

ROCKHAMPTON REGIONAL COUNCIL

APPROVED PLANS

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

Development Permit No.: D/168-2022

Dated: 14 September 2023

project:
**PROPOSED WORK FOR
71 FOSTER ST, GRACEMERE**

client:
**NATIONWIDE MACHINERY
SALES & HIRE**

design*tek* p 0749 222880
building design - documentation

Shop 5/10 Denham St
Rockhampton
QLD, 4700

QBCC MEM. NO # 1123040
BDAQ MEM. NO # 0000761

title:
PROPOSED SITE PLAN

scale:
1 : 1000

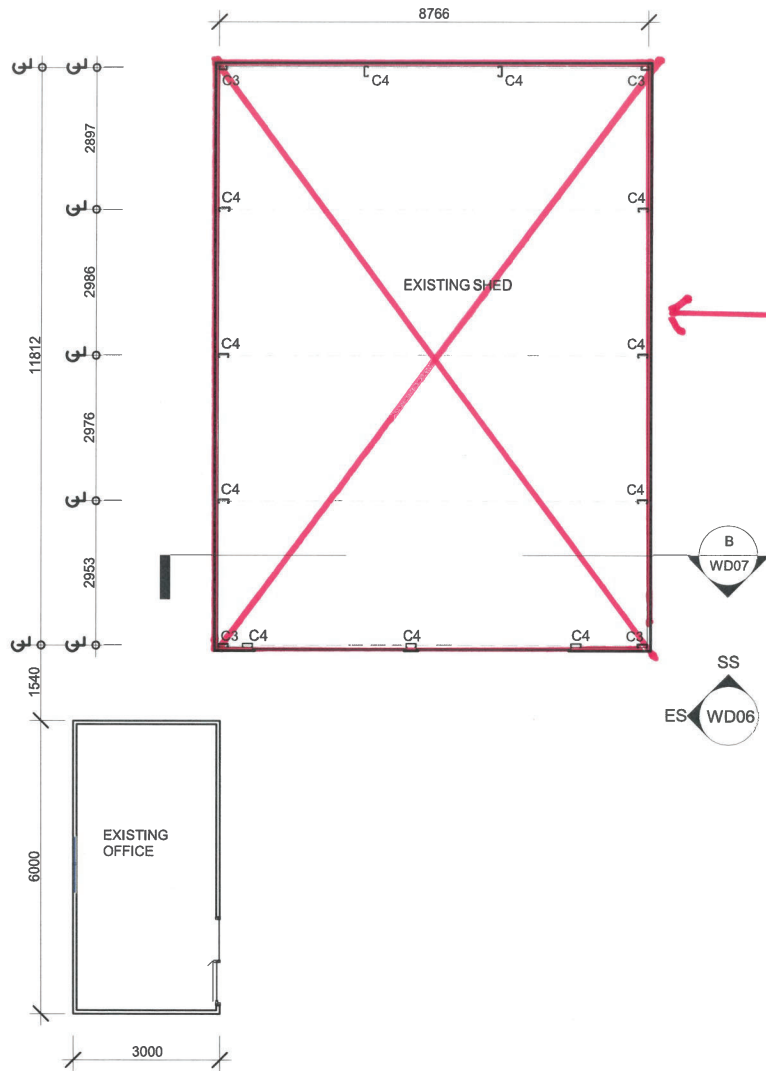
sheet no:
8 of 10

drawn: **AG**

project no:
2302-03

drawing no: **WD08**
rev: **A**

07/06/23 9:45:51 AM



← NOT APPROVED

ROCKHAMPTON REGIONAL COUNCIL

APPROVED PLANS

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

Development Permit No.: D/168-2022

Dated: 14 September 2023

LEGEND

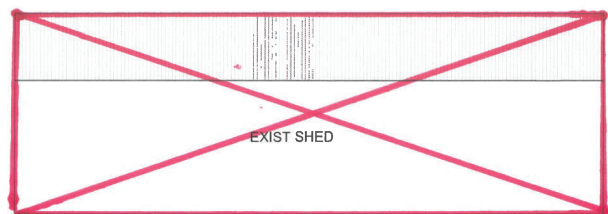
| | |
|-----|---------------------|
| C1 | 75 x 75 SHS COLUMNS |
| C2 | 100 x 95 HW COLUMN |
| C3 | 150 C PORTAL |
| C4 | 200 C PORTAL |
| RB1 | 150 C PURLIN BEAM |

EXIST SHED FLOOR PLAN

1 : 100



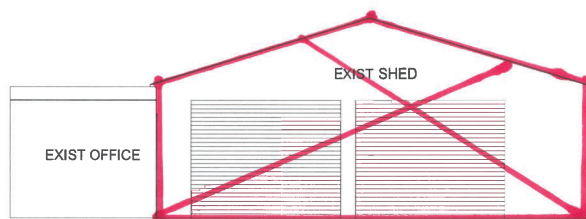
| | | | | | | |
|--|--|-----------------------------------|-------------------------------|--|--|---------------------|
| project: PROPOSED WORK FOR 71 FOSTER ST, GRACEMERE |  Shop 5/10 Denham St Rockhampton QLD, 4700 p 0749 222880 building design - documentation | title: EXIST SHED PLANS | | | | 07/06/23 9:45:50 AM |
| | | scale: 1 : 100 | project no: 2302-03 | | | |
| client: NATIONWIDE MACHINERY SALES & HIRE |  QBCC MEM. NO # 1123040  BDAQ MEM. NO # 0000761 | sheet no: 4 of 10 | drawing no: | | | |
| | | drawn: AG | WD04 | | | |
| | | rev: A | | | | |



← NOT APPROVED

EAST - SHED

1 : 100



← NOT APPROVED

SOUTH - SHED

1 : 100

ROCKHAMPTON REGIONAL COUNCIL

APPROVED PLANS

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

Development Permit No.: D/168-2022

Dated: 14 September 2023

project:
**PROPOSED WORK FOR
71 FOSTER ST, GRACEMERE**

client:
**NATIONWIDE MACHINERY
SALES & HIRE**



title:
ELEVATION - SHED

scale: 1 : 100

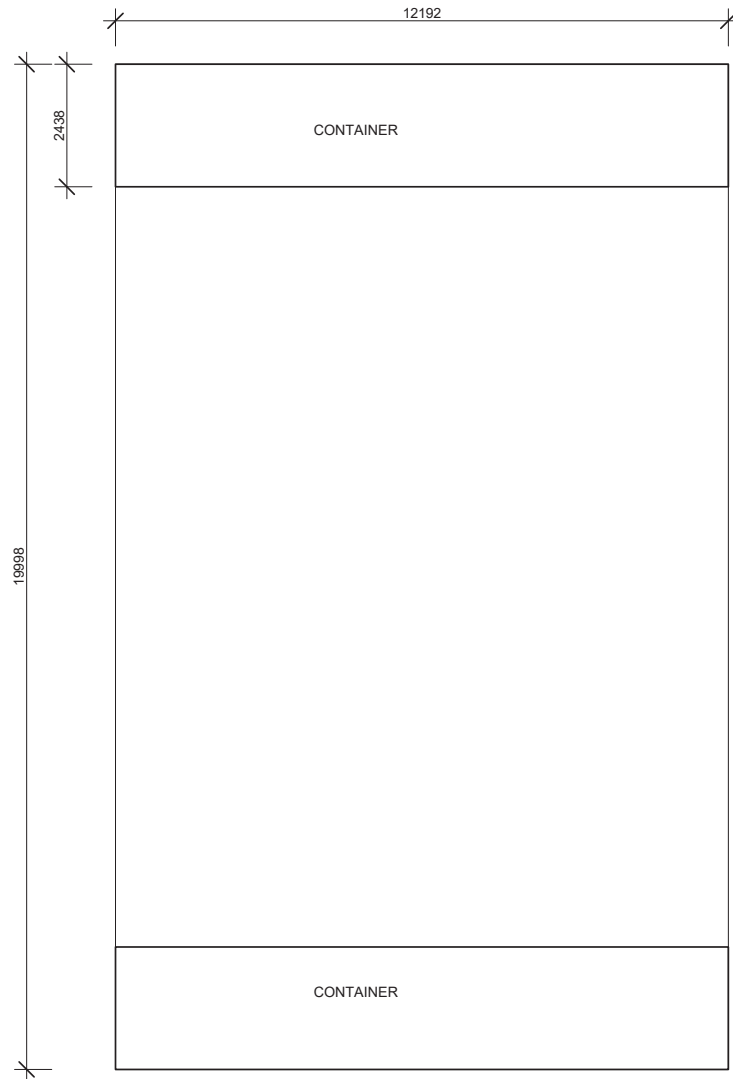
sheet no:
6 of 10

drawn: AG

project no:
2302-03

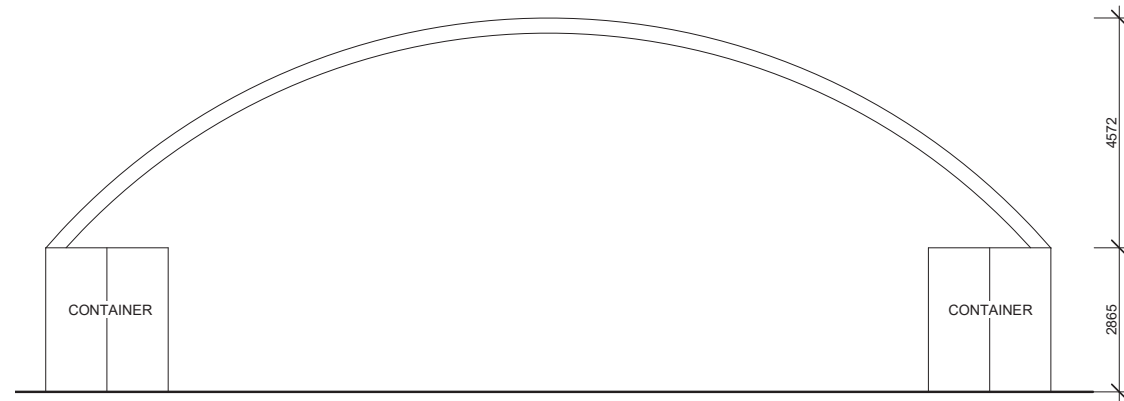
drawing no: WD06
rev: A

07/06/23 9:45:50 AM



PROPOSED FLOOR PLAN - MECHANICS IGLOO

1 : 100



ELEVATION - MECHANICS IGLOO

1 : 100

ROCKHAMPTON REGIONAL COUNCIL

APPROVED PLANS

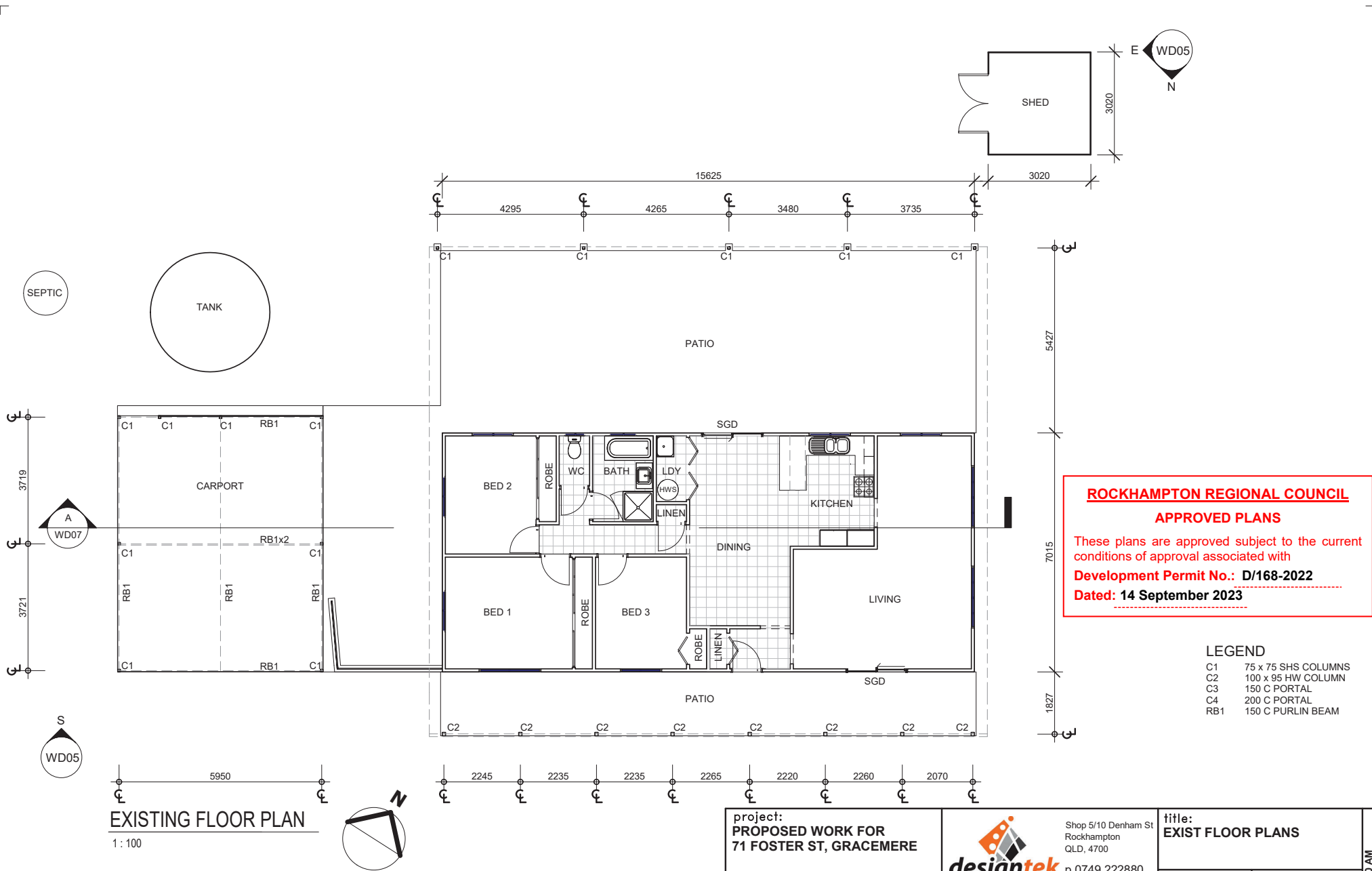
These plans are approved subject to the current conditions of approval associated with

Development Permit No.: D/168-2022

Dated: 14 September 2023

| | | | | |
|---|---|--|---|--|
| project: PROPOSED WORK FOR 71 FOSTER ST, GRACEMERE |  Shop 5/10 Denham St Rockhampton QLD, 4700 p 0749 222880 building design - documentation | | title: IGLOO LAYOUT | |
| client: NATIONWIDE MACHINERY SALES & HIRE |  QBCC MEM. NO # 1123040 BDAQ MEM. NO # 0000761 | | scale: 1 : 100 sheet no: 9 of 10 drawn: AG | project no: 2302-03 drawing no: WD09 rev: A |

07/06/23 9:45:51 AM



ROCKHAMPTON REGIONAL COUNCIL

APPROVED PLANS

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

Development Permit No.: D/168-2022

Dated: 14 September 2023

project:
**PROPOSED WORK FOR
71 FOSTER ST, GRACEMERE**

client:
**NATIONWIDE MACHINERY
SALES & HIRE**

designtek
Shop 5/10 Denham St
Rockhampton
QLD, 4700
p 0749 222880

building design - documentation

QBCC MEM. NO # 1123040
BDAQ MEM. NO # 0000761

title:
EXIST FLOOR PLANS

scale: 1 : 100

sheet no:
3 of 10

drawn: AG

project no:
2302-03

drawing no: rev:
WD03 A

07/06/23 9:45:50 AM



Premise

NATIONWIDE MACHINERY SALES & HIRE

71 Foster Street, Gracemere

SITE BASED STORMWATER MANAGEMENT PLAN

Report No: MIS1076/R02

Rev: B

9 June 2023

ROCKHAMPTON REGIONAL COUNCIL

APPROVED PLANS


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

Development Permit No.: D/168-2022

Dated: 14 September 2023

© Premise 2023

This report has been prepared by Premise Australia for Nationwide Machinery Sales & Hire; may only be used and relied on by Nationwide Machinery Sales & Hire; must not be copied to, used by, or relied on by any persons other than Nationwide Machinery Sales & Hire without the prior written consent of Premise. If Nationwide Machinery Sales & Hire wishes to provide this Report to a third party recipient to use and rely upon, the recipient agrees: to acknowledge that the basis on which this Report may be relied upon is consistent with the principles in this section of the Report; and to the maximum extent permitted by law, Premise shall not have, and the recipient forever releases Premise from, any liability to recipient for loss or damage howsoever in connection with, arising from or in the respect of this Report whether such liability arises in contract, tort including negligence.

| DOCUMENT AUTHORISATION | | | | | |
|------------------------|---------------|---------------------------------------|---------|---------------|---|
| Revision | Revision Date | Report Details | | | |
| A | 31/03/23 | Site Based Stormwater Management Plan | | | |
| B | 09/06/23 | Response to Information Request | | | |
| | | | | | |
| Prepared By | Initial | Reviewed By | Initial | Authorised By | Signature |
| Lewis Hamilton | LH | Chris Shields | | Jeremy Cox |  |

CONTENTS

| | |
|--|-----------|
| 1. INTRODUCTION | 1 |
| 2. DATA | 2 |
| 3. SITE CHARACTERISTICS | 2 |
| 3.1 SITE AREA AND LAND USE | 2 |
| 3.2 EXISTING DRAINAGE AND TOPOGRAPHY | 2 |
| 3.3 PROPOSED DEVELOPMENT | 2 |
| 3.4 PROPOSED DRAINAGE | 3 |
| 4. STORMWATER QUANTITY MANAGEMENT | 4 |
| 4.1 HYDROLOGIC ASSESSMENT | 4 |
| 4.2 IMPACT ANALYSIS | 7 |
| 4.3 MANAGEMENT OF RUNOFF | 7 |
| 5. STORMWATER QUALITY | 9 |
| 5.1 CONSTRUCTION PHASE | 9 |
| 5.2 NORMAL OPERATIONS | 10 |
| 6. CONCLUSION | 11 |
| 7. QUALIFICATIONS | 11 |
| 8. RPEQ CERTIFICATION | 11 |
| 9. REFERENCES | 12 |

FIGURES

| | |
|--|---|
| Figure 1: Aerial Imagery of the site (Source: Nearmap, Google, QGIS) | 1 |
| Figure 2: Proposed Development Layout | 3 |

TABLES

| | |
|--|---|
| Table 1: Summary of Sub-Catchment Characteristics..... | 5 |
| Table 2: Ensemble Temporal Pattern Selection for Hydraulic Model Inflows | 6 |
| Table 3: Peak Discharge Comparison – Whole Catchment - Rational vs. WBNM | 6 |
| Table 4: Peak Stormwater Discharges Summary..... | 7 |
| Table 5. Detention Characteristics | 7 |
| Table 6. Basin Stage-Storage-Discharge Relationship..... | 8 |
| Table 7: Peak Discharge Comparison – Mitigated Site..... | 8 |
| Table 8: Typical Construction Phase Pollutants | 9 |

APPENDICES

| |
|--|
| APPENDIX A PROPOSED SITE LAYOUT AND CONCEPT STORMWATER MANAGEMENT PLAN |
| APPENDIX B CATCHMENT AND FLOW REGIME |
| APPENDIX C CALCULATIONS AND MODEL DATA |

1. INTRODUCTION

Premise Australia Pty Ltd (here within referred to as "Premise") has been commissioned by Nationwide Machinery Sales & Hire to prepare a Site Based Stormwater Management Plan (SBSMP) in support of a proposed development at 71 Foster Street, Gracemere (Lot 28 on RP604012).

This Site Based Stormwater Management Report discusses the potential impacts the proposed development will have on stormwater in its operational phase and puts forth a plan for averting poor outcomes with respect to quantity and pollutant loading external to the site.

This report has been developed to address the below planning framework:

- Rockhampton Region Planning Scheme (RRPS) (2015) - Version 2.2;
- Planning Act 2016 and the associated State Planning Policy (SPP, DILGP, 2017); and
- Environmental Protection Act 1994, Environmental Protection (Water) Policy 2009 (EP water).

The assessment has been undertaken following best practice guidelines recommended within

- Rockhampton Regional Planning scheme policy:
 - SC6.18 Stormwater management planning scheme policy
- Capricorn Municipal Development Guidelines;
- Queensland Urban Drainage Manual (IPWEA, 2017); and
- Australian Rainfall and Runoff: A Guide to Flood Estimation (Babister et al, 2019) (ARR19)

Refer to **Figure 1** below for an aerial image of the site and its locality.



Figure 1: Aerial Imagery of the site (Source: Nearmap, Google, QGIS)

2. DATA

In the preparation of this report, information about the site was gathered from the following sources:

- Aerial LiDAR data by Department of Natural Resources and Mines (DNRM);
- Proposed development site plan provided by Designtek;
- Design inputs for hydrologic and hydraulic modelling from the Australian Rainfall and Runoff Data Hub;
- Rainfall and Meteorological data by the Australian Bureau of Meteorology; and
- Aerial Imagery and map data from Queensland Globe, Google and Nearmap (Accessed January 2023)

3. SITE CHARACTERISTICS

3.1 Site Area and Land Use

The subject site has an area of 1.13 hectares and has a road frontage to Foster Street of approximately 80 metres. The southern portion of the site contains a single residential dwelling, shed and ancillary structures, with gravel manoeuvring area, and plant and equipment storage. The site is currently zoned Medium Impact Industry in the RRPS, and is located in a narrow band of Medium Impact Industry which forms a buffer between High Impact Industry to the east and Rural land to the west.

3.2 Existing Drainage and Topography

There is no formal existing underground stormwater infrastructure within the site. The majority of roof water from structures is discharged directly to the surface, following the existing topography and flows overland to the surrounding properties as sheet flow. The southern portion of the site discharges over the western boundary to 63 Foster Street (Lot 27 on RP604012), the north-western portion discharges to 12 Cedar Street (Lot 26 on RP6040120) and 117 Somerset Road (Lot 1 on RP602365), and the north-eastern portion discharges to 77 Foster Street (Lot 29 on RP604012) and 117 Somerset Road (Lot 2 on RP602365). All runoff converges within the Somerset Road and Capricorn Highway road corridors where it is conveyed to the north via culvert crossings, and eventually ends up in the Fitzroy River. Runoff from a minor external catchment to the south-east is conveyed through the site as sheet flow. Refer to **Appendix B** for the existing drainage regime.

Based on the LiDAR data obtained from DNRM, the gradient across the site is generally flat with an approximate slope of 1%-5%. Elevations range from 22.3 m AHD (north-western corner of the site) to 28.4 m AHD (south-eastern corner of the site).

3.3 Proposed Development

The proposed development consists of a mechanics workshop, washdown bay, hardstand parking area, office and sales area, with an overall Gross Leasable Floor Area (GFLA) of 1,389 m². The proposed development site plan provided by Designtek is attached in **Appendix A** and reproduced in **Figure 2**. As the site is relatively flat, no filling or excavation will be required.

Nationwide have advised that the business will operate between 7:00AM to 5:30PM Monday to Saturday and generate between 2-5 trucks and up to 10 cars in and out per day from the second year of operation. Furthermore, it is expected that up to three (3) staff members will be present on site each day.

