

DRAWING LIS	г	
Drawing No:	Description	Issue
BA /01	Cover Sheet	05
BA /02	Site Plan	05
BA /03	Ground Floor Plan	05
BA /04	Roof Plan	05
BA /05	Elevation 1 / 1	05
BA /06	Typical Section 1/1	05

ROCKHAMPTON REGIONAL COUNCIL

APPROVED PLANS

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

Development Permit No.: D/174-2023

Dated: 5 April 2024

			Mailing Address 262 Grubb St Koongal QLD 4701 andrew@amfbuildingdesign.com.au 0423 375 400		^{Client} Central Queensland Respiratory Diagnostics	Drawing Title: Building Plans
			QBCC No 1068756	any	Project Name	Cover Sheet
05	11/10/2023	MCU APPLICATION (SITE 850 M2)	ABN 22143 527 198 all projects	BUILDING DESIGN	PROPOSED EXTENSION	
REV ID	Transmittal Set Date	DESCRIPTION	residential, commercial, industrial	V	123 DENHAM ST	



Scale: As shown	Date: MAY 2023
Status: MCU	Checked By:
Project No:	Drawing No.:
AMF23524	BA /01

Plot Date: 11/10/2023



HEALTH AND AMENITY

VENTILATION TO ALL WC AND BATHROOMS TO AS1668. TOILET DOORS OR FULLY ENCLOSED SANITARY COMPARTMENTS MUST SWING OUTWARDS OR SLIDE OR BE REMOVABLE FROM THE OUTSIDE IN ACCORDANCE WITH BCA 3.8.3.3

EXIT SIGNS & EMERGENCY LIGHTING

PROVIDE ILLUMINATED EXIT SIGNS & LIGHTING TO COMPLY WITH SECT. E4.2 & E4.7 OF THE BCA AND AS2293 PART 1. IN ACCORDANCE WITH THE ELECTRICAL ENGINEER'S DRAWINGS.

EXTINGUISHERS

PROVIDE FIRE EXTINGUISHERS APPROPRIATE TO THE LOCATION IN ACCORDANCE WITH THE NATIONAL CONSTRUCTION CODE SECT. E1.6 AND AS 2444.

MECHANICAL VENTILATION

PROVIDE A MECHANICAL VENTILATION SYSTEM TO AREAS GENERALLY AND A SEPARATE SYSTEM TO ALL AMENITIES, SECTION F4.5 OF THE NATIONAL CONSTRUCTION CODE AND AS 1668.2 & AS/NZ 3666.1. INACCORDANCE WITH MECHANICAL ENGINEER'S DRAWINGS. PROVIDE SOUND AND FIRE RATED ACCESS PANELS IN

ACCORDANCE WITH NATIONAL CONSTRUCTION CODE REQUIREMENTS. DUCTS/RISERS SHALL BE IN ACCORDANCE WITH BCA SECT. C3.12, C3.13, C3.15.

PLASTERBOARD

PLASTERBOARD CEILINGS AND WALL LININGS SHALL BE INSTALLED IN ACCORDANCE WITH AS 2785 AND THE MANUFACTURER'S SPECIFICATIONS AND DETAILS. SUSPENDED CEILING SYSTEM SHALL BE A PROPRIETARY SYSTEM SUCH AS THE 'RONDO' KEY-LOCK SYSTEM AND ALL PLASTERBOARD ON EXTERNAL BLOCK WALLS SHALL BE INSTALLED ON A PROPRIETARY STEEL FURRING CHANNEL SYSTEM.

PLUMBING AND DRAINAGE

- 1. CONNECT SEWERAGE AND STORMWATER IN ACCORDANCE WITH LOCAL AUTHORITY REQUIREMENTS.
- 2. FLOOR WASTES ARE SHOWN INDICATIVE ONLY AND SHOULD BE CONFIRMED BY PLUMBER ONSITE TO CONFORM WITH LOCAL AUTHORITY REQUIREMENTS.
- 3. PLUMBER TO COORDINATE FLOOR WASTE WITH TILING CONTRACTORS PREFERRED TILE LAYOUT

WATERPROOFING

- 1. ALL TIMBER FRAMED WALL TO WET AREAS TO BE LINED WITH WATERPROOF CLADDING.
- 2. ALL WATERPROOFING WORKS TO BE CARRIED OUT BY A QUALIFIED PROFESSIONAL AND COMPLIANCE CERTIFICATES SUPPLIED UPON COMPLETION.
- 3. FLOORS TO ALL WET AREAS TO HAVE ADEQUATE FALLS TO A FLOOR WASTE.

