

DD

ROCKHAMPTON MEDICAL CENTRE

90-94 HIGH STREET, ROCKHAMPTON, QLD, 4700

FOR
S.PRASAD



ARTISTS IMPRESSION ONLY

ROCKHAMPTON REGIONAL COUNCIL
AMENDED PLANS APPROVED
23 May 2024
DATE
These plans are approved subject to the current conditions of approval associated with
Development Permit No.: D/71-2021
Dated: 30 August 2023

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DRAWING LIST	
SHEET NO.	DRAWING NAME
DD-00	COVER PAGE
DD-01	LEVEL 1 GROUND / SITE PLAN
DD-02	LEVEL 2
DD-03	ELEVATIONS
DD-04	3D VIEW - NORTH WEST
DD-05	3D VIEW - NORTH EAST
DD-06	SITE AREA SUMMARY
DD-07	SIGNAGE PYLON CONCEPT

ROCKHAMPTON REGIONAL COUNCIL

AMENDED PLANS APPROVED

23 May 2024

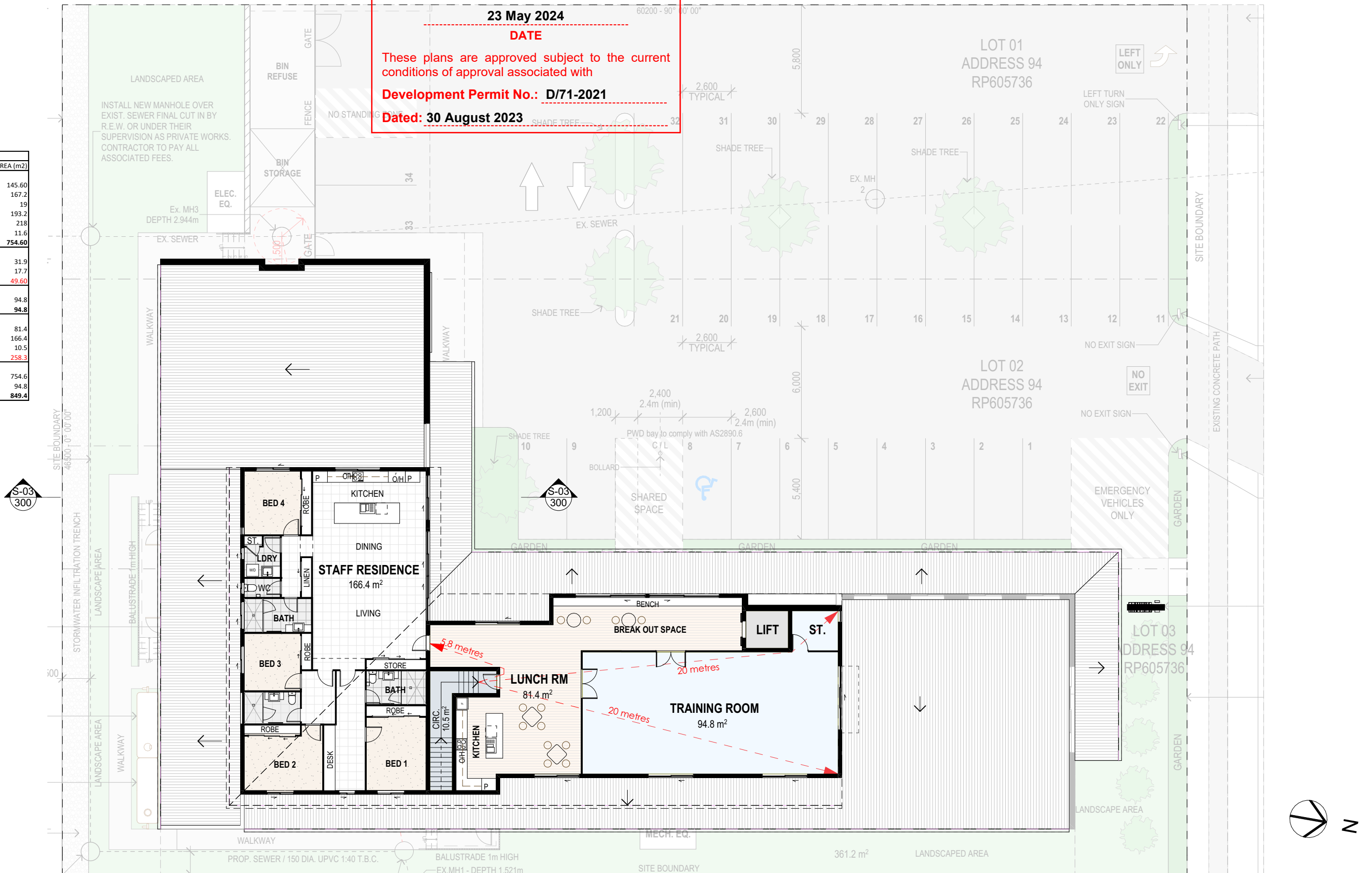