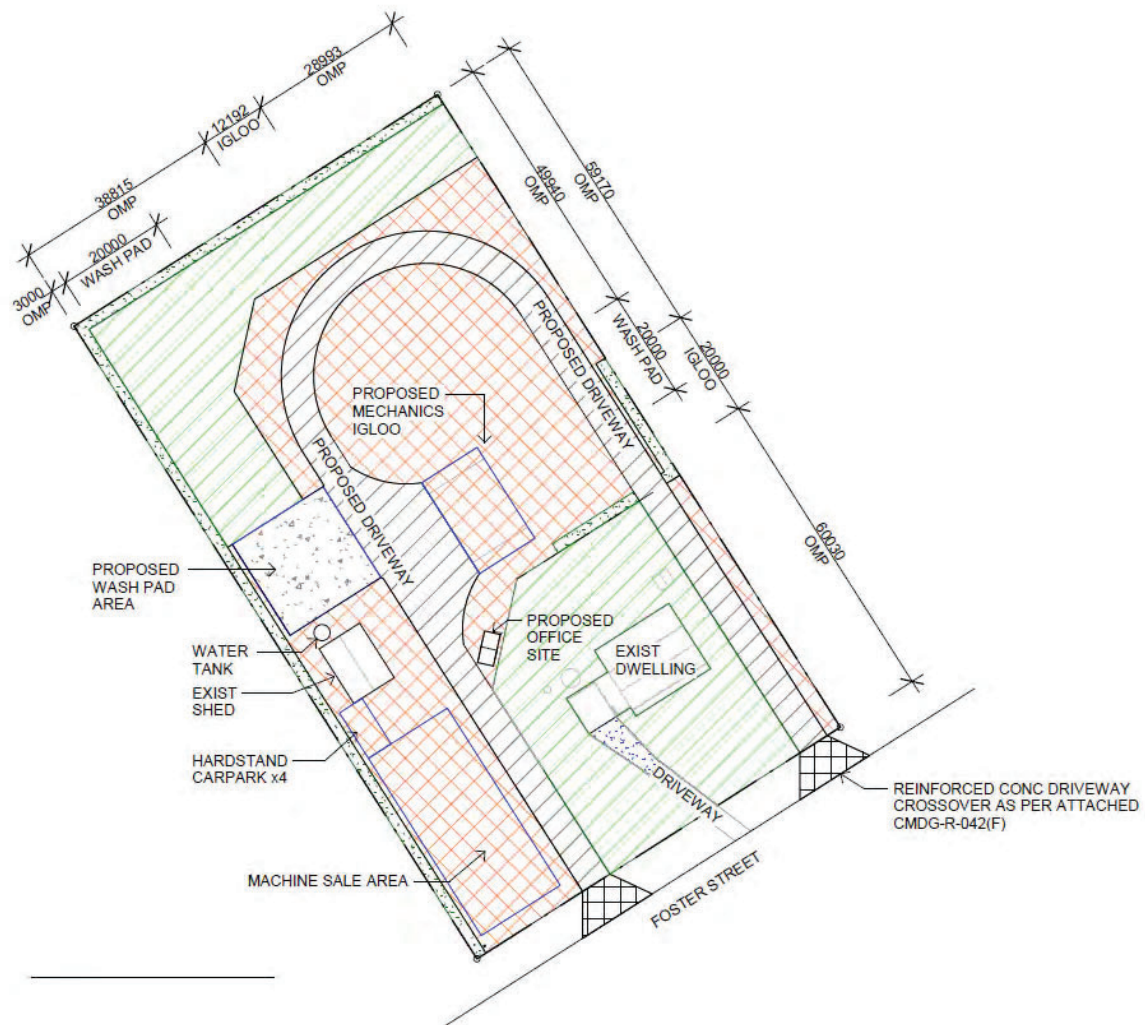


Figure 2: Proposed Development Layout

3.4 Proposed Drainage

Due to the lack of formal underground drainage within proximity of the site, surface and roofwater runoff will be discharged as sheet flows over the property boundaries and per the existing conditions. The proposed concept drainage layout can be seen in **Appendix A**.

4. STORMWATER QUANTITY MANAGEMENT

In accordance with QUDM (2017) section 3.9, lawful discharge of stormwater is required. A Lawful Point of Discharge Test (LPD Test) is outlined in Section 3.9.1 to ensure the stormwater is discharged from the site lawfully and at lawful locations in addition to needing to meet other statutory requirements such as the SPP and Planning Act.

The test in Section 3.9.1 of QUDM is in sequential order. If a condition can be met, then subsequent items need not be tested. This should be read in full but is summarised here to provide context for this site. It can be summarised as:

- Test 1: Will the proposed development alter the site's stormwater discharge characteristics in a manner that may substantially damage a third-party property? (if yes go to Test 2, if not then LPD is satisfied)
- Test 2: Is the location of the discharge from the development site under the lawful control of the local government or other statutory authority from whom permission to discharge has been received?
- Test 3: An authority to discharge over affected properties will be necessary.

The lawful points of discharge for the development area are the existing property boundaries in accordance with the LPD Test 1, and is shown in **Appendix B**. This is considered appropriate as it maintains the current flow regime within the site and allows for the development area to drain freely. Appropriate measures will be implemented at the outlets to minimise impacts on the downstream properties.

4.1 Hydrologic Assessment

A hydrologic model covering the project area and all the contributing catchments was undertaken using the rainfall-runoff routing software, Watershed Bounded Network Model (WBNM 2019), to determine the peak discharge and hydrographs from each sub-catchment. The modelling has been completed in accordance with the procedures and methodology prescribed by Australian Rainfall and Runoff 2019 (ARR19).

The software reference manual describes WBNM in the following way 'WBNM was originally developed to be a physically realistic representation of the catchment as it transforms storm rainfall into a flood hydrograph. It has built in lag relations, based on catchment geomorphology. The actual lag times in these relations were derived using recorded rainfall and flood hydrograph data' (University of Wollongong, 2007).

4.1.1 SUB-CATCHMENT CHARACTERISTICS

The catchment has been divided into sub-catchments to provide an accurate representation of the flow regime within the study area using the data outlined in **Section 2**. The sub-catchments have been defined to ensure results are provided at critical locations (LPDs) and were defined using the natural topography drainage paths. There are thirteen sub-catchments with a total area of 1.35ha. The sub-catchment plan is shown in **Appendix B**.

Analysis of aerial imagery has identified the fraction impervious values for the site catchments and surrounding catchment areas. The internal sub-catchment fraction impervious values were increased in the post-development scenario in accordance with the proposed site layout plan to represent the proposed development. A summary of model input parameters is provided in **Table 1**.

Table 1: Summary of Sub-Catchment Characteristics

| Catchment | Pre-Development | | Post-Development | |
|-----------|-----------------|------------------|------------------|------------------|
| | Area (ha) | Fraction Imp (%) | Area (ha) | Fraction Imp (%) |
| C01 | 0.554 | 17 | 0.554 | 12.5 |
| C02 | 0.332 | 2 | 0.332 | 15.8 |
| C03 | 0.202 | 5 | 0.202 | 5 |
| C04 | 0.045 | 0 | 0.045 | 0 |
| EX01 | 0.100 | 30 | 0.100 | 30 |
| EX02 | 0.115 | 50 | 0.115 | 50 |

4.1.2 METEOROLOGICAL DATA

Intensity-Frequency-Duration (IFD) data for the site has been derived in accordance with ARR19 and via Bureau of Meteorology's (BOM) Rainfall IFD Data System. The rainfall depths and intensities generated for the site have been derived from the co-ordinates: [-23.45 and 150.43]. The net rainfall depths (IFD data) have been used in conjunction with the dimensionless East Coast North (ECNorth) ensemble storm temporal patterns, as prescribed by ARR19 (Babister et al 2019), in the WBNM hydrologic analysis.

4.1.3 HYDROLOGIC ROUTING

Hydrologic modelling has been undertaken using the Nonlinear Routing Method which is the default for natural catchments in WBNM. For natural catchments and streams, the Stream Lag Factor is set at 1.0 with a non-linearity exponent of 0.77.

4.1.4 MODEL PARAMETERS

To utilise the 2016 IFDs in the hydrologic model, the model parameters (initial and continuing losses, preburst median depths and ratios) were extrapolated from the ARR Data Hub. Additional catchment and routing characteristics were entered into the model to reflect the characteristics of the existing catchment. A lag parameter of 1.6 was used in the model in accordance with the WBNM User Guide and the technical paper "WBNM runoff routing parameters for south and eastern Australia" (Boyd, Bodhinayake). Initial and continuing losses stated on the ARR data hub for the site were stated as 28mm and 1.7mm respectively. Pre-burst rainfall was included in the hydrologic model using the median pre-burst depths ranging from 1.0mm to 8.9mm. The Data Hub file containing the catchment data is included in **Appendix C**.

4.1.5 DESIGN STORM EVENT TEMPORAL PATTERN SELECTION

ARR19 requires simulation of a large volume of storms to determine the critical duration and the temporal patterns that led to the critical cases. ARR19 provides guidance to run the hydrological modelling process for the whole catchment of interest in order to determine the critical duration and the temporal pattern and selecting the duration in which the mean temporal pattern provides the highest peak discharge.

Based on the WBNM hydrologic model, the temporal patterns that produced mean design flow estimates at the catchment outlet are summarised in **Table 2**.

Table 2: Ensemble Temporal Pattern Selection for Hydraulic Model Inflows

| Annual Exceedance Probability (AEP) | Critical Duration (min) | Ensemble (No.) |
|-------------------------------------|-------------------------|----------------|
| 63.2% | 15 | 1 |
| 50% | 25 | 4 |
| 20% | 30 | 9 |
| 10% | 30 | 4 |
| 5% | 30 | 4 |
| 2% | 90 | 1 |
| 1% | 90 | 10 |

4.1.6 RATIONAL METHOD COMPARISON

The peak discharges for the development site provided by the hydrologic model have been compared against those obtained from the Rational Method calculations as a comparison that the model is providing reasonable results.

The results of **this** comparison are provided in **Table 3** and demonstrates the hydrologic model is providing results within an acceptable range of the Rational Method calculations and is therefore considered appropriate for use in this analysis.

Table 3: Peak Discharge Comparison – Whole Catchment - Rational vs. WBMN

| Location | Annual Exceedance Probability (AEP) | Design Event Peak Flow (m ³ /s) | |
|------------------|-------------------------------------|--|-------|
| | | Rational Method | WBMN |
| Catchment Outlet | 63.2% | 0.662 | 0.653 |
| | 50% | 0.566 | 0.559 |
| | 20% | 0.438 | 0.466 |
| | 10% | 0.362 | 0.35 |
| | 5% | 0.293 | 0.257 |
| | 2% | 0.197 | 0.168 |
| | 1% | 0.167 | 0.14 |

4.1.7 PEAK DISCHARGE SUMMARY

To understand the impact of the development, peak discharges for pre and post-development have been assessed for eastern boundary of the site. As the impervious area for catchments C03 and C04 are unchanged in the post-developed scenario, there are no changes to runoff and results have been omitted from this section. Peak discharges from the hydrologic model for the combined pre and post-developed subcatchments C01 and C02 are shown in **Table 4**.

Table 4: Peak Stormwater Discharges Summary

| Eastern Boundary | Pre -Development Peak Discharge (m ³ /s) | Pre -Development Peak Discharge (m ³ /s) | Impact | |
|------------------|---|---|-------------------|----|
| | | | m ³ /s | % |
| 63.2% | 0.113 | 0.114 | 0.001 | 1% |
| 50% | 0.135 | 0.136 | 0.001 | 1% |
| 20% | 0.204 | 0.208 | 0.004 | 2% |
| 10% | 0.283 | 0.284 | 0.001 | 0% |
| 5% | 0.378 | 0.378 | 0.000 | 0% |
| 2% | 0.449 | 0.451 | 0.002 | 0% |
| 1% | 0.517 | 0.528 | 0.011 | 2% |

4.2 Impact Analysis

It can be seen in **Table 4** that the peak discharge over the eastern boundary sees a small increase as a result of the development. This is an expected increase due to the increase in impervious area.

It should be noted the impervious areas (roof and driveway) are indirectly connected, and runoff flows over pervious surfaces before reaching the property boundary. Book 5, Chapter 3, Section 4 of ARR19 recommends a reduction (ratio of Effective Impervious Area to Total Impervious Area) of between 35% and 45% in total impervious area for indirectly connected impervious areas for single lot residential analysis. It is therefore considered the increase in impervious area will have less of an impact on the peak discharges than calculated from the hydrologic model.

4.3 Management of Runoff

It is proposed to discharge runoff from the site to match closely to the existing flow conditions. This scheme is designed to meet the LPD Test referenced in Section 4.1, and ensure the development not substantially alter the stormwater behaviour in a manner which may create actionable nuisance or unreasonably interfere with neighbouring property owners' use or enjoyment of their land.

It is proposed to provide attenuation of runoff from the existing dwelling to attenuate peak discharges from the site. The WBNM model for the mitigated post-development scenario includes the proposed 7kL rainwater tank collecting runoff from the roof of the existing dwelling only. Characteristics of the proposed detention system can be seen on **Table 5**, while the basin stage-storage-discharge relationship can be seen on **Table 6**.

Table 5. Detention Characteristics

| Characteristic | Value |
|--------------------------|-------------------------------|
| Location | Adjacent to Existing Dwelling |
| Basin Type | Rainwater Tank |
| Depth (m) | 1.8 |
| Volume (m ³) | 7 |
| Lower Outlet | 90mm Pipe |
| Lower Outlet Level | Invert |

Table 6. Basin Stage-Storage-Discharge Relationship

| Annual Exceedance Probability (AEP) | Stage (m) | Volume (m ³) | Basin Discharge (m ³ /s) |
|-------------------------------------|-----------|--------------------------|-------------------------------------|
| 63.2% | 0.109 | 0 | 0.004 |
| 50% | 0.109 | 0 | 0.004 |
| 20% | 0.201 | 1 | 0.007 |
| 10% | 0.304 | 1 | 0.009 |
| 5% | 0.359 | 2 | 0.01 |
| 2% | 0.56 | 2 | 0.013 |
| 1% | 0.815 | 3 | 0.016 |

The WBNM model was then run for the post-development case including the detention as the mitigated scenario. Results for the mitigated model can be found on **Table 7** below.

Table 7: Peak Discharge Comparison – Mitigated Site

| Annual Exceedance Probability (AEP) | Peak Discharge m ³ /s | | Change | |
|-------------------------------------|----------------------------------|-----------|-------------------|-----|
| | Pre | Mitigated | m ³ /s | % |
| 63.2 | 0.517 | 0.514 | -0.003 | -1% |
| 50% | 0.449 | 0.449 | 0.000 | 0% |
| 20% | 0.378 | 0.378 | 0.000 | 0% |
| 10% | 0.283 | 0.283 | 0.000 | 0% |
| 5% | 0.204 | 0.204 | 0.000 | 0% |
| 2% | 0.135 | 0.135 | 0.000 | 0% |
| 1% | 0.113 | 0.114 | 0.001 | 1% |

Table 7 shows that the proposed detention basin attenuates the post-development peak discharges to at or below the pre-development levels. It has therefore been demonstrated that the detention tank is adequately sized to offset the impacts from the development on the downstream catchment.

5. STORMWATER QUALITY

As the proposed development is a material change of use that results in an impervious area of less than 25% of the net developable area (refer **Appendix B**), the management of stormwater quality for the operational phase is not required to comply with the stormwater quality, frequent flow management and waterway stability infrastructure standards outlined in the RRPS stormwater management planning scheme policy, or the Queensland Government's State Planning Policy (SPP) (Queensland Government 2017), and in particular the outcomes of the SPP code: Water Quality (Appendix 2).

5.1 Construction phase

During the construction phase various pollutants are generated which can find their way into the stormwater runoff. These pollutants can affect the quality of the stormwater runoff and hence pollute both the site and the downstream receiving environment. **Table 8** below outlines the major sources of pollutants.

Table 8: Typical Construction Phase Pollutants

| Construction Phase Pollutants |
|---|
| Litter from construction packaging, paper, food packaging, off cuts, etc. |
| Sediment from erosion of exposed soils and stockpiles. |
| Hydrocarbons - from fuel and oil spills, leaks from construction equipment. |
| Toxic Materials - cement slurry, solvents, cleaning agents, wash waters. |
| pH altering substances - cement slurry, wash waters. |

Erosion and sediment control measures used during the construction phase of the development will be designed and installed in accordance with International Erosion Control Association (Australasia) - "Best Practice Erosion & Sediment Control – for building and construction sites" November 2008 and Whitsunday Regional Council's requirements for Erosion and Sediment Control.

5.1.1 GENERAL EROSION AND SEDIMENT CONTROL MEASURES

The principal contractor should ensure the following erosion and sediment control measures are followed at a minimum during construction:

- Clean stormwater runoff is to be diverted away from areas of disturbance using cut off drains or bunds;
- Sediment runoff prevention from areas of disturbance via effective installation of silt fences, sediment basins or other controls as deemed appropriate;
- Shakedown points should be established at vehicular access points with sediment removed to maintain operation;
- Where stockpiling of spoil is required, stockpiles should be established away from stormwater inlets and surrounded with appropriate erosion and sediment control measures; and
- Site inductions should include information of the erosion and sediment control measures, and a reporting system through which site personnel can report perceived erosion and sediment control issues

5.2 Normal Operations

During normal operations of the proposed development, the operation of equipment, vehicles and machines (i.e. tools and washdown) represents the main risk factors with respect to oil/fuel/fluids (hydrocarbons) contaminating waterways and the groundwater. The subject site is not in the immediate vicinity of any streams that connect directly with Fitzroy River, and the development is considered low risk in terms of contamination. The proposed washdown bay area is to consist of a system of tanks capturing and filtering dirty water to be reused in the cleaning of machinery. Sediment will be collected in tanks and pumped out and disposed of off-site. To minimise the risk of oil spills and fluid leakages to affect the water quality, the following are proposed:

- All visitors shall sign in and register the date, time in / time out, rego if applicable, and contact number.
 - In the event of oil/fluids leakage from any vehicle parked within the facility, the owner/responsible shall be contacted immediately.
- Clean water from the upstream catchment is to be diverted around the washdown area via bunding.
- If any hazardous liquid is to be removed:
 - This shall be done in the bunded washdown or workshop area.
 - The hazardous liquid shall be directed to drums located in the bunded area or into a portable container (over a bunded tray) after which it may be transferred to a storage area. No more than 20 L per week is expected to be removed from the scrap metal.
 - No removal or handling of liquid waste shall be undertaken externally while it is raining.
 - Any contaminated solid waste, i.e. oily rags, shall be kept in a contaminated container, which is able to be sealed.
- Drained liquids and contaminated solid wastes (e.g. oily rags) are to be disposed of by a licensed contractor.
- Batteries or tyres are not to be stored in open areas.
- Always keep all areas clean of residue liquids and oil.
- Ensure wheels of the on-site vehicles and machinery are kept clean at all times to prevent any tracking of residue oil into external areas.
- Spill kits for cleaning up spills are to be provided on-site.
- Bins for disposal of oily rags and used spill kit material are to be provided next to spill kits and must be disposed of via licensed waste contractor.
- Undertake regular site inspections to review management controls.

6. CONCLUSION

This Site Based Stormwater Management Report details the proposed stormwater quantity and quality management strategy for the development in accordance with the Capricorn Municipal Development Guidelines, Rockhampton Regional Council Guidelines, Queensland Urban Drainage Manual and Australian Rainfall and Runoff Guidelines.

Runoff will discharge from the site as sheet surface flow across the boundaries. Hydrologic modelling was undertaken to determine the characteristics of the proposed mitigation infrastructure, being a rainwater tank collecting runoff from the existing dwelling. The system has sufficient capacity to attenuate peak discharges to below pre-development levels, ensuring no actionable nuisance external to the site.

Results from the WBNM modelling presented in this report show that the proposed development would not create an adverse impact or substantially alter the stormwater behaviour in a manner which may create actionable nuisance or unreasonably interfere with neighbouring property owners' use or enjoyment of their land.

7. QUALIFICATIONS

Our analysis and overall approach have been specifically catered for the requirements of Nationwide Machinery Sales & Hire and may not be applicable beyond this scope. For this reason, any other third parties are not authorised to utilise this report without further input and advice from Premise.

Premise has relied on the following information as outlined in **Section 2** of this Report.

8. RPEQ CERTIFICATION

As Registered Professional Engineer of Queensland (RPEQ) for this project, on behalf of Premise Australia Pty Ltd, I certify that the modelling undertaken as part of this assessment has been undertaken in accordance with current engineering best practice as recommended in the Capricorn Municipal Development Guidelines, Rockhampton Regional Council Guidelines Queensland Urban Drainage Manual and Australian Rainfall and Runoff Guidelines.

Name: Jeremy Cox

RPEQ No: 14732

Date: 9 June 2023

Signature: _____



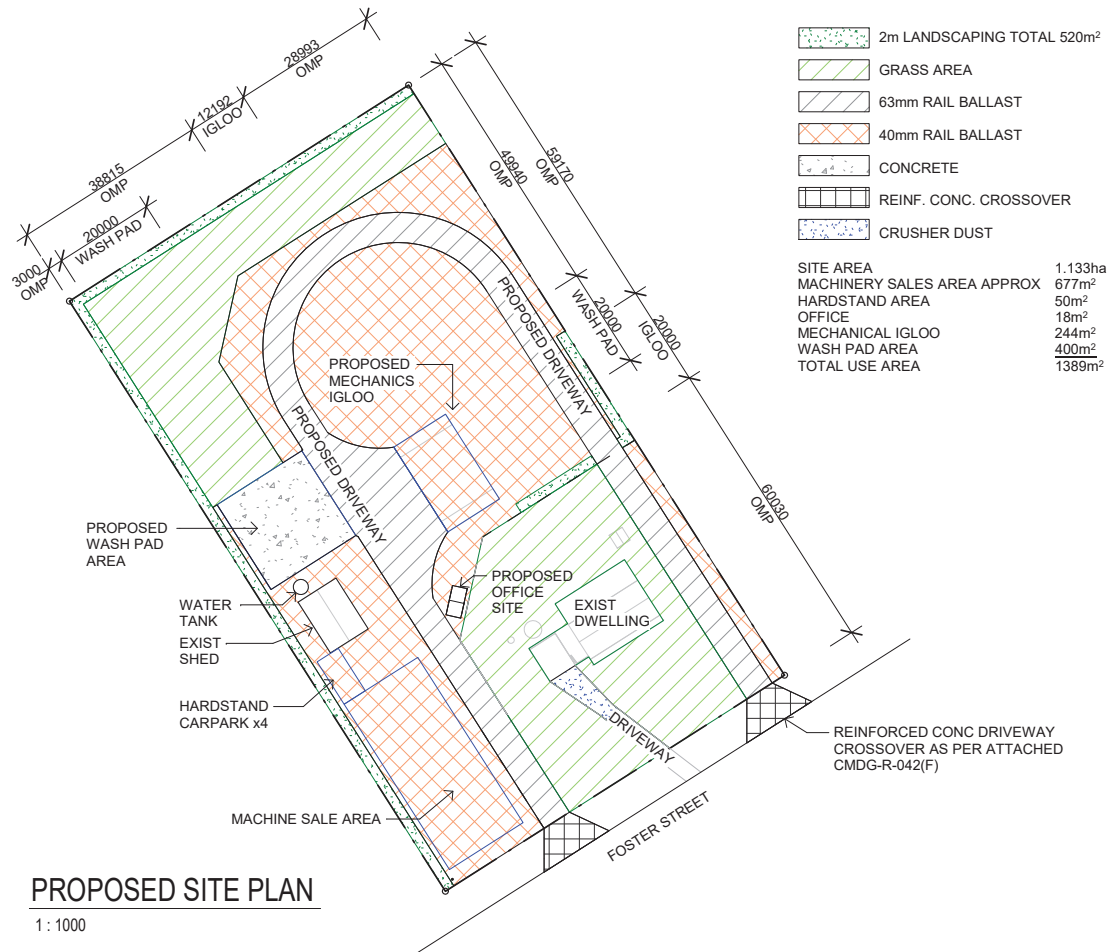
9. REFERENCES

1. Rockhampton Regional Council, *Rockhampton Region Planning Scheme (2015)*, Version 2.2, 2021, Rockhampton.
2. Institute of Public Works Engineering Australasia (QLD Division), et al, 2016. *Queensland Urban Drainage Manual (QUDM), Fourth Edition*. Brisbane.
3. Ball J, Babister M, Nathan R, Weeks W, Weinmann E, Retallick M, Testoni I, *Australian Rainfall and Runoff: A Guide to Flood Estimation*, Commonwealth of Australia (Geoscience Australia), 2016, Canberra.
4. Bureau of Meteorology, *2016 IFDs – Rainfall Data*. Available at: <http://www.bom.gov.au/water/designRainfalls/revised-efd/?year=2016>
5. Department of Infrastructure, Local Government and Planning, July 2017. *State Planning Policy (SPP)*, Brisbane.



