Application for Planning Approval

Land Use Planning and Approvals Act 1993

APPLICATION NO.

DA2023/116

LOCATION OF AFFECTED AREA

20-22 GREENPOINT ROAD, BRIDGEWATER

DESCRIPTION OF DEVELOPMENT PROPOSAL

DEMOLITION & CONSTRUCTION OF NEW EMERGENCY SERVICES BUILDING. WORKS IN ROAD RESERVE INCLUDING NEW ACCESS.

A COPY OF THE DEVELOPMENT APPLICATION MAY BE VIEWED AT www.brighton.tas.gov.au AND AT THE COUNCIL OFFICES, 1 TIVOLI ROAD, OLD BEACH, BETWEEN 8:15 A.M. AND 4:45 P.M., MONDAY TO FRIDAY OR VIA THE QR CODE BELOW. ANY PERSON MAY MAKE WRITTEN REPRESENTATIONS CONCERNING AN APPLICATION UNTIL 4:45 P.M. ON **16/10/2023**. ADDRESSED TO THE GENERAL MANAGER AT 1 TIVOLI ROAD, OLD BEACH, 7017 OR BY EMAIL AT development@brighton.tas.gov.au.
REPRESENTATIONS SHOULD INCLUDE A DAYTIME TELEPHONE NUMBER TO ALLOW COUNCIL OFFICERS TO DISCUSS, IF NECESSARY, ANY MATTERS RAISED.

JAMES DRYBURGH
General Manager

SCAN ME

Brighton
going places

045.22138 DPFEM TASMANIA POLICE
BRIDGEWATER POLICE STATION
20-22 GREEN POINT ROAD BRIDGEWATER TAS 7030

PHILP
LIGHTON
ARCHITECTS

LOCATION PLAN
1 : 1000

DRAWING LIST

DA00	COVER PAGE	
DA000	FRONT PAGE	
DA01	SITE PLAN DEMOLITION	
DA02	SITE PLAN	
DA03	FLOOR PLAN	
DA04	ELEVATIONS 1	
DA05	ELEVATIONS 2	
DA06	SITE SECTIONS	
DA07	SECTIONS	
DA08	SECTIONS 2	
DA09	SHADOW DIAGRAMS	
DA10	3D VIEW 1	
DA11	3D VIEW 2	
DA12	MISCELLANEOUS	

PROJECT INFORMATION

LANDOWNER + DEVELOPER:	THE CROWN - DPFEM
ADDRESS:	20-22 GREEN POINT ROAD BRIDGEWATER TAS 7030
TITLE:	2/152307
ARCHITECTS:	PHILP LIGHTON ARCHITECTS PTY LTD 49 SANDY BAY ROAD HOBART
CBOS ABSP:	PETER GAGGIN CC997A ARCHITECT UNLIMITED
SITE AREA:	1ha
LOCAL AUTHORITY:	BRIGHTON COUNCIL
PLANNING SCHEME:	TASMANIAN PLANNING SCHEME - BRIGHTON
ZONING:	15.0 GENERAL BUSINESS
USE:	EMERGENCY SERVICES - POLICE, FIRE, AMBULANCE AND OTHER EMERGENCY SERVICES INCLUDING STORAGE AND DEPLOYMENT OF EMERGENCY VEHICLES AND EQUIPMENT

045.22138 DPFEM TASMANIA POLICE
BRIDGEWATER POLICE STATION
20-22 GREEN POINT ROAD BRIDGEWATER TAS 7030

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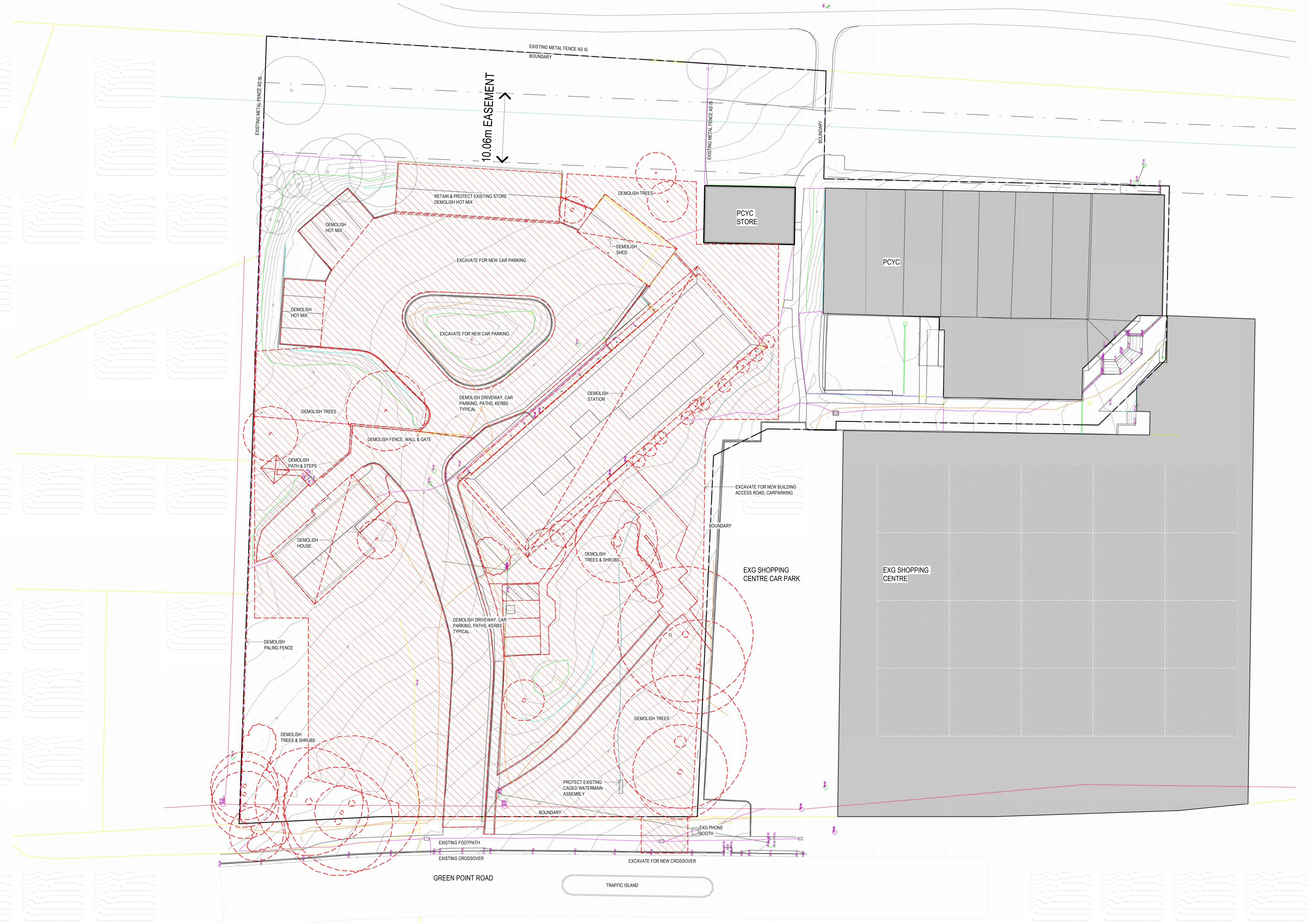
LIGHTON
ARCHITECTS