TERMITES

TERMITE MANAGEMENT SYSTEM BCA 3.1.3 THE PRIMARY BUILDING ELEMENT OF THIS PROPOSED DWELLING MUST BECONSTRUCTED OF A MATERIAL THAT COMPLY WITH THE BCA THAT ARE NOT AFFECTED BY TERMITES. ANY TIMBER BEING USED MUST BE NATURALLY TERMITE RESISTANT TIMBER OR PRESERVATIVE TREATED TIMBER IN ACCORDANCE WITH AS3660.1. PROVIDE A STICKER TO THE METER BOX AND THE KITCHEN CUPBOARD STATING THE BUILDING ELEMENTS ARE PROTECTED TO COMPLY WITH THE BCA 3.1.3 AND AS3660.1

SMOKE ALARMS

SMOKE ALARMS IN THE DWELLING MUST:

BE PHOTOELECTRIC (AS3786-2014); AND NOT ALSO CONTAIN AN IONISATION SENSOR; AND BE HARDWIRED TO THE MAINS POWER SUPPLY WITH A SECONDARY POWER SOURCE (I.E. BATTERY); AND BE INTERCONNECTED WITH EVERY OTHER SMOKE ALARM IN THE DWELLING SO ALL ACTIVATE TOGETHER.





Legend BC

DP

DP/S

EG

HC

MRS

ROOF NOTES:

STANDARDS

PART 3.5.2.4

STORMWATER

SELECTION

ACCEPTABLE.

A)

ÓR

D)

5.

PC RC

V

	REV	Date	DESCRIPTION
	05	11/10/20	23 MCU APPLICATION (SITE 850 M2)
	04	25/08/20	23 MCU APPLICATION
	03	4/08/202	23 PRE DEVELOPMENT MEETING
	DIMENS USE FII DRAWI PRIOR REMAII ENSUR AND RE	SIONS GURED DIME NGS. CONFIF TO CONSTR NS THE CON E COMPLIAI EGULATIONS	ENSIONS. DO NOT SCALE FROM THE RM ALL DIMENSIONS ON SITE UCTION OR FABRICATION. IT TRACTORS RESPONSIBILITY TO NCE WITH ALL RELEVANT CODES SIS MAINTAINED AT ALL TIMES
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BOX GUTTER			
VALL BELOW			
	APPF	ROVED	
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SOLAR PANELS	APPF CHEC DRAV DESI Mailing, 262 Gru Koongal andrew 0423 3	ROVED CKED VN GN Iding Design Address bb St octo 4701 #amfbuildingd 75 400	AMF AMF esign.com.au
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	REV	Date	DESCRIPTION
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	04	2310012023	
ORBOND METAL CIA & GUTTERING	03	4/08/2023	MEETING
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	123 ALL	DENHAL	VI ST VN QLD 4700
	JOB	No. A	MF23524
	DWG	/REV. Bu	uilding Plans
	05	B	A /06



PERSPECTIVE VIEW

ROCKHAMPTON REGIONAL COUNCIL

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AMF23524	BA /15

Plot Date: 11/10/2023

2023



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Dated: 5 April 2024

PROPOSED BUILDING WORKS - EXTENSIONS 123 DENHAM STREET, ROCKHAMPTON LOT 24 RP600323

STORMWATER MANAGEMENT REPORT

FOR CENTRAL QUEENSLAND RESPIRATORY DIAGNOSTICS

D23.281-RP01

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Docu	Document Status					
Rev	Author	Poviowor	Approved For Issue			
No.	Aution	Reviewei	Name	Signature	Date	
A	T. Lau	A. Lucas	Tony Lau RPEQ 19272	Ah	05/10/2023	

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1. Introduction

This report was prepared for Central Queensland Respiratory Diagnostics, in support of a proposed development (Extensions) on L24 RP600323 at 123 Denham Street, Rockhampton. This report should be read in conjunction with the overall application for Material Change of Use. The proponent is seeking approval to develop the lot with an extension to the existing building and carparking works.

The site is located within the built-up Rockhampton inner city limits where most surrounding lots are developed. Denham Street has been constructed with Kerb and Channel (K&C) and underground stormwater infrastructure. Refer Appendix A for drawings denoting the type, size and location of existing services.

2. Existing Stormwater Conditions

The site is approximately 850m² in area and is currently developed with an office building and carport surrounded by grass and garden beds. Roof water is discharged directly onto the ground within the lot. Overland flows generally discharge from site to Denham Lane and are captured by existing stormwater infrastructure in West Street.

