. 21258

DATE: DECEMBER 2023

MELIORA CONSULTING ENGINEERS
ABN 46 153 772 813
E: INFO@MELIORACE.COM

21 McLEOD STREET
HERSTON, QLD 4006
PHONE: 0429970345



CLIENT: RAY GROUP PTY LTD

PROJECT: 6 LAWRIE ST, GRACEMERE, QLD 4702

DRAWING TITLE: PRELIMINARY CIVIL DRAINAGE CATCHMENT PLAN

MELIORA JOB No. 23118

DWG No SK07

REVISION 01

## 5.3 APPENDIX C – SURVEY PLAN

**ROCKHAMPTON REGIONAL COUNCIL**

**APPROVED PLANS**

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**Dated:** 19 April 2024

**ROCKHAMPTON REGIONAL COUNCIL**

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**Dated:** 19 April 2024

240050E 240075E 240100E 240125E 240150E 240175E

7405975N 7405950N 7405925N 7405900N

## SERVICES DISCLAIMER

While every effort has been made to locate, identify, and where appropriate, indicate the extent & connectivity of all relevant visible and underground infrastructure within the survey area, no guarantee, either explicit or implied, can be given as to the correctness and completeness of such infrastructure shown hereon.

Due to the intrusive, high impact and potentially dangerous nature of exposing underground infrastructure, the risk of serious injury and damage to infrastructure is very high, therefore further investigation by suitably qualified personnel with the relevant skills, techniques and equipment will be required to comprehensively establish and qualify the true state of all infrastructure on site.

Please refer to each of the relevant service providers rules, procedures, guidelines, rights and responsibilities when designing or working in the vicinity of each respective plant or service.

This note is an integral part of this plan, being 2 sheets in total, and all subsequent iterations of this plan. ©

1
SP263932

2
SP263932

604
R2642

2
RP608092

STREET

JOHN

Bitumen Driveway

Gravel Driveway

Vacant Land

Channel

Fence

Wire Fence

Stringer

Steel Post

Gate

Kerb

Conc

SW HW SL21.95

IL21.28

600x170 RCBC

IL21.34

SW HW SL22.00

IL21.36
375Ø
IL21.34

SW Pit SL21.96

Sew MH SL24.50

IL22.98

IL23.01

IL23.08

BM 01
Bolt in Bitumen
RL 24.40

0m 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30m

PRINCIPAL

**BELO DEVELOPMENTS**

DESCRIPTION

# DETAIL SURVEY OF LOT 604 ON R2642 & ADJACENT ROAD CORRIDORS

## 6 LAWRIE STREET, GRACEMERE

REAL PROPERTY DESCRIPTION

| | |
|---|---|
| Lot/Plan : | 604/R2642 |
| Area : | 3187m2 |
| Locality : | Gracemere |
| Local Authority : | Rockhampton Regional Council |

NOTES

This plan was prepared for BELO DEVELOPMENTS from field survey for the purpose of designing new constructions on the subject land and should not be used by any other persons for any other purpose.

Property boundaries have not been reinstated or marked at the time of survey and are approximate only, based on appropriate boundary connections.

Where possible underground services have been located by field survey. Some services shown hereon are compiled from local authority and service provider plans and/or plans provided by the client and are noted accordingly on the plan.

Prior to any design, excavation or construction on site, the relevant authorities, and a qualified service locator should be engaged to ensure all services that may be affected by any future works have been located.

These plans have been prepared as verification plots only. Some text RL's have been omitted for clarity. Please refer to the relevant 3D data files for any spatial interrogation requirements.

Any discrepancies should be verified in writing with Capricorn Survey Group (CQ) Pty Ltd.

This note is an integral part of this plan.

LEGEND

### SERVICES LEGEND

- S — UG Sewerage Line
- SC — UG Sewerage Line (Compiled)
- SW — UG Stormwater Line
- SWC — UG Stormwater Line (Compiled)
- Overland Flow/Direction
- E — UG Electrical Line
- EC — UG Electrical Line (Compiled)
- OH Electrical Line
- T — UG Communication Line
- TC — UG Communication Line (Compiled)
- W — UG Water Line
- WC — UG Water Line (Compiled)
- AG Water Line
- G — UG Gas Line
- GC — UG Gas Line (Compiled)
- Top of Bank
- Toe of Bank
- C/L of Bitumen
- Edge of Bitumen
- Retaining Wall
- Line Marking
- Fence Line
- Roof / Guttering
- Eaves

### CONTOUR LEGEND

- 0.25m Interval
- 1.00m Interval

### GENERAL SYMBOL LEGEND

- Comms Conduit Marker
- Comms Pit
- Elec Conduit Marker
- Elec Turret
- Elec Pit
- Elec Light Bollard
- Elec Light Pole
- Elec Power Pole
- Elec Power Pole + Light
- Elec Power Pole + Transformer
- Elec Stay Point
- Traffic Lights
- Gas Marker
- Gas Valve
- Gas Hot Water System
- Sewerage M/H
- Sewerage Vent
- Sewerage IO
- Stormwater M/H
- Stormwater Pit
- Stormwater DP / Kb Outlet
- Water Fire Hydrant
- Water Meter
- Water Valve
- Water Tap
- Water Control Tap
- Water Tee
- Water Conduit Marker
- Water Tapping Band
- Post
- Bollard
- Guide Sign
- Flag Pole
- Australia Post Box
- Shrub

DATUM

| | |
|---|---|
| Vertical Datum : | AHD Vide Smartnet Aus |
| Horizontal Datum : | MGA94 Vide Smartnet Aus |
| Contour Interval : | 0.25m, 1.0m Index |
| Co-ord System : | MGA94 Vide Smartnet Aus |

**WARNING**

LOCATION AND CONNECTIVITY OF U/G SERVICES SHOWN HEREON HAVE BEEN DETERMINED BY DIRECT ACCESS OR COMPILED FROM LOCAL AUTHORITY AND SERVICE PROVIDER PLANS ONLY. FURTHER INVESTIGATION MAY BE REQUIRED TO DETERMINE LOCATIONS OF ALL INACCESSIBLE SERVICES.

REVISION

| Issue | Date | Details | Authorised |
|---|---|---|---|
| A | 27-04-2023 | Initial Issue | RJKF |
| - | - | - | - |

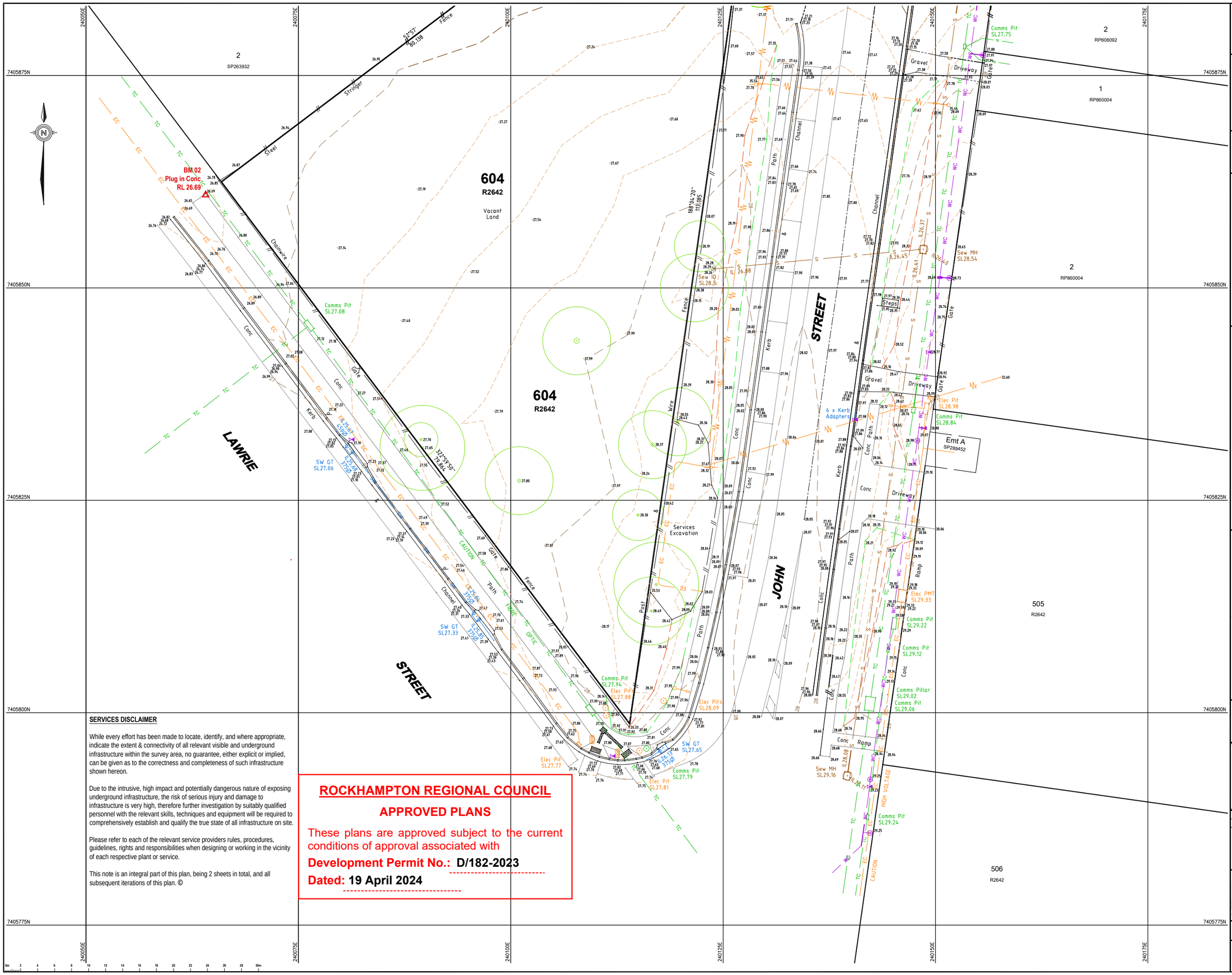
CREATED

capricornsurveygroupcq
SURVEYING & PLANNING SOLUTIONS
07 4927 5199 | reception@cegcq.com.au | 132 Victoria Parade, Rockhampton QLD 4700

SCALE

**1:200 @ A1**

| DRAWING NUMBER | ISSUE |
|---|---|
| 8113-06-DTL (1/2) | A |




**SERVICES DISCLAIMER**

While every effort has been made to locate, identify, and where appropriate, indicate the extent & connectivity of all relevant visible and underground infrastructure within the survey area, no guarantee, either explicit or implied, can be given as to the correctness and completeness of such infrastructure shown hereon.

Due to the intrusive, high impact and potentially dangerous nature of exposing underground infrastructure, the risk of serious injury and damage to infrastructure is very high, therefore further investigation by suitably qualified personnel with the relevant skills, techniques and equipment will be required to comprehensively establish and qualify the true state of all infrastructure on site.

Please refer to each of the relevant service providers rules, procedures, guidelines, rights and responsibilities when designing or working in the vicinity of each respective plant or service.

This note is an integral part of this plan, being 2 sheets in total, and all subsequent iterations of this plan. ©

**ROCKHAMPTON REGIONAL COUNCIL**

**APPROVED PLANS**

These plans are approved subject to the current conditions of approval associated with

**Development Permit No.: D/182-2023**

**Dated: 19 April 2024**

PRINCIPAL

**BELO DEVELOPMENTS**

DESCRIPTION

# DETAIL SURVEY OF LOT 604 ON R2642 & ADJACENT ROAD CORRIDORS

## 6 LAWRIE STREET, GRACEMERE

REAL PROPERTY DESCRIPTION

| | |
|---|---|
| Lot/Plan : | 604/R2642 |
| Area : | 3187m2 |
| Locality : | Gracemere |
| Local Authority : | Rockhampton Regional Council |

NOTES

This plan was prepared for BELO DEVELOPMENTS from field survey for the purpose of designing new constructions on the subject land and should not be used by any other persons for any other purpose.

Property boundaries have not been reinstated or marked at the time of survey and are approximate only, based on appropriate boundary connections.

Where possible underground services have been located by field survey. Some services shown hereon are compiled from local authority and service provider plans and/or plans provided by the client and are noted accordingly on the plan.

Prior to any design, excavation or construction on site, the relevant authorities, and a qualified service locator should be engaged to ensure all services that may be affected by any future works have been located.

These plans have been prepared as verification plots only. Some text RL's have been omitted for clarity. Please refer to the relevant 3D data files for any spatial interrogation requirements.

Any discrepancies should be verified in writing with Capricorn Survey Group (CQ) Pty Ltd.

This note is an integral part of this plan.