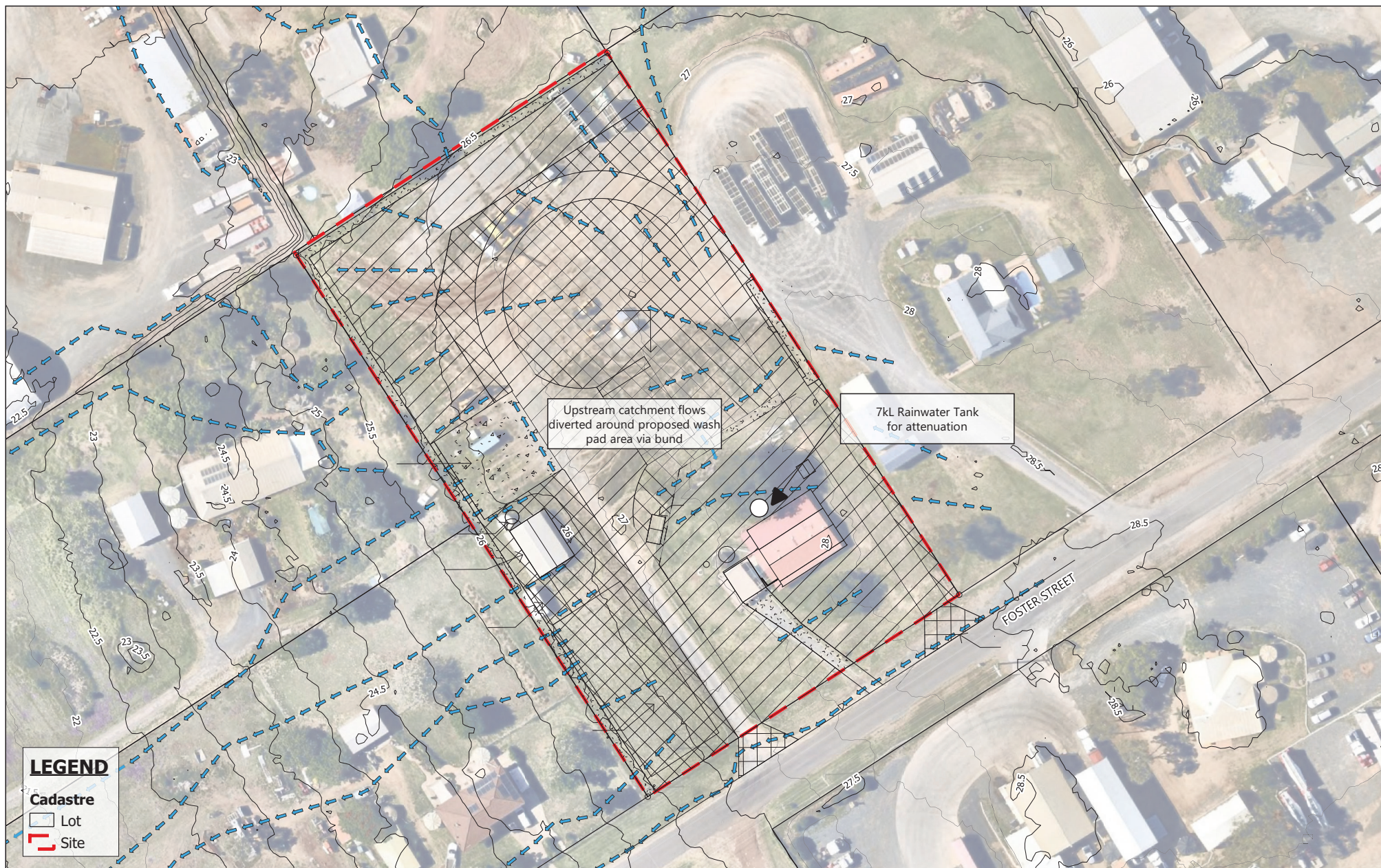
APPENDIX A


PROPOSED SITE LAYOUT AND CONCEPT STORMWATER MANAGEMENT PLAN



| | | | | |
|---|--|--|--|-------------------------------|
| project: PROPOSED WORK FOR 71 FOSTER ST, GRACEMERE |  Shop 5/10 Denham St Rockhampton QLD, 4700 p 0749 222880 | | title: PROPOSED SITE PLAN | |
| | building design - documentation | | scale: 1 : 1000 | project no: 2302-03 |
| client: NATIONWIDE MACHINERY SALES & HIRE | QBCC MEM. NO # 1123040 BDAQ MEM. NO # 0000761 | | sheet no: 8 of 10 | drawing no: WD08 |
| | | | drawn: AG | rev: A |

07/06/23 9:45:51 AM

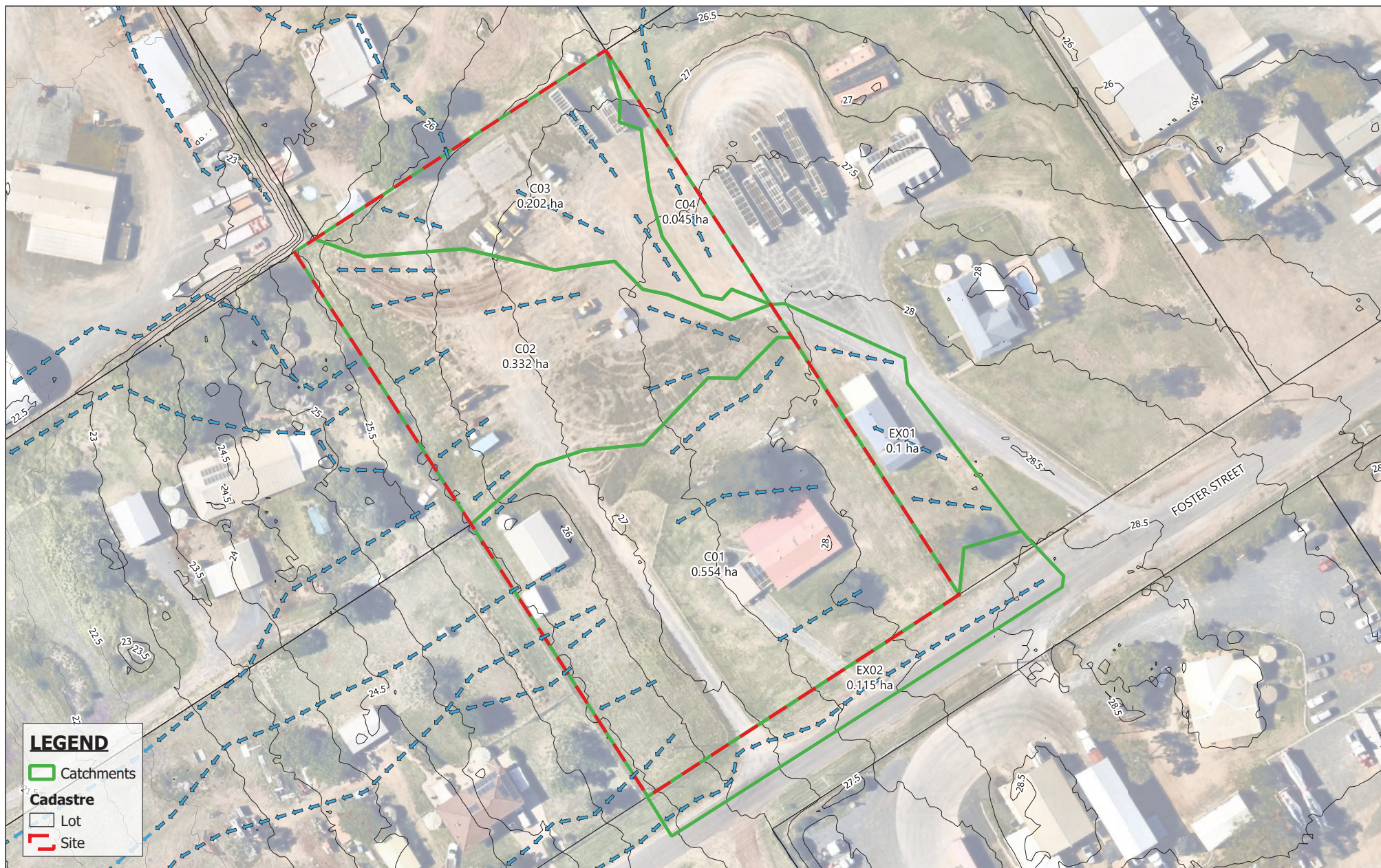



| | | | |
|--|---|--|----------|
|  <p>Scale 1:750 09.06.2023</p> | NATIONWIDE MACHINERY SALES | | Jun 2023 |
| | 71 FOSTER STREET, GRACEMERE | | MIS-1076 |
| | Catchments and Flow Regime - Post-Development | | A001 |

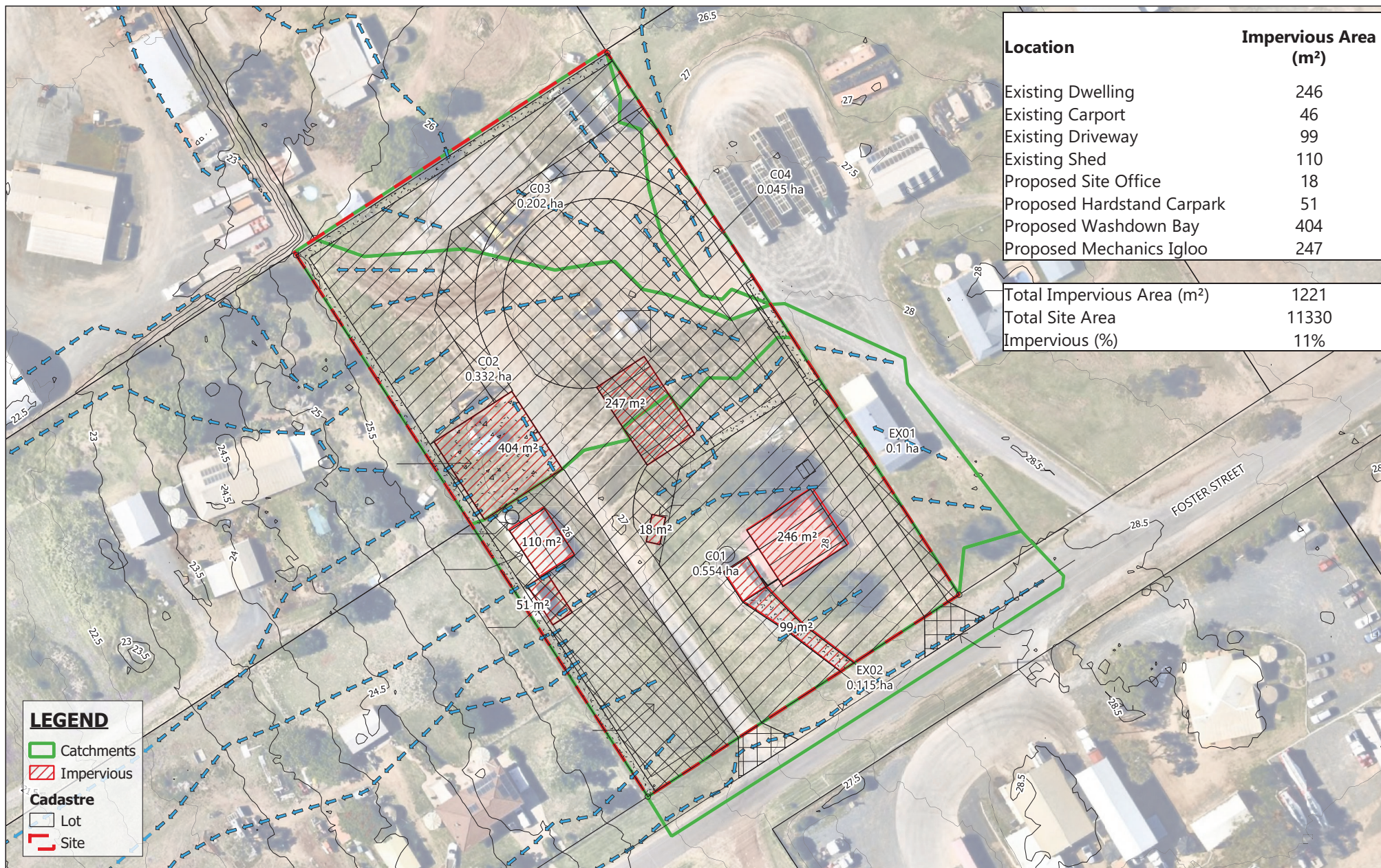


APPENDIX B

CATCHMENT AND FLOW REGIME



| | | | |
|--|--|--|----------|
|  <p>Scale 1:750 31.03.2023</p> | NATIONWIDE MACHINERY SALES | | Mar 2023 |
| | 71 FOSTER STREET, GRACEMERE | | MIS-1076 |
| | Catchments and Flow Regime - Pre-Development | | B001 |



| Location | Impervious Area (m²) |
|-----------------------------------|----------------------|
| Existing Dwelling | 246 |
| Existing Carport | 46 |
| Existing Driveway | 99 |
| Existing Shed | 110 |
| Proposed Site Office | 18 |
| Proposed Hardstand Carpark | 51 |
| Proposed Washdown Bay | 404 |
| Proposed Mechanics Igloo | 247 |
| Total Impervious Area (m²) | 1221 |
| Total Site Area | 11330 |
| Impervious (%) | 11% |

LEGEND

▬ Catchments

▨ Impervious

Cadastre

 Lot

 Site

0 40 80 m

Scale 1:750

09.06.2023

| | |
|---|----------|
| NATIONWIDE MACHINERY SALES | Jun 2023 |
| 71 FOSTER STREET, GRACEMERE | MIS-1076 |
| Catchments and Flow Regime - Post-Development | B002 |

THIS DOCUMENT MAY NOT BE COPIED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS WITHOUT OR IN VIOLATION OF THE WRITTEN CONSENT OF PREMISE AUSTRALIA PTY LTD.



APPENDIX C

CALCULATIONS AND MODEL DATA

RATIONAL METHOD SUMMARY

| Pre-Development Scenario | | | | | |
|--------------------------|------|------|------|------|-------|
| Catchment | C01 | C02 | C03 | C04 | Total |
| Area (ha) | 0.55 | 0.33 | 0.20 | 0.05 | 1.13 |

| Post-Development Scenario | | | | | |
|---------------------------|------|------|------|------|-------|
| Catchment | C01 | C02 | C03 | C04 | Total |
| Area (ha) | 0.55 | 0.33 | 0.20 | 0.05 | 1.13 |

[illegible]

| Post Development Flows | | | | | | | | | | | | | | | | | | | | | | | | |
|------------------------|-----------|-------------|-------------------|-----------|-----------------------------|------------------|----------|-----------------------------|------------------|----------|-----------------------------|------------------|----------|------------------------------|---------------|-------|------------------------------|---------------|-------|------------------------------|---------------|-------|------------------------------|----------------------------------|
| Catchment Name | Area (ha) | t_c (min) | I_{100} (mm/hr) | C_{100} | 1% AEP (mm ³ /s) | I_{50} (mm/hr) | C_{50} | 2% AEP (mm ³ /s) | I_{30} (mm/hr) | C_{30} | 5% AEP (mm ³ /s) | I_{10} (mm/hr) | C_{10} | 10% AEP (mm ³ /s) | I_5 (mm/hr) | C_5 | 18% AEP (mm ³ /s) | I_2 (mm/hr) | C_2 | 39% AEP (mm ³ /s) | I_1 (mm/hr) | C_1 | 63% AEP (mm ³ /s) | Q_{month} (mm ³ /s) |
| C01 | 0.55 | 18 | 204 | 0.85 | 0.268 | 182 | 0.82 | 0.229 | 154 | 0.75 | 0.177 | 134 | 0.71 | 0.096 | 114 | 0.67 | 0.118 | 86 | 0.60 | 0.080 | 77 | 0.57 | 0.067 | 0.034 |
| C02 | 0.33 | 15 | 219 | 0.85 | 0.171 | 196 | 0.81 | 0.146 | 166 | 0.74 | 0.113 | 144 | 0.71 | 0.093 | 122 | 0.67 | 0.076 | 92 | 0.60 | 0.051 | 83 | 0.56 | 0.045 | 0.022 |
| C03 | 0.40 | 15 | 219 | 0.85 | 0.104 | 196 | 0.81 | 0.089 | 166 | 0.74 | 0.069 | 144 | 0.71 | 0.057 | 122 | 0.67 | 0.046 | 92 | 0.60 | 0.031 | 83 | 0.56 | 0.026 | 0.013 |
| C04 | 0.05 | 15 | 219 | 0.85 | 0.023 | 196 | 0.82 | 0.020 | 166 | 0.75 | 0.015 | 144 | 0.71 | 0.013 | 122 | 0.67 | 0.010 | 92 | 0.60 | 0.007 | 83 | 0.57 | 0.006 | 0.003 |

| | Annual Exceedance Probability (AEP) | | | | | | |
|----------|-------------------------------------|------|------|------|------|------|------|
| Duration | 63.2% | 50%# | 20%* | 10% | 5% | 2% | 1% |
| 1 min | 2.61 | 2.89 | 3.81 | 4.46 | 5.10 | 5.97 | 6.66 |
| 2 min | 4.36 | 4.84 | 6.42 | 7.49 | 8.53 | 9.94 | 11.0 |
| 3 min | 6.17 | 6.86 | 9.07 | 10.6 | 12.1 | 14.1 | 15.6 |
| 4 min | 7.89 | 8.76 | 11.6 | 13.5 | 15.4 | 18.0 | 20.0 |
| 5 min | 9.48 | 10.5 | 13.9 | 16.2 | 18.5 | 21.6 | 24.1 |
| 10 min | 15.8 | 17.5 | 23.1 | 27.0 | 30.9 | 36.2 | 40.3 |
| 15 min | 20.3 | 22.5 | 29.6 | 34.6 | 39.6 | 46.4 | 51.8 |
| 20 min | 23.6 | 26.2 | 34.5 | 40.3 | 46.2 | 54.2 | 60.5 |
| 25 min | 26.3 | 29.1 | 38.4 | 44.9 | 51.5 | 60.4 | 67.4 |
| 30 min | 28.4 | 31.5 | 41.6 | 48.7 | 55.8 | 65.5 | 73.2 |
| 45 min | 33.2 | 36.9 | 48.8 | 57.2 | 65.6 | 77.2 | 86.3 |
| 1 hour | 36.5 | 40.6 | 53.9 | 63.3 | 72.8 | 85.7 | 96.0 |
| 1.5 hour | 41.2 | 45.9 | 61.4 | 72.3 | 83.3 | 98.5 | 111 |
| 2 hour | 44.5 | 49.8 | 67.0 | 79.2 | 91.5 | 109 | 122 |
| 3 hour | 49.4 | 55.6 | 75.6 | 90.0 | 105 | 125 | 141 |
| 4.5 hour | 54.8 | 62.0 | 85.7 | 103 | 121 | 145 | 166 |
| 6 hour | 59.2 | 67.3 | 94.1 | 114 | 134 | 163 | 187 |
| 9 hour | 66.1 | 75.8 | 108 | 133 | 158 | 195 | 225 |
| 12 hour | 71.8 | 82.7 | 120 | 149 | 179 | 223 | 259 |
| 18 hour | 80.9 | 94.0 | 140 | 176 | 216 | 271 | 318 |
| 24 hour | 88.2 | 103 | 156 | 199 | 247 | 313 | 370 |
| 30 hour | 94.3 | 111 | 170 | 218 | 273 | 350 | 415 |
| 36 hour | 99.5 | 117 | 182 | 235 | 297 | 382 | 454 |
| 48 hour | 108 | 127 | 201 | 263 | 336 | 435 | 521 |
| 72 hour | 120 | 142 | 227 | 302 | 390 | 509 | 613 |
| 96 hour | 127 | 151 | 243 | 324 | 422 | 554 | 669 |
| 120 hour | 133 | 157 | 252 | 337 | 440 | 578 | 699 |
| 144 hour | 136 | 161 | 257 | 343 | 448 | 588 | 712 |
| 168 hour | 139 | 164 | 259 | 343 | 449 | 589 | 712 |

Australian Rainfall & Runoff Data Hub - Results

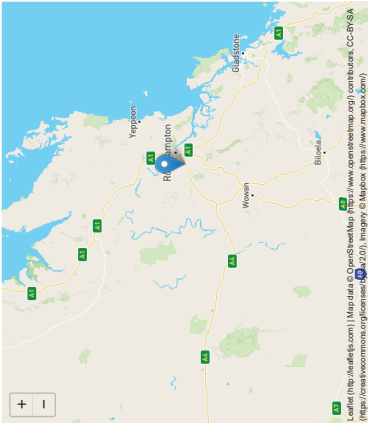
Input Data

| | |
|-----------|--------|
| Longitude | 150.43 |
| Latitude | -23.46 |

Selected Regions

(clear)

| | |
|-----------------------------------|------|
| River Region | show |
| ARF Parameters | show |
| Storm Losses | show |
| Temporal Patterns | show |
| Areal Temporal Patterns | show |
| BOM IFDs | show |
| Median Preburst Depths and Ratios | show |
| 10% Preburst Depths | show |
| 25% Preburst Depths | show |
| 75% Preburst Depths | show |
| 90% Preburst Depths | show |
| Interim Climate Change Factors | show |



Data

| | |
|--------------|---------------------|
| River Region | North East Coast |
| Division | 30 |
| River Number | Fitzroy River (Old) |

ARF Parameters

$$ARF = Min \left\{ 1, 1 - 0.287 \left(Area^{0.265} - 0.439 \log_{10}(Duration) \right), Duration^{-0.1} + e^{Area^{0.1225} \log_{10}(0.3 + \log_{10}(AEP))} + 10 \left(Area^{0.1225} \log_{10}(0.3 + \log_{10}(AEP)) \right) \right\}$$

Note: $Area^{0.1225}$ is the area of the catchment in km^2 .