As per the Capricorn Municipal Development Guidelines (CMDG) and the Queensland Urban Drainage Manual (QUDM), the Rational Method was used to determine the pre and post development flows.

According to the Rockhampton Regional Council (RRC) online mapping, the land is currently zoned as being for *Low-Medium Density Residential* use. According to the CMDG, Table D05.06.1, the fraction impervious value for *Low-Medium Density Residential* use should be 0.6 for undeveloped sites. However, as the site is already developed, pre-development runoff will be calculated using the existing site conditions, at the time of this report.

The existing fraction impervious was determined to be 0.29 and pre-development flows have been calculated based on the average 1.23% slope of the main flow path and average grassed surface of the existing site. An overall time of concentration (T_c) of 16 minutes has been adopted in accordance with QUDM Figure 4.4 with a C₁₀ value of 0.734 in accordance with QUDM Table 4.5.4.

Friends Equation (Eq 4.5) - Shallow overland sheet flow					
L	Surface	n	S	Tc	
m	Surface	Manning's	%	minutes	
42.425	Average Grassed	0.045	1.23	16	

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Discharges for a range of events for both actual pre-development conditions and assumed predevelopment conditions based on council information were calculated using Qy=F*Cy*Iy*A.

PRE-DEVELOPME	INT CASE		-			o	
[Development Area	0.085	ha		Fi		0.29
Event AEP	С	I	Α	Q	¹ l ₁₀ (mm/	/hr)	65.1
%	coefficient	mm/hr	ha	m3/s	TC (minu	utes)	16
63.2	0.587	80	0.0850	0.0111	C ₁₀		0.734
50	0.624	89	0.0850	0.0131	From QL	JDM Table	e 4.5.3
20	0.697	118	0.0850	0.0194			
10	0.734	138	0.0850	0.0239			
5	0.770	159	0.0850	0.0289			
2	0.844	187	0.0850	0.0372			
1	0.880	210	0.0850	0.0436			

3. Post Developed Site Flows and Management

3.1 Post Developed Flows

The proposed development increases the fraction impervious from 0.29 to 0.65 based on the following additional impervious areas. Refer also, to the proposed layout plans in Appendix A.

Post-Development Fi					
Total Area	850	m²			
Existing Impervio	250	m²			
Additional	Extension	63	m²		
Impervious Area Carpark & Access (Concrete)		237	m²		
Fraction Impervio	0.65				

The post-development time of concentration was calculated taking the different surface conditions into account in accordance with QUDM Figure 4.4 with a C_{10} value of 0.813 in accordance with QUDM Table 4.5.4. It has been assumed that post-development site levels will be generally in keeping with existing levels.

Friends Equation (Eq 4.5) - Shallow overland sheet flow				
L	Surface	n	S	tc
m	Surface	Mannings	%	minutes
20	Average Grassed	0.045	1.23	12.53
22.245	Paved	0.015	1.23	4.33
			Total	16.85

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Based on these revised values, discharges for a range of events were calculated using Qy=F*Cy*Iy*A.

Dated: 5 April 2024

DOCT DEVELOD	ACNIT CACE					
POST-DEVELOPI	VIENT CASE					
	Development Area	0.085	ha		Fi	0.65
Event AEP	С	I	А	Q	¹ I ₁₀ (mm/hr)	65.1
%	coefficient	mm/hr	ha	m3/s	TC (minutes)	17
63.2	0.650	78	0.0850	0.0119	C ₁₀	0.813
50	0.691	86	0.0850	0.0141	From QUDM Table	4.5.3
20	0.772	114	0.0850	0.0208		
10	0.813	134	0.0850	0.0257		
5	0.854	154	0.0850	0.0310		
2	0.935	182	0.0850	0.0402		
1	0.976	204	0.0850	0.0470		

When compared with the existing pre-developed total site flows, we note an increase in flow for all recurrence intervals. Refer table below.

COMPARISON OF UNTREATED FLOWS			
Event AEP	Pre-Development	Post-Development	Change
%	m³/s	m³/s	%
63.2	0.0111	0.0119	7.78%
50	0.0131	0.0141	7.83%
20	0.0194	0.0208	7.07%
10	0.0239	0.0257	7.62%
5	0.0289	0.0310	7.35%
2	0.0372	0.0402	7.87%
1	0.0436	0.0470	7.67%

3.2 Discharge Flow Management

It is proposed to mitigate the increase in stormwater runoff by retaining roofwater from the proposed extension, as well as the adjacent section of existing roof in a 3,000L rainwater tank. Roofwater will discharge from the tank, directly onto the ground and sheet flow to Denham Lane.