LEGEND

**SERVICES LEGEND**

| | |
|---|---|
| S | UG Sewerage Line |
| SC | UG Sewerage Line (Compiled) |
| SW | UG Stormwater Line |
| SWC | UG Stormwater Line (Compiled) |
| > | Overland Flow/Direction |
| E | UG Electrical Line |
| EC | UG Electrical Line (Compiled) |
| | OH Electrical Line |
| T | UG Communication Line |
| TC | UG Communication Line (Compiled) |
| W | UG Water Line |
| WC | UG Water Line (Compiled) |
| W | AG Water Line |
| G | UG Gas Line |
| GC | UG Gas Line (Compiled) |
| | Top of Bank |
| | Toe of Bank |
| | C/L of Bitumen |
| | Edge of Bitumen |
| | Retaining Wall |
| | Line Marking |
| // | Fence Line |
| | Roof / Guttering |
| | Eaves |

**CONTOUR LEGEND**

| | |
|---|---|
| | 0.25m Interval |
| 5 | 1.00m Interval |

**GENERAL SYMBOL LEGEND**

| | |
|---|---|
| Comms Conduit Marker | Stormwater M/H |
| Comms Pit | Stormwater Pit |
| Elec Conduit Marker | Stormwater DP / Kb Outlet |
| Elec Turret | Water Fire Hydrant |
| Elec Pit | Water Meter |
| Elec Light Bollard | Water Valve |
| Elec Light Pole | Water Tap |
| Elec Power Pole | Water Control Tap |
| Elec Power Pole + Light | Water Tee |
| Elec Power Pole + Transformer | Water Conduit Marker |
| Elec Stay Point | Water Tapping Band |
| Traffic Lights | Post |
| Gas Marker | Bollard |
| Gas Valve | Guide Sign |
| Gas Hot Water System | Flag Pole |
| Sewerage M/H | Australia Post Box |
| Sewerage Vent | Shrub |
| Sewerage IO | |

DATUM

| | |
|---|---|
| Vertical Datum : | AHD Vide Smartnet Aus |
| Horizontal Datum : | MGA94 Vide Smartnet Aus |
| Contour Interval : | 0.25m, 1.0m Index |
| Co-ord System : | MGA94 Vide Smartnet Aus |

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REVISION

| Issue | Date | Details | Authorised |
|---|---|---|---|
| A | 27-04-2023 | Initial Issue | RJKF |
| - | - | - | - |

CREATED

capricornsurveygroupcq
SURVEYING & PLANNING SOLUTIONS
07 4927 5199 | reception@csgcq.com.au | 132 Victoria Parade, Rockhampton QLD 4700

SCALE **1:200 @ A1**

DRAWING NUMBER **8113-06-DTL (2/2)**

ISSUE **A**

## 5.4 APPENDIX D – BYDA RESULTS

**ROCKHAMPTON REGIONAL COUNCIL**

**APPROVED PLANS**

These plans are approved subject to the current conditions of approval associated with

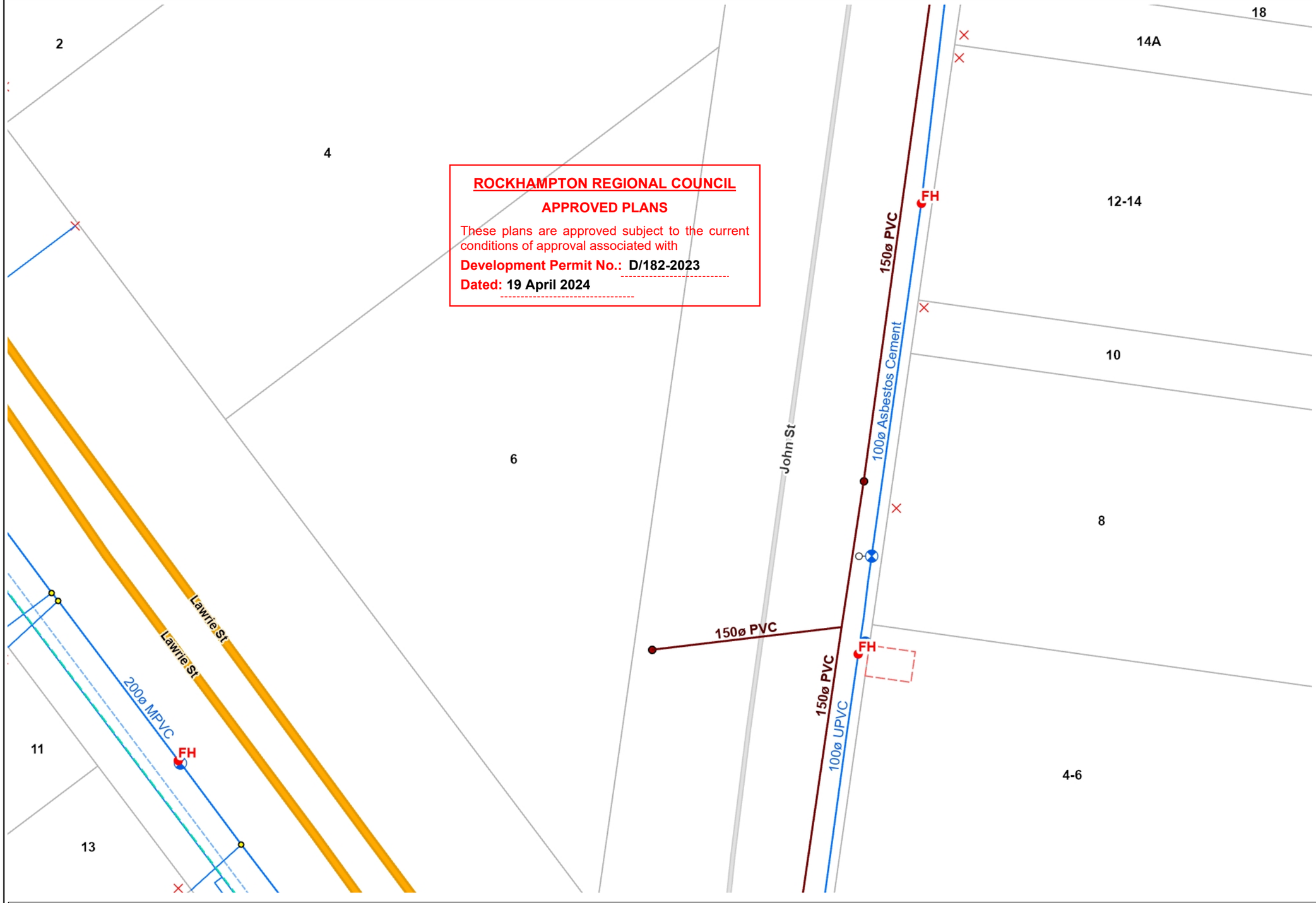
**Development Permit No.:** **D/182-2023**

**Dated:** **19 April 2024**

**DBYD Number:** 35751567

6 Lawrie St, Gracemere

**Sequence Number:** 233804643




**ROCKHAMPTON REGIONAL COUNCIL**

**APPROVED PLANS**

These plans are approved subject to the current conditions of approval associated with

**Development Permit No.:** D/182-2023

**Dated:** 19 April 2024

## DBYD - Rockhampton Regional Council Infrastructure

CBD Parking sensor zones

**Water**
- Gate, Sluice, Butterfly
- Air Valve
- Ball Cock, Stop Cock
- Ball Valve
- Motor Sluice Valve
- Non Return Valve
- Pressure Reducing Valve
- RPZ Valve
- Reflux Valve
- Scour Valve
- Sluice Bypass Valve
- Tap
- Other Valve Type
- Open - Dialysis
- Closed - Zone
- Valve Normally Open
- Valve Normally Closed
- Trunk Main
- Reticulation Main
- Raw Water Main
- Scour Line
- Other Main Type
- Water Service
- Hydrants
- Reservoirs
- Intake
- Pump Station
- Treatment Plant
- Unknown
- Abandoned Mains

**Private Water**
- Private Water Hydrants
- Private Water Valves
- Private Water Mains
- Private Water Abandoned Mains

**Stormwater**
- Flood Mitigation Devices
- Culverts
- Headwalls
- Stormwater Junctions
- Pollution Trap
- Subsoil Clean-Out pit
- Stormwater Jump ups
- Connector; Reticulation Main
- Culvert Pipe; LinkSlab
- Inter-Allotment
- Low Flow Pipe
- Other
- Stormwater Drop Structures
- Batter Chute; Open Channel
- Bio-Retention Swale
- Subsoil Drain
- Weirs
- Bio-Retention
- Detention/Retention
- Abandoned Mains
- Abandoned Headwalls
- Abandoned Culverts
- Abandoned Junctions

**Private Stormwater**
- Culverts Private
- Headwalls Private
- Stormwater Junctions Private
- Pollution Trap Private
- Subsoil Clean-Out pit Private
- Stormwater Jump Up Private
- Stormwater Main Private
- Open Channel Private
- Subsoil Drain Private
- Retention Basins Private

**Effluent**
- Effluent Structures
- Effluent Valves
- Effluent Mains

**Sewer**
- Pump Station
- Treatment Plant
- Combined Main
- Reticulation Main
- Trunk Main
- Overflow Main
- Sewer Rising Mains
- Roll Over
- Lamp Hole | Inspection Opening
- Overflow Chamber
- Access Chambers
- Sewer Valves
- Sewer Jump Ups
- Sewer Access Chambers Abandoned
- Sewer Mains Abandoned

**Private Sewer**
- Pump Station
- Treatment Plant
- Sewer Access Chambers Private
- Sewer Joints Private
- Sewer Valves Private
- Sewer Gravity Mains Private
- Sewer Rising Mains Private
- Sewer Jump Ups Private
- Sewer Mains Abandoned Private
- Sewer Access Chambers Abandoned Private

**Administrative**
- Easements
- Property Parcels



GDA2020

A3 Page scale at 1:500.00

Printed from GeoCortex on 08/01/2024

Rockhampton Regional Council

All underground cables shall be treated as being energised. Where a cable is located that is not represented on the ERGON ENERGY BYDA map, then ERGON ENERGY shall be contacted immediately.

For Emergency Situations please call 13 16 70

ERGON ENERGY NETWORK
Part of Energy Queensland

# BYDA

Sequence: 233804644
Date: 08/01/2024

Scale: 1:1025

**OVERVIEW**

**ROCKHAMPTON REGIONAL COUNCIL**

**APPROVED PLANS**

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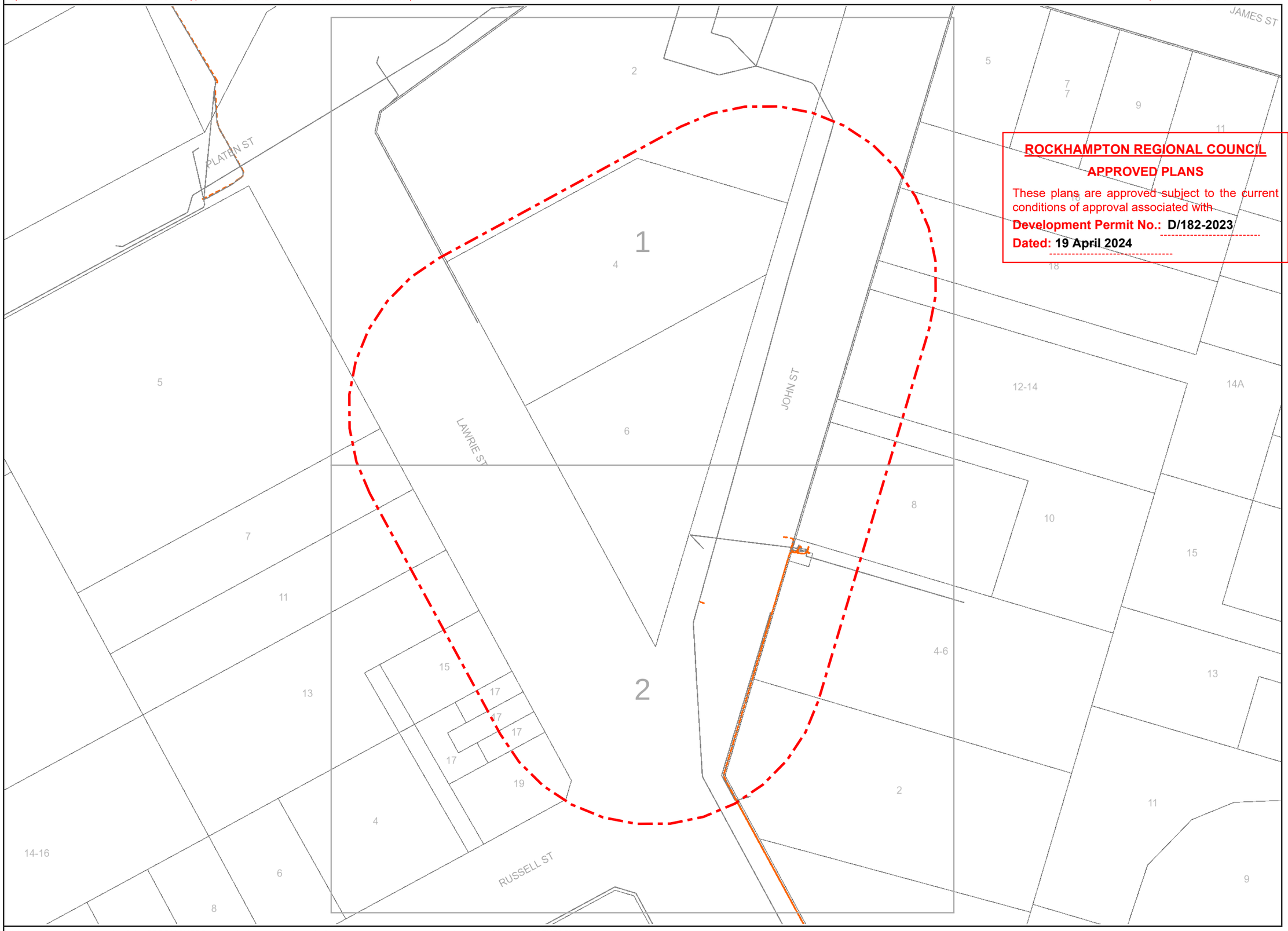
**Development Permit No.:** D/182-2023