Note: These losses are only for rural use and are NOT FOR DIRECT USE in urban areas.

| | | | | | | | | | |
|-----------------|-------|-------|-------|------|---------|------|-------|-------|---------|
| Zone | a | b | c | d | e | f | g | h | i |
| East Coast Norm | 0.327 | 0.241 | 0.448 | 0.36 | 0.00096 | 0.48 | -0.21 | 0.012 | -0.0013 |

Short Duration ARF

$$ARF = Min \left[1, 1 - 0.287 \left(Area^{0.265} - 0.439 \log_{10}(Duration) \right), Duration^{-0.346} + 2.26 \times 10^{-3} \times Area^{0.1225} \log_{10}(0.3 + \log_{10}(AEP)) + 0.0141 \times Area^{0.1225} \log_{10}(0.3 + \log_{10}(AEP)) \right]$$

Storm Losses

Note: Rural Loss = Storm Loss - Preburst

Note: These losses are only for rural use and are NOT FOR DIRECT USE in urban areas.

| | |
|------------------------------|---------|
| ID | 12470.0 |
| Storm Initial Losses (mm) | 28.0 |
| Storm Continuing Losses (mm) | 1.7 |

Temporal Patterns | Download (.zip) (static)temporal_patterns/Temporal_Patterns/Areal(Areal_ECNorth.zip)

| | |
|-------|------------------|
| code | ECNorth |
| Label | East Coast North |

Areal Temporal Patterns | Download (.zip) (/static/Temporal_Patterns/Areal(Areal_ECNorth.zip)

| | |
|-----------|------------------|
| code | ECNorth |
| arealabel | East Coast North |

BOM IFDs

Click here (http://www.bom.gov.au/water/designRatios/revised-idx/?year=2016&coordinate_type=sdd&latitude=-23.46&longitude=150.43&min=tim&sdh=true&sdlay=true&user_label=) to obtain the IFD depths for catchment centroid from the BOM website

Median Preburst Depths and Ratios

Values are of the format depth (ratio) with depth in mm

| min (h/AEP)(%) | 50 | 20 | 10 | 5 | 2 | 1 |
|----------------|-------------|-------------|--------------|--------------|--------------|--------------|
| 60 (1.0) | 1.0 (0.025) | 2.7 (0.060) | 3.9 (0.061) | 5.0 (0.068) | 7.2 (0.083) | 8.9 (0.091) |
| 90 (1.5) | 1.7 (0.037) | 1.7 (0.027) | 1.6 (0.023) | 1.6 (0.019) | 9.8 (0.099) | 15.9 (0.143) |
| 120 (2.0) | 0.7 (0.014) | 2.1 (0.032) | 3.1 (0.039) | 4.0 (0.044) | 10.0 (0.091) | 14.4 (0.117) |
| 180 (3.0) | 1.2 (0.021) | 3.5 (0.046) | 5.1 (0.056) | 6.5 (0.062) | 11.5 (0.091) | 15.2 (0.106) |
| 300 (6.0) | 2.6 (0.039) | 8.0 (0.065) | 11.6 (0.101) | 15.1 (0.111) | 22.3 (0.136) | 27.7 (0.147) |
| 720 (12.0) | 0.2 (0.002) | 9.6 (0.079) | 15.9 (0.106) | 21.9 (0.121) | 38.5 (0.172) | 51.0 (0.198) |
| 1080 (18.0) | 0.0 (0.000) | 6.7 (0.068) | 16.1 (0.091) | 22.2 (0.102) | 27.6 (0.101) | 31.7 (0.099) |
| 1440 (24.0) | 0.0 (0.000) | 7.2 (0.046) | 12.0 (0.060) | 16.5 (0.066) | 39.9 (0.127) | 57.5 (0.154) |
| 2160 (36.0) | 0.0 (0.000) | 7.5 (0.041) | 12.5 (0.053) | 17.3 (0.058) | 30.0 (0.076) | 39.5 (0.086) |
| 2880 (48.0) | 0.0 (0.000) | 3.0 (0.015) | 4.9 (0.016) | 6.8 (0.020) | 16.2 (0.037) | 23.2 (0.044) |
| 4320 (72.0) | 0.0 (0.000) | 0.0 (0.000) | 0.0 (0.000) | 0.0 (0.000) | 2.8 (0.005) | 4.8 (0.008) |

10% Preburst Depths

Values are of the format depth (ratio) with depth in mm

| min (h/AEP)(%) | 50 | 20 | 10 | 5 | 2 | 1 |
|----------------|-------------|-------------|-------------|-------------|-------------|-------------|
| 60 (1.0) | 0.0 (0.000) | 0.0 (0.000) | 0.0 (0.000) | 0.0 (0.000) | 0.0 (0.000) | 0.0 (0.000) |
| 90 (1.5) | 0.0 (0.000) | 0.0 (0.000) | 0.0 (0.000) | 0.0 (0.000) | 0.0 (0.000) | 0.0 (0.000) |
| 120 (2.0) | 0.0 (0.000) | 0.0 (0.000) | 0.0 (0.000) | 0.0 (0.000) | 0.0 (0.000) | 0.0 (0.000) |
| 180 (3.0) | 0.0 (0.000) | 0.0 (0.000) | 0.0 (0.000) | 0.0 (0.000) | 0.0 (0.000) | 0.0 (0.000) |
| 360 (6.0) | 0.0 (0.000) | 0.0 (0.000) | 0.0 (0.000) | 0.0 (0.000) | 0.0 (0.000) | 0.0 (0.000) |
| 720 (12.0) | 0.0 (0.000) | 0.0 (0.000) | 0.0 (0.000) | 0.0 (0.000) | 0.5 (0.002) | 0.8 (0.003) |
| 1080 (18.0) | 0.0 (0.000) | 0.0 (0.000) | 0.0 (0.000) | 0.0 (0.000) | 0.0 (0.000) | 0.0 (0.000) |
| 1440 (24.0) | 0.0 (0.000) | 0.0 (0.000) | 0.0 (0.000) | 0.0 (0.000) | 1.1 (0.004) | 2.0 (0.006) |
| 2160 (36.0) | 0.0 (0.000) | 0.0 (0.000) | 0.0 (0.000) | 0.0 (0.000) | 0.0 (0.000) | 0.0 (0.000) |
| 2880 (48.0) | 0.0 (0.000) | 0.0 (0.000) | 0.0 (0.000) | 0.0 (0.000) | 0.0 (0.000) | 0.0 (0.000) |
| 4320 (72.0) | 0.0 (0.000) | 0.0 (0.000) | 0.0 (0.000) | 0.0 (0.000) | 0.0 (0.000) | 0.0 (0.000) |

Layer Info

| | |
|---------------|-----------------------|
| Time Accessed | 31 March 2023 01:34PM |
| Version | 2016_v2 |

Layer Info

| | |
|---------------|-----------------------|
| Time Accessed | 31 March 2023 01:34PM |
| Version | 2016_v2 |

Layer Info

| | |
|---------------|-----------------------|
| Time Accessed | 31 March 2023 01:34PM |
| Version | 2016_v1 |

Layer Info

| | |
|---------------|--|
| Time Accessed | 31 March 2023 01:34PM |
| Version | 2016_v1 |
| Note | Preburst interpolation methods for catchment wide preburst has been slightly altered. Point values remain unchanged. |

Layer Info

| | |
|---------------|--|
| Time Accessed | 31 March 2023 01:34PM |
| Version | 2016_v1 |
| Note | Preburst interpolation methods for catchment wide preburst has been slightly altered. Point values remain unchanged. |

25% Preburst Depths

Values are of the formal depth (ratio) with depth in mm

| min (N/AEP)(%) | 50 | 20 | 10 | 5 | 2 | 1 |
|----------------|------------|------------|------------|------------|------------|------------|
| 60 (1.0) | 0.0 (0.00) | 0.1 (0.02) | 0.3 (0.03) | 0.3 (0.04) | 0.7 (0.09) | 1.1 (0.11) |
| 90 (1.5) | 0.0 (0.00) | 0.0 (0.00) | 0.0 (0.00) | 0.0 (0.00) | 0.5 (0.05) | 0.8 (0.07) |
| 120 (2.0) | 0.0 (0.00) | 0.0 (0.00) | 0.0 (0.00) | 0.0 (0.00) | 0.7 (0.07) | 1.3 (0.11) |
| 180 (3.0) | 0.0 (0.00) | 0.1 (0.01) | 0.1 (0.01) | 0.2 (0.02) | 0.6 (0.05) | 0.9 (0.06) |
| 300 (6.0) | 0.0 (0.00) | 0.3 (0.04) | 0.6 (0.06) | 0.8 (0.08) | 1.5 (0.20) | 2.0 (0.10) |
| 720 (12.0) | 0.0 (0.00) | 0.5 (0.08) | 1.0 (0.10) | 7.2 (11.8) | | |
| 1080 (18.0) | 0.0 (0.00) | 0.1 (0.01) | 0.0 (0.00) | 0.3 (0.04) | 4.4 (7.4) | |
| 1440 (24.0) | 0.0 (0.00) | 0.1 (0.01) | 0.2 (0.03) | 4.5 (7.7) | | |
| 2160 (36.0) | 0.0 (0.00) | 0.0 (0.00) | 0.0 (0.00) | 0.0 (0.00) | 8.4 (14.8) | |
| 2880 (48.0) | 0.0 (0.00) | 0.0 (0.00) | 0.0 (0.00) | 0.0 (0.00) | 0.1 (0.01) | 0.2 (0.02) |
| 4320 (72.0) | 0.0 (0.00) | 0.0 (0.00) | 0.0 (0.00) | 0.0 (0.00) | 0.0 (0.00) | 0.0 (0.00) |

Layer Info

31 March 2023 01:34PM

| Time Accessed | Version | Note |
|---------------|---------|--|
| 2018_v1 | | Preburst interpolation methods for catchment wide preburst has been slightly altered. Point values remain unchanged. |

90% Preburst Depths

Values are of the formal depth (ratio) with depth in mm

| min (N/AEP)(%) | 50 | 20 | 10 | 5 | 2 | 1 |
|----------------|--------------|---------------|---------------|---------------|---------------|---------------|
| 60 (1.0) | 26.7 (0.655) | 45.0 (0.829) | 57.0 (0.894) | 68.6 (0.936) | 82.8 (0.958) | 93.4 (0.964) |
| 90 (1.5) | 79.7 (1.728) | 82.7 (1.339) | 84.7 (1.163) | 86.6 (1.032) | 146.9 (1.476) | 192.0 (1.721) |
| 120 (2.0) | 79.4 (1.586) | 78.7 (1.187) | 78.2 (0.980) | 77.7 (0.843) | 173.0 (1.580) | 244.4 (1.982) |
| 180 (3.0) | 48.9 (0.875) | 106.3 (1.366) | 144.3 (1.592) | 180.8 (1.716) | 221.7 (1.760) | 252.3 (1.770) |
| 300 (6.0) | 63.4 (0.357) | 103.0 (1.067) | 129.3 (1.127) | 154.4 (1.141) | 202.6 (1.232) | 238.8 (1.266) |
| 720 (12.0) | 34.2 (0.410) | 84.8 (0.701) | 118.4 (0.790) | 150.6 (0.833) | 213.6 (0.952) | 260.8 (1.002) |
| 1080 (18.0) | 62.7 (0.662) | 105.3 (0.746) | 133.5 (0.752) | 160.5 (0.739) | 193.5 (0.708) | 218.2 (0.681) |
| 1440 (24.0) | 43.0 (0.413) | 95.4 (0.605) | 130.0 (0.648) | 163.3 (0.657) | 206.8 (0.656) | 239.4 (0.643) |
| 2160 (36.0) | 25.9 (0.219) | 76.1 (0.414) | 109.3 (0.460) | 141.1 (0.472) | 186.3 (0.432) | 185.2 (0.405) |
| 2880 (48.0) | 22.5 (0.175) | 65.9 (0.324) | 94.6 (0.356) | 122.2 (0.361) | 154.2 (0.285) | 153.7 (0.236) |
| 4320 (72.0) | 9.8 (0.068) | 42.5 (0.185) | 64.2 (0.211) | 85.0 (0.216) | 102.9 (0.200) | 116.3 (0.188) |

Interim Climate Change Factors

| | RCP 4.5 | RCP6 | RCP 8.5 |
|------|--------------|---------------|---------------|
| 2030 | 0.869 (4.3%) | 0.783 (3.9%) | 0.883 (4.8%) |
| 2040 | 1.057 (6.3%) | 1.014 (5.1%) | 1.349 (6.8%) |
| 2050 | 1.272 (6.4%) | 1.238 (6.2%) | 1.773 (9.0%) |
| 2060 | 1.488 (7.5%) | 1.458 (7.4%) | 2.237 (11.5%) |
| 2070 | 1.676 (8.5%) | 1.691 (8.6%) | 2.722 (14.2%) |
| 2080 | 1.810 (9.2%) | 1.944 (8.9%) | 3.208 (16.9%) |
| 2090 | 1.862 (9.5%) | 2.227 (11.5%) | 3.679 (19.7%) |

Download TXT (downloadsb9bcb1947f9bb-41ac-ba67-7b6f6bcb31.txt)

Download JSON (downloadsb07713e-cla6-4139-add5-c11073a4e6df.json)

Generating PDF... (downloadsbfe039bdc4d73-4e03-9f44-44e37f8989a.pdf)

Layer Info

31 March 2023 01:34PM

| Time Accessed | Version | Note |
|---------------|---------|--|
| 2018_v1 | | ARR recommends the use of RCP4.5 and RCP 8.5 values. These have been updated to the values that can be found on the climate change in Australia website. |



Premise



premise.com.au



Premise

NATIONWIDE MACHINERY SALES & HIRE

71 Foster Street Gracemere

TRAFFIC IMPACT ASSESSMENT

Report No: MIS-1076/R01

Rev: A

21 June 2023

ROCKHAMPTON REGIONAL COUNCIL

APPROVED PLANS

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

Development Permit No.: D/168-2022

Dated: 14 September 2023

© Premise 2023

This report has been prepared by Premise Australia for Nationwide Machinery Sales & Hire; may only be used and relied on by Nationwide Machinery Sales & Hire; must not be copied to, used by, or relied on by any persons other than Nationwide Machinery Sales & Hire without the prior written consent of Premise. If Nationwide Machinery Sales & Hire wishes to provide this Report to a third party recipient to use and rely upon, the recipient agrees: to acknowledge that the basis on which this Report may be relied upon is consistent with the principles in this section of the Report; and to the maximum extent permitted by law, Premise shall not have, and the recipient forever releases Premise from, any liability to recipient for loss or damage howsoever in connection with, arising from or in the respect of this Report whether such liability arises in contract, tort including negligence.

| DOCUMENT AUTHORISATION | | | | | |
|------------------------|---------------|-------------------------|--|---------------|--|
| Revision | Revision Date | Report Details | | | |
| A | 27/03/23 | For submission | | | |
| B | 21/06/23 | Informal RFI Response 2 | | | |
| | | | | | |
| Prepared By | | Reviewed By | | Authorised By | |
| Lawrence Mills | LM | Bradley Jones | | Chris Shields | |

CONTENTS

| | |
|---|-----------|
| 1. INTRODUCTION | 1 |
| 1.1 BACKGROUND..... | 1 |
| 1.2 SCOPE AND STUDY AREA | 1 |
| 1.3 REQUEST FOR INFORMATION | 2 |
| 2. EXISTING CONDITIONS | 3 |
| 2.1 LAND USE AND ZONING | 3 |
| 2.2 ADJACENT LAND USES / APPROVAL..... | 3 |
| 2.3 SURROUNDING ROAD NETWORK DETAILS | 4 |
| 2.4 TRAFFIC VOLUMES | 5 |
| 2.5 INTERSECTION AND NETWORK PERFORMANCE..... | 6 |
| 2.6 ROAD SAFETY ISSUES..... | 7 |
| 2.7 SITE ACCESS | 7 |
| 3. PROPOSED DEVELOPMENT DETAILS | 8 |
| 3.1 DEVELOPMENT SITE PLAN..... | 8 |
| 3.2 OPERATIONAL DETAILS | 8 |
| 3.3 PROPOSED ACCESS AND PARKING..... | 9 |
| 4. DEVELOPMENT TRAFFIC | 10 |
| 4.1 TRAFFIC GENERATION | 10 |
| 4.2 TRIP DISTRIBUTION | 10 |
| 4.3 DEVELOPMENT TRAFFIC VOLUMES ON THE NETWORK | 11 |
| 5. IMPACT ASSESSMENT AND MITIGATION | 12 |
| 5.1 WITH AND WITHOUT DEVELOPMENT TRAFFIC VOLUMES..... | 12 |
| 5.2 ROAD SAFETY IMPACT ASSESSMENT AND MITIGATION | 14 |
| 5.3 ACCESS AND FRONTAGE IMPACT ASSESSMENT AND MITIGATION..... | 15 |
| 5.4 INTERSECTION DELAY IMPACT ASSESSMENT AND MITIGATION..... | 20 |
| 6. CONCLUSIONS AND RECOMMENDATIONS | 21 |
| 6.1 SUMMARY OF IMPACTS AND MITIGATION MEASURES..... | 21 |
| 6.2 CERTIFICATION STATEMENT AND AUTHORISATION..... | 21 |

FIGURES

| | |
|---|----|
| Figure 1 – Impact Assessment Area | 1 |
| Figure 2 – RRC Planning Scheme | 3 |
| Figure 3 – Macquarie Street / Foster Street Priority Controlled Intersection..... | 4 |
| Figure 4 – Observed (2023) Morning Peak Hour Traffic Volumes | 5 |
| Figure 5 – Observed (2023) Afternoon Peak Hour Traffic Volumes | 6 |
| Figure 6 – Proposed Development Layout..... | 8 |
| Figure 7 – Morning Peak Hour Development Traffic Volumes..... | 11 |
| Figure 8 – Afternoon Peak Hour Development Traffic Volumes..... | 11 |
| Figure 9 – ‘Design Year (2033) ‘Without Development’ Morning Peak Hour Traffic Volumes..... | 12 |

| | |
|--|----|
| Figure 10 – ‘Design Year’ ‘Without Development’ Afternoon Peak Hour Traffic Volumes | 13 |
| Figure 11 – ‘Design Year’ With Development Morning Peak Hour Traffic Volumes | 13 |
| Figure 12 – ‘Design Year’ With Development Afternoon Peak Hour Traffic Volumes | 14 |
| Figure 13 – Foster Street looking west from the existing site access (proposed site entry) | 16 |
| Figure 14 – Foster Street looking east from the existing site access (proposed site entry) | 16 |
| Figure 15 – Foster Street east from the proposed site exit | 17 |
| Figure 16 – Proposed Driveway Dimensions – CMDG-R-042 (B) | 18 |
| Figure 17 – Vehicle Swept Path for 19m Semi Trailer – East Direction | 18 |
| Figure 18 – Vehicle Swept Path Analysis for 19m Semi Trailer – West Direction | 19 |
| Figure 19 – Vehicle Swept Path Analysis for 26 m B-Double..... | 19 |

TABLES

| | |
|--|---|
| Table 1 – Intersection Volumes Below Which Capacity Analysis is Unnecessary (AGTM03-09)..... | 6 |
|--|---|

APPENDICES

| |
|--|
| APPENDIX A REQUESTS FOR INFORMATION |
| APPENDIX B DEVELOPMENT SITE PLAN |
| APPENDIX C CMDG STANDARD DRAWINGS |
| APPENDIX D TRAFFIC IMPACT ASSESSMENT CERTIFICATION |

1. INTRODUCTION

Premise Australia Pty Ltd (Premise) has been engaged by Nationwide Machinery Sales & Hire (Nationwide) to undertake a Traffic Impact Assessment (TIA) in accordance with the Department of Transport and Main Roads' (TMR's) "Guide to Traffic Impact Assessment" (GTIA) for the proposed development located at 71 Foster Street, Gracemere (Lot 28 on RP604012).

1.1 Background

Nationwide Machinery Sales & Hire is proposing to utilise Lot 28 on RP604012, known as 71 Foster Street, for outdoor heavy machinery sales with the Development Application (D/168-2022) received by Rockhampton Regional Council (RRC) on 14 December 2022. The new development will consist of a designated machinery sales area, hardstand parking, sales office, mechanical workshop and washdown area.

In response to the development application a request for information (RFI) was raised by RRC on 19 January 2023, and a subsequent information RFI was raised by RRC on 21 April 2023. This TIA responds to both.

1.2 Scope and Study Area

Figure 1 shows the impact assessment area which consists of the proposed development site and the existing priority-controlled intersection between Macquarie Street and Foster Street.

Figure 1 – Impact Assessment Area



1.3 Request For Information

The original RFI raised by RRC is enclosed in Appendix A, Item 1.1 of the RFI requests details to be provided for development traffic generation and any impact on the existing nearby road network. Specifically, a TIA was stipulated if traffic was considered greater than 5% of existing Foster Street traffic volumes.

2. EXISTING CONDITIONS

2.1 Land Use and Zoning

As illustrated in Figure 2, the subject site is currently zoned Medium Impact Industry in the RRC Planning Scheme and is occupied by a single residential dwelling.

Figure 2 – RRC Planning Scheme



2.2 Adjacent Land Uses / Approval

The subject site is located in a narrow band of Medium Impact Industry which forms a buffer between High Impact Industry to the east and Rural land to the west, as shown by Figure 2.

2.3 Surrounding Road Network Details

The surrounding road network is shown by Figure 1 and Figure 2.

2.3.1 FRONTAGE ROADS

The subject site has frontage to Foster Street on the southern lot boundary. Foster Street is classified as Industrial Access under the governing authority of RRC and consists of a single lane in each direction. The road is approximately 1.86 km in length and, for the purposes of this report, is described as being aligned east-west from Capricorn Street to Stewart Street. The carriageway width varies along the route. Near the intersection with Stewart Street the seal is approximately 5.4 m wide without a kerb, whilst to the east of Macquarie Street the carriageway is an 8.4 m wide seal with kerb.

It is also important to note that 19m semi-trailers can approach and leave the site from both directions, however A-doubles, B-Doubles and Road Trains are only approved to approach and leave from the east (Macquarie St end).

2.3.2 INTERSECTIONS

This assessment will investigate the priority controlled (give way) intersection between Macquarie Street and Foster Street, as shown in Figure 3. The subject intersection is a crossroads with Macquarie Street, described as aligned north-south, having priority. All intersection legs feature a two-way single lane carriageway, with no designated turning lanes. Both Macquarie Street and Foster Street are under the Jurisdiction of RRC.

Figure 3 – Macquarie Street / Foster Street Priority Controlled Intersection.



2.4 Traffic Volumes

RRC supplied traffic count data which was collected between 21st January 2014 and 24th February 2014 adjacent to 63 Foster Street (immediately to the west of the development site). The data obtained from this survey included:

- The Average Daily Traffic (ADT) reported during this period was 173 vehicles per day (vpd) with 27.6% heavy vehicles (%HV).
- The morning peak hour is reported as 6-7AM with 12.7 vehicles per hour (vph).
- The afternoon peak hour is reported as 3-4PM with 14.1 vph.

Additionally, Premise undertook traffic counts at the Macquarie Street / Foster Street intersection on 22nd February 2023 from 5:30AM to 7:30AM and 2:30PM to 4:30PM. These time periods were selected as extending half an hour either side of the weekday peak hours reported by RRC for the 2014 traffic count. Observed AM and PM traffic volumes, are illustrated in Figure 4 and Figure 5 respectively. The observed peak hours and %HV during these periods were found to be consistent with the RRC supplied data.