The tank detention will reduce the post developed 20% AEP discharge to $0.0188m^3$ /s (a $0.0006m^3$ /s decrease on pre-developed flows) and post developed 1% AEP discharge to $0.04535m^3$ /s (a $0.0001m^3$ /s decrease on pre-developed flows). See tables below and drawings in Appendix A for further detail of the relevant roofwater catchments and tank arrangement.

PARTIAL ROOF F	LOWS TO TANK					
[Development Area	0.0118	ha		Fi	1.00
Event AEP	C	I	Α	Q	¹ l ₁₀ (mm/hr)	65.1
%	coefficient	mm/hr	ha	m3/s	TC (minutes)	5
63.2	0.718	115	0.0118	0.0027	C ₁₀	0.898
50	0.763	128	0.0118	0.0032	From QUDM Tab	le 4.5.3
20	0.853	170	0.0118	0.0048		
10	0.898	200	0.0118	0.0059		
5	0.943	229	0.0118	0.0071		
2	1.000	268	0.0118	0.0088		
1	1.000	300	0.0118	0.0098		

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COMPARING 20% AEP FLOWS POST TREATMENT			
PRE DEV.	0.0194	m ³ /sec	
POST DEV	0.0188	m ³ /sec	
EQUALS	3.27	% DECREASE IN MINOR	FLOWS

COMPARING 1% AEP FLOWS POST TREATMENT			
PRE DEV.	0.0436	m ³ /sec	
POST DEV	0.0435	m ³ /sec	
EQUALS	0.33	% DECREASE IN MAJOR	FLOWS

3.3 Stormwater Quality Management

Due to the size of the development (<2500m²), State Planning Policy Healthy Water has not been triggered.

No additional stormwater quality improvement devices (SQIDs) are proposed at this time.

4. Conclusion

The proposed development will increase the impervious area of the site and consequently, increase stormwater runoff. It is proposed to mitigate the increase in runoff with a 3,000L roofwater detention tank which outlets directly to the ground. Runoff from carpark areas will discharge from site as sheet flow to Denham Lane, then be captured into the existing stormwater piped network in West Street. To further enhance the use of water sensitive urban design principles, additional tanks may be provided to harvest stormwater for irrigation and other non-potable uses.

The Stormwater Management Plan (SMP) in Appendix A provides an acceptable solution to ensure the proposed development does not worsen the peak discharges and runoff volumes from the site as required by the *Rockhampton Region Planning Scheme's Stormwater Management Code*.

Tony Lau

Senior Engineer (RPEQ)

Dileigh Consulting Engineers Pty Ltd

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Appendix A – Stormwater Management Plan Drawings

Refer drawings D23.281-01 & D23.281-02, dated 05/10/2023 by Dileigh Consulting Engineers.

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Version: 1, Version Date: 11/12/2023

LEGEND



EXISTING ELECTRICITY EXISTING SEWER MAIN EXISTING EDGE OF BITUMEN \equiv \equiv \equiv \equiv \equiv EXISTING KERB AND CHANNEL EXISTING CONTOUR EXISTING PERVIOUS GRASS / GARDEN EXISTING IMPERVIOUS PAVEMENT

EXISTING OVERLAND STORM WATER FLOW PATH

ROCKHAMPTON REGIONAL COUNCIL

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ALL CALCULATIONS CARRIED OUT IN ACCORDANCE WITH THE QUEENSLAND URBAN DRAINAGE MANUAL SITE CATCHMENT TAKEN FROM ACTUAL SITE AREAS USING ACTUAL FRACTION IMPERVIOUS AND AN ASSUMED 90% IMPERVIOUS ARE FOR THE REMAINDER OF LOT 48 ON SP 194997. RAINFALL INTENSITIES TAKEN FROM BUREAU OF METEOROLOGY RAINFALL IFD DATA SYSTEM CATCHMENTS N1 AND N4 DISCHARGE TO PROPOSED CHANNEL. CATCHMENTS N2 AND N3 DISCHARGE TO STORMWATER INLET IN ROAD RESERVE.

UEENSLAND RESRAITORY DIAGNOSTICS MANAGMENT	DWG NO. D23.281-01
TREET, ALLENSTOWN	CIVIL
	REVISION
AN & HYDRAOLODGY	A