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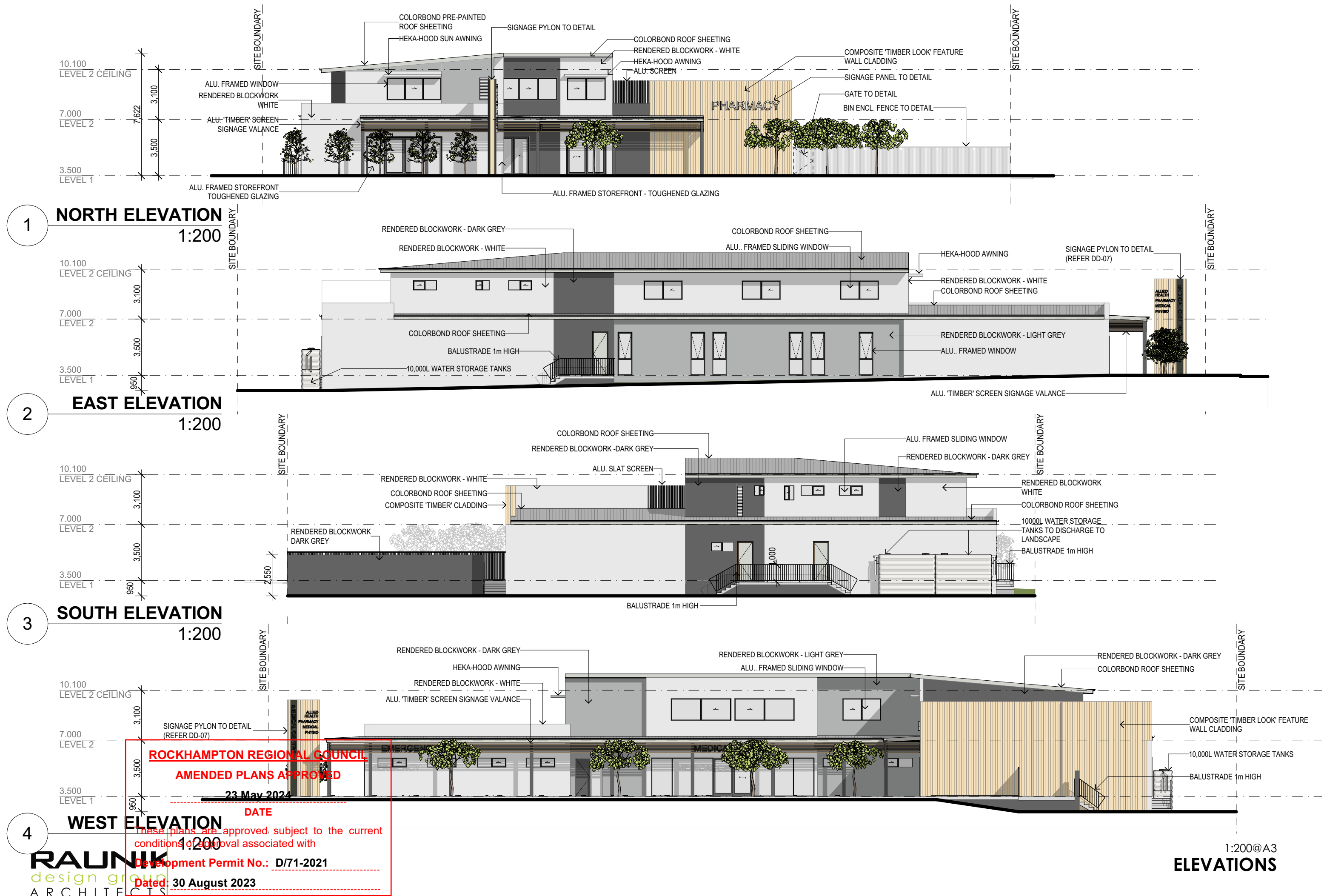
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GFA AREA CALCULATION		
ITEM	LOCATION	AREA (m2)
A GROUND FLR LEVEL		
1	EMERGENCY	145.60
2	MEDICAL CONSULTANTS	167.2
3	PATHOLOGY	19
4	PHARMACY	193.2
5	RADIOLOGY	218
6	STORES	11.6
S/TOTAL		754.60
EXCLUDED FROM CALC.		
7	AMENITIES / CIRCULATION	31.9
8	LIFT LOBBY	17.7
S/TOTAL		49.60
B FIRST FLR LEVEL		
9	TRAINING RM / STORE	94.8
S/TOTAL		94.8
EXCLUDED FROM CALC.		
10	LUNCH RM / BREAK OUT AREA	81.4
11	STAFF RESIDENCE	166.4
12	CIRCULATION	10.5
S/TOTAL		258.3
C GFA SUMMARY		
GROUND FLR GFA		754.6
FIRST FLR GFA		94.8
TOTAL GFA		849.4