DEVELOPMENT APPLICATION

Print Date 20/06/2023 10:17:30 AM

DA00



PHILP
LIGHTON
ARCHITECTS

BRIDGEWATER POLICE STATION

CLIENT: DPFEM TASMANIA POLICE
ADDRESS: 20-22 GREEN POINT ROAD BRIDGEWATER TAS

DEVELOPMENT APPLICATION

SITE PLAN DEMOLITION

DRAWING No:	DA01
PROJECT No:	045.22138
SCALE:	1 : 250 @ A1
DATE:	
REVISION:	

DEVELOPMENT APPLICATION

PHILP
LIGHTON
ARCHITECTS

BRIDGEWATER POLICE STATION

CLIENT: DPFEM TASMANIA POLICE
ADDRESS: 20-22 GREEN POINT ROAD BRIDGEWATER TAS

NORTH

SITE PLAN

DRAWING No: DA02
PROJECT No: 045.22138
SCALE: 1 : 250 @ A1
DATE:
REVISION:

DEVELOPMENT APPLICATION

PHILP
LIGHTON
ARCHITECTS

BRIDGEWATER POLICE STATION

CLIENT: DPFEM TASMANIA POLICE
ADDRESS: 20-22 GREEN POINT ROAD BRIDGEWATER TAS

NORTH

FLOOR PLAN

DRAWING No: DA03
PROJECT No: 045.22138
SCALE: 1 : 100 @ A1
DATE:
REVISION:

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20/06/2023 3:41:38 PM

SOUTH ELEVATION
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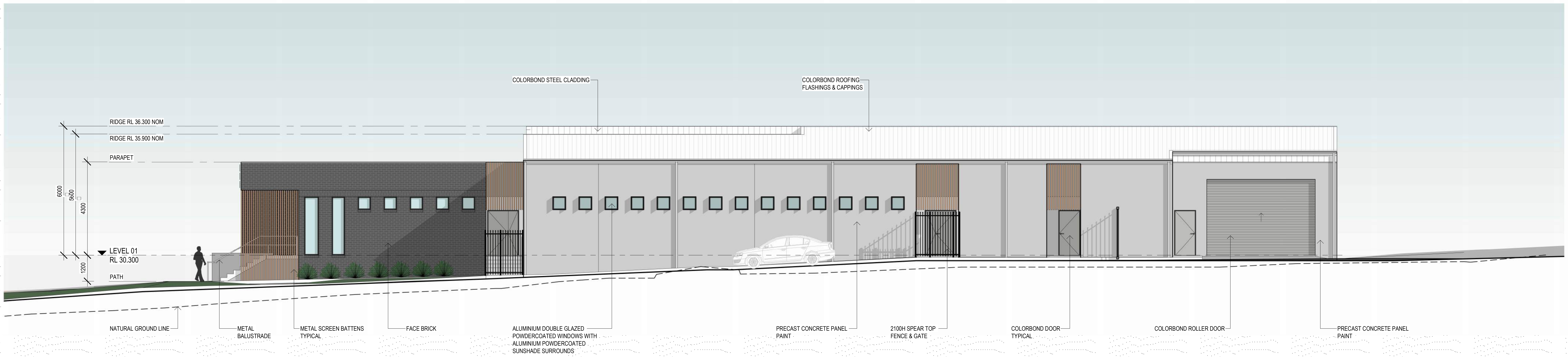