**Dated:** 19 April 2024




**For a full list of Map Symbols, please refer to the supplied BYDA Symbology Legend page**

AS5488 Category "D" Plan

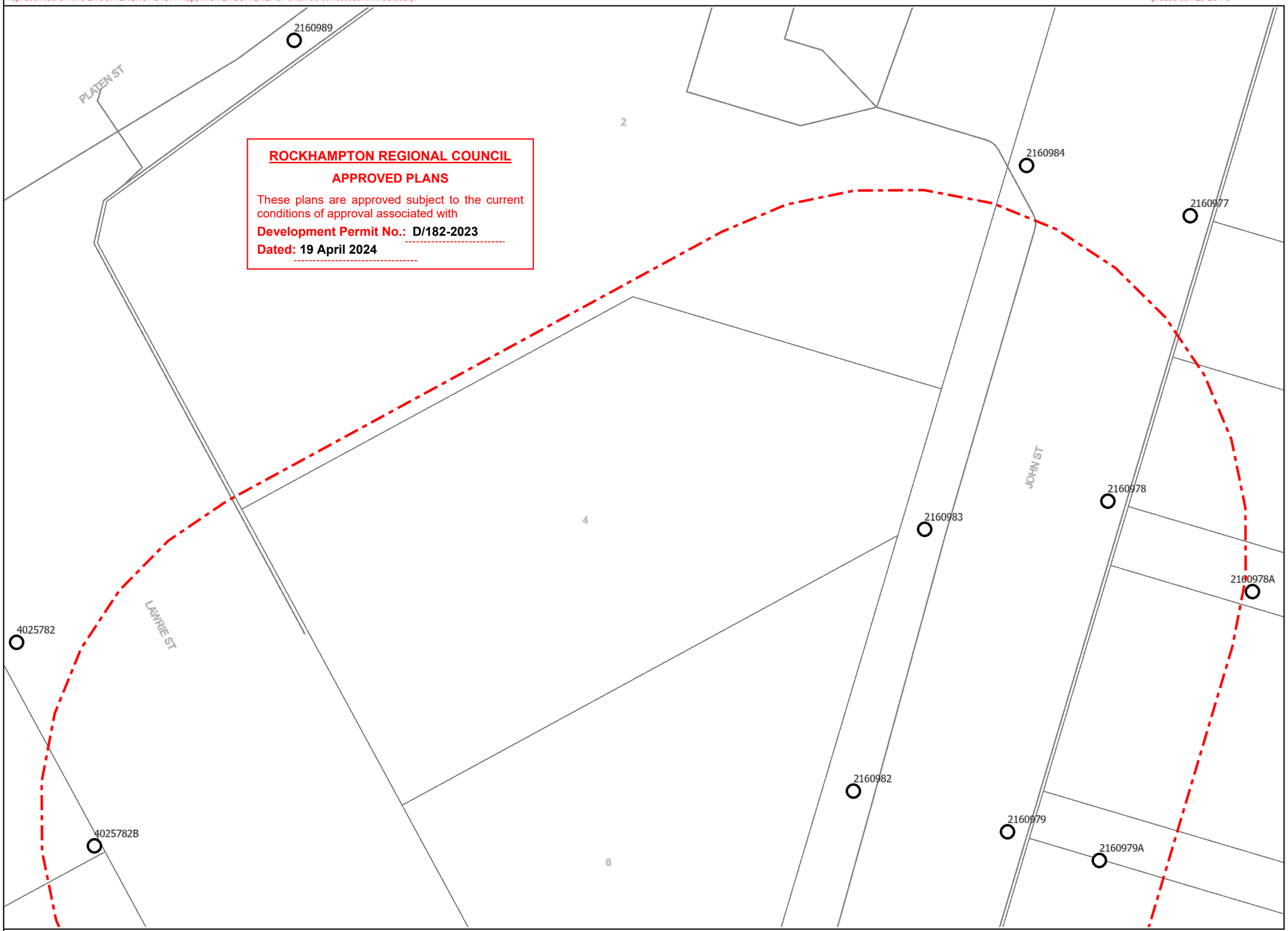
N
W
E
S

**DISCLAIMER:** While reasonable measures have been taken to ensure the accuracy of the information contained in this plan response, neither Ergon Energy nor PelicanCorp shall have any liability whatsoever in relation to any loss, damage, cost or expense arising from the use of this plan response or the information contained in it or the completeness or accuracy of such information. Use of such information is subject to and constitutes acceptance of these terms.

This output provides details of the ERGON ENERGY electrical network. As variations map exist no responsibility is incurred by ERGON ENERGY for the accuracy or completeness of the information provided. Exact positions of cables and electrical connectivity should be confirmed on site.

All underground cables shall be treated as being energised. Where a cable is located that is not represented on the ERGON ENERGY BYDA map, then ERGON ENERGY shall be contacted immediately.

For Emergency Situations please call 13 16 70




**ROCKHAMPTON REGIONAL COUNCIL**

**APPROVED PLANS**

These plans are approved subject to the current conditions of approval associated with

**Development Permit No.:** D/182-2023

**Dated:** 19 April 2024

ERGON ENERGY NETWORK
Part of Energy Queensland

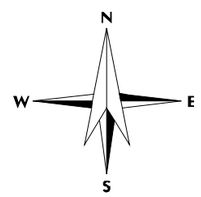
**BYDA**

Sequence: 233804644
Date: 08/01/2024

Scale: 1:500
**Tile No: 1**

**For a full list of Map Symbols, please refer to the supplied BYDA Symbology Legend page**

AS5488 Category "D" Plan

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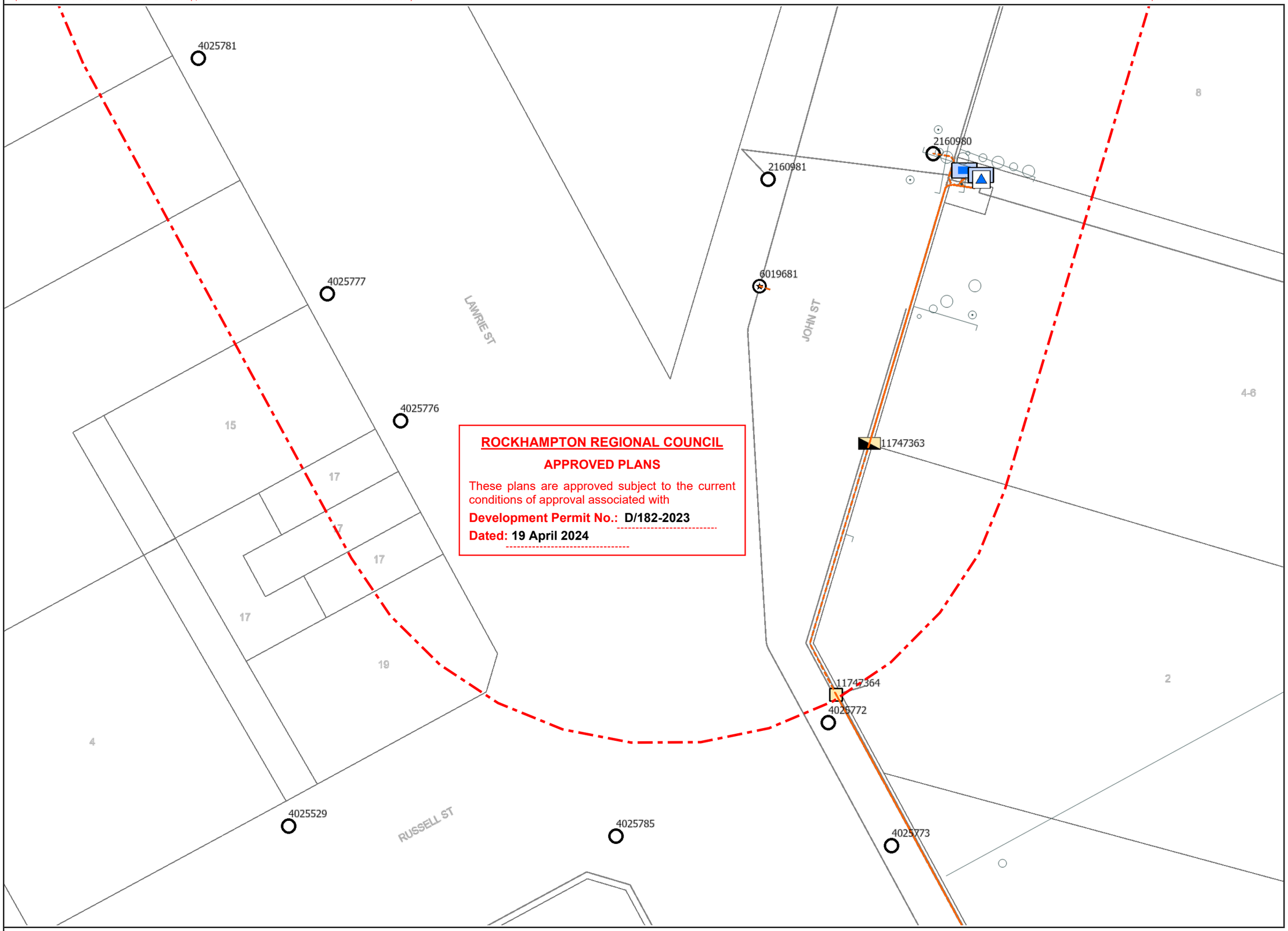


**ROCKHAMPTON REGIONAL COUNCIL**

**APPROVED PLANS**

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**Development Permit No.:** D/182-2023

**Dated:** 19 April 2024

ERGON ENERGY NETWORK
Part of Energy Queensland

**BYDA**

Sequence: 233804644
Date: 08/01/2024

Scale: 1:500
**Tile No: 2**

**For a full list of Map Symbols, please refer to the supplied BYDA Symbology Legend page**

AS5488 Category "D" Plan

N
W E
S

**DISCLAIMER:** While reasonable measures have been taken to ensure the accuracy of the information contained in this plan response, neither Ergon Energy nor PelicanCorp shall have any liability whatsoever in relation to any loss, damage, cost or expense arising from the use of this plan response or the information contained in it or the completeness or accuracy of such information. Use of such information is subject to and constitutes acceptance of these terms.

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**ROCKHAMPTON REGIONAL COUNCIL**

**APPROVED PLANS**

These plans are approved subject to the current conditions of approval associated with

**Development Permit No.:** D/182-2023

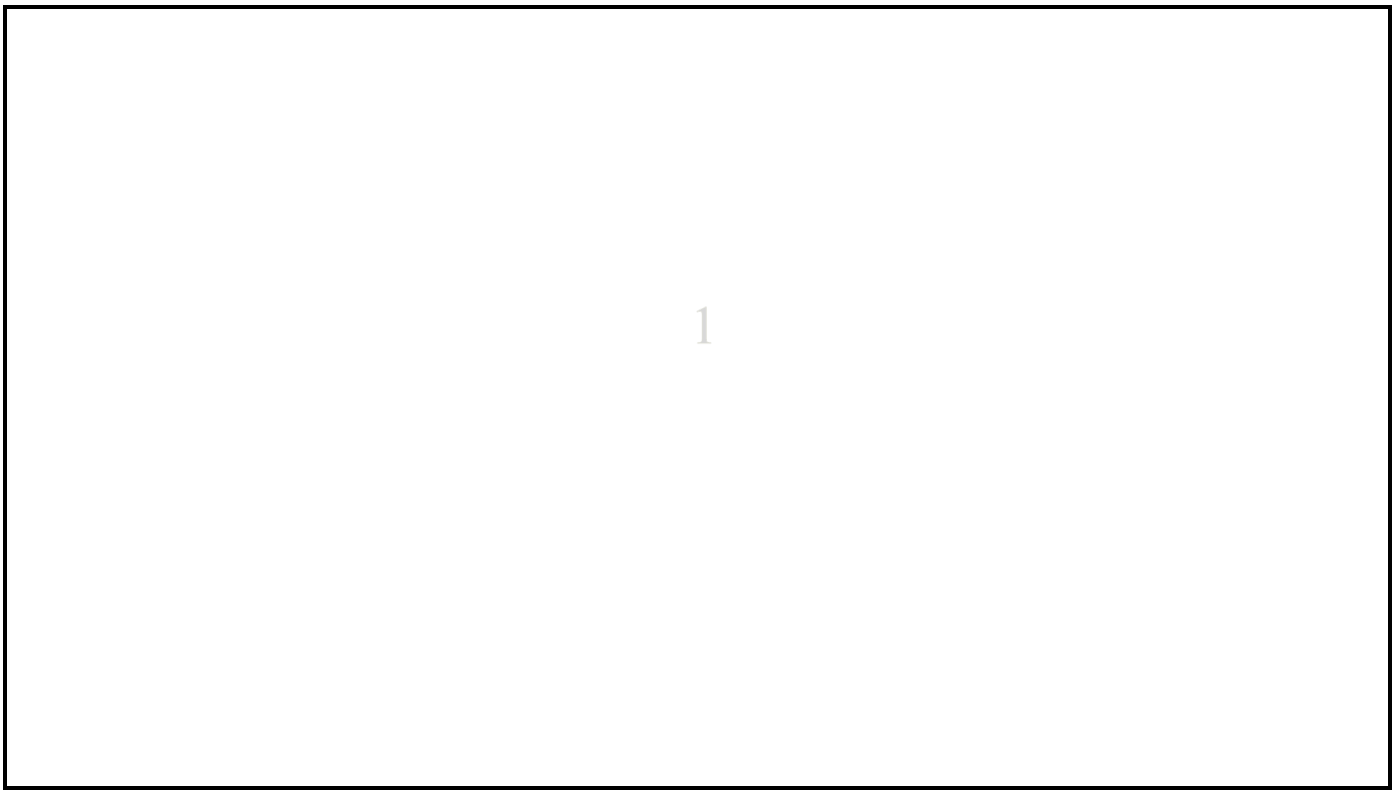
**Dated:** 19 April 2024

**To:** Kousik De
**Phone:** Not Supplied
**Fax:** Not Supplied
**Email:** admin@meliorace.com

| | |
|---|---|
| **Dial before you dig Job #:** | 35751567 |
| **Sequence #** | 233804645 |
| **Issue Date:** | 07/01/2024 |
| **Location:** | 6 Lawrie St , Gracemere , QLD , 4702 |

DIAL BEFORE YOU DIG www.1100.com.au

## Indicative Plans



**ROCKHAMPTON REGIONAL COUNCIL**

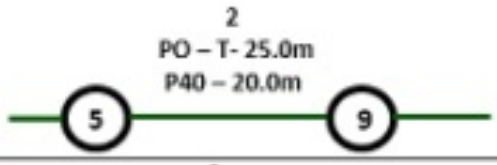
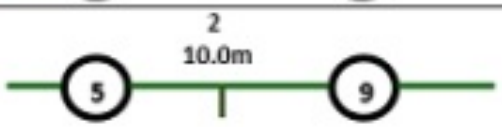
**APPROVED PLANS**