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@A3
3D VIEW - NORTH WEST



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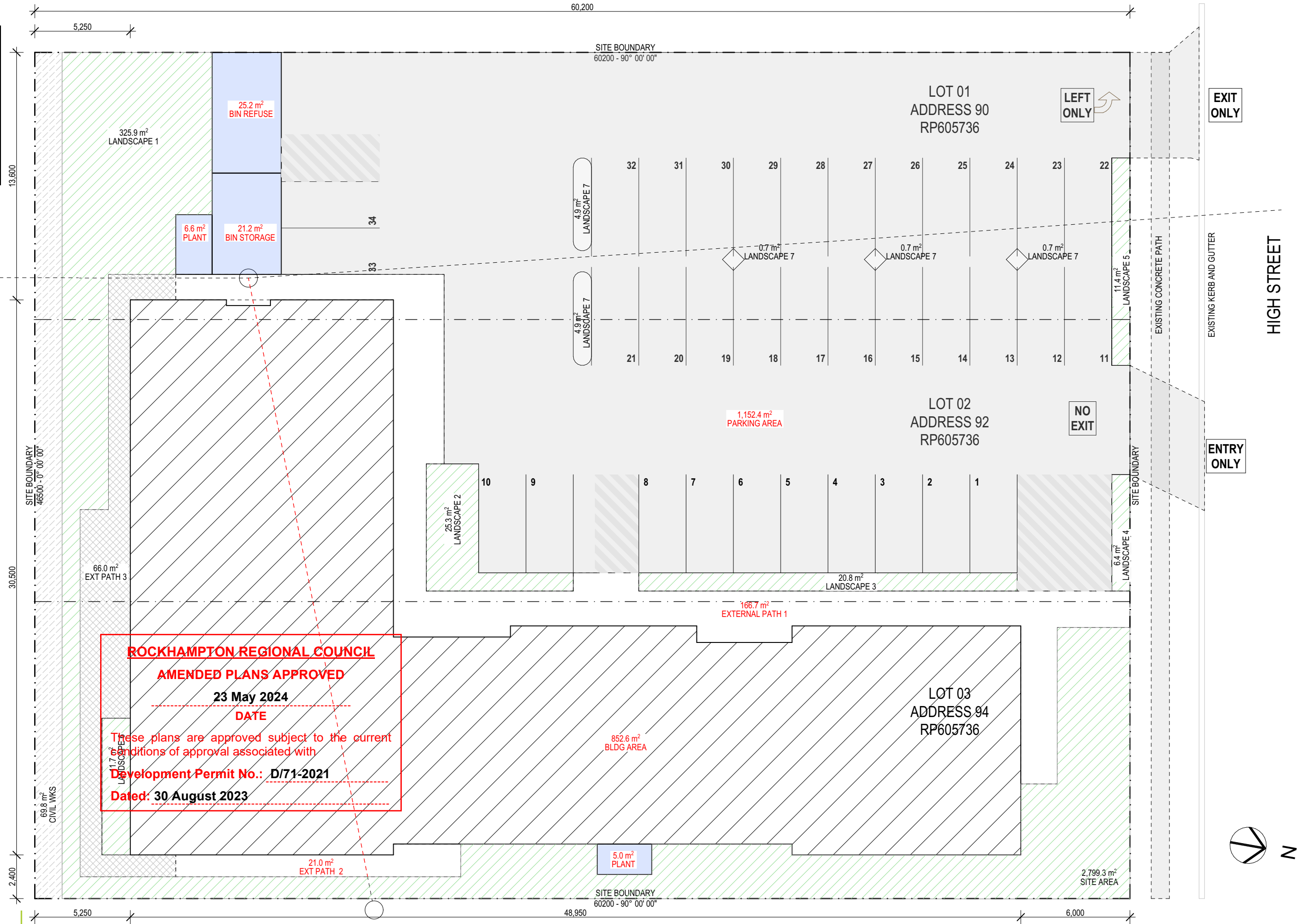
These plans are approved subject to the current conditions of approval associated with