EAST ELEVATION
1 : 100

DEVELOPMENT APPLICATION

PHILP LIGHTON ARCHITECTS

BRIDGEWATER POLICE STATION

CLIENT: DPFEM TASMANIA POLICE
ADDRESS: 20-22 GREEN POINT ROAD BRIDGEWATER TAS

ELEVATIONS 1

DRAWING No:	DA04
PROJECT No:	045.22138
SCALE:	1 : 100 @ A1
DATE:	
REVISION:	

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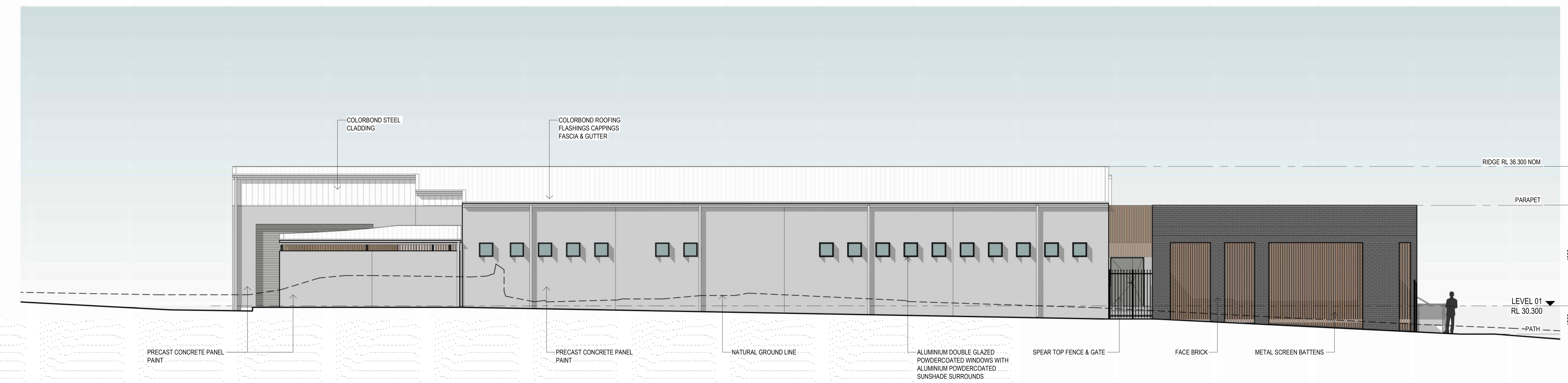

WEST ELEVATION
1 : 100

PHILP LIGHTON ARCHITECTS

BRIDGEWATER POLICE STATION

CLIENT: DPFEM TASMANIA POLICE
ADDRESS: 20-22 GREEN POINT ROAD BRIDGEWATER TAS

DEVELOPMENT APPLICATION

ELEVATIONS 2

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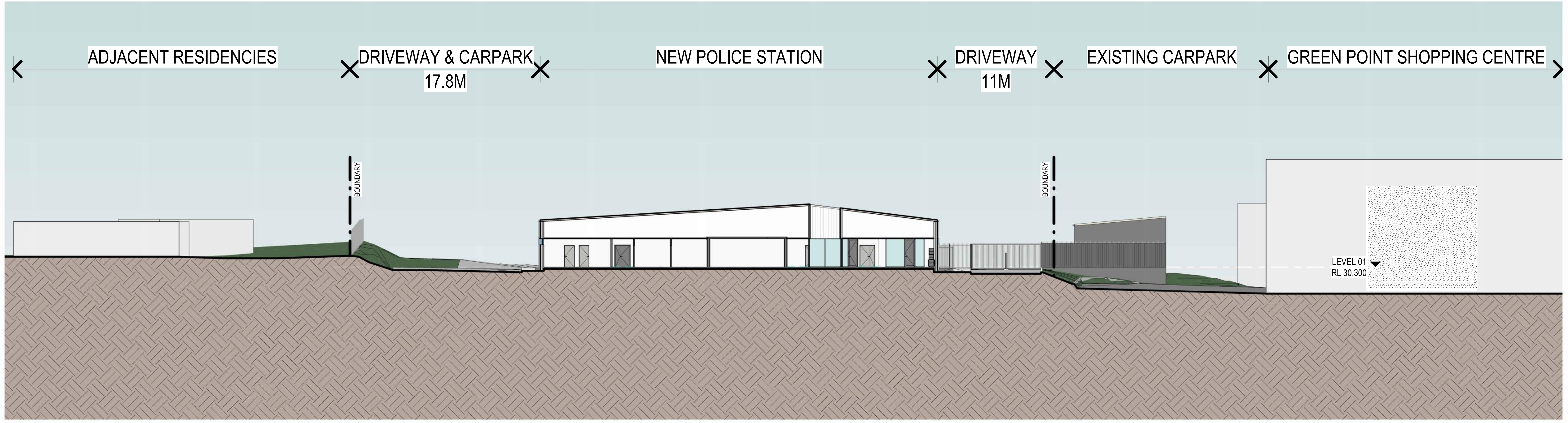
REVISION:	