These plans are approved subject to the current conditions of approval associated with

**Development Permit No.:** D/182-2023

**Dated:** 19 April 2024

# LEGEND

| | |
|---|---|
| 34 | Parcel and the location |
| 5 | Pit with size "5" |
| 2E | Power Pit with size "2E".<br>Valid PIT Size: e.g. 2E, 5E, 6E, 8E, 9E, E, null. |
|  | Manhole |
|  | Pillar |
|  | Cable count of trench is 2.<br>One "Other size" PVC conduit (PO) owned by Telstra (-T-), between pits of sizes, "5" and "9" are 25.0m apart.<br>One 40mm PVC conduit (P40) owned by NBN, between pits of sizes, "5" and "9" are 20.0m apart. |
|  | 2 Direct buried cables between pits of sizes ,"5" and "9" are 10.0m apart. |
|  | Trench containing any INSERVICE/CONSTRUCTED (Copper/RF/Fibre) cables. |
|  | Trench containing only DESIGNED/PLANNED (Copper/RF/Fibre/Power) cables. |
|  | Trench containing any INSERVICE/CONSTRUCTED (Power) cables. |
| BROADWAY ST | Road and the street name "Broadway ST" |
| Scale | 0 20 40 60 Meters<br>1:2000<br>1 cm equals 20 m |

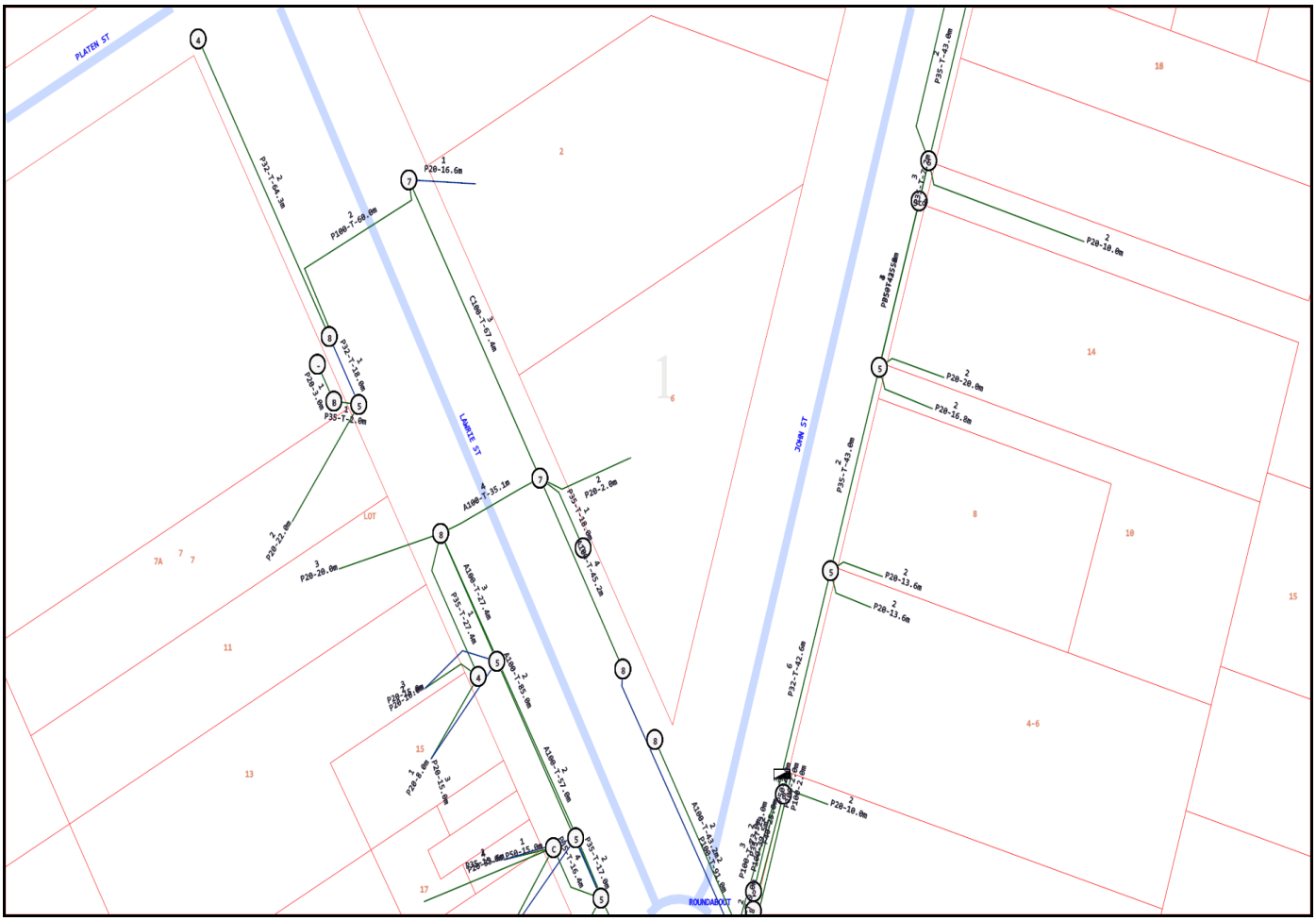
**ROCKHAMPTON REGIONAL COUNCIL**

**APPROVED PLANS**

These plans are approved subject to the current conditions of approval associated with

**Development Permit No.:** D/182-2023

**Dated:** 19 April 2024




## Emergency Contacts

You must immediately report any damage to the **nbn™** network that you are/become aware of. Notification may be by telephone - 1800 626 329.

**ROCKHAMPTON REGIONAL COUNCIL**

**APPROVED PLANS**

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**Dated:** 19 April 2024

| | |
|---|---|
| **To:** | Kousik De |
| **Phone:** | Not Supplied |
| **Fax:** | Not Supplied |
| **Email:** | admin@meliorace.com |

| | |
|---|---|
| **Dial before you dig Job #:** | 35751567 |
| **Sequence #** | 233804645 |
| **Issue Date:** | 07/01/2024 |
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DIAL BEFORE YOU DIG www.1100.com.au

## Indicative Plans

1

**ROCKHAMPTON REGIONAL COUNCIL**

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**Dated:** 19 April 2024

# LEGEND

| | |
|---|---|
| 34 | Parcel and the location |
| 5 | Pit with size "5" |
| 2E | Power Pit with size "2E".<br>Valid PIT Size: e.g. 2E, 5E, 6E, 8E, 9E, E, null. |
| | Manhole |
| | Pillar |
| 2<br>PO – T- 25.0m<br>P40 – 20.0m<br>5 9 | Cable count of trench is 2.<br>One "Other size" PVC conduit (PO) owned by Telstra (-T-), between pits of sizes, "5" and "9" are 25.0m apart.<br>One 40mm PVC conduit (P40) owned by NBN, between pits of sizes, "5" and "9" are 20.0m apart. |
| 2<br>10.0m<br>5 9 | 2 Direct buried cables between pits of sizes ,"5" and "9" are 10.0m apart. |
| 5 9 | Trench containing any INSERVICE/CONSTRUCTED (Copper/RF/Fibre) cables. |
| 5 9 | Trench containing only DESIGNED/PLANNED (Copper/RF/Fibre/Power) cables. |
| 5 9 | Trench containing any INSERVICE/CONSTRUCTED (Power) cables. |
| BROADWAY ST | Road and the street name "Broadway ST" |
| Scale | 0 20 40 60 Meters<br>1:2000<br>1 cm equals 20 m |

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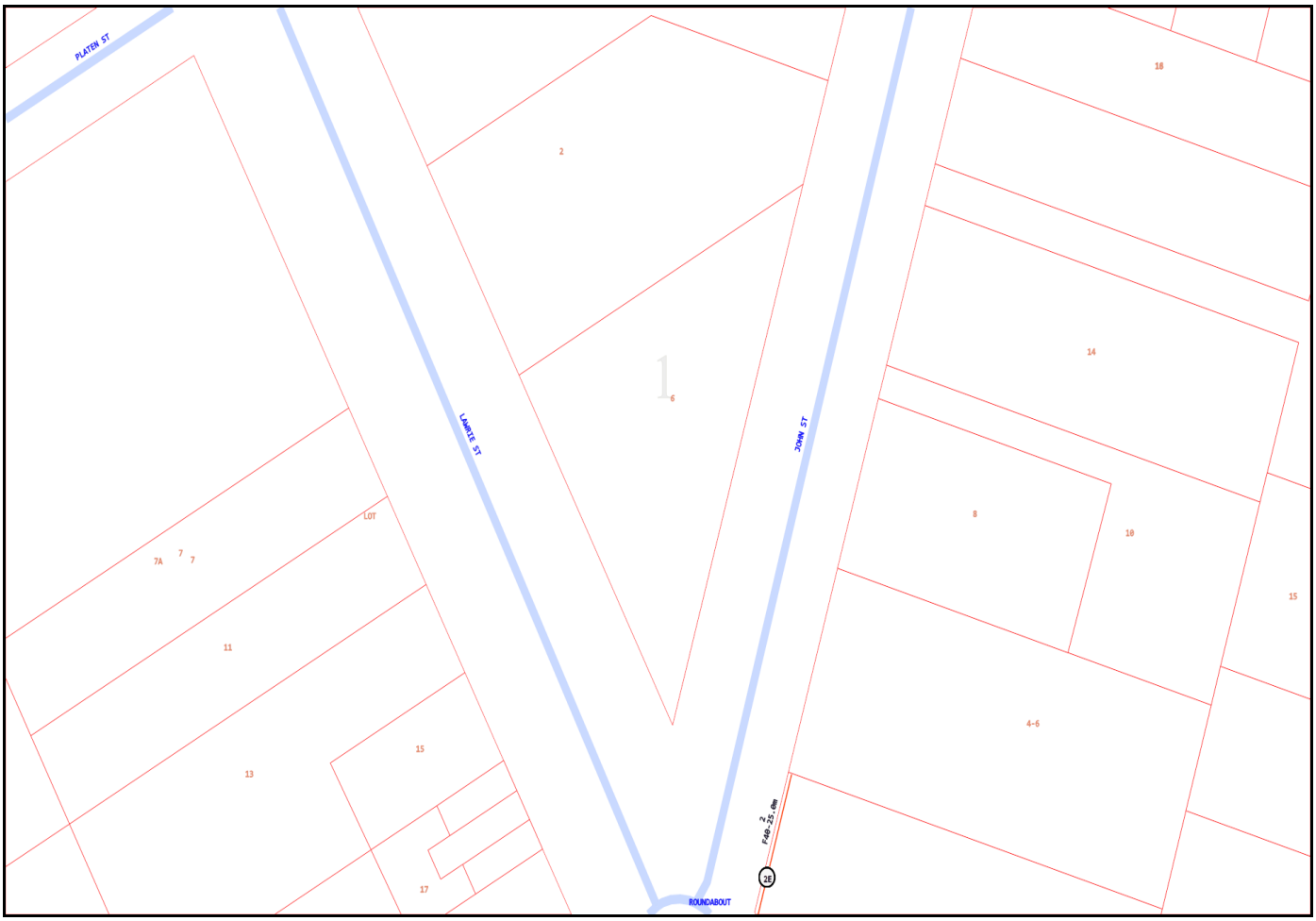
**Dated:** 19 April 2024

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# Cable Plan

**ROCKHAMPTON REGIONAL COUNCIL**

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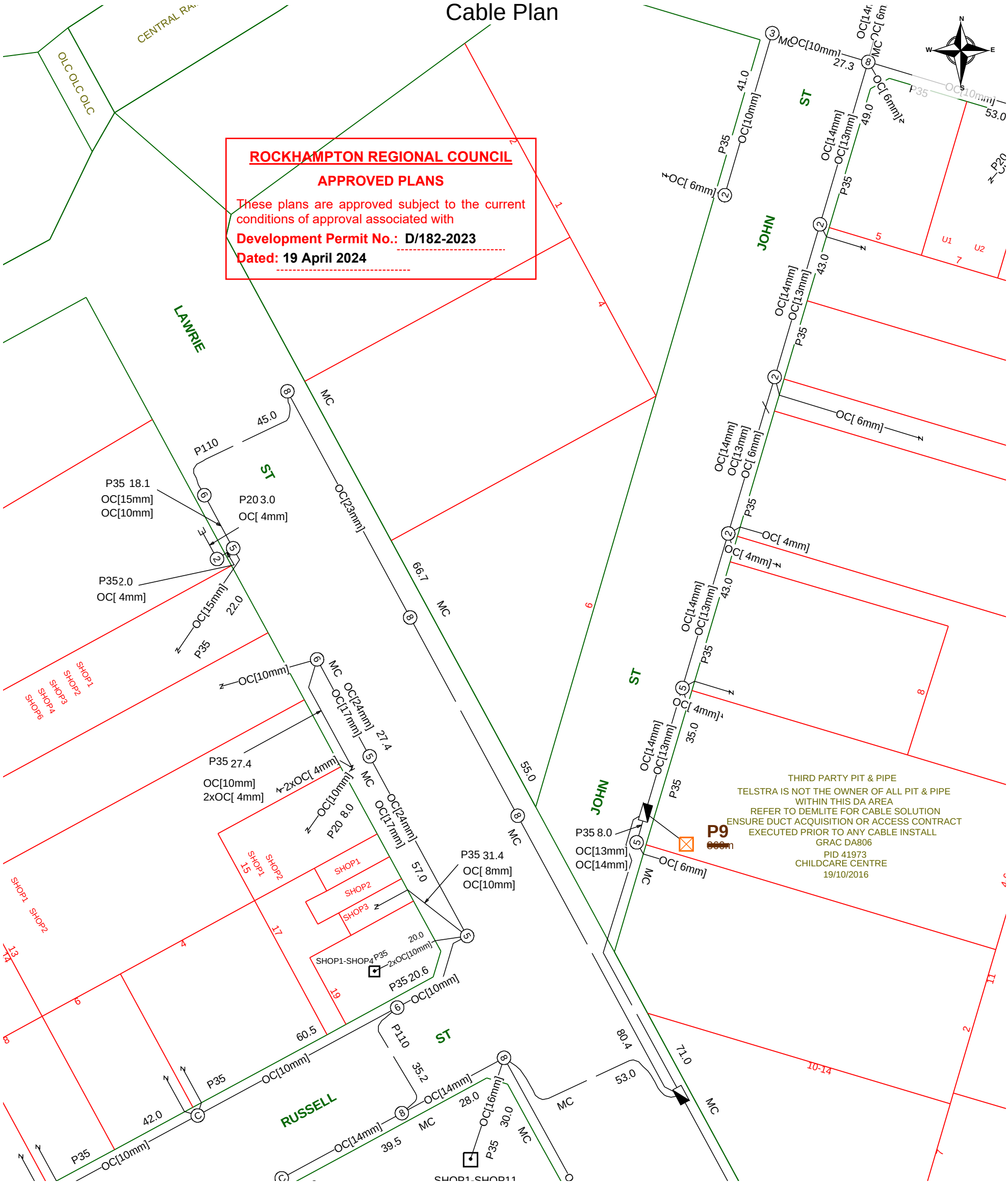
**Dated:** 19 April 2024




| | |
|---|---|
| Report Damage: https://service.telstra.com.au/customer/general/forms/report-damage-to-telstra-equipment<br>Ph - 13 22 03<br>Email - Telstra.Plans@team.telstra.com<br>Planned Services - ph 1800 653 935 (AEST bus hrs only) General Enquiries | Sequence Number: 233804646 |
| TELSTRA LIMITED A.C.N. 086 174 781 | CAUTION: Fibre optic and/ or major network present in plot area. Please read the Duty of Care and contact Telstra Plan Services should you require any assistance. |
| Generated On 08/01/2024 14:05:12 | |