Figure 4 – Observed (2023) Morning Peak Hour Traffic Volumes

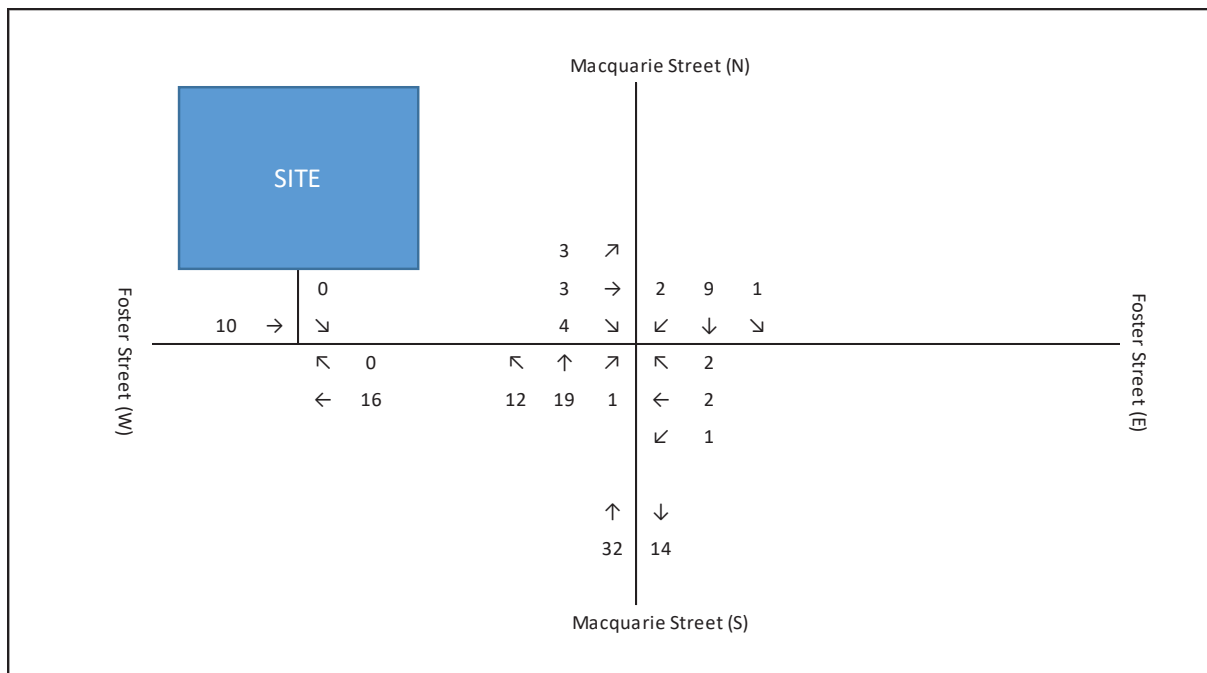
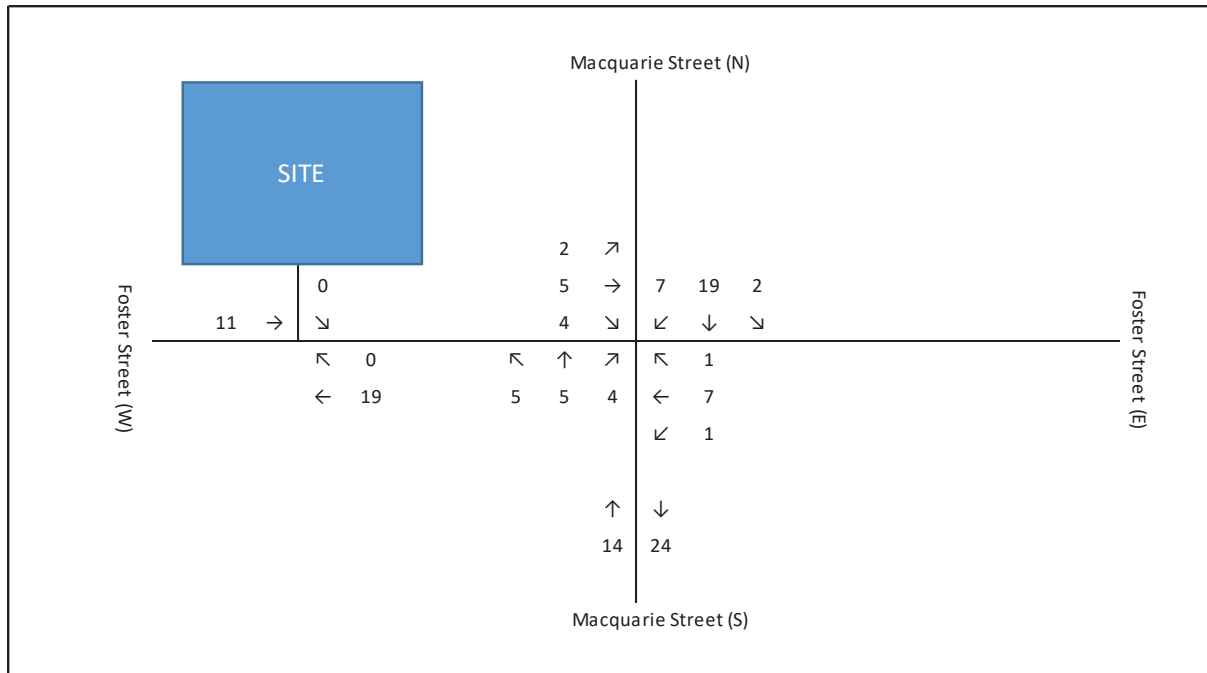


Figure 5 – Observed (2023) Afternoon Peak Hour Traffic Volumes



2.5 Intersection and Network Performance

The 2009 edition of Austroads "Guide to traffic Management Part 3: Traffic Studies and Analysis" (AGTM03-09) states that "at unsignalised intersections with minor roads where there are relatively low volumes of cross and turning traffic, capacity considerations are usually not significant, and capacity analysis is unnecessary." Table 1 reproduced from AGTM03-09 sets out details of intersection volumes below which capacity analysis is unnecessary.

Table 1 – Intersection Volumes Below Which Capacity Analysis is Unnecessary (AGTM03-09)

| Type of road | Light cross and turning volumes maximum design hour volumes vehicles per hour (two way) | | |
|----------------------|---|------|------|
| | | | |
| Two-lane major road | 400 | 500 | 650 |
| Cross road | 250 | 200 | 100 |
| Four-lane major road | 1000 | 1500 | 2000 |
| Cross road | 100 | 50 | 25 |

As Macquarie Street is a two-lane major road and both Macquarie Street and Foster Street currently carry less than 100 vph as indicated in Section 2.4, the intersection of Macquarie Street with Foster Street does not require analysis.

2.6 Road Safety Issues

To identify existing road safety issues in the study area road crash location data reported in Queensland Globe was reviewed. No road crashes are reported on Foster Street in Queensland Globe. The closest crashes to the development site reported in Queensland Globe occurred on Macquarie Street near the intersection with Middle Road approximately 670m from the Foster Street intersection.

2.7 Site Access

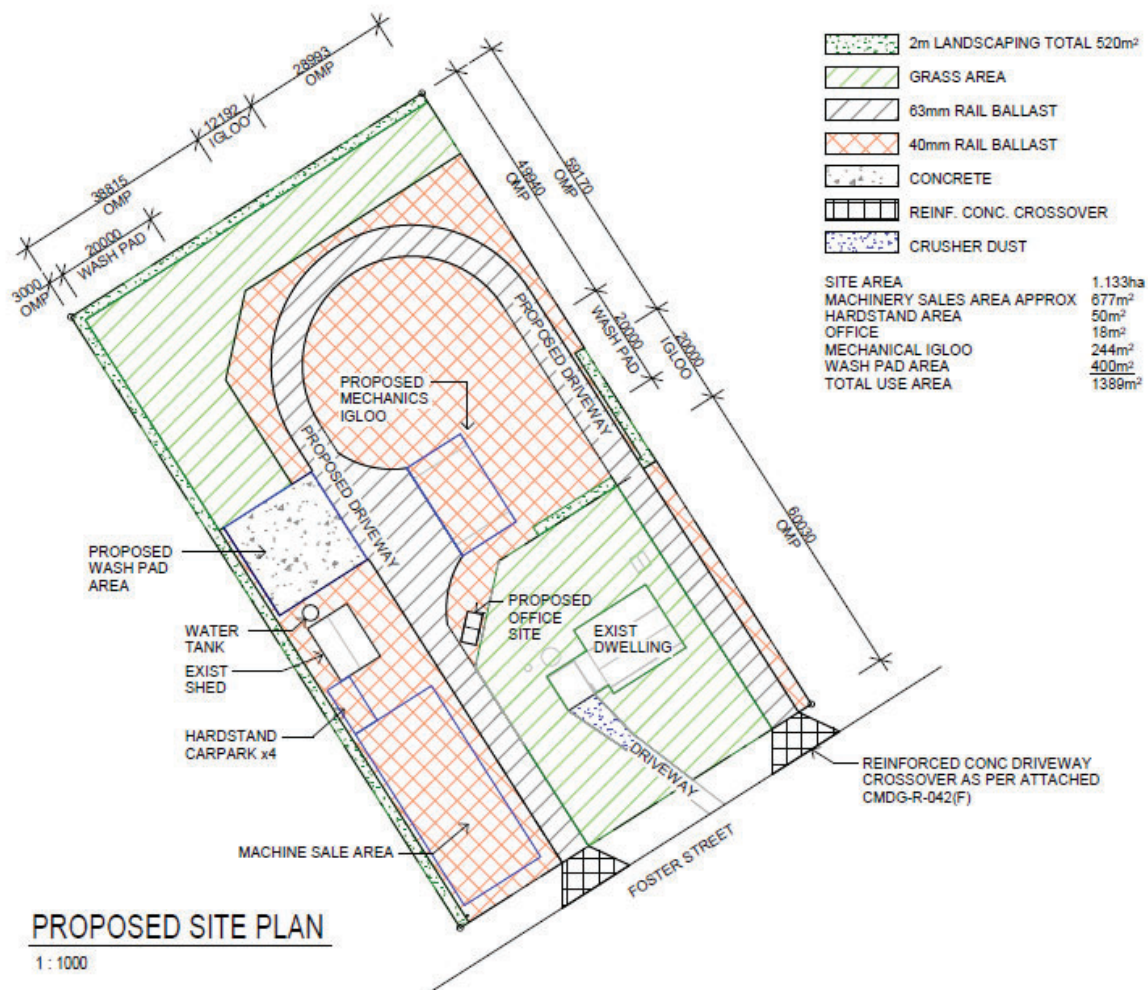
The development site currently has a single unsealed crossover on Foster Street.

3. PROPOSED DEVELOPMENT DETAILS

3.1 Development Site Plan

The proposed development site plan provided by Designtek is attached in Appendix B and reproduced in Figure 6. The proposed development consists of a mechanics workshop, washdown bay, hardstand parking area, office and sales area.

Figure 6 – Proposed Development Layout



3.2 Operational Details

Nationwide have advised that the business will operate between 7:00AM to 5:30PM Monday to Saturday and generate up to 10 trucks per day from the second year of operation. Furthermore, it is expected that up to three (3) staff members will be present on site each day.

3.3 Proposed Access and Parking

Nationwide have proposed to separate entering and exiting traffic with vehicles entering via the existing driveway at the western end of the site and exiting via a new crossover at the eastern end of the site.

A hardstand area providing four (4) car parking spaces will be constructed for both staff and customers.

4. DEVELOPMENT TRAFFIC

4.1 Traffic Generation

As a conservative estimate of peak hour heavy vehicle traffic, it is assumed that two (2) heavy vehicles will be entering and exiting the site during the morning and afternoon peak hours. The design and check vehicles are a 19m semi-trailer and 26m B-Double respectively, which have been used for swept path analysis later in this report.

Also, it is assumed that three (3) staff members will enter the site during the morning peak hour and subsequently exit the site during the afternoon peak hour period.

4.2 Trip Distribution

Nationwide have advised that all development traffic is expected to approach / depart via Macquarie Street intersection.

4.3 Development Traffic Volumes on the Network

Estimated development traffic volumes on the study area road network are shown in Figure 7 and Figure 8 for the respective morning and afternoon peak hours.

Figure 7 – Morning Peak Hour Development Traffic Volumes.

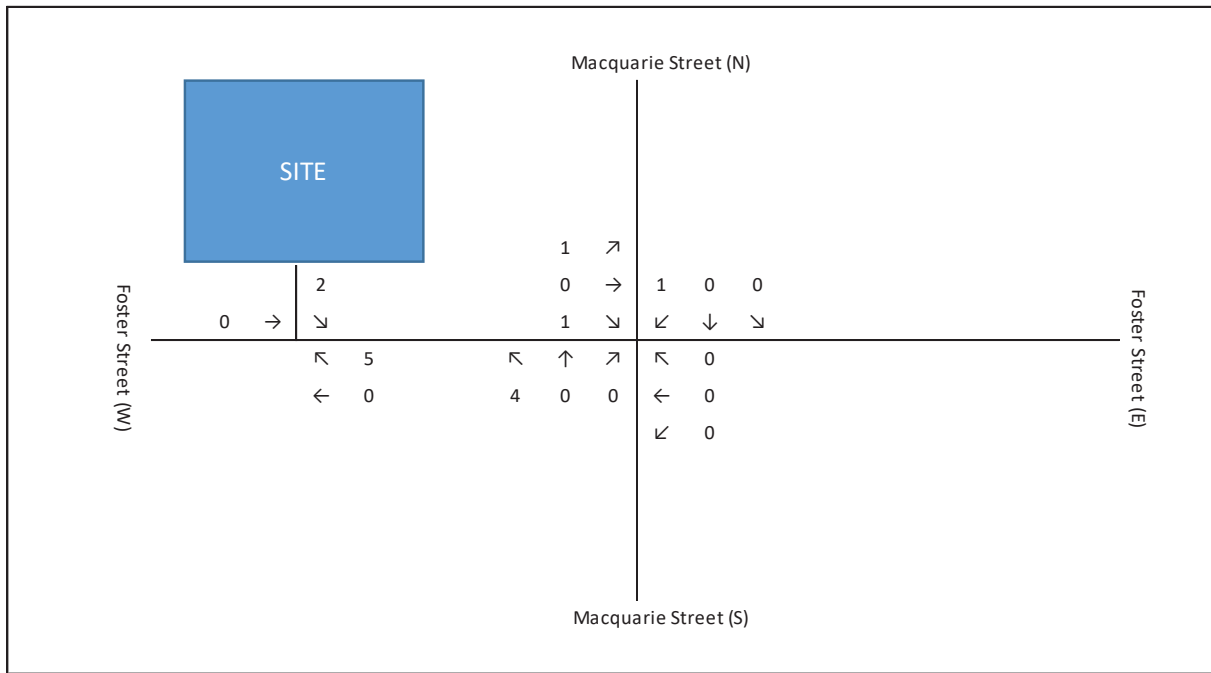
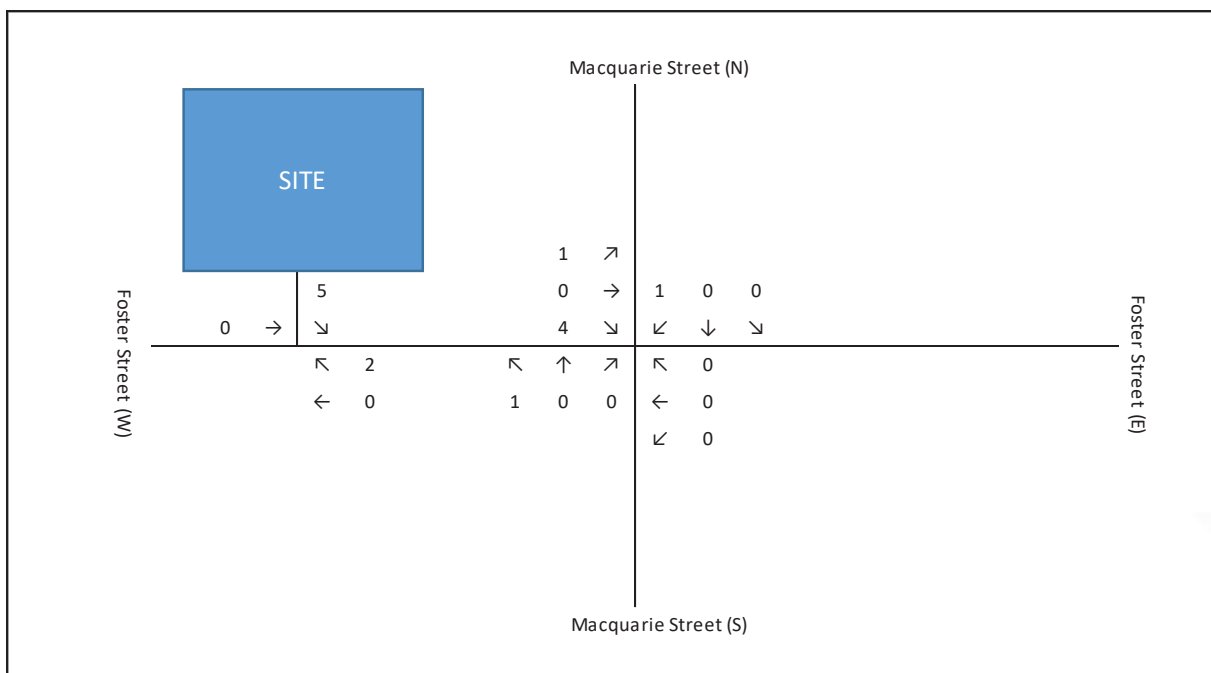


Figure 8 – Afternoon Peak Hour Development Traffic Volumes.



5. IMPACT ASSESSMENT AND MITIGATION

5.1 With and Without Development Traffic Volumes

5.1.1 “WITHOUT DEVELOPMENT” TRAFFIC VOLUMES

Existing traffic volumes shown in Figure 4 and Figure 5, have been adopted as the opening year 2023 ‘Without Development’ traffic volumes.

For the design year traffic volumes, a 3% linear annual growth rate has been adopted to determine the ‘without development’ traffic volumes 10 years from the opening year, that is, the design year is 2033. The estimated ‘without development’ morning and afternoon peak hour traffic volumes in the design year (2033) are illustrated in Figure 9 and Figure 10 respectively.

Figure 9 – ‘Design Year (2033) ‘Without Development’ Morning Peak Hour Traffic Volumes

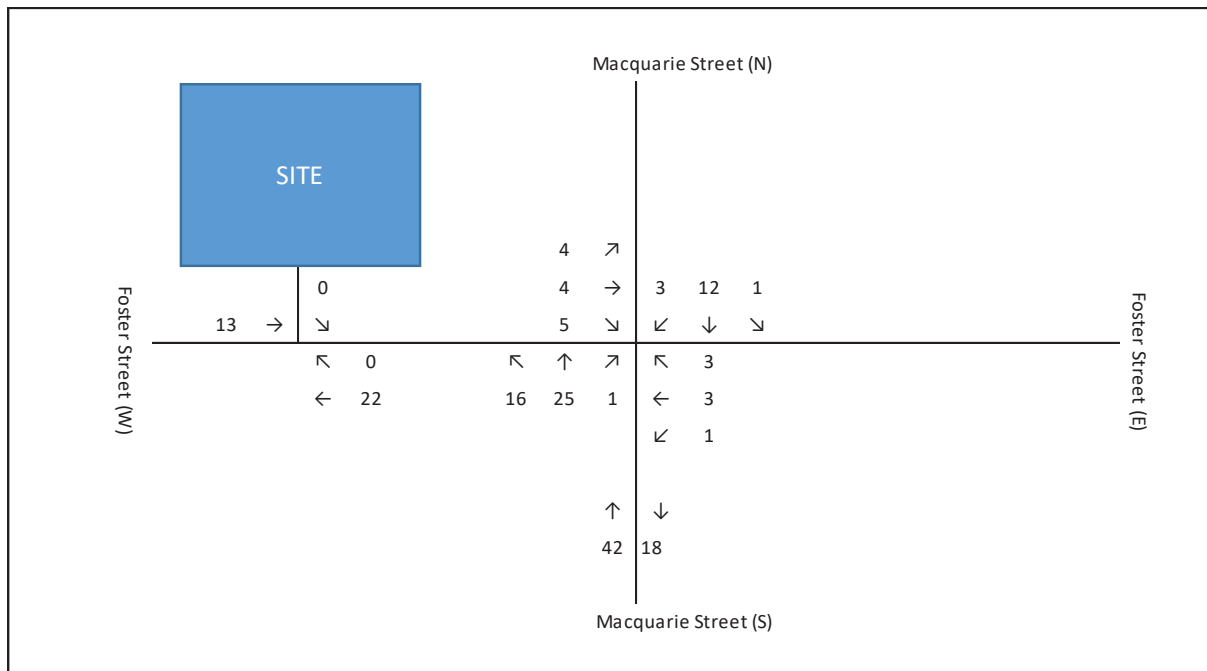
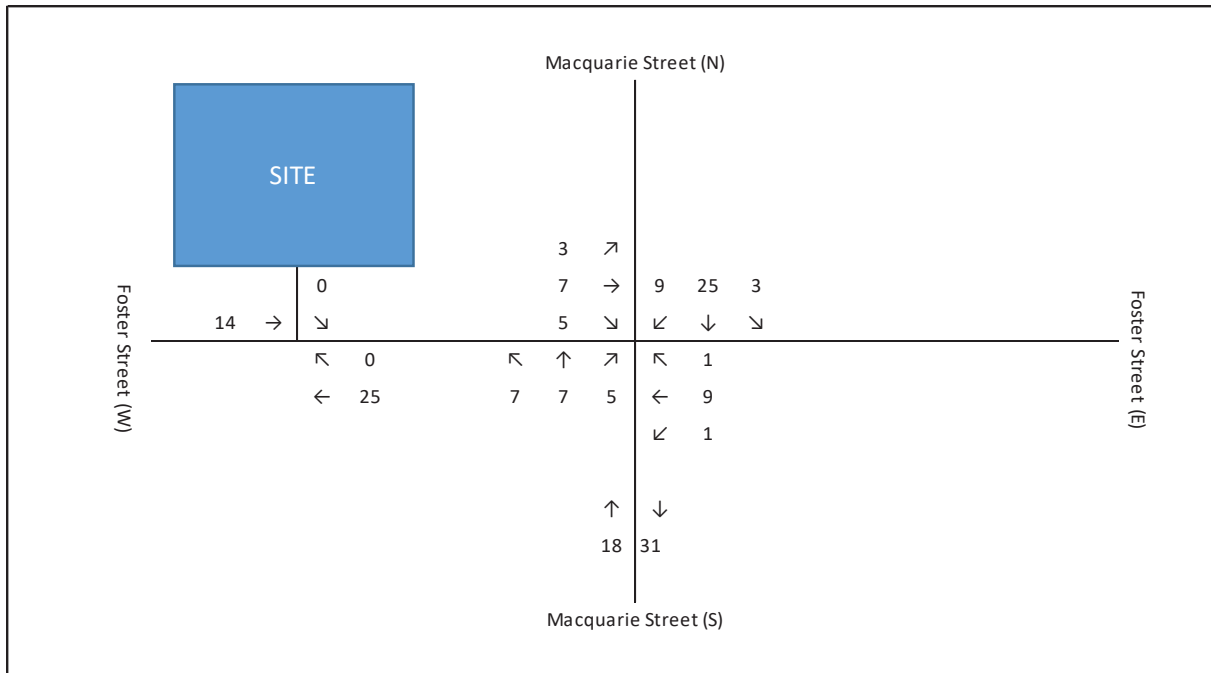


Figure 10 – ‘Design Year’ ‘Without Development’ Afternoon Peak Hour Traffic Volumes



5.1.2 “WITH DEVELOPMENT” TRAFFIC VOLUMES

The estimated ‘with development’ traffic volumes for the morning and afternoon peak hours in the design year (2033) are shown in Figure 11 and Figure 12. This traffic was estimated by summing development traffic volumes from Section 4.3 and the design year (2033) ‘without development’ traffic volumes from Section 5.1.2.