SITE SECTION 1
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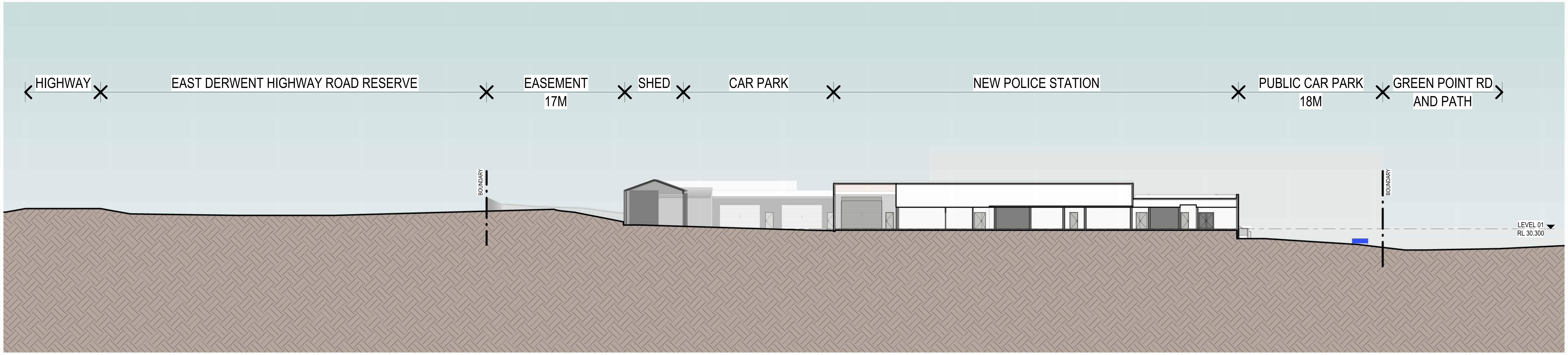

SITE SECTION 2
1 : 250

DEVELOPMENT APPLICATION

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LIGHTON
ARCHITECTS

BRIDGEWATER POLICE STATION

CLIENT: DPFEM TASMANIA POLICE
ADDRESS: 20-22 GREEN POINT ROAD BRIDGEWATER TAS

SITE SECTIONS

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PROJECT No: 045.22138

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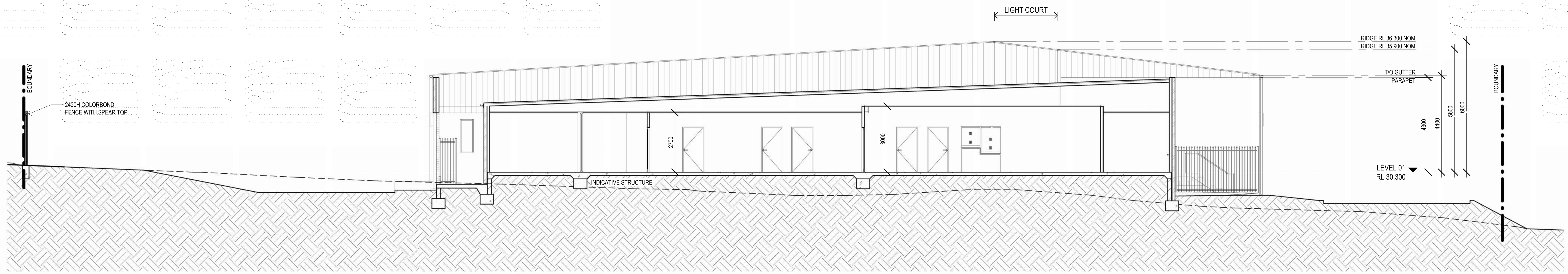

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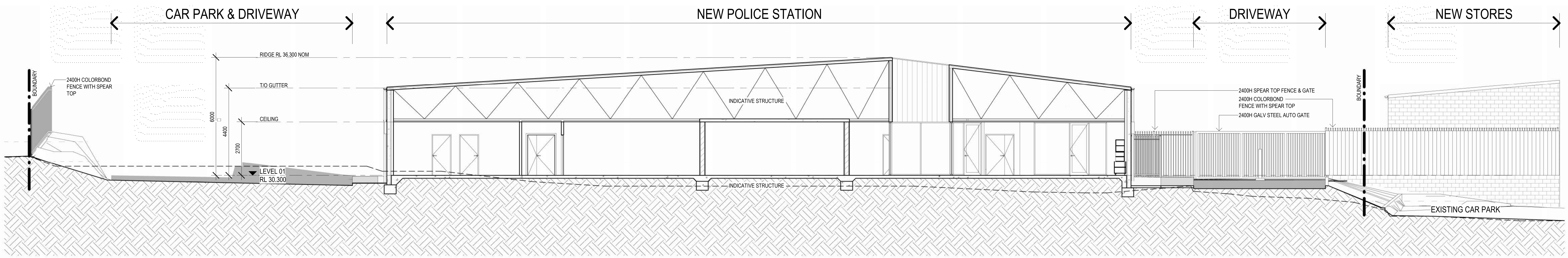

SECTION 2
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DEVELOPMENT APPLICATION

PHILP LIGHTON ARCHITECTS

BRIDGEWATER POLICE STATION

CLIENT: DPFEM TASMANIA POLICE
ADDRESS: 20-22 GREEN POINT ROAD BRIDGEWATER TAS

SECTIONS

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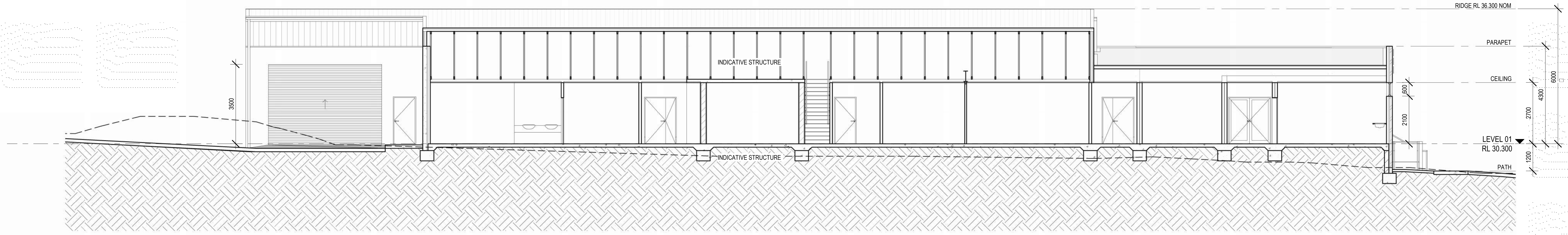