The above plan must be viewed in conjunction with the Mains Cable Plan on the following page

WARNING
Telstra plans and location information conform to Quality Level "D" of the Australian Standard AS 5488-Classification of Subsurface Utility Information.
As such,Telstra supplied location information is indicative only.Spatial accuracy is not applicable to Quality Level D.
Refer to AS 5488 for further details. The exact position of Telstra assets can only be validated by physically exposing it.
Telstra does not warrant or hold out that its plans are accurate and accepts no responsibility for any inaccuracy.
Further on site investigation is required to validate the exact location of Telstra plant prior to commencing construction work.
A Certified Locating Organisation is an essential part of the process to validate the exact location of Telstra assets and to ensure the asset is protected during construction works.

See the Steps- Telstra Duty of Care that was provided in the email response.

# Mains Cable Plan

'100
c3:M1-800 800 <- (AB)
3502:BB-AK/1-12 12F/- SMOF FNPEHJ/STD <- (BA)
1xP32 SUBDUCTS (BA)
QK800416 (BA1)
3502:AK-BR/1-12 12F/- SMOF FNPEHJC/STD (BB)
OC[10mm] (BB)

**ROCKHAMPTON REGIONAL COUNCIL**

**APPROVED PLANS**

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**Development Permit No.: D/182-2023**

**Dated: 19 April 2024**

P100
3
27.3
8
30.0
N
W
E
S

ST
JOHN
LAWRIE
RUSSELL

AA C100 OC[23mm](AA)
66.7
8
AA A100 2xOC(AA)
6
27.4
AA 2xOC(AA) A100
5
57.0
AA 2xOC(AA) A100
5
55.0
WARNING ELECTRICITY
AA P50
4.5
8
2.1
80.4
71.0
0.6
1.9
AA BA P110
AA BA P100 c3:M1401-1600 200 CPIUT (AA)
c3:M1601-1700 100 CPFUT MBHJ (AA)

**P9 300/900**
~~c3:M1401-1700~~
860m
DA9
THIRD PARTY PIT & PIPE
TELSTRA IS NOT THE OWNER OF ALL PIT & PIPE WITHIN THIS DA AREA
REFER TO DEMLITE FOR CABLE SOLUTION
ENSURE DUCT ACQUISITION OR ACCESS CONTRACT EXECUTED PRIOR TO ANY CABLE INSTALL
GRAC DA806
PID 41973
CHILDCARE CENTRE
19/10/2016

8
39.5
28.0
C
AA P100 OC[14mm](AA)
8
53.0
2.1
2.0
0.6
1.7
82.1
0.6
AA BA c3:M1401-1600 200 CI
c3:M1601-1700 100 CI

Report Damage: https://service.telstra.com.au/customer/general/forms/report-damage-to-telstra-equipment
Ph - 13 22 03
Email - Telstra.Plans@team.telstra.com
Planned Services - ph 1800 653 935 (AEST bus hrs only) General Enquiries

TELSTRA LIMITED A.C.N. 086 174 781

Generated On 08/01/2024 14:05:13

Sequence Number: 233804646

CAUTION: Fibre optic and/ or major network present in plot area. Please read the Duty of Care and contact Telstra Plan Services should you require any assistance.

WARNING
Telstra plans and location information conform to Quality Level "D" of the Australian Standard AS 5488-Classification of Subsurface Utility Information.
As such,Telstra supplied location information is indicative only.Spatial accuracy is not applicable to Quality Level D.
Refer to AS 5488 for further details. The exact position of Telstra assets can only be validated by physically exposing it.
Telstra does not warrant or hold out that its plans are accurate and accepts no responsibility for any inaccuracy.
Further on site investigation is required to validate the exact location of Telstra plant prior to commencing construction work.
A Certified Locating Organisation is an essential part of the process to validate the exact location of Telstra assets and to ensure the asset is protected during construction works.

See the Steps- Telstra Duty of Care that was provided in the email response.

**ROCKHAMPTON REGIONAL COUNCIL**

**APPROVED PLANS**

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**Development Permit No.:** D/182-2023

**Dated:** 19 April 2024

MELIORA
CONSULTING ENGINEERS

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W: www.meliorace.com

**21 McLeod Street**
Herston
QLD 4006
Australia

# ZARRAFFA'S COFFEE GRACEMERE

## 6 LAWRIE STREET,
## GRACEMERE, QLD, 4702

# DEVELOPMENT APPLICATION

DRAWING REGISTER

| | |
|---|---|
| 2023051-DA-A000 | COVER SHEET |
| 2023051-DA-A110 | EXISTING SITE PLAN |
| 2023051-DA-A111 | EXISTING STREET VIEW ELEVATIONS |
| 2023051-DA-A120 | PROPOSED SITE PLAN |
| 2023051-DA-A180 | MRV SERVICE VEHICLE PATH PLAN |
| 2023051-DA-A220 | PROPOSED FLOOR PLAN |
| 2023051-DA-A300 | PROPOSED BUILDING ELEVATIONS SHEET 1 OF 2 |
| 2023051-DA-A301 | PROPOSED BUILDING ELEVATIONS SHEET 2 OF 2 |
| 2023051-DA-L100 | PROPOSED LANDSCAPE SITE PLAN |

**REAL PROPERTY DESCRIPTION**

LOT 604 ON R2642
PARISH OF GRACEMERE
COUNTY OF LIVINGSTONE
LGA: ROCKHAMPTON REGIONAL COUNCIL
SITE: 977.00 m²

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LOCALITY PLAN
SCALE NTS

NOT FOR CONSTRUCTION

DEVELOPMENT
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AMENDMENTS

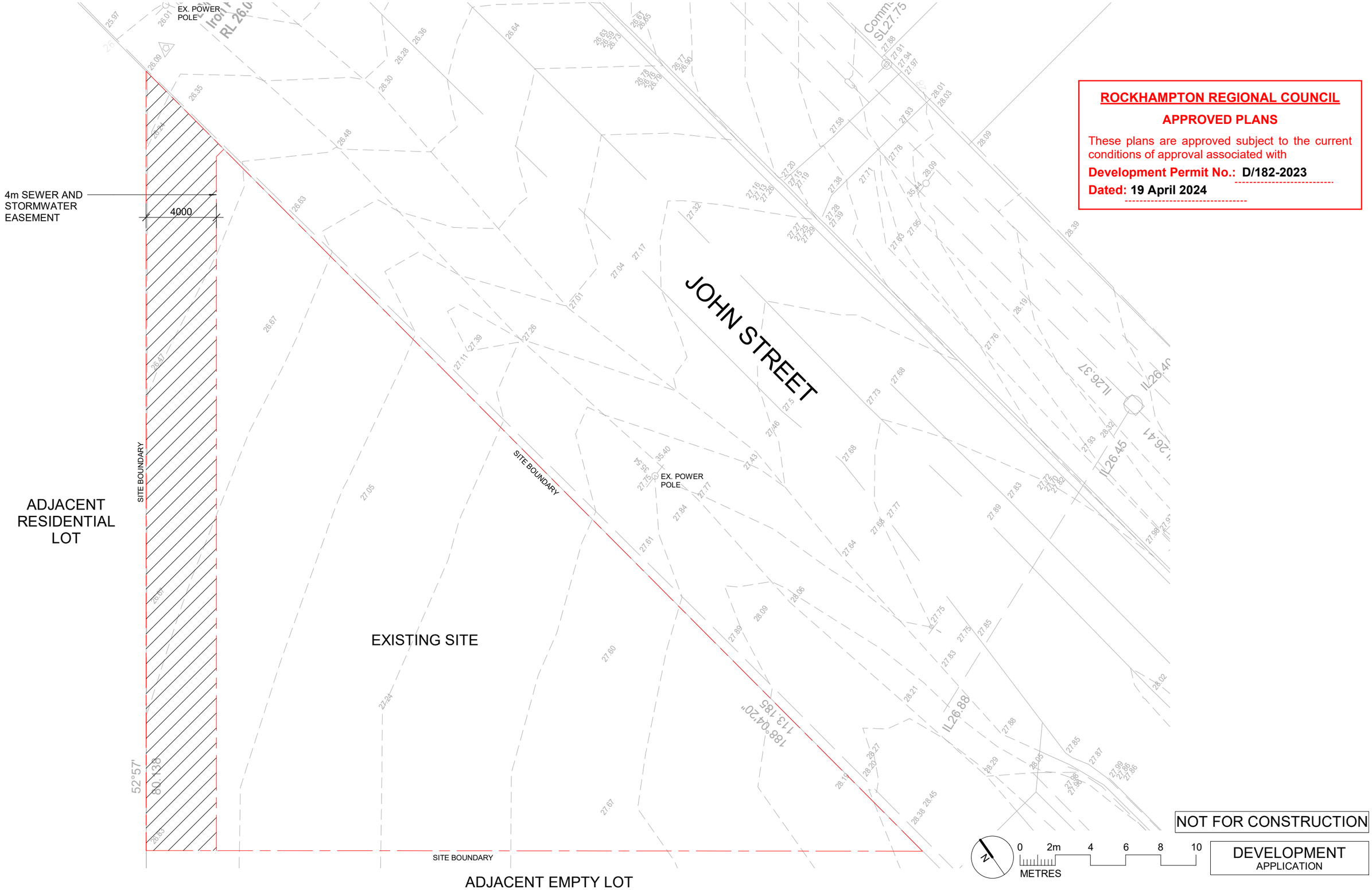
| REV | DATE | DESCRIPTION | BY |
|---|---|---|---|
| A | 21/11/23 | PRELIMINARY ISSUE | CMi |
| B | 01/12/23 | DEVELOPMENT APPROVAL | CMi |

CLIENT
GRACEMERE RETAIL PTY LTD (AS TRUSTEE) GRACEMERE RETAIL TRUST

PROJECT
ZARRAFFA'S COFFEE GRACEMERE
6 LAWRIE STREET,
GRACEMERE, QLD, 4702

TITLE
COVER SHEET

| | | |
|---|---|---|
| SCALE NTS | DRAWN CMi | DATE 17/11/23 |
| SIZE A3 | CHECKED | DATE |
| DRAWING NUMBER 2023051-DA-A000 | | REVISION B |

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PROJECT: ZARRAFFA'S COFFEE GRACEMERE
6 LAWRIE STREET, GRACEMERE, QLD, 4702

TITLE: EXISTING SITE PLAN

| SCALE | DRAWN | DATE |
|---|---|---|
| 1 : 200 | CMi | 17/11/23 |
| SIZE: A3 | CHECKED | DATE |
| DRAWING NUMBER: 2023051-DA-A110 | | REVISION: B |