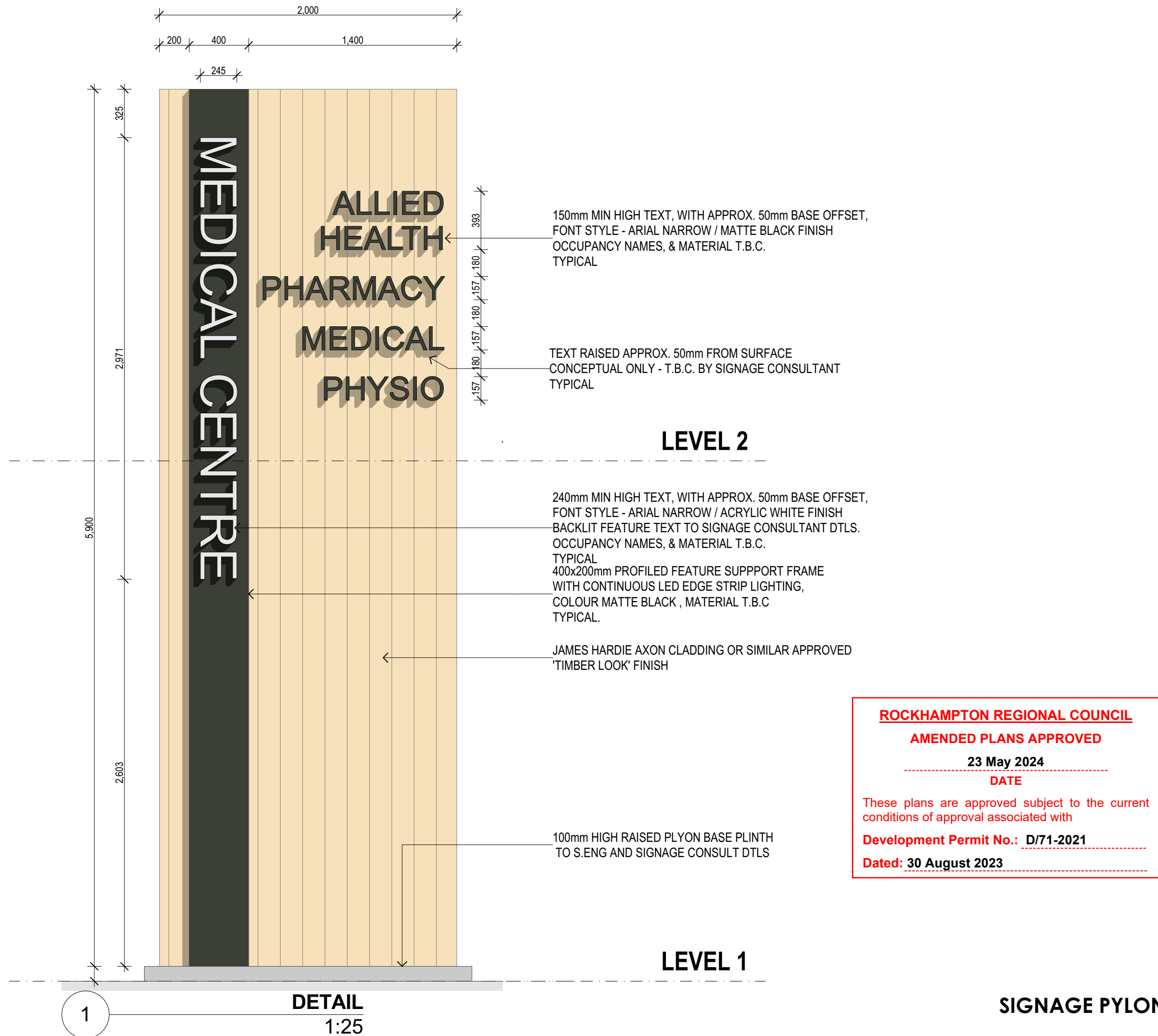
Development Permit No.: D/71-2021

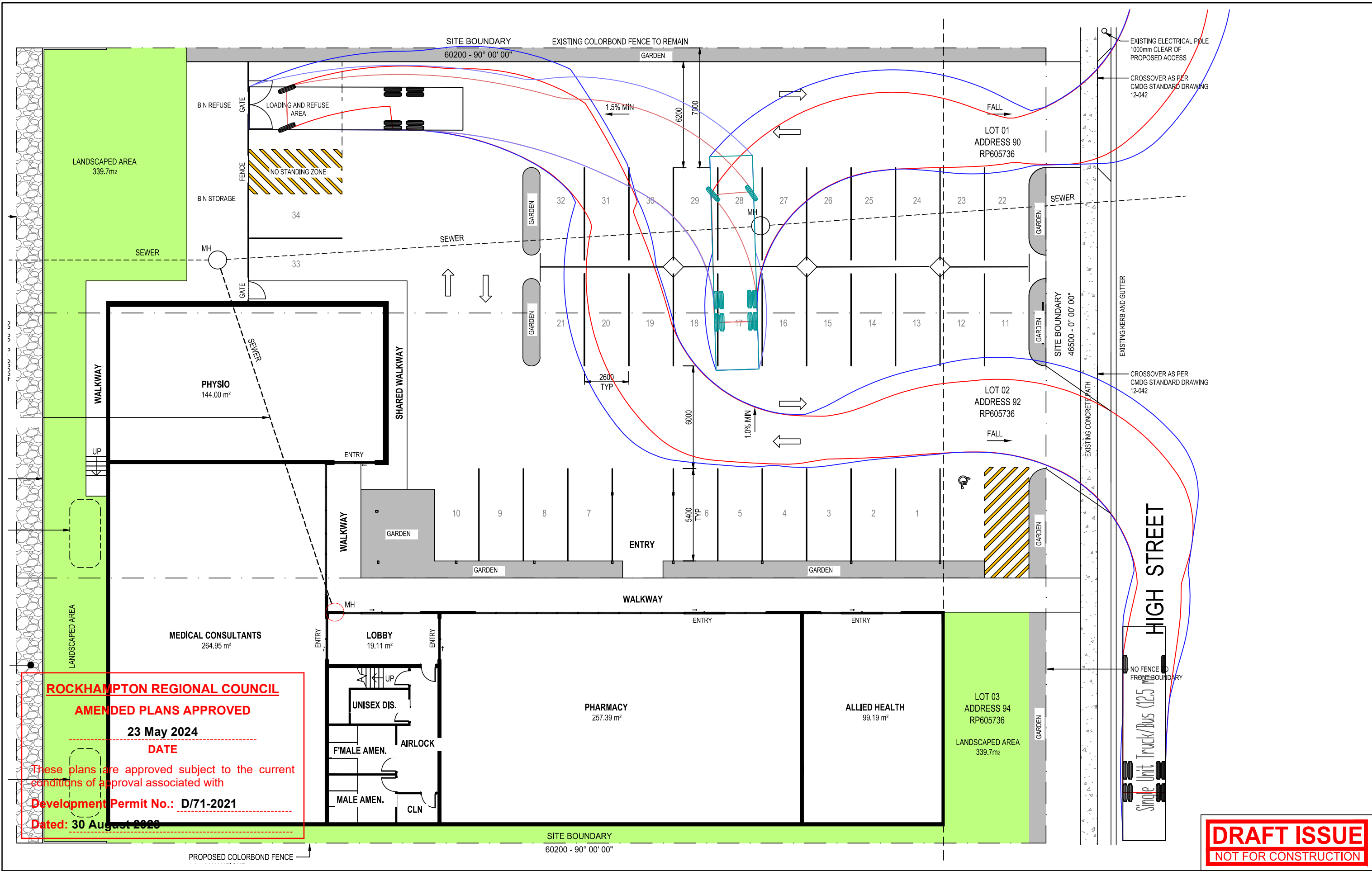
Dated: 30 August 2023

@A3
3D VIEW - NORTH EAST

SITE AREA SUMMARY		
ITEM	LOCATION	AREA (m ²)
TOTAL SITE AREA		2800
IMPERVIOUS		
1	PARKING AREA	1,152.40
2	EXT. PATHWAYS 1	166.7
3	EXT. PATHWAYS 2	21
4	BUILDING AREA	852.6
5	PLANT & EQUIPMENT	58
S/TOTAL		2,250.70
PERVIOUS		
6	EXT. PATHWAYS 3	66
7	LANDSCAPE 1	325.9
8	LANDSCAPE 2 - 7	87.5
9	STORMWATER / CIVIL WKS	69.8
S/TOTAL		549.2
TOTAL SITE AREA		2,799.90