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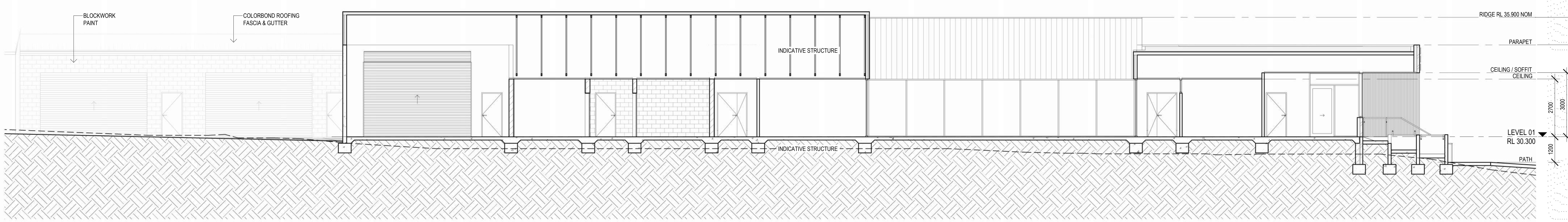

SECTION 4
1 : 100

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ARCHITECTS

BRIDGEWATER POLICE STATION

CLIENT: DPFEM TASMANIA POLICE
ADDRESS: 20-22 GREEN POINT ROAD BRIDGEWATER TAS

DEVELOPMENT APPLICATION

SECTIONS 2

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PROJECT No:	045.22138
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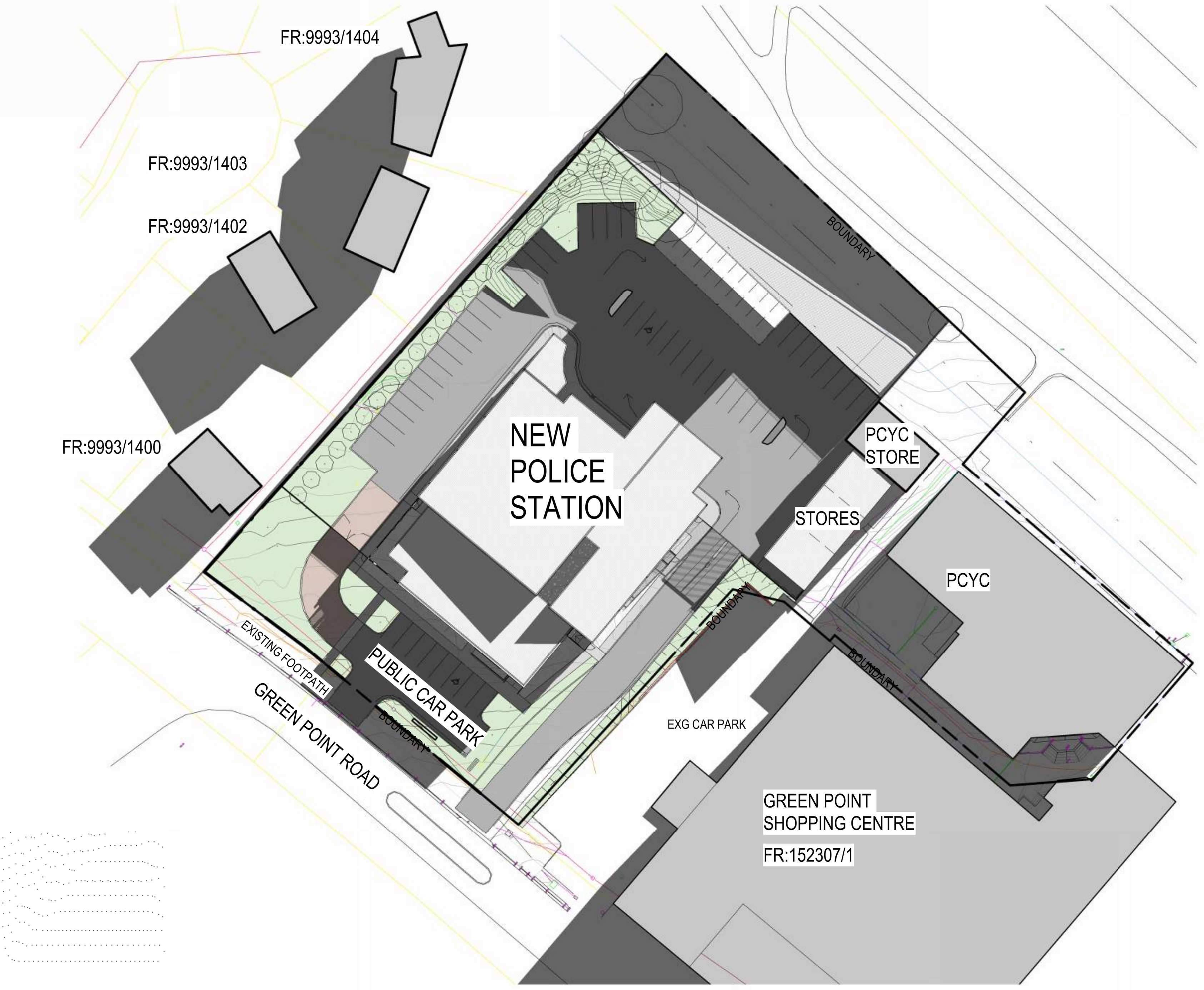
REVISION:	