1 EXISTING SITE LOOKING NORTH ALONG JOHN STREET
SCALE 1 : NTS

2 EXISTING SITE FROM JOHN STREET
SCALE 1 : NTS

3 EXISTING SITE LOOKING SOUTH ALONG JOHN STREET
SCALE 1 : NTS

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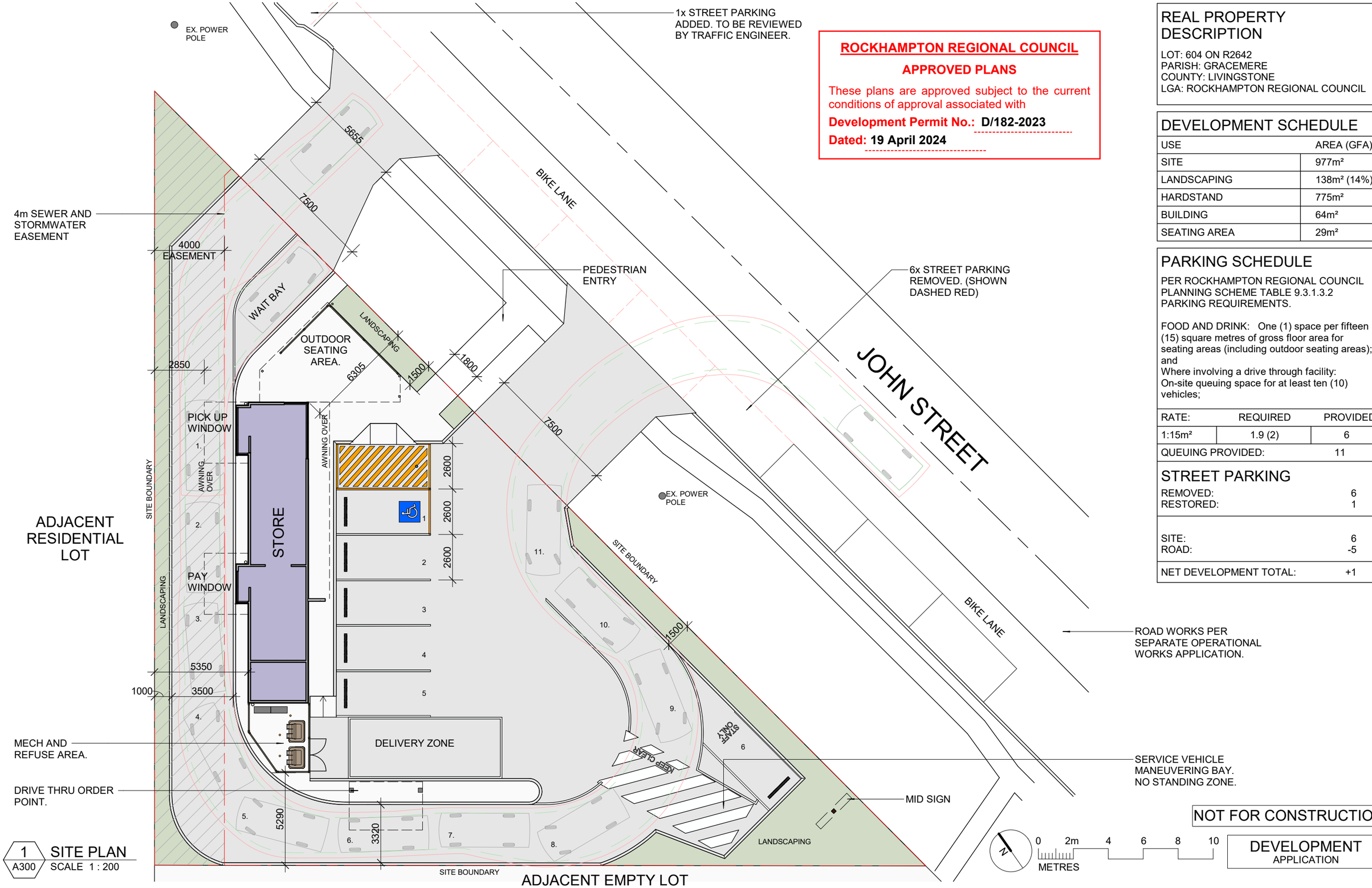
ZARRAFFA'S COFFEE GRACEMERE
6 LAWRIE STREET,
GRACEMERE, QLD, 4702

TITLE
EXISTING STREET VIEW ELEVATIONS

| SCALE | DRAWN | DATE |
|---|---|---|
| 1 : NTS | CMi | 17/11/23 |
| SIZE | CHECKED | DATE |
| A3 | | |
| DRAWING NUMBER | | REVISION |
| 2023051-DA-A111 | | B |

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## REAL PROPERTY DESCRIPTION

LOT: 604 ON R2642
PARISH: GRACEMERE
COUNTY: LIVINGSTONE
LGA: ROCKHAMPTON REGIONAL COUNCIL

## DEVELOPMENT SCHEDULE

| USE | AREA (GFA) |
|---|---|
| SITE | 977m² |
| LANDSCAPING | 138m² (14%) |
| HARDSTAND | 775m² |
| BUILDING | 64m² |
| SEATING AREA | 29m² |

## PARKING SCHEDULE

PER ROCKHAMPTON REGIONAL COUNCIL PLANNING SCHEME TABLE 9.3.1.3.2 PARKING REQUIREMENTS.

FOOD AND DRINK: One (1) space per fifteen (15) square metres of gross floor area for seating areas (including outdoor seating areas); and
Where involving a drive through facility:
On-site queuing space for at least ten (10) vehicles;

| RATE: | REQUIRED | PROVIDED |
|---|---|---|
| 1:15m² | 1.9 (2) | 6 |
| QUEUING PROVIDED: | | 11 |

## STREET PARKING

| | |
|---|---|
| REMOVED: | 6 |
| RESTORED: | 1 |
| SITE: | 6 |
| ROAD: | -5 |
| NET DEVELOPMENT TOTAL: | +1 |

1 A300 **SITE PLAN**
SCALE 1 : 200

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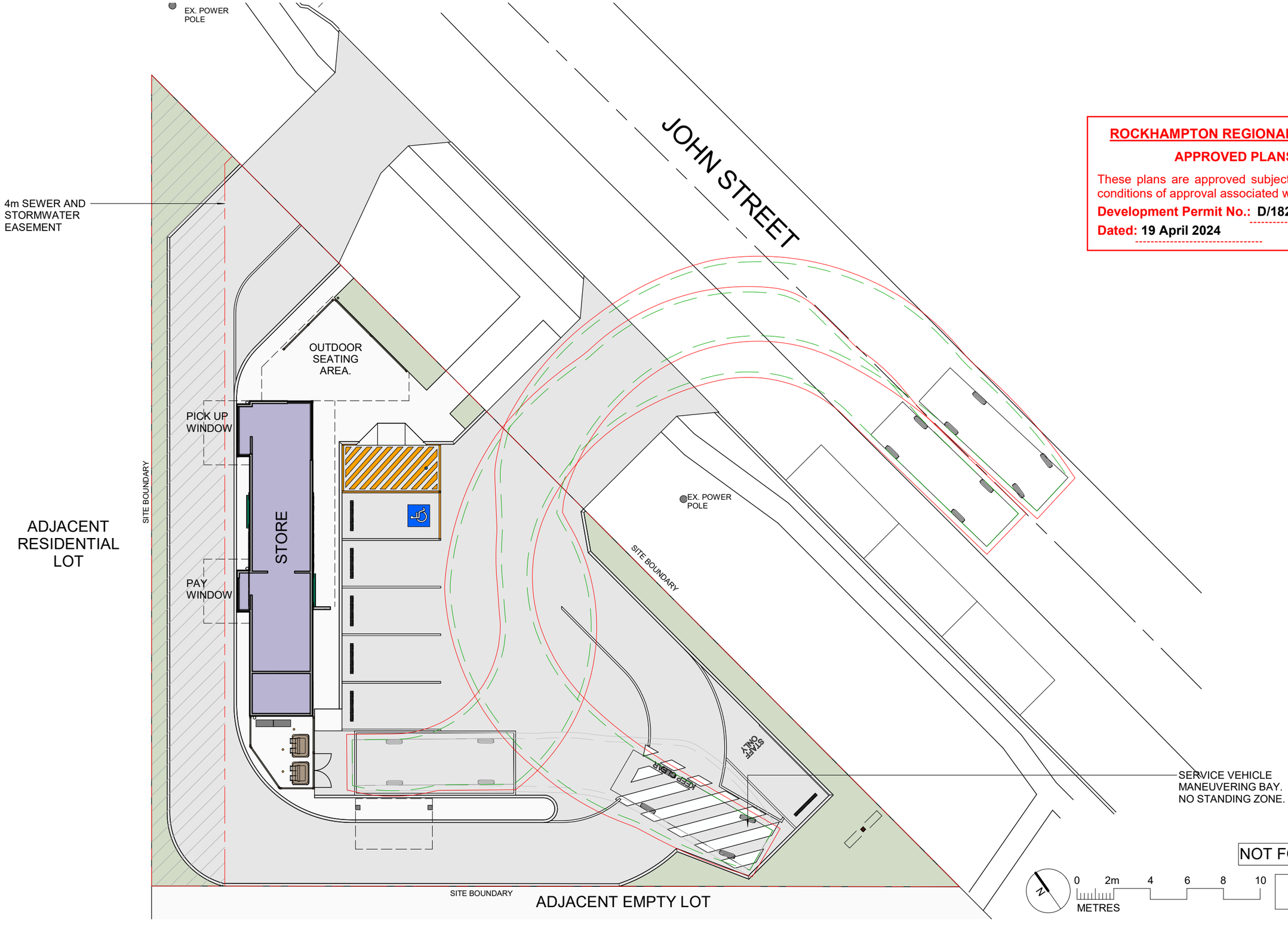
PROJECT
ZARRAFFA'S COFFEE GRACEMERE
6 LAWRIE STREET, GRACEMERE, QLD, 4702

TITLE
PROPOSED SITE PLAN

| SCALE | DRAWN | DATE |
|---|---|---|
| As indicated | CMi | 17/11/23 |
| SIZE | CHECKED | DATE |
| A3 | | |
| DRAWING NUMBER | | REVISION |
| 2023051-DA-A120 | | B |

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PROJECT
ZARRAFFA'S COFFEE GRACEMERE
6 LAWRIE STREET,
GRACEMERE, QLD, 4702

TITLE
MRV SERVICE VEHICLE PATH PLAN

| SCALE | DRAWN | DATE |
|---|---|---|
| 1 : 200 | CMi | 17/11/23 |
| SIZE A3 | CHECKED | DATE |
| DRAWING NUMBER | | REVISION |
| 2023051-DA-A180 | | B |

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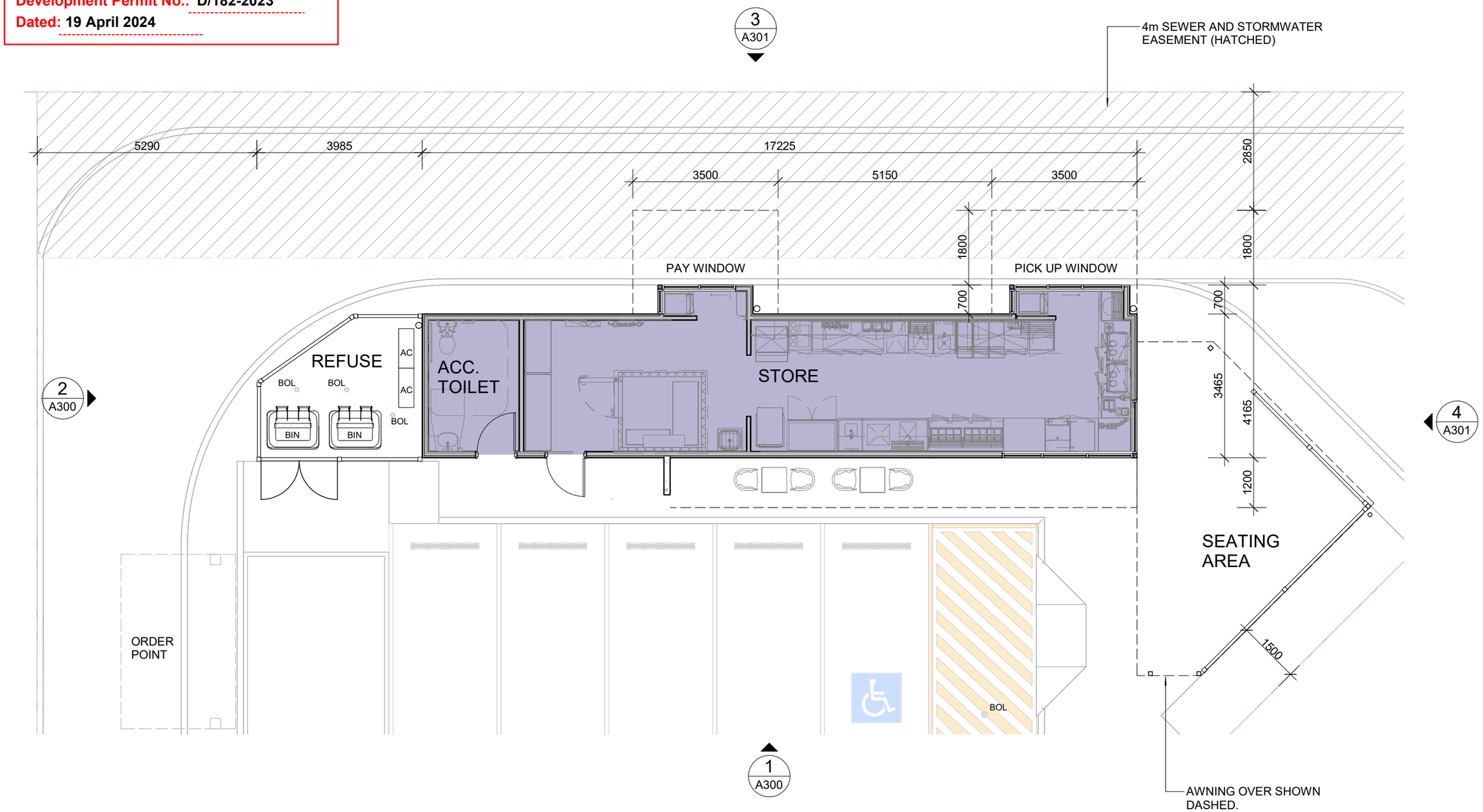