ROCKHAMPTON REGIONAL COUNCIL

AMENDED PLANS APPROVED

23 May 2024

DATE

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

Development Permit No.: D/71-2021

Dated: 30 August 2020

DRAFT ISSUE
NOT FOR CONSTRUCTION

SCALE

0 1 2 3 4 1:200
DESCRIPTION

REV	REVISION	DATE
A	FOR INFORMATION ONLY	15/12/2021
B	FOR INFORMATION ONLY - AMENDED CROSSOVER LAYOUTS	20/07/2022

DILEIGH
CIVIL / STRUCTURAL DESIGN & PROJECT MANAGEMENT

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Checked by
Approved
RPEQ
7682

CER

GJB

Sign

S PRASAD
CONCEPT PROPOSED MEDICAL AND PHARMACY
90-94 HIGH STREET, ROCKHAMPTON, 4700
VEHICLE SWEEP PATH
REFUSE TRUCK

D21.546-01

SHEET 1 OF 01

A B

S:\DATA\2021\21.546_PRASAD 90-94 High Street Development\IC Drawings\21-546 Prasad_RVT22 - Floor Plan - PROPOSED SITE PLAN.dwg, 01, 20/07/2022 2:20:12 PM, Ashleigh.D, ISO full bleed A3 (420.00 x 297.00 MM), 1:1

2021



ROCKHAMPTON REGIONAL COUNCIL

AMENDED PLANS APPROVED

23 May 2024

DATE

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

Development Permit No.: D/71-2021

Dated: 30 August 2023

**PROPOSED MEDICAL SUITES & PHARMACY
90 – 94 HIGH STREET
BERSERKER**

STORMWATER MANAGEMENT REPORT

FOR DR. S. PRASAD

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Document Status					
Rev No.	Author	Reviewer	Approved For Issue		
			Name	Signature	Date
A	G Brown	A Doherty	Glenn Brown RPEQ 7682		06.12.2021
B	G Brown	A Doherty	Glenn Brown RPEQ 7682		13.05.2022

1. Introduction

This report was prepared for Dr. Prasad in support of their material change of use application for the site located at 90 – 94 High Street Berserker. This report should be read in conjunction with the overall application relating to this project. The proponent is seeking approval to develop the sites with a proposed pharmacy, medical suites, and other similar type offices with associated, landscaping, access and parking.

The land subject to this application is described as Lots 1, 2 & 3 on RP605736 which has a total area of 2,799.3m².

2. Existing Stormwater Conditions

The following existing conditions were reviewed and assessed to ensure the post development conditions do not exceed or are mitigated back to those currently generated by the sites.

2.1 Internal Catchments

The natural surface levels on the site fall from the front property boundary towards the rear property boundary. Arbitrary spot levels taken on Lot 2 indicate the fall to be in the vicinity of 670mm to 850mm, refer attached site plan.

Lots 1 & 3 are currently occupied by residential dwellings while Lot 2 is currently vacant but had in the past been occupied with a residential style dwelling. Based on the existing residence and others in the area we have allowed approximately 180m² for the residence and driveways (impervious areas) for each of the three allotments under consideration.

From QUDM Figure 4.4 a time of concentration of 16 minutes was adopted for the site being 60m of sheet flow across average grass at approximately 1.3% fall

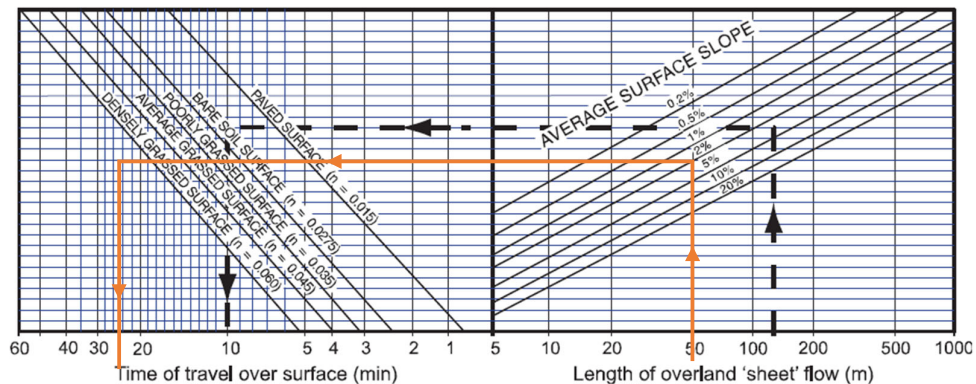


Figure 4.4 – Overland sheet flow times (shallow sheet flow only) (source: ARR, 1977)

The pre-developed site discharge was then calculated using the modified rational method and the results tabulated below.

PRE DEVELOPED					TC= 16 min		
Development Area	0.27993 ha						
F	C	I	A	Q			
sq kms	co eff	mm/hr	sq kms	m3/sec			
Q2	0.278	0.603198478	89.1	0.00280	0.0418	Fi	0.193
Q5	0.278	0.674163005	118.0	0.00280	0.0619	I ₁₀	65.60 mm/hr
Q10	0.278	0.709645268	139.0	0.00280	0.0768	C ₁₀	0.710
Q20	0.278	0.745127532	160.0	0.00280	0.0928	From QUDM T4.5.4	
Q50	0.278	0.816092059	189.0	0.00280	0.1200		
Q100	0.278	0.851574322	212.0	0.00280	0.1405		

Table 2.1: Pre-Developed Site Discharge

Based on these revised figures, the following discharges from site were calculated:

POST DEVELOPED					TC= 13 min			
Development Area								
	F	C	I	A	Q			
AreaA	sq kms	co eff	mm/hr	sq kms	m3/sec	Fi	0.781	
Q2	0.278	0.71836736	97.4	0.00280	0.0545	I ₁₀	65.60	mm/hr
Q5	0.278	0.802881167	129.0	0.00280	0.0806	C ₁₀	0.845	
Q10	0.278	0.84513807	152.0	0.00280	0.1000	From QUDM T4.5.3		
Q20	0.278	0.887394974	175.0	0.00280	0.1209			
Q50	0.278	0.971908781	206.0	0.00280	0.1558			
Q100	0.278	1	231.0	0.00280	0.1798			

Table 3.2: Post-Developed Full Site Discharge

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

COMPARING PRE-TREATMENT FLOWS			
EVENT ARI	PRE-DEV	POST -DEV	CHANGE
Q2	0.0418	0.0545	30.19%
Q5	0.0619	0.0806	30.19%
Q10	0.0768	0.1000	30.23%
Q20	0.0928	0.1209	30.26%
Q50	0.1200	0.1558	29.81%
Q100	0.1405	0.1798	27.95%

Table 3.3: Site Discharge Comparison

3.2 Discharge Flow Management

Based on the increase of pervious areas and resulting increase in site runoff, stormwater detention is required.

The following strategies are proposed for the minor (20% AEP) and major (1% AEP) storm events.

3.2.1 Minor (20% AEP) Storm Management

Flows from the carpark and landscaped areas will travel overland as sheet flow to the rear of the site. At this point it is proposed to mitigate the increase in discharge utilising a portion of the lower landscaped area to the rear of the proposed development. A 150mm high kerb to the perimeter of the landscaping will act as a high flow discharge weir with 9 x 100 diameter outlets evenly spaced as low flow discharge. The low flow discharge outlets have been designed to have the same IL to replicate the existing flow conditions, spreading the discharge across a greater length. Flows will then travel across 1.5m of embedded gravel which will act to spread the flows further and dissipate the energy prior to crossing the boundary into the neighbouring land at pre-development rates.

We note at this level of event we do not expect the weir to overtop with all flows through the low flow outlet pipes.

Roof water will be captured in a number of rainwater tanks at the rear of the building. These tanks with a combined total volume of 20,000L will collect all roof water runoff before discharging to ground surface and into the overland flow and detention system along the rear boundary as described above.

3.2.2 Major (1% AEP) Storm Management

Flow management will be similar to that of the minor storm event however in this event the weir will overtop after the required detention is provided to reduce flows back to pre-development levels. As with the minor event the weir will overtop onto a gravel buffer prior to discharge to the neighbouring properties.

As with the minor storm event roof water will be captured in a number of rainwater tanks at the rear of the building. These tanks with a combined total volume of 20,000L will collect all roof water runoff before discharging to ground surface and into the overland flow and detention system along the rear boundary as described above.

Refer to plan D21546-SW-01 in Appendix A for preliminary layout.

3.2.3 Flow Management Outcomes

With the above flow management strategies in place the following outcomes are expected.

COMPARING Q5 FLOWS POST TREATMENT			
PRE DEV.	0.0806	m3/sec	
POST DEV	0.0415	m3/sec	
EQUALS	48.54	% DECREASE IN MINOR FLOWS	

Table 3.4: Q5 Flow Comparison

From the above we note that the provision of roof water tanks is sufficient to achieve a reduction in flows from site. In addition to this, flows will be further reduced through the kerb and overland detention area.

In the major storm event, we are unable to capture sufficient roof water runoff to fully mitigate the flows back to pre-development level and will need rely on the proposed overland detention system to provide the remainder of the required reduction. From the following outputs we note that the roofwater tanks will reduce the post development outflow to 157L/s which represents a 12% increase on pre-development levels.

COMPARING Q100 FLOWS POST TREATMENT			
PRE DEV.	0.1405	m3/sec	
POST DEV	0.1578	m3/sec	
EQUALS	12.33	% INCREASE IN MAJOR FLOWS	

With the post development inflows from the above equating to the required flows to be mitigated additional detention through the overland area reduces the outflow from site to 139L/s which is less than pre-development levels.

COMPARING Q100 FLOWS POST TREATMENT			
PRE DEV.	0.140	m3/sec	
POST DEV	0.139	m3/sec	
EQUALS	0.71	% DECREASE IN MAJOR FLOWS	

3.2.4 Stormwater Discharge Characteristics

In developing the stormwater management strategies for both minor and major storm events consideration was given to the effects the development would have on the characteristics of the predevelopment flows or the current flows in to neighbouring properties.

Section 3.6 of Queensland Urban Drainage Manual (QUDM) indicates four issues to be considered to reduce the likelihood of the resultant flows causing an actionable nuisance or becoming unlawful.

Diversion of Stormwater: Currently the site discharges as sheet flow across the rear boundary with flows in a south westerly to southerly direction. We note an existing retaining wall along the western boundary will intercept flows and concentrate them through the property to the rear at this point.

The proposed development site will partially restrict flows through the top of the catchment however once clear of the building flows will be captured by a small kerb as the lower boundary of the detention area. As noted in the above flow management strategies the kerb will be slotted and discharge to a rubble infiltration trench along the full length of the boundary ensuring flows are able to remain as sheet type flows prior to crossing the property boundaries as they currently do.

Concentration of Stormwater Flows: The proposed strategies will not result in any concentration of flows across the rear boundaries and will improve the current situation where flows are concentrated at the end of the existing retaining wall by allowing the flows to integrate with the flows through the rubble infiltration trench.

Other Flow Characteristics

Peak discharges have been treated through detention to ensure they are no greater than the existing and will provide a significant improvement to the rear property owners in a minor storm event with less peak flow.