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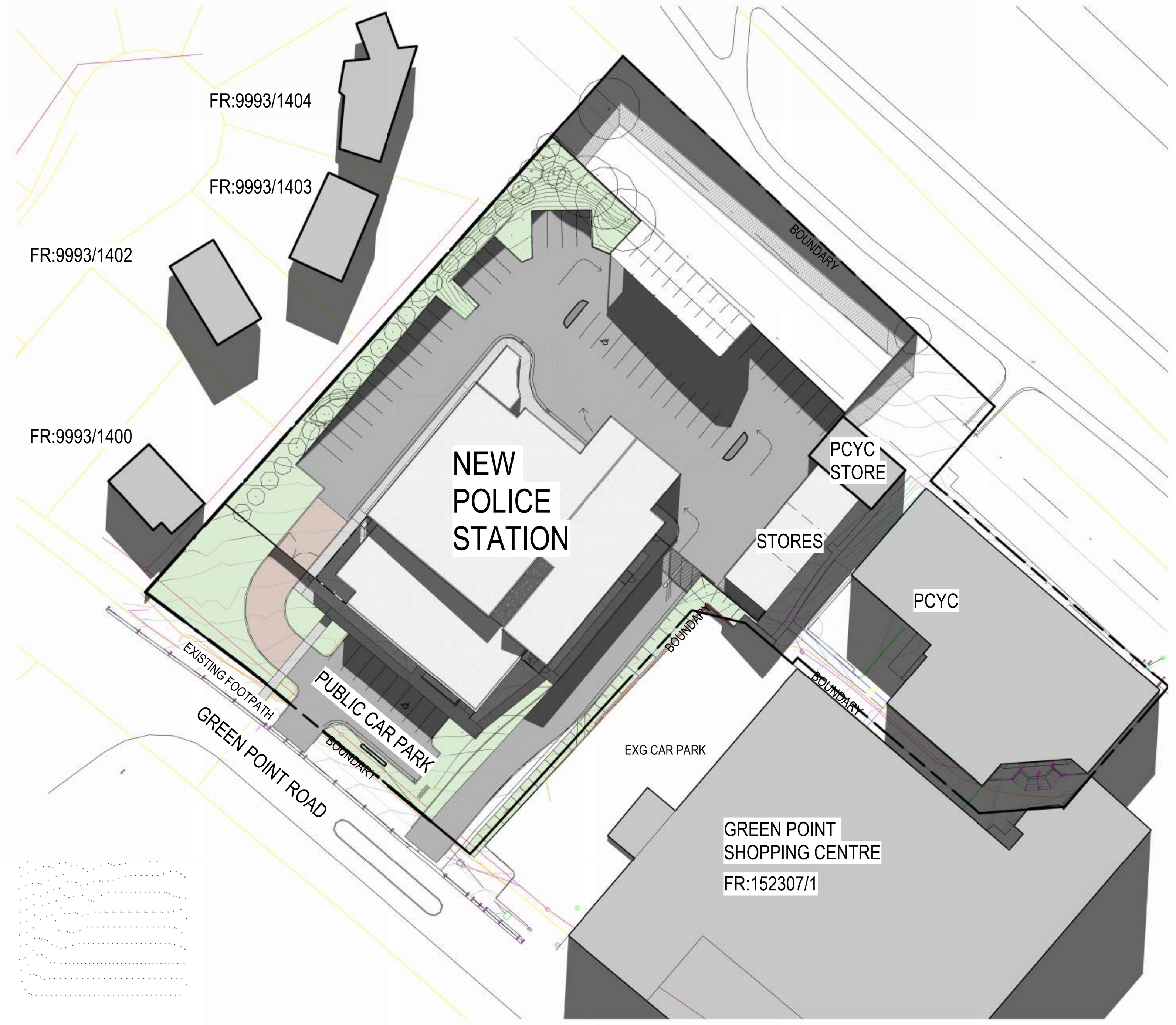