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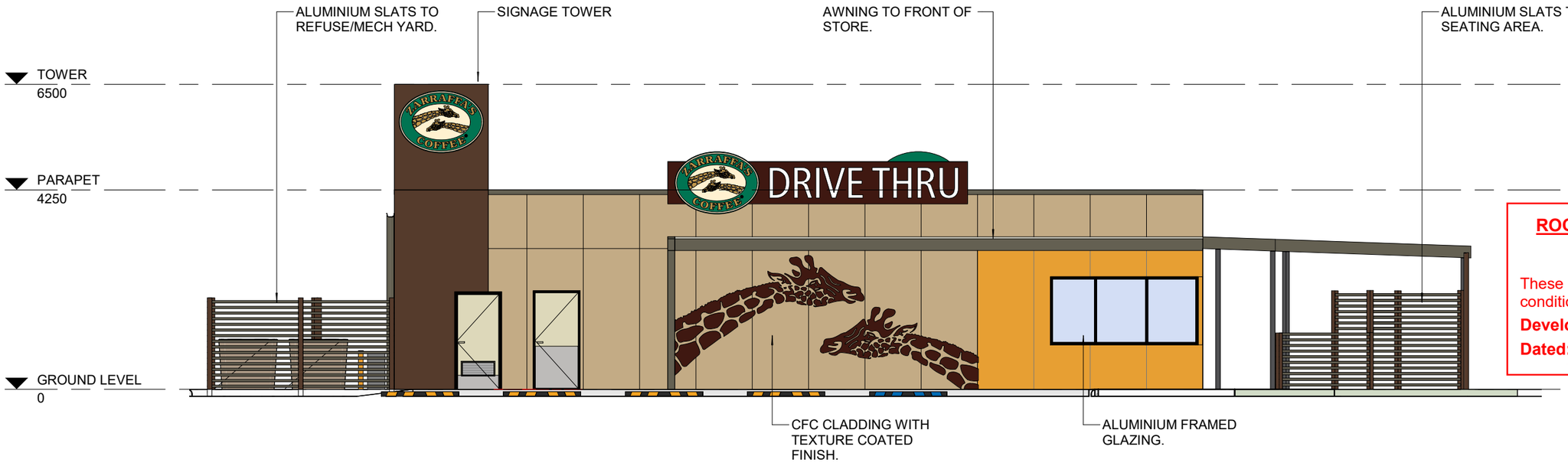
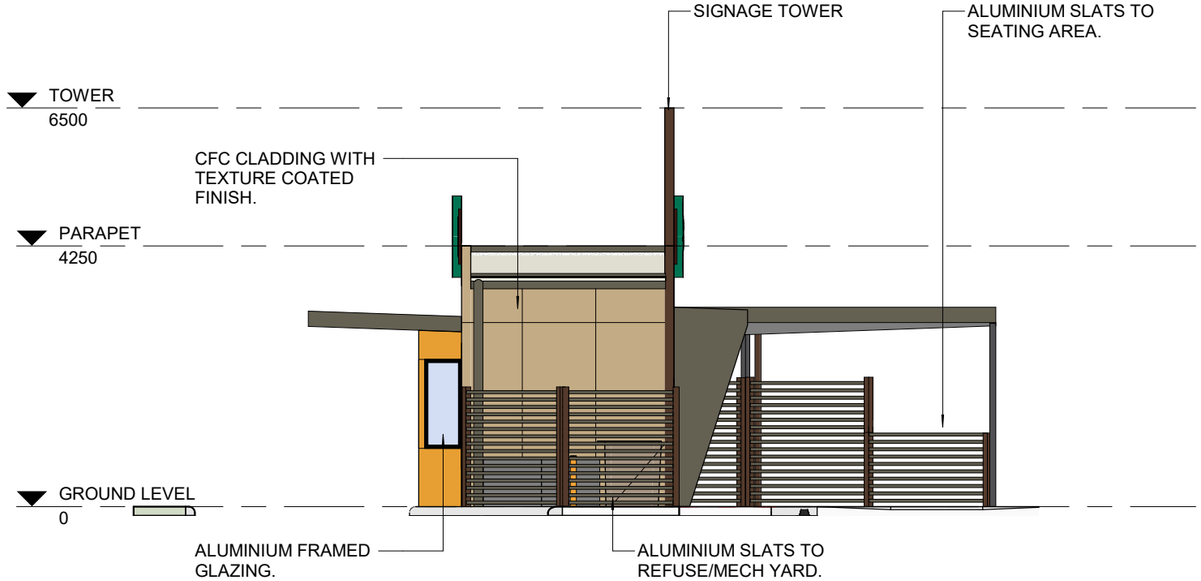
PROJECT: ZARRAFFA'S COFFEE GRACEMERE
6 LAWRIE STREET, GRACEMERE, QLD, 4702

TITLE: PROPOSED FLOOR PLAN

| SCALE | DRAWN | DATE |
|---|---|---|
| 1 : 100 | CMi | 17/11/23 |
| SIZE | CHECKED | DATE |
| A3 | | |
| DRAWING NUMBER | | REVISION |
| 2023051-DA-A220 | | B |




1 A220 EAST ELEVATION
SCALE 1 : 100




2 A220 SOUTH ELEVATION
SCALE 1 : 100

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## FINISHES

| | | |
|---|---|---|
| | DULUX GOLDEN OCHRE | EXTERNAL FEATURE WALLS |
| | DULUX JASPER | SLAT SCREENINGS, DOWNPIPES, AWNING FASCIAS |
| | DULUX OLD RUIN | EXTERNAL WALLS |
| | DULUX REAL BROWN | EXTERNAL WALLS, SEATING AREA COLUMNS. |
| | WATTYL WHEATLANDS | EXTERNAL DOORS, SOFFITS. |

NOT FOR CONSTRUCTION

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METRES

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PROJECT
ZARRAFFA'S COFFEE GRACEMERE
6 LAWRIE STREET, GRACEMERE, QLD, 4702

TITLE
PROPOSED BUILDING ELEVATIONS SHEET 1 OF 2

| SCALE | DRAWN | DATE |
|---|---|---|
| 1 : 100 | CMi | 17/11/23 |
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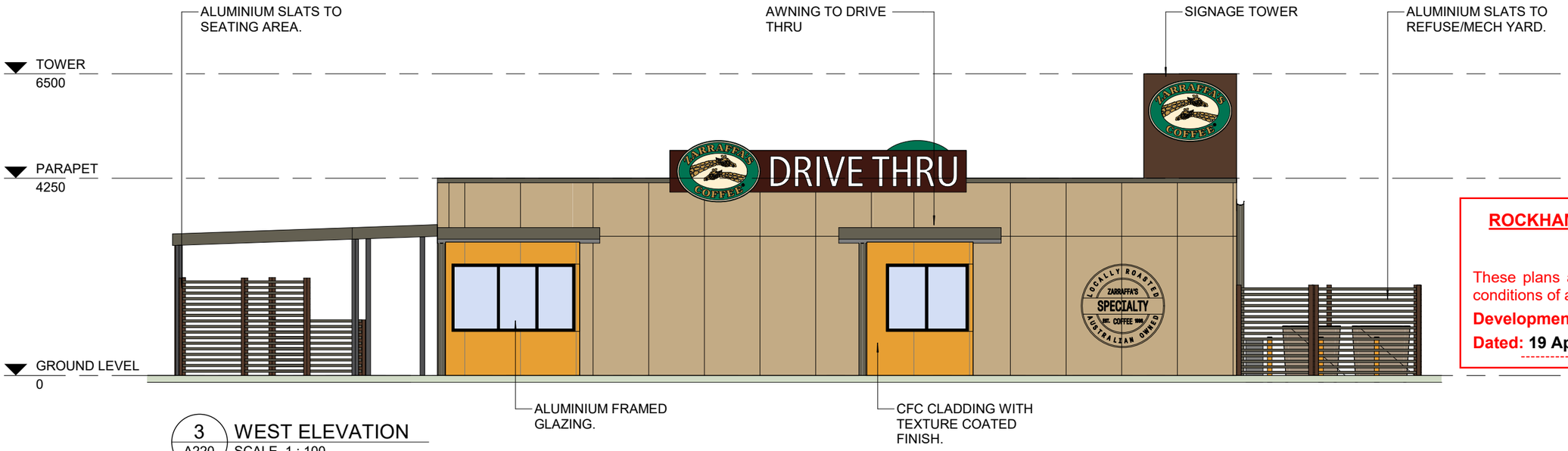
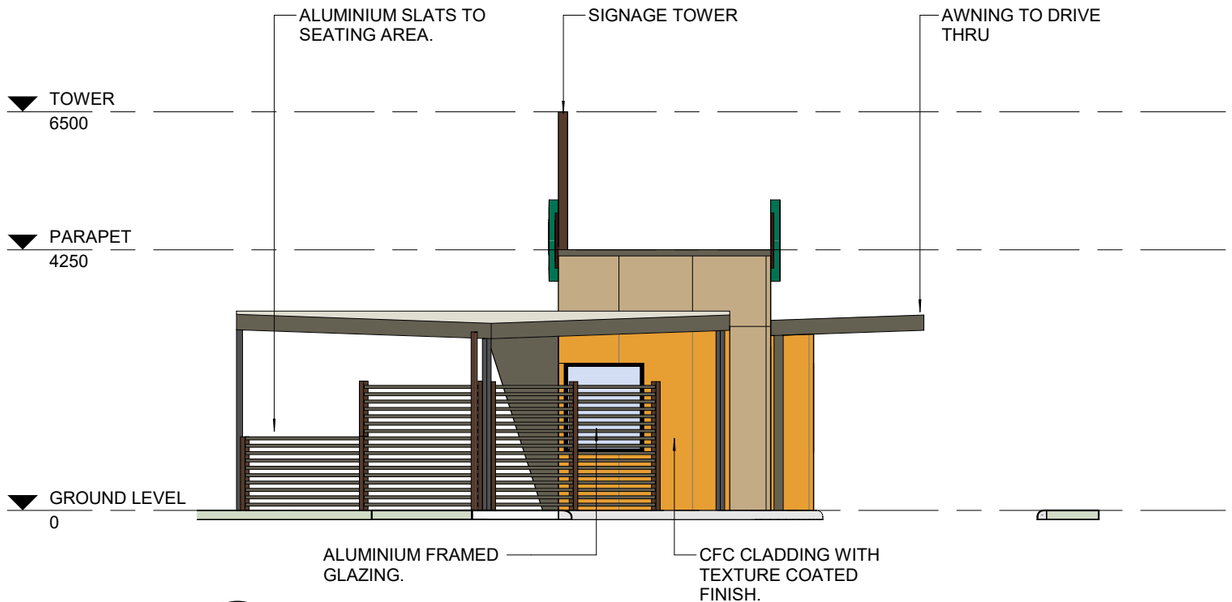
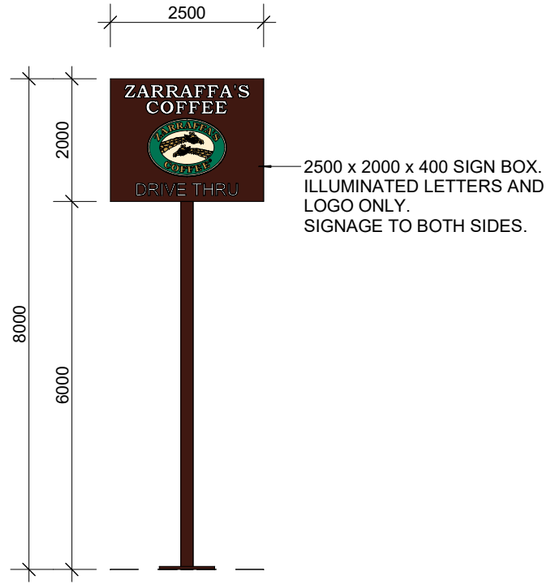



3 A220 WEST ELEVATION
SCALE 1 : 100




4 A220 NORTH ELEVATION
SCALE 1 : 100




6 A240 MID SIGN ELEVATION
SCALE 1 : 100

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| | DULUX JASPER | SLAT SCREENINGS, DOWNPIPES, AWNING FASCIAS |
| | DULUX OLD RUIN | EXTERNAL WALLS |
| | DULUX REAL BROWN | EXTERNAL WALLS, SEATING AREA COLUMNS. |
| | WATTYL WHEATLANDS | EXTERNAL DOORS, SOFFITS. |

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TITLE
PROPOSED BUILDING ELEVATIONS SHEET 2 OF 2

| SCALE | DRAWN | DATE |
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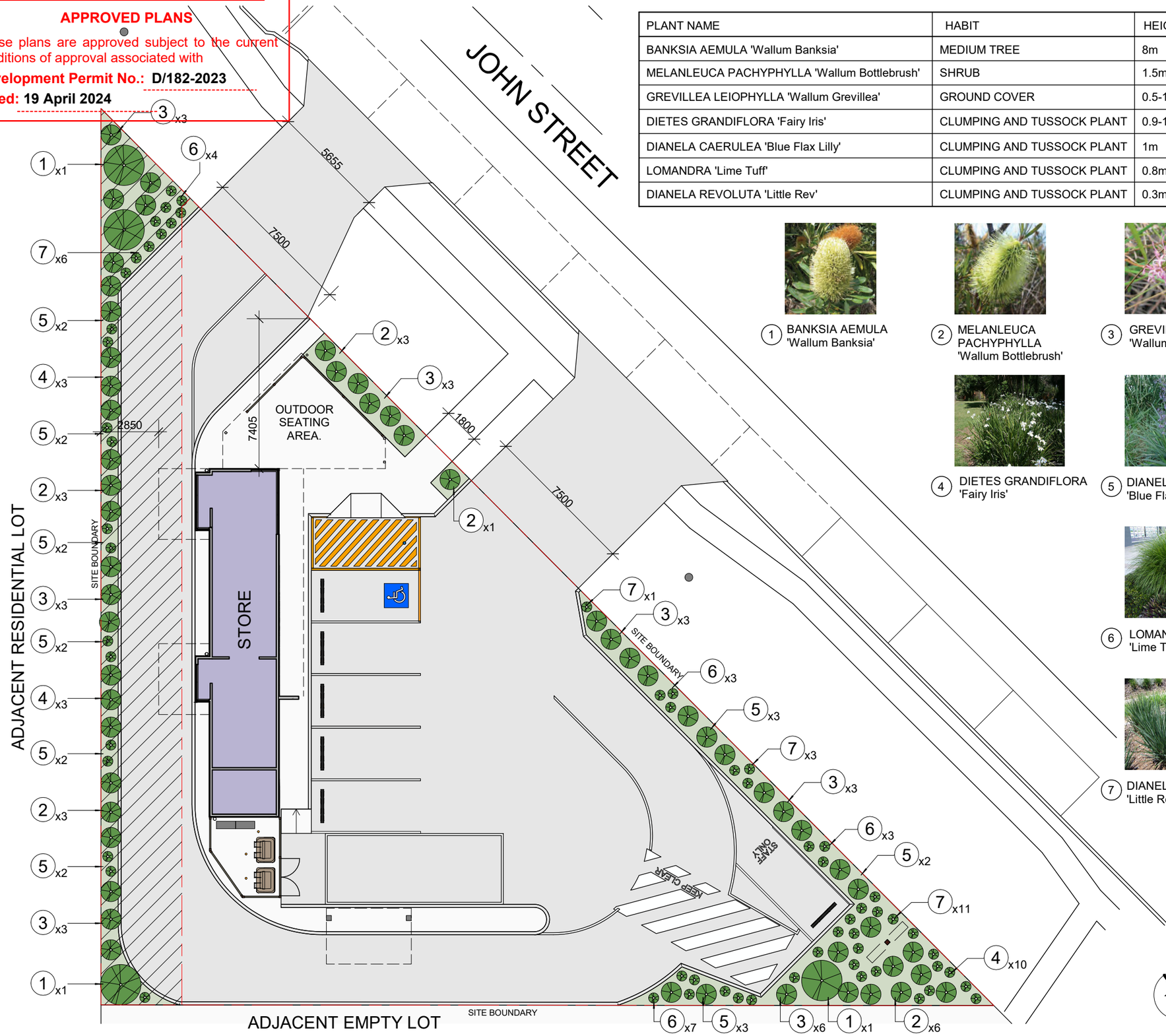