Flow velocities will be tempered by the kerbing and rubble trench ensuring flows velocities are no greater than the current.

Treatment through grass buffers and detention and the infiltration trench will ensure water quality is reduced to required levels under the SPP ensuring downstream recipients are not required to deal with or treat water of an unacceptable quality.

Adverse Impacts

The proposed treatment described previously will ensure there are no adverse impacts to the receiving lands ensuring they are suitable for future use as deemed suitable and acceptable by Council.

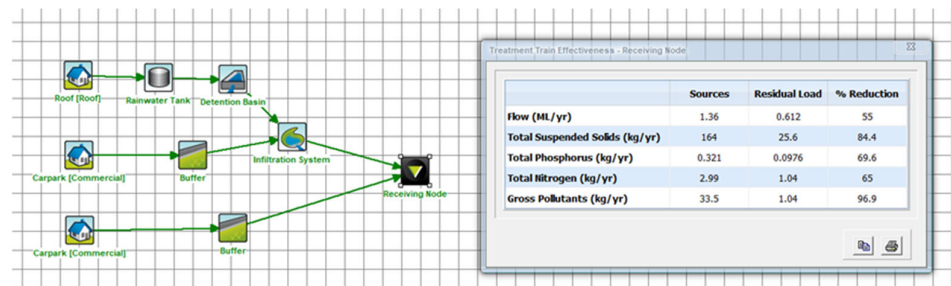
3.3 Stormwater Quality Management

The size of the combined development area being greater than 2500m² (2,799m²), triggers the State Planning Policy Healthy Water however given the location of the development and distance from any receiving water ways, stormwater drainage systems or other systems that would transport contaminants to receiving waters we ask that Council relax this requirement in this instance.

While relaxation of the requirements is requested we note that some quality improvement is proposed for the site as follows:

- All paved and roof areas will flow across grass buffer strips prior to exiting the development site
- Detention along the southern boundary will allow some contaminants to settle
- Following the detention, flows will traverse a rubble strip and infiltration trench which will accept the 3-month flows allowing further contaminants to be removed.
- Prior to reaching any pervious material, roadway or drainage infrastructure runoff is required to traverse another grass buffer area being the rear yards to the residential premises of the adjoining allotments.

The system was modelled using Music X to provide an indication of the provided reductions, refer below output.



The SPP 2017 notes the following design objectives in relation to water quality reductions for Central Queensland (South)

- Total Suspended Solids (TSS) 85%
- Total Phosphorous (TP) 60%
- Total Nitrogen (TN) 45%
- Gross Pollutants >5mm 90%

Based on the above all objectives except the total suspended solids have been met. Although we note that the difference between the achieved and required is very minor at 0.6% and could be considered as being compliant.