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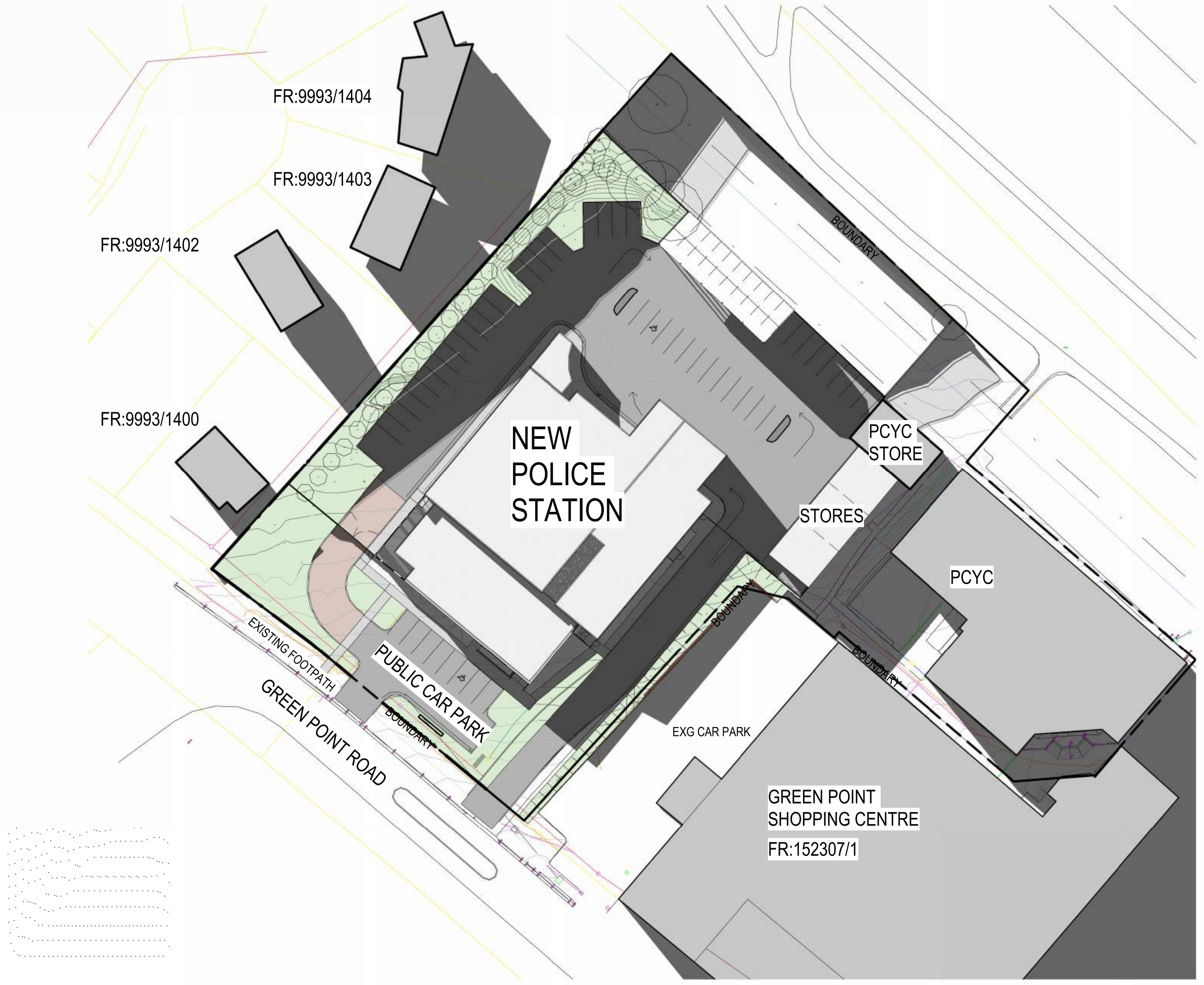

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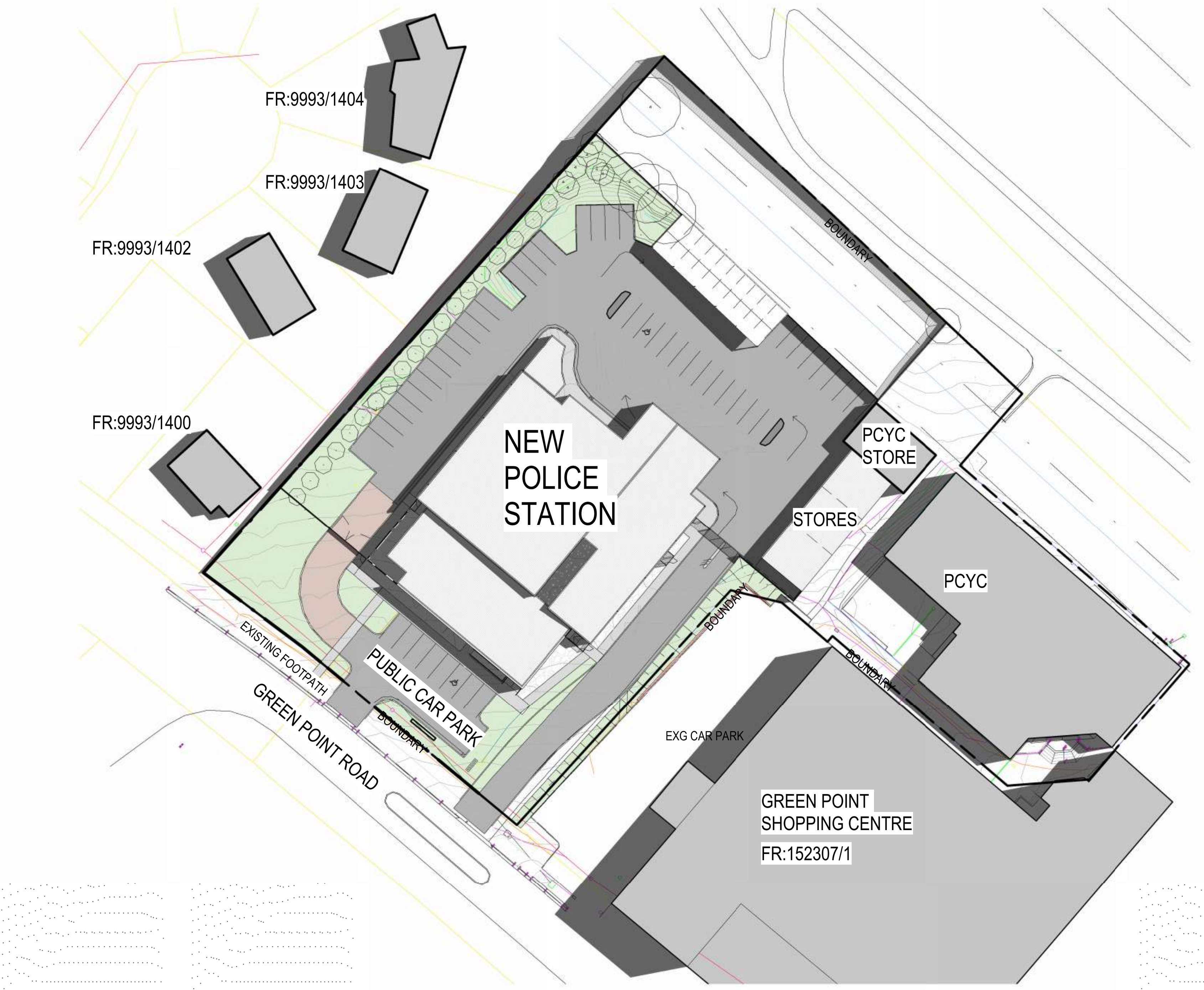