| PLANT NAME | HABIT | HEIGHT | WIDTH |
|---|---|---|---|
| BANKSIA AEMULA 'Wallum Banksia' | MEDIUM TREE | 8m | 3-4m |
| MELANLEUCA PACHYPHYLLA 'Wallum Bottlebrush' | SHRUB | 1.5m | 1-2m |
| GREVILLEA LEIOPHYLLA 'Wallum Grevillea' | GROUND COVER | 0.5-1m | 1-2m |
| DIETES GRANDIFLORA 'Fairy Iris' | CLUMPING AND TUSSOCK PLANT | 0.9-1.2m | 0.3-0.6m |
| DIANELA CAERULEA 'Blue Flax Lilly' | CLUMPING AND TUSSOCK PLANT | 1m | 0.5m |
| LOMANDRA 'Lime Tuff' | CLUMPING AND TUSSOCK PLANT | 0.8m | 0.5m |
| DIANELA REVOLUTA 'Little Rev' | CLUMPING AND TUSSOCK PLANT | 0.3m | 0.3m |



1 BANKSIA AEMULA 'Wallum Banksia'



2 MELANLEUCA PACHYPHYLLA 'Wallum Bottlebrush'

3 GREVILLEA LEIOPHYLLA 'Wallum Grevillea'



4 DIETES GRANDIFLORA 'Fairy Iris'

5 DIANELA CAERULEA 'Blue Flax Lilly'

6 LOMANDRA 'Lime Tuff'

7 DIANELA REVOLUTA 'Little Rev'

## LANDSCAPE NOTES

**FALLS & DRAINAGE**
- PROVIDE FALLS TO ALL LANDSCAPE AREAS. FALL TO DRAINS AS INDICATED AND AWAY FROM BUILDING AND NEIGHBORING PROPERTIES, PONDING IS NOT ACCEPTABLE AND NOTIFY IF ADDITIONAL DRAINAGE MAY BE REQUIRED.
- MIN CROSSFALL TO PLANTING AREAS IS 1:40
- MIN CROSSFALL TO PAVED AREAS TO BE 1:100

**GARDEN EDGING**
- PROVIDE EDGING CONCRETE EDGING TO ALL LANDSCAPE AREAS AND ADJOINING CARPARK AND TURFED AREAS.

**PLANTING BEDS**
- REFER TO LANDSCAPE PLANS AND SCHEDULE FOR PLANTING AREAS AND SPECIES.
- CULTIVATE ALL PLANTING BEDS TO MIN 150mm DEEP.
- MULCH AND SOIL TO MEET AS4454 AND AS4419 AND ENSURE SOIL MEDIA IS AMELIORATED TO INCREASE WATER HOLDING CAPACITIES.
- APPLY GYPSUM TO THE SUB GRADE AT A RATE OF 100 GRAMS/m2.
- APPLY BLOOD AND BONE TO THE SUB GRADE AT A RATE OF 100 GRAMS/m2.
- SPREAD A MIN DEPTH OF 350mm OF IMPORTED ORGANIC WEED FREE SOIL MIX TO GARDEN BEDS DIRECTLY AFTER CULTIVATION WORKS.
- CROWN BEDS IN THE CENTRE.
- POSITION PLANTS GENERALLY IN ACCORDANCE WITH THE LANDSCAPE PLAN.
- MULCH GARDEN BEDS TO 100mm USING QUALITY TEA TREE MULCH.
- WATER PLANTING BEDS.
- FERTILISE WITH A LONG TERM SLOW RELEASE FERTILISER.

**LEVELS**
- ALL SURFACES ABUTTING BUILDINGS TO BE A MIN 75mm BELOW WEEPHOLES.

**ROCKS/PEBBLES**
- ALL GARDEN BEDS AGAINST A BUILDING SHALL BE SEPARATED BY A MIN 150mm STRIP OF PEBBLES.
- ALL PEBBLES AREAS TO HAVE WEED MATTING INSTALLED UNDER. BIORETENTION BASIN TO PLANTED WITH GROUND COVERS AT A DENSITY OF 4/m² AS PER THE WSUD TECHNICAL DESIGN GUIDELINES.
- ANY TREES IN BIORETENTION BASIN TO BE MOUNDED LOCALLY TO 800mm MINIMUM.

**SERVICES**
- LANDSCAPE CONTRACTOR TO LIAISE WITH SITE PROJECT MANAGER/SUPERVISOR TO DETERMINE LOCATION OF ALL AS CONSTRUCTED SERVICES PRIOR TO COMMENCING WORKS.

**ESTABLISHMENT & MAINTENANCE**
- 12 WEEK ESTABLISHMENT PERIOD TO ALL TURF AND PLANTING AREAS COMMENCING FROM BUILDERS PRACTICAL COMPLETION DATE.
- REFER TO LOCAL AUTHORITY REQUIREMENTS IN RELATION TO WATER USAGE RESTRICTIONS TO ENSURE WATER REGIME IS NOT IN BREACH.
- WATER TWICE WEEKLY FOR FIRST 3 WEEKS AND ONCE WEEKLY THEREAFTER.

N

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METRES

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PROJECT: ZARRAFFA'S COFFEE GRACEMERE
6 LAWRIE STREET, GRACEMERE, QLD, 4702

TITLE: PROPOSED LANDSCAPE SITE PLAN

| SCALE | DRAWN | DATE |
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| 1 : 200 | CMi | 17/11/23 |
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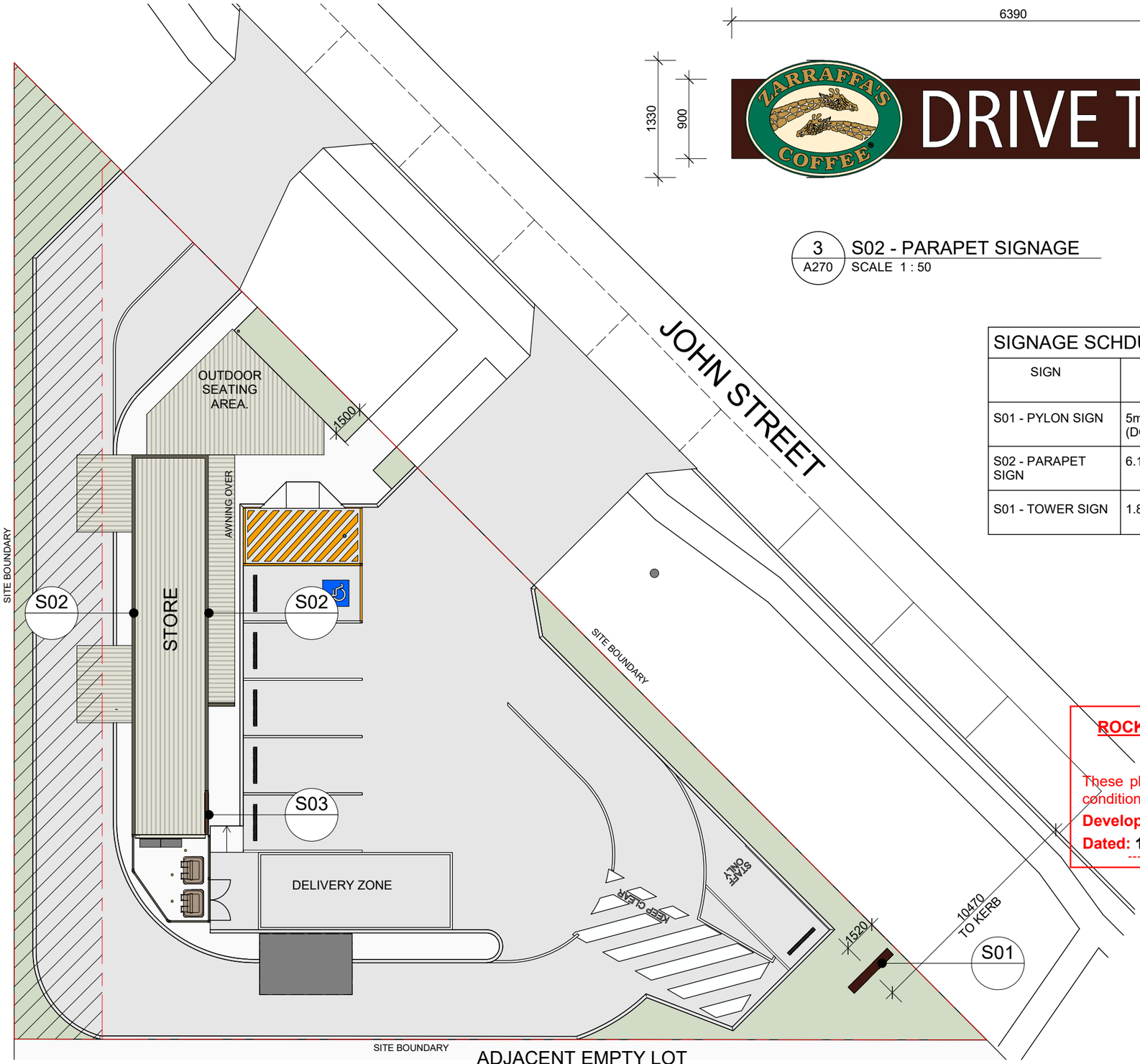
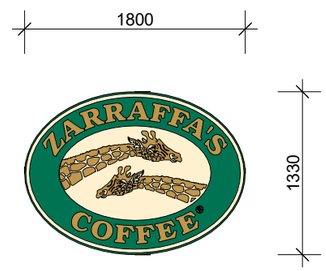



1 A300 SITE PLAN - SIGNAGE
SCALE 1 : 200

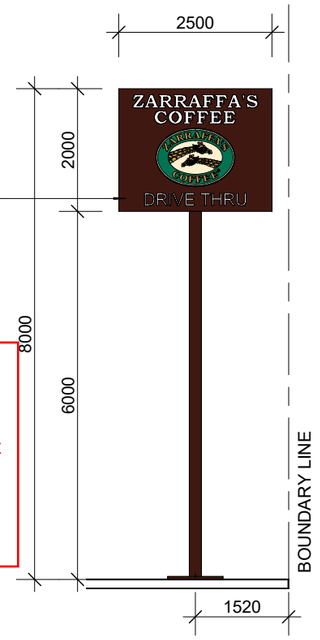

3 A270 S02 - PARAPET SIGNAGE
SCALE 1 : 50




4 A270 S03 - TOWER SIGNAGE
SCALE 1 : 50

| SIGNAGE SCHDULE | | |
|---|---|---|
| SIGN | FACE AREA (m²) | HEIGHT FROM GROUND. |
| S01 - PYLON SIGN | 5m² x2 (DOUBLE SIDED) | 8.0m |
| S02 - PARAPET SIGN | 6.15m² | 5.2m |
| S01 - TOWER SIGN | 1.8m² | 6.5m |

2500 x 2000 x 400 SIGN BOX.
ILLUMINATED LETTERS AND LOGO ONLY.
SIGNAGE TO BOTH SIDES.




2 A240 S01 - MID SIGN
SCALE 1 : 100

**ROCKHAMPTON REGIONAL COUNCIL**

**APPROVED PLANS**

These plans are approved subject to the current conditions of approval associated with

**Development Permit No.:** D/182-2023

**Dated:** 19 April 2024

NOT FOR CONSTRUCTION

N

0 0.25m 0.50 0.75 1.0 1.25
METRES

DEVELOPMENT APPLICATION

inTOTUM®
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W: www.intotum.com.au QBCC Lic: 1247034



AMENDMENTS

| REV | DATE | DESCRIPTION | BY |
|---|---|---|---|
| A | 22/01/24 | COUNCIL RFI | CMi |

CLIENT
GRACEMERE RETAIL PTY LTD (AS TRUSTEE) GRACEMERE RETAIL TRUST

PROJECT
ZARRAFFA'S COFFEE GRACEMERE
6 LAWRIE STREET,
GRACEMERE, QLD, 4702

TITLE
SIGNAGE DETAILS

| SCALE | DRAWN | DATE |
|---|---|---|
| As indicated | CMi | 17/11/23 |
| SIZE A3 | CHECKED | DATE |
| DRAWING NUMBER 2023051-DA-S100 | | REVISION A |