Figure 11 – ‘Design Year’ With Development Morning Peak Hour Traffic Volumes

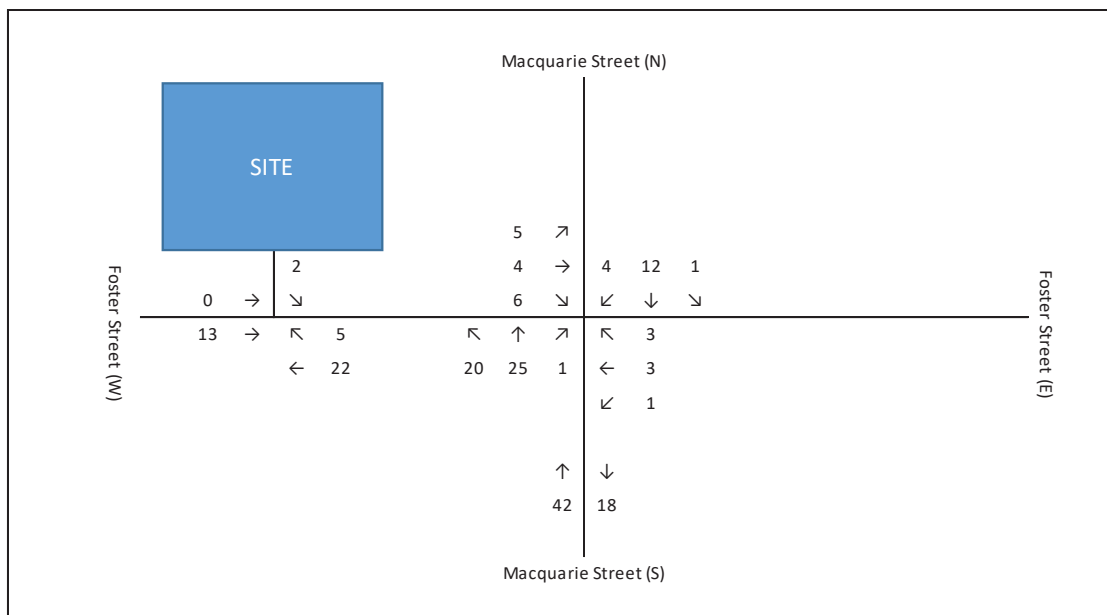
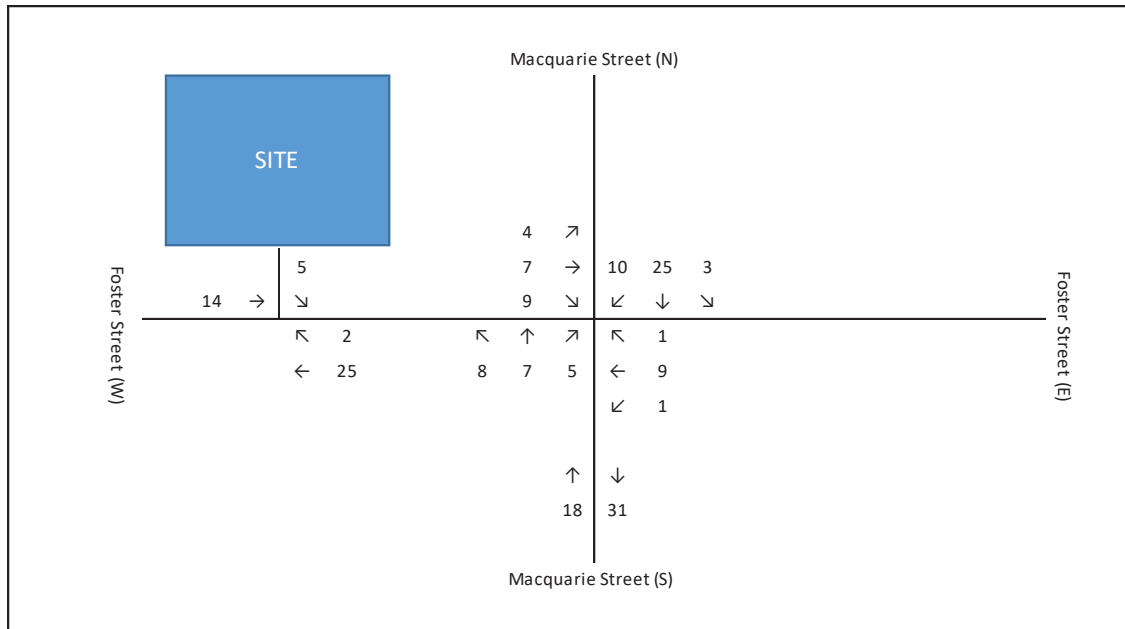


Figure 12 – ‘Design Year’ With Development Afternoon Peak Hour Traffic Volumes



5.2 Road Safety Impact Assessment and Mitigation

The GTIA specifies the following two (2) stage process for assessment of road safety impacts:

1. Risk Assessment to determine the change in risk profile associated with existing road safety issues as a result of the development; and
2. Safety Assessment to determine if changes to infrastructure require either a road safety audit by an accredited road safety auditor (RSA) or a road safety assessment by either an RSA or a registered professional engineer of Queensland (RPEQ).

5.2.1 RISK ASSESSMENT

A risk assessment was conducted in accordance with the risk assessment process specified by the GTIA, the risk assessment process involves the following steps for each risk item:

- Evaluate potential consequences based on accident severity from 1, property damage only, to 5, fatality;
- Evaluate potential likelihood from 1, rare, to 5, almost certain; and
- Sum the potential consequence and likelihood values to determine the risk score with scores up to and including 4 considered low risk, 5 to 7 medium risk, and 8 or greater high risk.

As mentioned in Section 2.4, no crashes were identified on Foster Street or on Macquarie Street within 100m of the Foster Street intersection. The complete absence of crash records in Queensland Globe for the study area suggests that the potential likelihood and / or potential consequence of any existing risk items results in a low overall risk score. Therefore, the marginal increase in traffic originating from the proposed development will not result in any existing risk items becoming high risk and therefore no action is required to mitigate existing road safety issues.

5.2.2 SAFETY ASSESSMENT

In accordance with the GTIA, both Macquarie Street and Foster Street are assessed as having a low road environment risk rating based on having a posted speed limit of 60 km/h and an AADT of less than 8,000vpd.

As the risk level of the road environment is low, changes to the road environment do not require a road safety audit but should be subject to a road safety assessment. A road safety assessment may be conducted by either an accredited RSA or an RPEQ. This requirement would be satisfied by safety reports prepared in accordance with Section 295 of the Work Health and Safety Regulation 2011 as part of the design process.

5.3 Access and Frontage Impact Assessment and Mitigation

5.3.1 SIGHT DISTANCES

Available sight distances at both the proposed development entry via the existing site access and the proposed development exit to be constructed at the western end of the site have been assessed.

5.3.1.1 Site Entry

The minimum sight distance requirement for the site entry is approach sight distance (ASD). ASD is the distance at which a driver on the major road is able to identify the location of the access and take action to safely enter the site. A clear line of sight is required from the driver's eye to the surface of the access.

Minimum ASD is calculated using the formula,

$$ASD = \frac{R_T \times V}{3.6} + \frac{V^2}{254 \times (d + 0.01 \times a)}$$

where:

- R_T = reaction time
= 2.0sec (alert driving conditions in rural areas) ;
- V = design speed
= 70 km/h (10 km/h above the posted speed limit)
- d = coefficient of deceleration
= 0.36 (desirable value for most urban and rural road types); and
- a = longitudinal grade

The existing site access to be utilised as the entry to the proposed development is located on a grade which falls from east to west at approximately 3%. Therefore, require ASD at the proposed site entry is 88m for vehicles approaching from the west and 97m for vehicles approaching from the east.

A site inspection was undertaken on 24th February 2023, to determine visibility at the existing site access point which would be used as an entry only for the proposed development. As illustrated in Figure 13, visibility from the existing access (proposed entry) is unobstructed as far as Stewart Street approximately 700m to the west. Conversely, Figure 14 shows that visibility to the east is restricted by a crest approximately 90 m from the proposed entrance. The overhead powerlines and roadside fencing indicate that the crest is of a large radius. Therefore, features above the access surface such as gates and development signage will be visible from a greater distance than the access surface and effectively provide ASD on the east approach to the proposed site entry.

Figure 13 – Foster Street looking west from the existing site access (proposed site entry)



Figure 14 – Foster Street looking east from the existing site access (proposed site entry)



5.3.1.2 Site Exit

The minimum sight distance requirement for the site exit is safe intersection sight distance (SISD). SISD is the distance at which a driver on the major road can see a vehicle moving into a collision situation and decelerate to a stop before reaching the collision point. Minimum SISD is calculated using the formula,

$$SISD = \frac{D_T \times V}{3.6} + \frac{V^2}{254 \times (d + 0.01 \times a)}$$

where the meaning of variables is as for ASD with decision time, D_T , being the sum of reaction time, R_T , and observation time, O_T (3.0 sec). The proposed site exit is located on a crest resulting in the grade on Foster Street at the exit being approximately level ($a = 0\%$). Therefore, require SISD at the proposed site entry is 151m.

Figure 15 shows that a vehicle approaching the proposed site exit from the east would be able to see a vehicle exiting the development site from at least 190m away. As indicated in Section 5.3.1.1, visibility to the west of the proposed site exit is also acceptable.

Figure 15 – Foster Street east from the proposed site exit

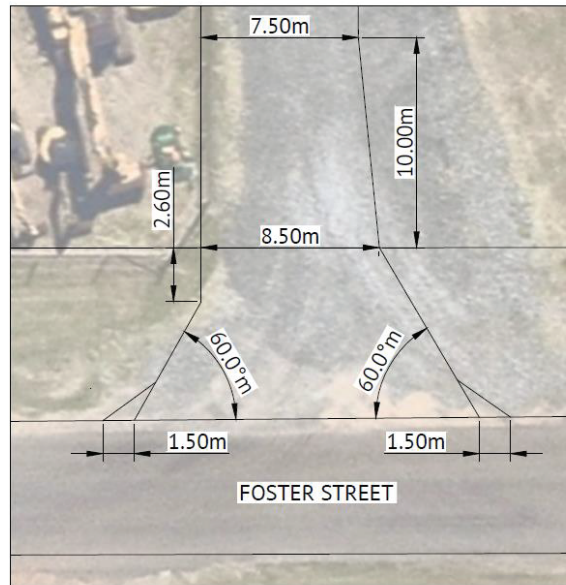


5.3.2 VEHICLE TURN PATH ASSESSMENT

Nationwide Machinery and Sales have advised that the typical vehicle that will most likely be used on site is a low loader, with the possibility that 26m B-double vehicles will enter the site occasionally. Vehicle swept path analysis has been undertaken using a 26m B-double and a 19m Semi-trailer. The development site plans shown in Appendix B, indicate a reinforced concrete driveway crossover in accordance with the Capricorn Municipal Design Guidelines drawing CMDG-R-042 *Type A – Two Way Access Commercial Driveway Slab* with a driveway width of 6m. However, vehicle swept path analysis undertaken has demonstrated that there may not be sufficient turning space to allow this vehicle to enter and exit the site. To allow more turning space, it has been proposed that the driveway design be modified Type B2 illustrated in CMDG-R-042A *Urban Commercial / Industrial Driveway*. The proposed driveway dimensions are shown in Figure 16. Vehicle

swept path analysis for the 19m semi-trailer for the east and west directions is shown in Figure 17 and Figure 18 respectively.

Figure 16 – Proposed Driveway Dimensions – CMDG-R-042 (B)



TYPICAL DRIVEWAY DIMENSIONS
TYPE B2 (CMDG-R-042A)

Figure 17 – Vehicle Swept Path for 19m Semi Trailer – East Direction

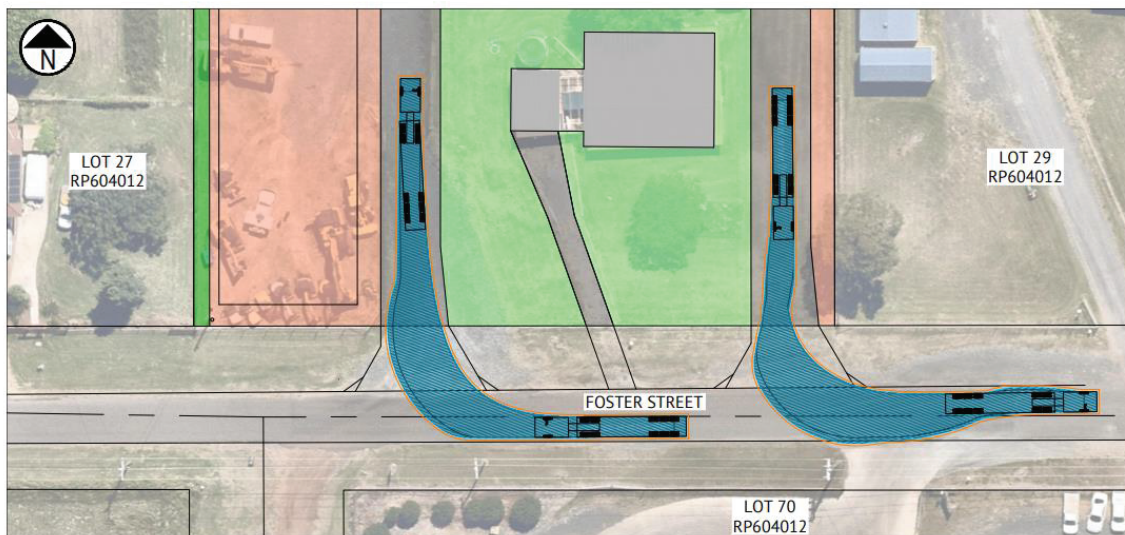
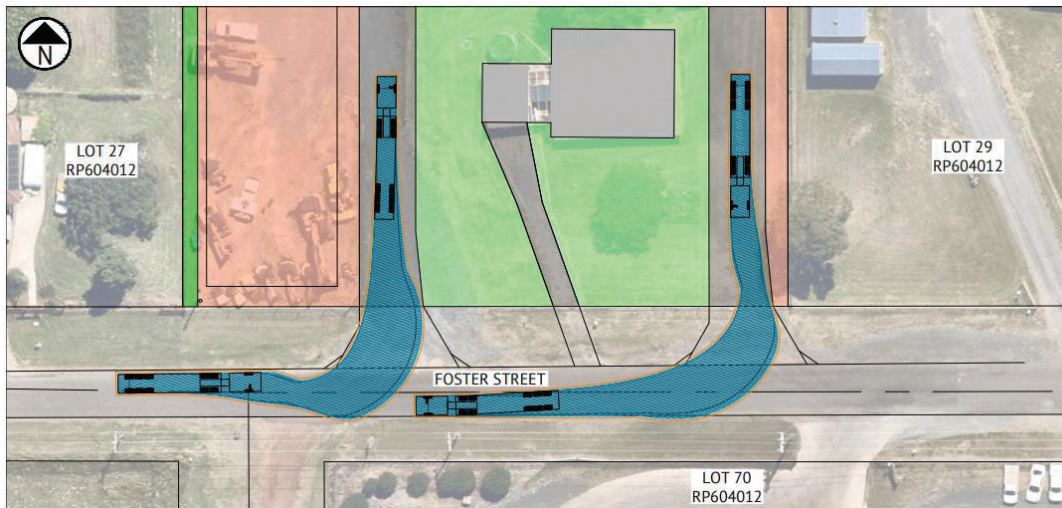


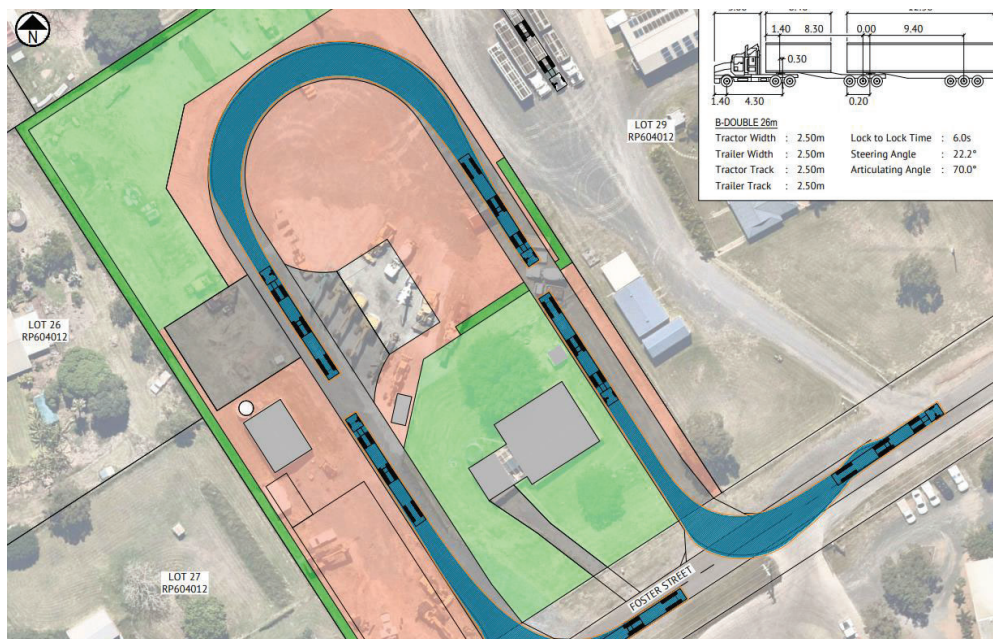
Figure 18 – Vehicle Swept Path Analysis for 19m Semi Trailer – West Direction



Furthermore, swept path analysis has been undertaken for a 26m B-double, so as to demonstrate that this vehicle can enter and exit the site if required to do so. This has been undertaken for entry and exit from the east directions as shown in Figure 19. It has been noted that B-doubles are not currently permitted to travel to or from the west direction.

When exiting the site 26m B-doubles may have to utilise part of the unsealed shoulder width of Foster Street and the neighbouring driveway of Lot 70 on RP604012. The exit swept path analysis indicates that 26m B-doubles are able to exit the site without interfering with the power lines opposite the site. Therefore, the site entry and exit has sufficient room for the design vehicles, providing that the dimensions shown in Figure 16 are adopted.

Figure 19 – Vehicle Swept Path Analysis for 26 m B-Double



5.4 Intersection Delay Impact Assessment and Mitigation

As described in Section 2.5, unsignalized intersections with minor roads containing relatively low traffic volumes do not require capacity analysis.

As indicated by Figure 6 and Figure 7, forecast traffic on Foster Street and Macquarie Street is expected to remain less than 100vph. Therefore, in accordance with Table 1, Section 2.5 and AGTM03-09, capacity analysis is unnecessary for the proposed site access.

6. CONCLUSIONS AND RECOMMENDATIONS

6.1 Summary of Impacts and Mitigation Measures

This TIA was undertaken to address the impacts of development traffic originating from the proposed Nationwide Machinery Sales & Hire development.

The road safety impact assessment indicates that there are no existing road safety issues in the impact assessment area which will require mitigation as a result of the proposed development and that the road environment safety rating of both Foster Street and Macquarie Street is low risk.

Traffic volumes on Foster Street are very low warranting the minimum standard of property access specified by CMDG for sealed roads. That is, property accesses should incorporate a sealed shoulder on the same side as the property access within 10 m of the property access centre line.

Visibility at the existing site access which is proposed to be utilised as the development entry and the proposed development exit to be constructed near the western property boundary is acceptable.

Austroads guidelines indicate that traffic volumes in the impact assessment area are low enough to not require capacity analysis of intersections.

6.2 Certification Statement and Authorisation

This report was prepared by Lawrence Mills under the direct supervision of Bradley Jones (RPEQ 19986).

The Traffic Impact Assessment Certification in accordance with the GTIA is attached in Appendix D.



APPENDIX A

REQUESTS FOR INFORMATION

19 January 2023

Our reference: D/168-2022
Enquiries to: Brendan Standen
Telephone: 07 4936 8099

Nationwide Machinery Sales & Hire
C/- Capricorn Survey Group (CQ) Pty Ltd
PO BOX 1391
ROCKHAMPTON QLD 4700

Dear Sir/Madam

INFORMATION REQUEST – DEVELOPMENT APPLICATION D/168-2022 FOR A MATERIAL CHANGE OF USE FOR OUTDOOR SALES – SITUATED AT 71 FOSTER STREET, GRACEMERE - LOT 28 ON RP604012

Council refers to your application received on 14 December 2022. Council officers have undertaken a detailed assessment of the development application and require you to provide further information to address the following issues:

1.0 ENGINEERING

- 1.1 Provide details regarding traffic generation including the design vehicle from the proposed development and any impact to the current traffic volumes on Foster Street and other nearby road network. A Traffic Impact Assessment report will be required if the traffic generation from the proposed development is greater than 5% of the traffic already using Foster Street. The traffic volume comparison must be carried out for peak hour traffic volumes in accordance with the Guide to Traffic Impact Assessment (GTIA) requirements. All reports to be carried out and signed by Registered Professional Engineer of Queensland (RPEQ).
- 1.2 Provide a Stormwater Management Plan that complies with the requirements of the Stormwater Management Code of the *Rockhampton Region Planning Scheme 2015* (v2.2) (the Planning Scheme). The Stormwater Management Plan must be prepared and certified by a RPEQ.
- 1.3 Provide information regarding proposed washdown bay including but not limited to treatment methods, storage and discharge arrangement etc.
- 1.4 Provide information including location of the existing on-site sewerage treatment area on the site.

Note: No development will be approved within on-site sewerage treatment area.

2.0 PLANNING

- 2.1 Provide an updated Site Plan that clearly shows (outlines):
 - 2.1.1. The proposed use area within the site, which includes all area required to accommodate vehicle parking and manouvering, as well as services.

- 2.1.2. The proposed surface treatment of the use areas within the site, including the areas in square meters.
 - 2.1.3. Dimensions of all proposed buildings and structures, including wash down area.
 - 2.1.4. Proposed setbacks of all buildings, structures and use areas to site property boundaries.
 - 2.1.5. Landscaping area provided along the road frontage of the site and common boundary between the site and lots 26 and 27 on RP60412 for a minimum width of two (2) metres.
- 2.2 Provide elevation and floor plans for all proposed buildings and structures. All proposal plans must be dimensioned and drawn to scale.
- 2.3 Provide details on the type and number of goods that are likely to be display for sale or hire in the proposed 'Sales Area'.
- 2.4 Confirm the proposed days and hours of operation, noting hours of operation will be limited in accordance with AO11.3 of the Medium Impact Industry Zone Code of the Planning Scheme.

Under section 13 of the Development Assessment Rules, the Applicant has three (3) options available in response to this information request. The Applicant must give the Assessment Manager:

- 1. all of the information requested; or
- 2. part of the information requested, together with a notice requiring the Assessment Manager and each referral agency to proceed with the assessment of the application; or
- 3. a notice:
 - i. stating the Applicant does not intend to supply any of the information requested; and
 - ii. requiring the Assessment Manager and each referral agency to proceed with the assessment of the application.

Response to this further information request should be forwarded to:

General.Enquiries@rrc.qld.gov.au or;
Development Assessment Section
Rockhampton Regional Council
PO Box 1860
ROCKHAMPTON QLD 4700

A response needs to be received within a period of three (3) months from the date of this letter, In accordance with section 68 (1) of the *Planning Act 2016* and sections 12 and 13 of the Development Assessment Rules. Please forward your response to this information request to Council at your earliest convenience, in order for the assessment of your application to progress further.

Should you have any queries regarding the above information request, please contact the undersigned on 07 4936 8099.