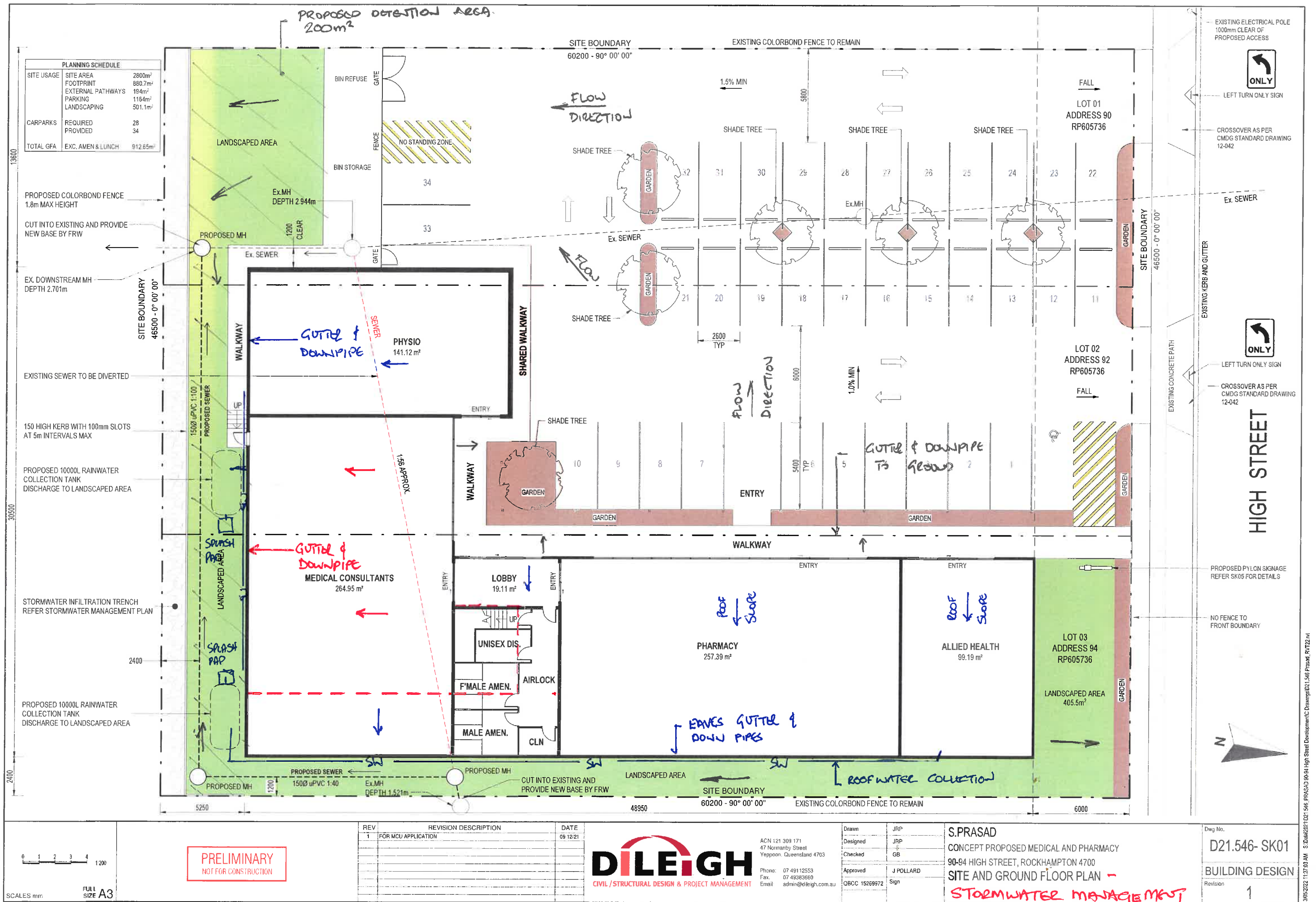
4. Conclusion

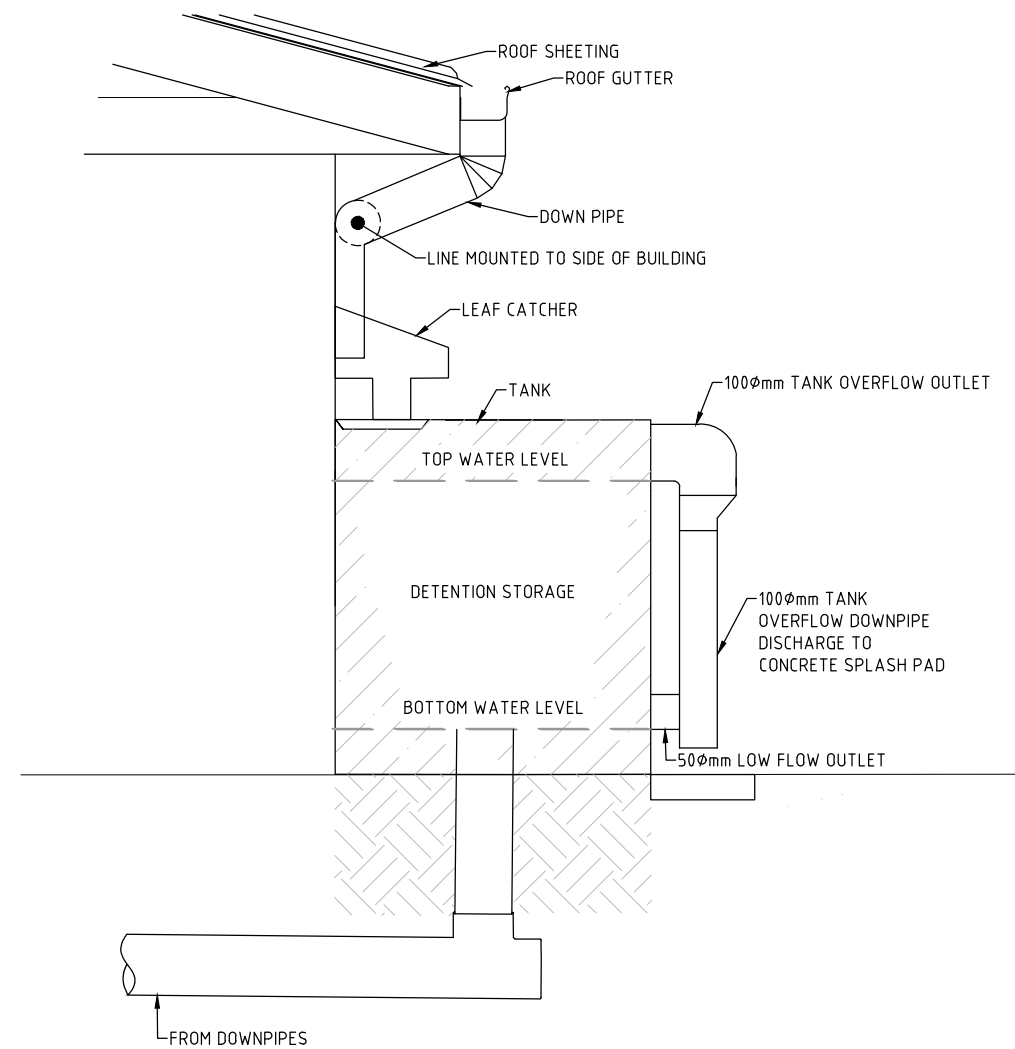
The proposed development will increase the impervious area of the site and requires quantity management of the stormwater discharge which will be achieved by installing a detention system along the southern boundary. The detention area will then discharge to via a weir type system to a rubble / infiltration drain prior to leaving site.

Quality objectives will not be fully met but given the location of the development it is unlikely that the partially treated runoff will impact on the surrounding environment or any receiving waters.

Based on the above the proposed stormwater management plan demonstrates that predeveloped flows can be maintained with some onsite detention and does not adversely affect the surrounding allotments which should allow Council to approve this plan.

Appendix A – Stormwater Management Strategy Drawing





SCALE

REV	REVISION	DATE
A	FOR APPROVAL	11/03/2021



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Checked by	GJB
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RPEQ	7682
Date	12.05.2022

S. PRASAD
STORMWATER MANAGEMENT PLAN ASSOC WITH AN MCU
90 & 94 HIGH STREET, BERSERKER
**PROPOSED DETENTION TANK
DETAILS**

D21.057-03

SHEET 02 OF 02

A					
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