Yours faithfully



Brendan Standen
Acting Coordinator Development Assessment
Planning and Regulatory Services

Information Request Response Form
(to be returned to the Assessment Manager with the response)

I _____ choose to respond to the Assessment Manager's
Information Request:

- ☐ in full;
OR
- ☐ in part, with this notice requiring the Assessment Manager and each referral agency to proceed with the assessment of the application;
OR
- ☐ stating that I do not intend to supply any of the information requested; and requiring the Assessment Manager and each referral agency to proceed with the assessment of the application.

A copy of the response to the Assessment Manager's information request has been provided to all Referral Agencies nominated on the Confirmation Notice.

I understand the requirements of this Information Request as listed above.

Signed : _____ Date : _____

Position : _____

From: Declan Cox <Declan.Cox@rrc.qld.gov.au>
Sent: Friday, 21 April 2023 5:46 PM
To: 'Capricorn Survey Group CQ'
Cc: Chris Shields
Subject: FW: [#MIS-1076] D/168-2022 - Further information is required - Outdoor Sales - 71 Foster Street, Gracemere

Hi Richard,

As discussed, we have outlined below the remaining items not addressed as part of the information request response dated 4 April 2023 and further information required.

ENGINEERING

Item 1.1 – Traffic Management Report

- Please confirm the design vehicle for the proposed development.
- Please provide swept-paths for the design vehicle at the proposed entry & exist locations. Please determine appropriate road widening/sealing areas at entry/exit points to suit with the swept-paths.

Item 1.2 – Stormwater Management Plan

- Please provide proposed materials and fraction impervious percentage and area (m²) for the development including but not limited to proposed Machine sale area + hardstand, proposed wash pad, proposed mechanic igloo, proposed driveways, possible truck parking area, possible truck manoeuvring area etc.
 - a. Please provide total impervious area for the development considering abovesaid all areas.
- Please provide total area of the development footprint. Depending on the total footprint and total impervious area, please confirm the total impervious area is less than 25%. If it is greater than 25% water quality assessment must be undertaken.
- Please include all abovesaid impervious areas for the water quantity calculation/model. Appropriate detention must be determined/proposed to suit for the proposed development.

PLANNING

Item 1.4

- Is there any additional demand on the existing onsite effluent treatment? i.e. additional toilets in the proposed office that intends to discharge to the existing facility onsite.

Item 2.11

- Mark up carparking areas on site plan to demonstrate compliance with minimum carparking numbers.

Item 2.1.2

- Provide further details on all surface treatment use areas for outdoor sales footprint in square meters which may be displayed as a legend on the plans. I.e. gravel areas, concrete/bitumen hardstand areas onsite.

Item 2.13

- Amended plans provided have not dimensioned all buildings and structures onsite. Please provide plans that include all the uses that are dimensioned.

Item 2.1.4

- Provide amended plans that show all setbacks on buildings or structures. Currently the amended plans only include partial setbacks.

Item 2.1.5

- Confirm landscaping dimensions on plan/legend that the proposed landscaping is a minimum width of 2 metres wide.

Item 2.2

- Provide elevations and floor plans for all buildings and structures.

Can you also confirm the following:

- Provide details on quantities and types of fluids that are proposed to be stored on-site, including the location of these.

Please do hesitate to contact me to discuss any of the items above.

Kind Regards,

Declan Cox

Planning Officer | Development Assessment

Rockhampton Regional Council

Ph: 4932 9000 | E-mail: declan.cox@rrc.qld.gov.au

Address: PO Box 1860, Rockhampton Q 4700 | Web: www.rrc.qld.gov.au

Like us: www.facebook.com/RockhamptonRegionalCouncil | Follow us: www.twitter.com/RRCouncil



ACCOUNTABLE | CUSTOMER FOCUSED | PEOPLE DEVELOPMENT | ONE TEAM | CONTINUOUS IMPROVEMENT

From: Chris Shields <chris.shields@premise.com.au>

Sent: Tuesday, 4 April 2023 10:02 AM

To: General Enquiries <General.Enquiries@rrc.qld.gov.au>; Brendan Standen <Brendan.Standen@rrc.qld.gov.au>

Cc: James Berriman Nationwide Machinery Sales & Hire <James@nwmachinery.com.au>; Steve Guy

<SteveGuy@maasgroup.com.au>; richard@csgcq.com.au

Subject: [#MIS-1076] Full RFI Response - D/168-2022 - MCU DA at 71 Foster St, Gracemere

[External Email] This email was sent from outside the organisation – be cautious, especially with links and attachments.

Hi Brendan,

In response to your Information Request Notice for D/168-2022 (MCU DA at 71 Foster St, Gracemere) dated 19 January 2023, please find enclosed a full RFI response package for your review and assessment.

If you require any further information or would like to discuss, please don't hesitate to get in contact.

Regards,

Chris

0407036875



CHRIS SHIELDS

General Manager – Rockhampton

T 07 4829 3660 | M 0407 036 875



Be in the know!
www.facebook.com/RockhamptonRegionalCouncil
www.twitter.com/RRCouncil
Keeping you up to date with Council news, services, programs and events.

This message and any attachments are for the named person's use only. It may contain confidential, proprietary or legally privileged information and may be protected by copyright. No confidentiality or privilege is waived or lost by any mistransmission. If you receive this message in error, please immediately delete it and all copies of it from your system, destroy any hard copies of it and notify the sender. You must not, directly or indirectly, use, disclose, distribute, print, or copy any part of this message if you are not the intended recipient. Rockhampton Regional Council and any of its subsidiaries each reserve the right to monitor all e-mail communications through its networks. Any views expressed in this message are those of the individual sender, except where the message states otherwise and the sender is authorised to state them to be the views of any such entity. It is the addressee's responsibility to scan this message for viruses. Rockhampton Regional Council does not warrant that the information is free from any virus, defect or error.



APPENDIX B

DEVELOPMENT SITE PLAN

DRAWING LIST

| DWG No. | DRAWING NAME | REV. |
|---------|-------------------------|------|
| WD01 | NOTES AND LOCALITY PLAN | A |
| WD02 | SITE | A |
| WD03 | EXIST FLOOR PLANS | A |
| WD04 | EXIST SHED PLANS | A |
| WD05 | ELEVATION - HOUSE | A |
| WD06 | ELEVATION - SHED | A |
| WD07 | SECTIONS | A |
| WD08 | PROPOSED SITE PLAN | A |
| WD09 | IGLOO LAYOUT | A |
| WD10 | PHOTOS | A |

GENERAL NOTES

CONTRACTOR TO CONFIRM ALL DIMENSIONS, SITE LEVELS, FINISH FLOOR LEVELS BEFORE COMMENCING WORK.

FOR ALL CONSTRUCTION DETAILS NOT SHOWN TO BE CARRIED OUT IN ACCORDANCE WITH TIMBER FRAMING MANUAL AS1684 (C2)

ALL WORK TO BE CARRIED OUT TO LOCAL AUTHORITY REQUIREMENTS

STORM WATER DRAINAGE
- WHERE STORM WATER SYSTEM NOT PROVIDED, DOWN PIPE DISCHARGE TO BE DISPERSED AWAY FROM ALL STRUCTURES. (REFER AS2870.1/ ENGINEERING REQUIREMENTS FOR REACTIVE SITES)

FALL GROUND AWAY FROM ALL BUILDINGS - 100mm MIN. OVER 1m ON ALL SIDES, SHAPE GROUND TO DIVERT ALL SURFACE WATER AWAY FROM FOUNDATIONS AND ENSURE NO PONDING.

REFER TO "HOME OWNERS GUIDE FOR TERMITE PROTECTION" (AVAILABLE FROM QMBA) PROVIDE TERMITE PROTECTION IN ACCORDANCE WITH BCA - QUEENSLAND AMENDMENTS, AS3660 "PROTECTION OF BUILDINGS FROM SUBTERRANEAN TERMITES" AND LOCAL AUTHORITY REQUIREMENTS. HOME OWNER AND SUBSEQUENT OWNERS SHALL BE RESPONSIBLE FOR ARRANGING TERMITE INSPECTIONS BY TRAINED PERSON (RECOMMENDED 12 MONTH INTERVALS).

RP DETAILS

LOT 28 ON RP604012
LOCALITY: GRACEMEREL.
LOCAL AUTHORITY: ROCKHAMPTON COUNCIL.
SITE AREA: 11,330m²



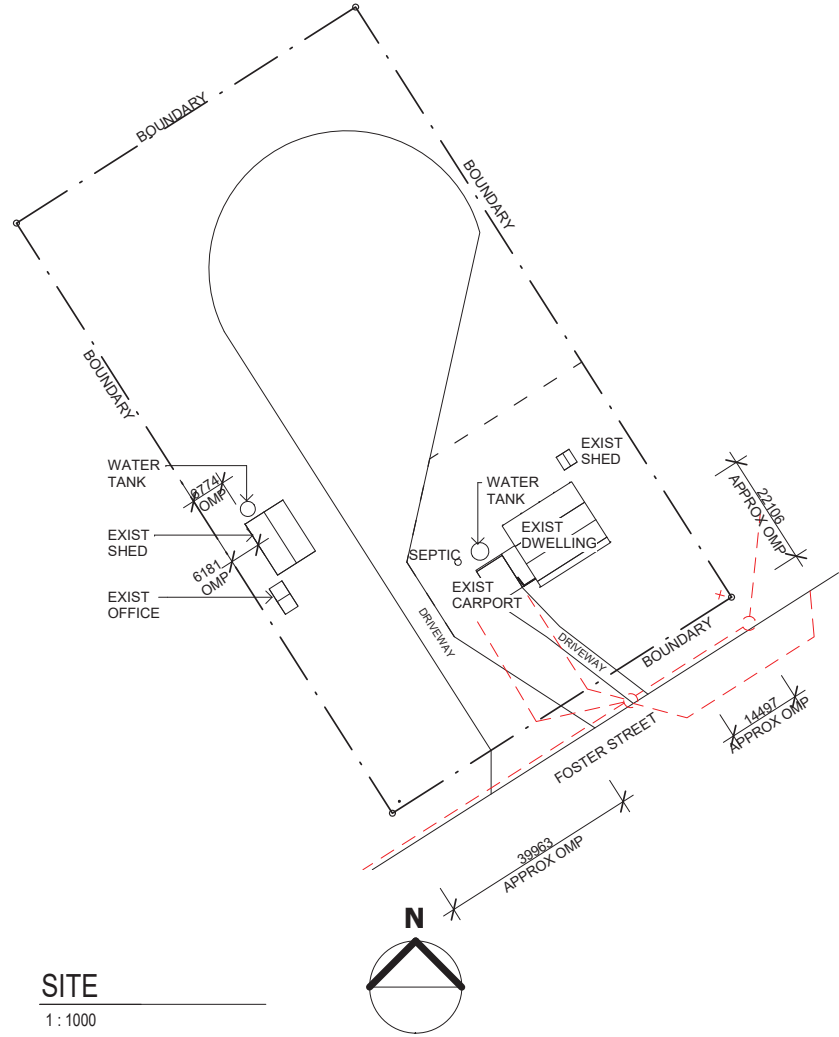
LOCALITY

1:1000

LOCATIONS OF PROPOSED WORK

| | | | | | |
|--|--|--|--|--|-------------------------------|
| project: PROPOSED WORK FOR 71 FOSTER ST, GRACEMERE | |  Shop 5/10 Denham St Rockhampton QLD, 4700 p 0749 222880 | | title: NOTES AND LOCALITY PLAN | |
| client: NATIONWIDE MACHINERY SALES & HIRE | | building design - documentation | | scale: As indicated | project no: 2302-03 |
| | |  QBCC MEM. NO # 1123040 BDAQ MEM. NO # 0000761 | | sheet no: 1 of 10 | drawing no: WD01 |
| | | | | drawn: AG | rev: A |

07/06/23 9:45:49 AM

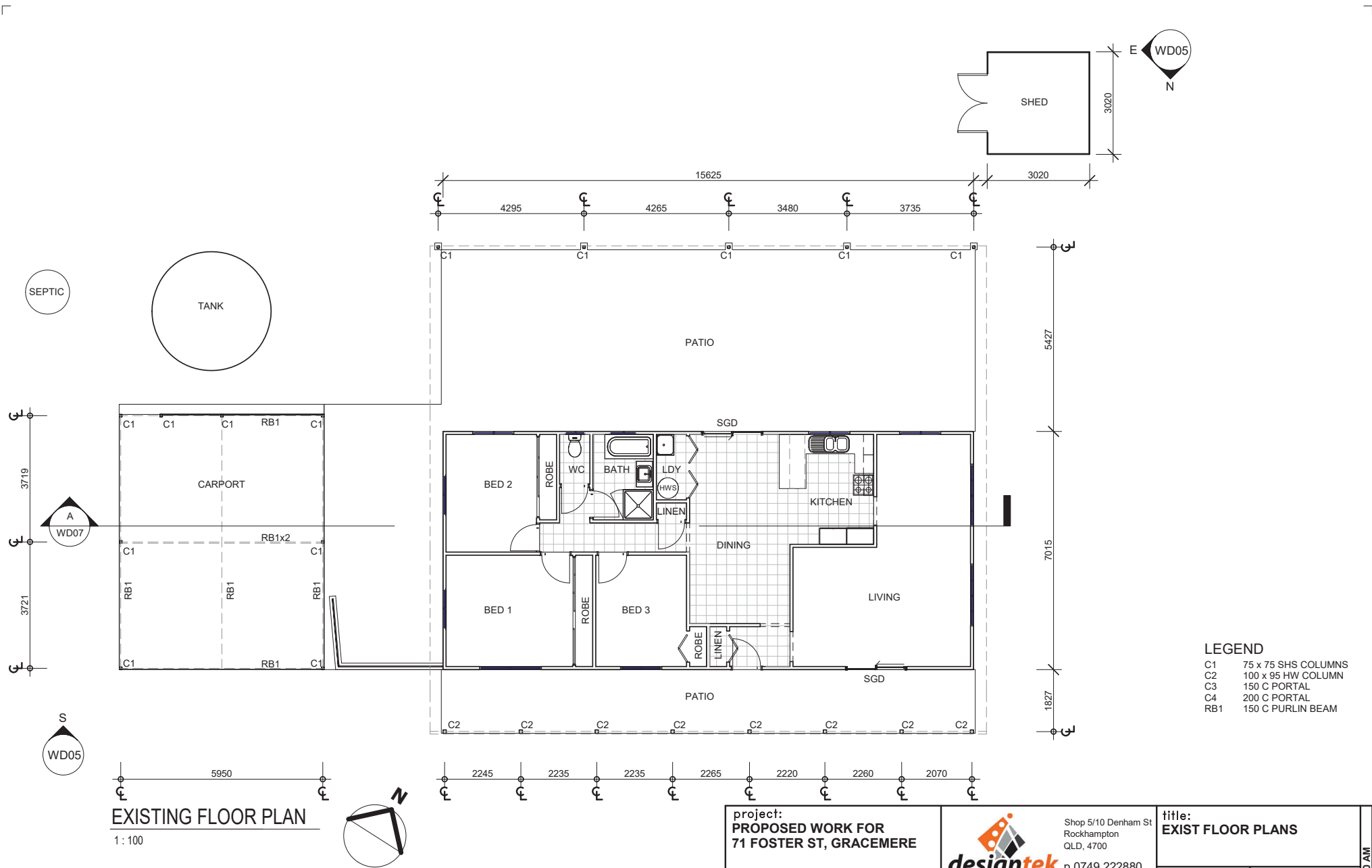


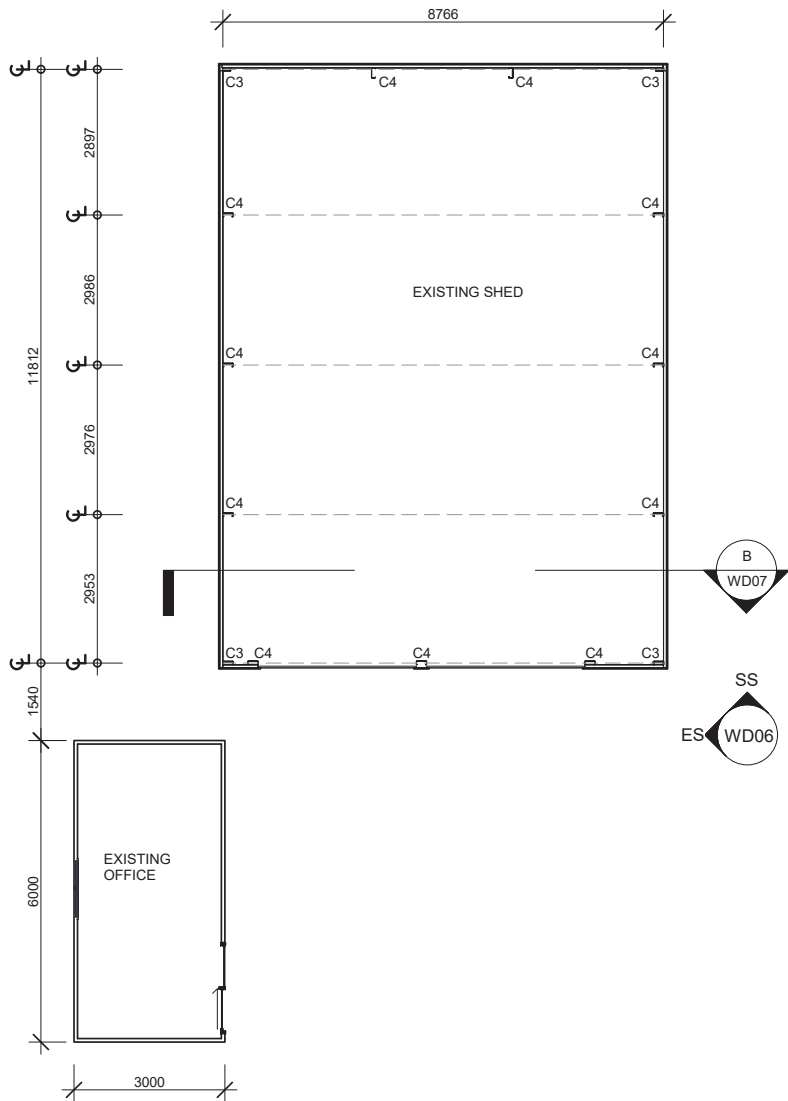
SITE

1 : 1000

| | | | | |
|---|--|--|------------------------------|-------------------------------|
| project: PROPOSED WORK FOR 71 FOSTER ST, GRACEMERE |  Shop 5/10 Denham St Rockhampton QLD, 4700 p 0749 222880 | | title: SITE | |
| | building design - documentation | | scale: 1 : 1000 | project no: 2302-03 |
| client: NATIONWIDE MACHINERY SALES & HIRE |  QBCC MEM. NO # 1123040 BDAQ MEM. NO # 0000761 | | sheet no: 2 of 10 | drawing no: WD02 |
| | | | drawn: AG | rev: A |

07/06/23 9:45:49 AM





EXIST SHED FLOOR PLAN

1:100

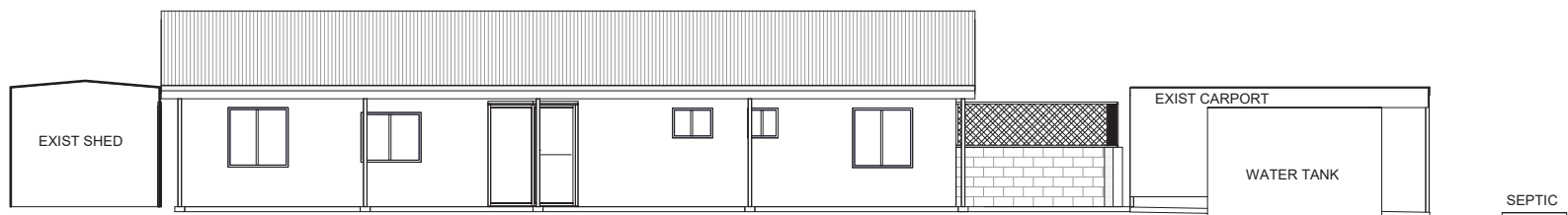


LEGEND

| | |
|-----|---------------------|
| C1 | 75 x 75 SHS COLUMNS |
| C2 | 100 x 95 HW COLUMN |
| C3 | 150 C PORTAL |
| C4 | 200 C PORTAL |
| RB1 | 150 C PURLIN BEAM |

| | | | | |
|---|--|--|--|--------------------------------------|
| project: PROPOSED WORK FOR 71 FOSTER ST, GRACEMERE |  Shop 5/10 Denham St Rockhampton QLD, 4700 p 0749 222880 | | title: EXIST SHED PLANS | |
| | building design - documentation | | scale: 1:100 | project no: 2302-03 |
| | client: NATIONWIDE MACHINERY SALES & HIRE | | sheet no: 4 of 10 | drawing no: WD04 |
| | QBCC MEM. NO # 1123040 BDAQ MEM. NO # 0000761 | | drawn: AG | rev: A |

07/06/23 9:45:50 AM



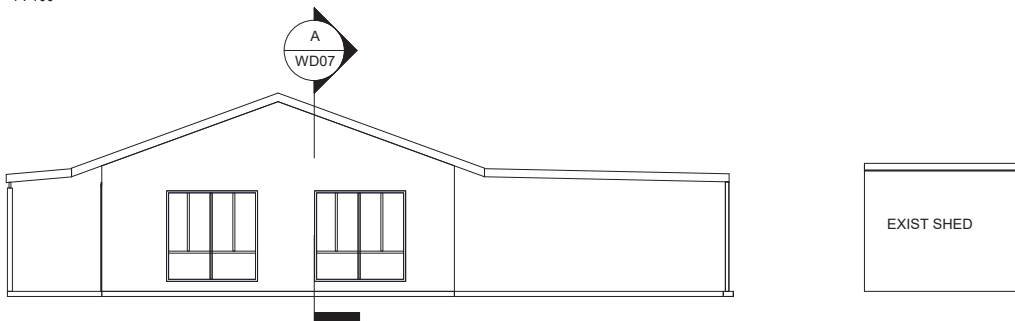
NORTH

1:100



SOUTH

1:100

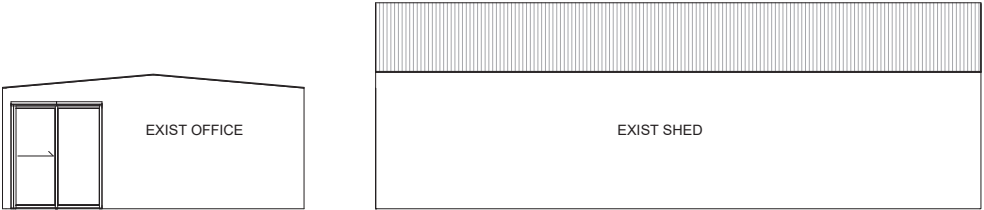


EAST

1:100

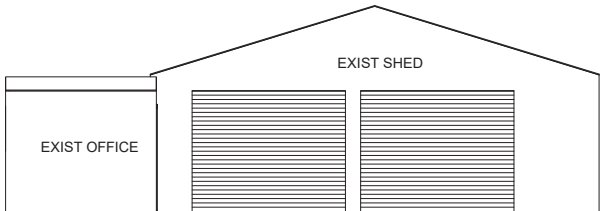
| | | | | | |
|---|--|---|---|---|---------------------|
| project: PROPOSED WORK FOR 71 FOSTER ST, GRACEMERE | |  <div>Shop 5/10 Denham St Rockhampton QLD, 4700 p 0749 222880</div> <div>building design - documentation</div> | | title: ELEVATION - HOUSE | |
| client: NATIONWIDE MACHINERY SALES & HIRE |  QBCC MEM. NO # 1123040 BDAQ MEM. NO # 0000761 | |  | | 07/06/23 9:45:50 AM |
| | scale: 1 : 100 | | project no: 2302-03 | | |
| | sheet no: 5 of 10 | | drawing no: WD05 | | |
| | | drawn: AG | | rev: A | |

07/06/23 9:45:50 AM



EAST - SHED

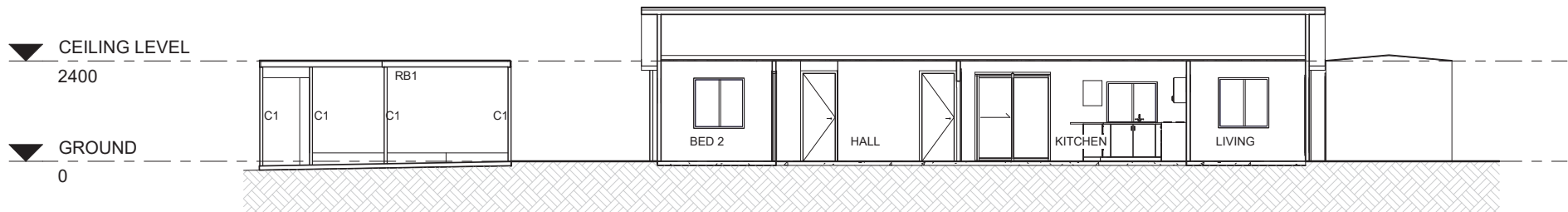
1 : 100



SOUTH - SHED

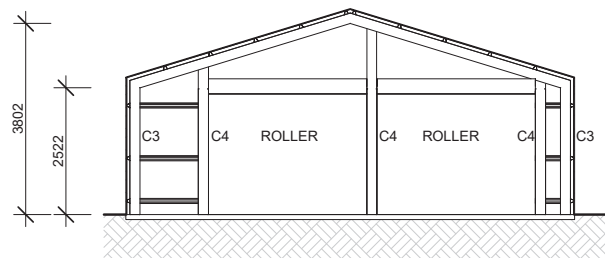
1 : 100

| | | | | | |
|--|---|----------------------------|------------------------|------|---------------------|
| project: PROPOSED WORK FOR 71 FOSTER ST, GRACEMERE | <div><div>Shop 5/10 Denham St Rockhampton QLD, 4700 p 0749 222880</div></div> <div>building design - documentation</div> <div><div>QBCC MEM. NO # 1123040 BDAQ MEM. NO # 0000761</div></div> | title: ELEVATION - SHED | | | 07/06/23 9:45:50 AM |
| | | scale: 1 : 100 | project no: 2302-03 | | |
| | | sheet no: 6 of 10 | drawing no: | rev: | |
| | | drawn: AG | WD06 | A | |



SECTION A

1 : 100



SECTION B

1 : 100

LEGEND

| | |
|-----|---------------------|
| C1 | 75 x 75 SHS COLUMNS |
| C2 | 100 x 95 HW COLUMN |
| C3 | 150 C PORTAL |
| C4 | 200 C PORTAL |
| RB1 | 150 C PURLIN BEAM |

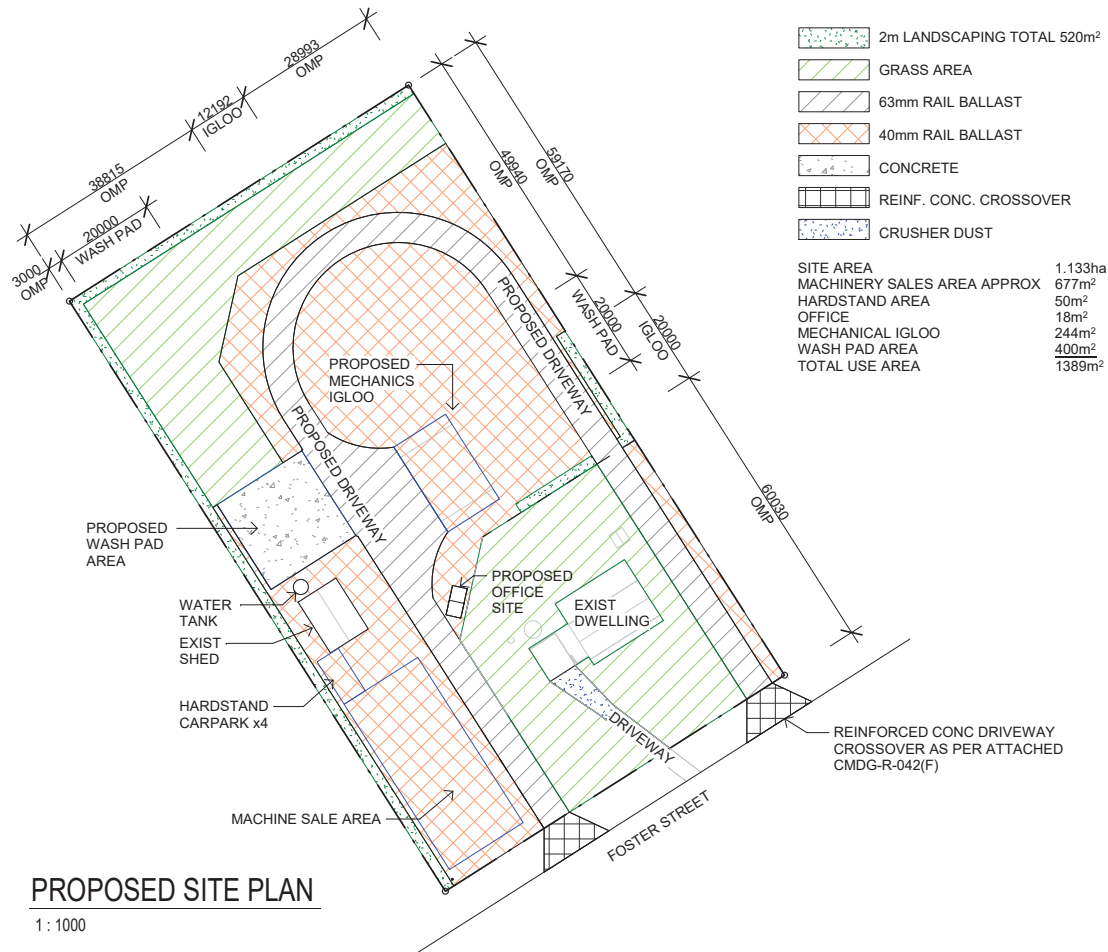
| | | | | | |
|---|--|--|----------------------------------|-------------------------------|---------------------|
| project: PROPOSED WORK FOR 71 FOSTER ST, GRACEMERE |  Shop 5/10 Denham St Rockhampton QLD, 4700 p 0749 222880 | | title: SECTIONS | | 07/06/23 9:45:51 AM |
| | | | | | |
| | building design - documentation | | scale: 1 : 100 | project no: 2302-03 | |
| | client: NATIONWIDE MACHINERY SALES & HIRE | | sheet no: 7 of 10 | drawing no: WD07 | rev: A |



QBCC MEM. NO # 1123040

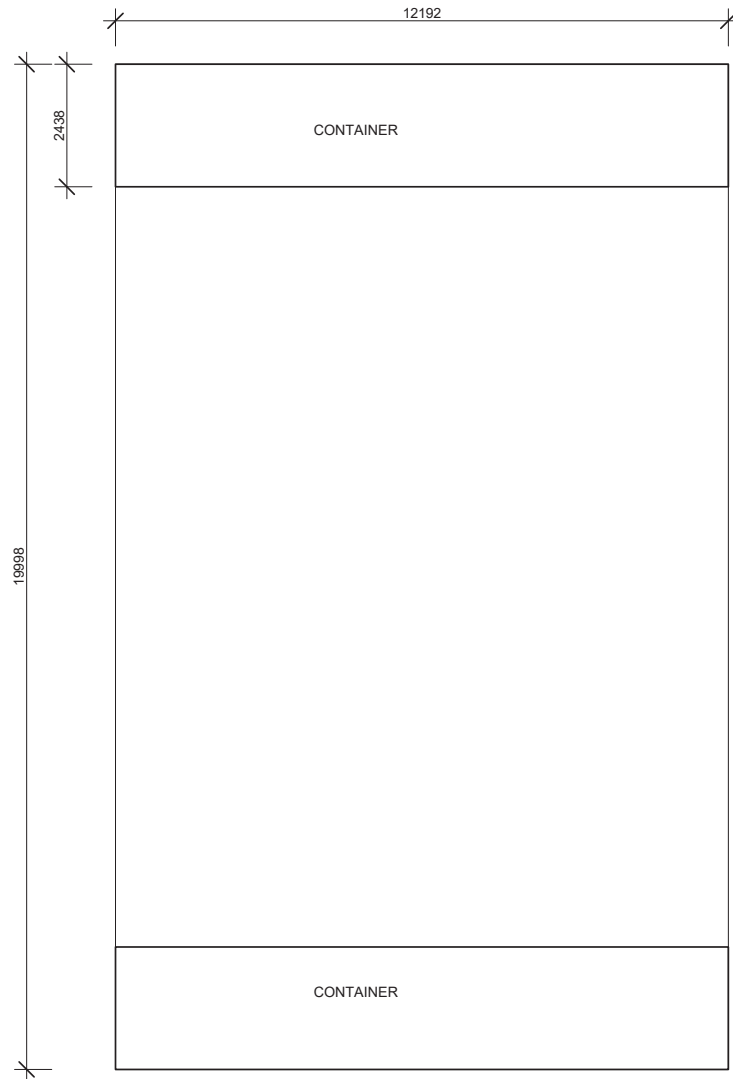
BDAQ MEM. NO # 0000761





| | | | | |
|---|--|--|--|-------------------------------|
| project: PROPOSED WORK FOR 71 FOSTER ST, GRACEMERE |  Shop 5/10 Denham St Rockhampton QLD, 4700 p 0749 222880 | | title: PROPOSED SITE PLAN | |
| | building design - documentation | | scale: 1 : 1000 | |
| client: NATIONWIDE MACHINERY SALES & HIRE | QBCC MEM. NO # 1123040 BDAQ MEM. NO # 0000761 | | sheet no: 8 of 10 | project no: 2302-03 |
| |  | | drawing no: AG | rev: A |

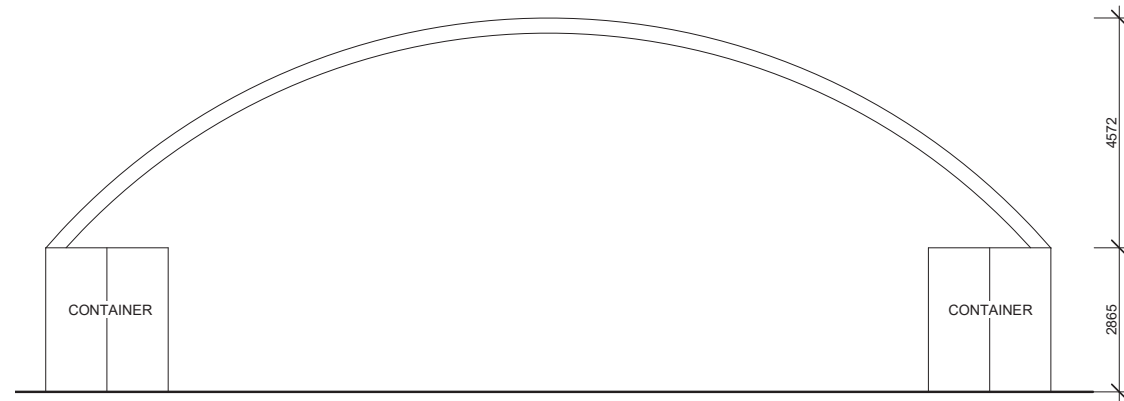
07/06/23 9:45:51 AM



WD09 MI

PROPOSED FLOOR PLAN - MECHANICS IGLOO

1 : 100



ELEVATION - MECHANICS IGLOO

1 : 100

| | | |
|--|---|--|
| <div>project:</div> <div>PROPOSED WORK FOR 71 FOSTER ST, GRACEMERE</div> | <div><div><div><div></div><div></div><div></div><div></div></div><div></div></div><div><div>Shop 5/10 Denham St Rockhampton QLD, 4700</div><div>p 0749 222880</div></div></div> <div><div>designtek</div><div>building design - documentation</div></div> <div><div><div><div></div><div></div><div></div></div><div>QBCC MEM. NO # 1123040</div></div><div><div><div></div><div></div><div></div></div><div>BDAQ MEM. NO # 0000761</div></div></div> | <div><div>title:</div><div>IGLOO LAYOUT</div></div> <div><div><div>scale: 1 : 100</div><div>sheet no: 9 of 10</div><div>drawn: AG</div></div><div><div>project no: 2302-03</div><div>drawing no: WD09</div><div>rev: A</div></div></div> |
| <div>client:</div> <div>NATIONWIDE MACHINERY SALES & HIRE</div> | <div>07/06/23 9:45:51 AM</div> | |

07/06/23 9:45:51 AM



PHOTO 1



PHOTO 2



PHOTO 3



PHOTO 4



PHOTO 5



PHOTO 6



PHOTO 7



PHOTO 8



PHOTO 9



PHOTO 10



PHOTO 11



PHOTO 12



PHOTO 13



PHOTO 14



PHOTO 15



PHOTO 16



PHOTO 17



PHOTO 18



PHOTO 19

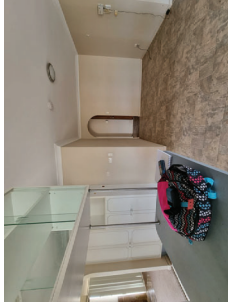


PHOTO 20

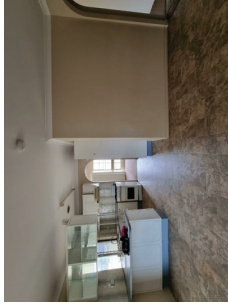


PHOTO 21



PHOTO 22



PHOTO 23



PHOTO 24

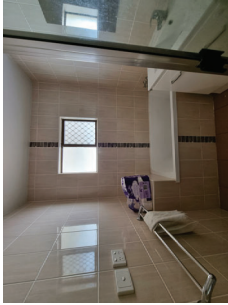


PHOTO 25



PHOTO 26



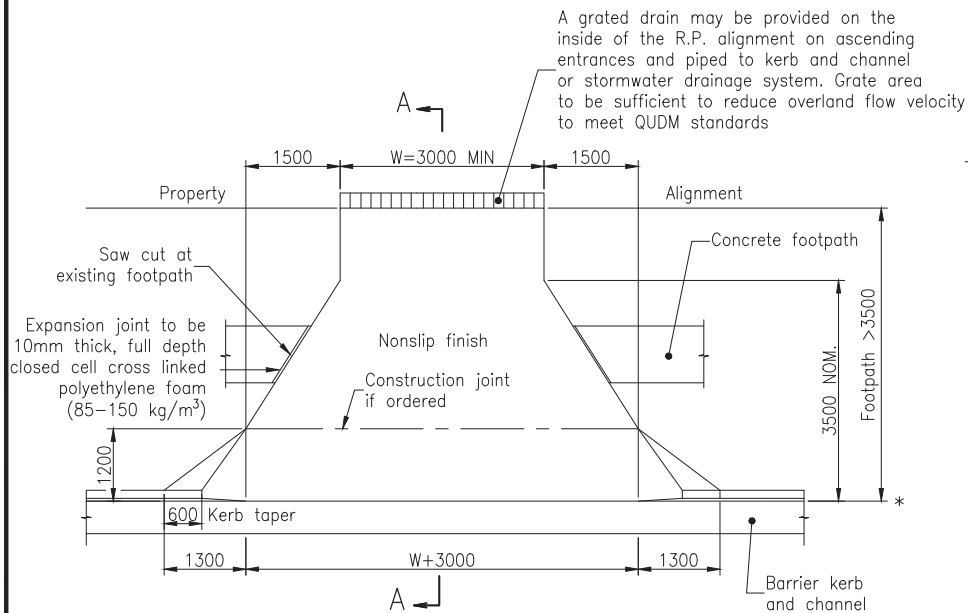
PHOTO 27

| | | | | | |
|--|--|--|--|----------------------------------|-------------------------------|
| project: PROPOSED WORK FOR 71 FOSTER ST, GRACEMERE | | title: PHOTOS | | 07/06/23 9:46:16 AM | |
| client: NATIONWIDE MACHINERY SALES & HIRE | | Shop 5/10 Denham St Rockhampton QLD, 4700 designtek p 0749 222880 building design - documentation | | scale: project no: 2302-03 | drawing no: rev: WD10 A |
| | | sheet no: 10 of 10 | | drawn: AG | |
| | | QBCC MEM. NO # 11230407 qbcc BDAQ MEM. NO # 00007611 | | | |

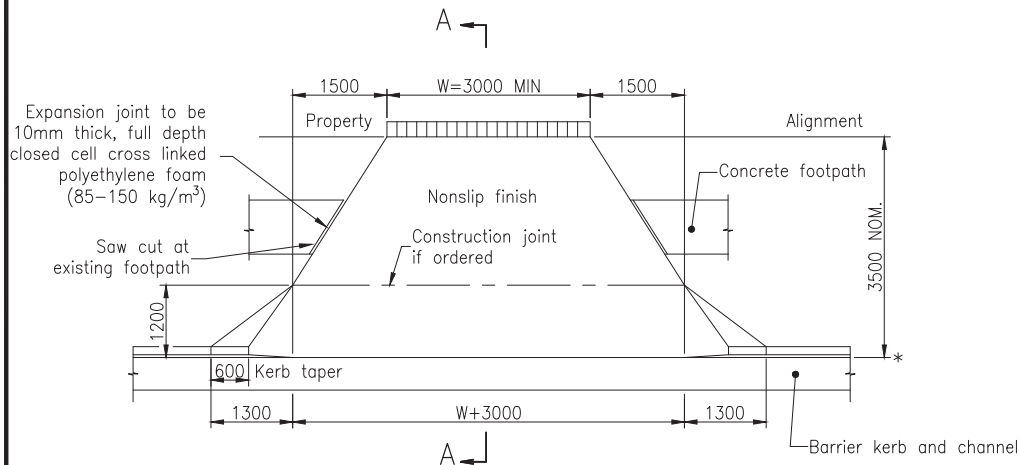


APPENDIX C

CMDG STANDARD DRAWINGS

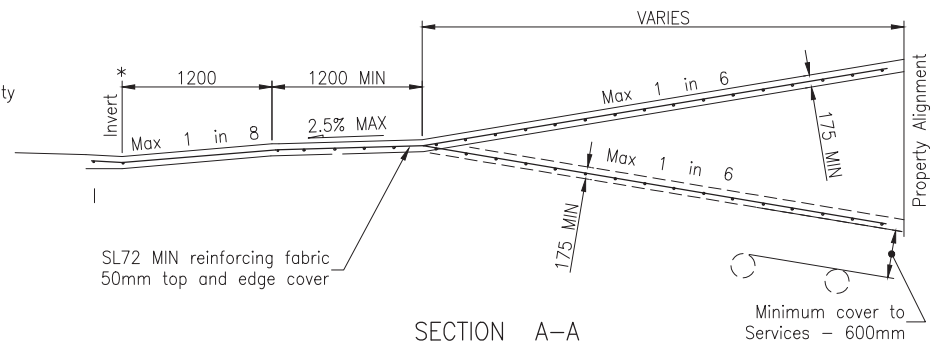


PLAN – WIDE FOOTPATHS
SCALE 1 : 40



PLAN – 3.5m FOOTPATH
SCALE 1 : 40

ADDED REGARDING
GRADED DRAIN RATE
AREA



SECTION A–A

LEGEND:

* NOM. kerb line.

NOTES:

- The owner of the property served by the driveway shall be responsible for all maintenance associated with the driveway.
- Concrete N32 in accordance with AS 1379 and AS 3600.
- Reinforcing fabric to AS 4671. Lap fabric 250mm.
- Depths of concrete and reinforcing steel shown are the minimum requirements for good foundation conditions, and average traffic loading. Where this does not apply, depths of concrete and reinforcing shall be increased to suit specific conditions. Council accepts no responsibility for the structural adequacy of the design and it is recommended that engineering advice be sought where higher commercial vehicle loadings are expected.
- Reprofile adjacent footpath to match driveway. Footpath earthworks adjoining concrete must be well compacted.
- Existing footpath profile to be maintained where possible.
- Compaction for subgrade 95% Standard to AS 1289.5.1.1.
- Where subgrade is less than CBR 5 excavate and provide imported material to satisfaction of independent Engineering authority.
- Driveways to be constructed from concrete only.
- Approval of location, feature finishes and levels must be obtained from Local Authority prior to excavation.
- Engineering advice should be sought where it is proposed to modify the footpath profile by excavation or filling to ensure drainage problems do not result and existing services are not affected.
- Where new concrete work abuts existing concrete work, 12dia dowels (500mm length) at 300mm centres (500mm allowable at invert of kerb and channel) to be installed to prevent differential movement.
- All dimensions in millimetres.

APPLICABILITY TABLE

| | BSC | CHRC | GRC | IRC | LSC | MRC | RRC |
|----------------|-------------|------|-----|-----|-----|-----|-----|
| Applicable | Yes | Yes | No | Yes | Yes | Yes | Yes |
| Applicable DWG | CMDG-R-042A | | | | | | |

| REVISIONS | DATE |
|---|---------|
| F IRC ADDED | 12/2016 |
| E APPLICABLE DRAWING ADDED | 04/2016 |
| D GRC AND LSC ADDED | 09/2014 |
| C MRC ADDED/AMENDMENT TO DRIVEWAY GRADE | 07/2011 |
| B NOTE ADDED REGARDING GRADED DRAIN RATE AREA | 12/2010 |
| A POST AMALGAMATION REVISION | 01/2010 |

DISCLAIMER.

The authors and sponsoring organisations shall have no liability or responsibility to the user or any other person or entity with respect to any liability, loss or damage caused or alleged to be caused, directly or indirectly, by the adoption and use of these Standard Drawings including, but not limited to, any interruption of service, loss of business or anticipatory profits, of consequential damages resulting from the use of these Standard Drawings. Persons must not rely on these Standard Drawings as the equivalent of, or a substitute for, project-specific design and assessment by an appropriately qualified professional.

Capricorn Municipal Development Guidelines

Banana Shire Council (BSC) Incorporating: Livingstone Shire Council (LSC)
Central Highlands Regional Council (CHRC) Maranoa Regional Council (MRC)
Gladstone Regional Council (GRC) Rockhampton Regional Council (RRC)
Isaac Regional Council (IRC)

**TYPE A – TWO WAY ACCESS
COMMERCIAL DRIVEWAY SLAB**

ROADS

STANDARD
DRAWING
CMDG-R-042

REV. A B C D E F



APPENDIX D

TRAFFIC IMPACT ASSESSMENT CERTIFICATION

CERTIFICATION OF TRAFFIC IMPACT ASSESSMENT REPORT
REGISTERED PROFESSIONAL ENGINEER OF QUEENSLAND
FOR

| | |
|----------------------|---|
| Project Title | 71 Foster Street, Gracemere: Traffic Impact Assessment |
|----------------------|---|

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 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
- 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
- The outcomes of this traffic impact assessment are a true reflection of results of assessment; and that
- I believe the strategies recommended for mitigating impacts by this traffic impact assessment, embrace contemporary practice initiatives and will deliver the desired outcomes.

| | |
|--------------------------|--|
| Name | Bradley Jones |
| RPEQ No. | 19986 |
| RPEQ Competencies | Civil |
| Email | Bradley.Jones@premise.com.au |
| Postal Address | PO Box 1110, Townsville QLD, 4810 |
| Signature | |
| Date | 21 June 2023 |

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



Premise



premise.com.au