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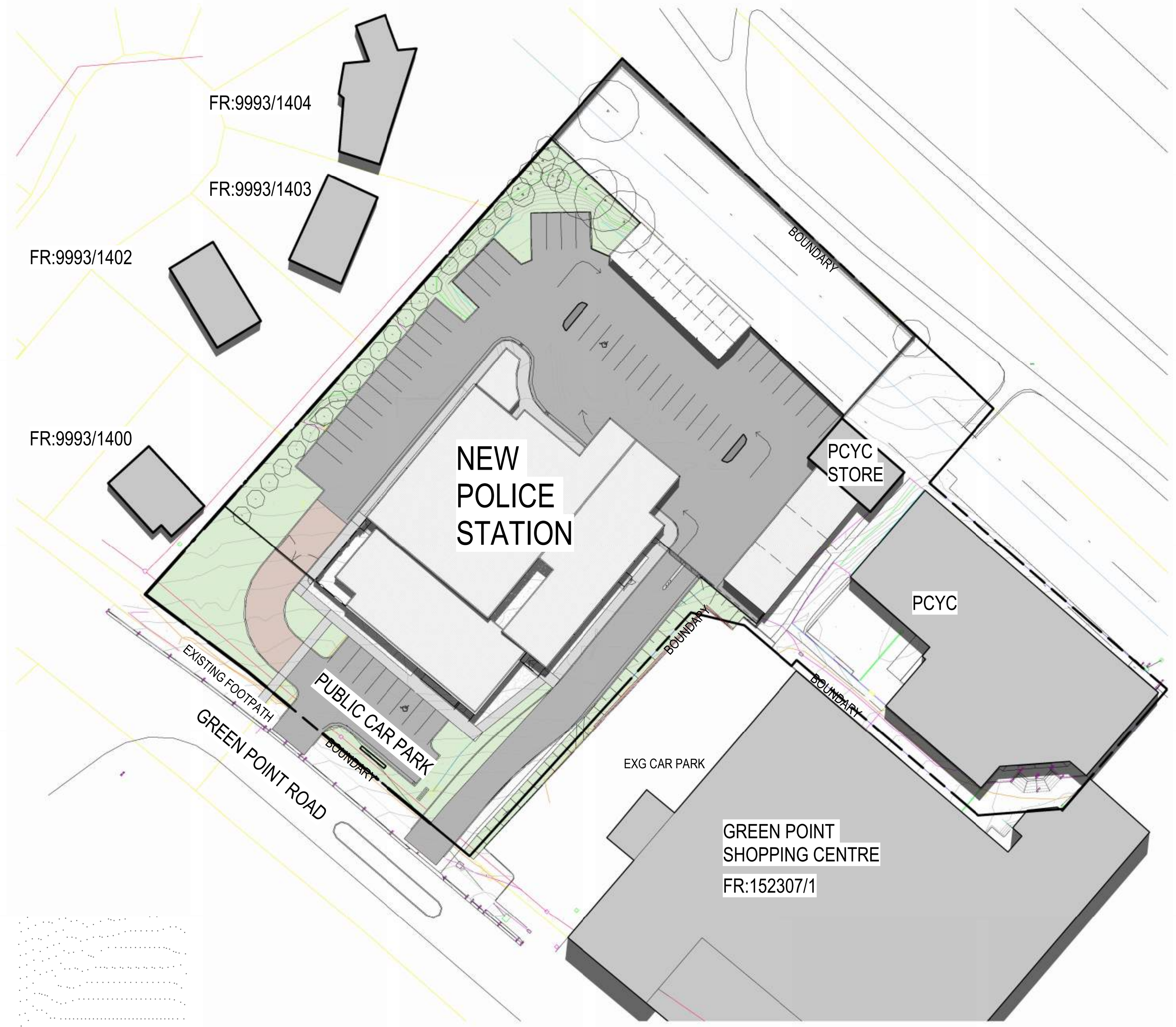

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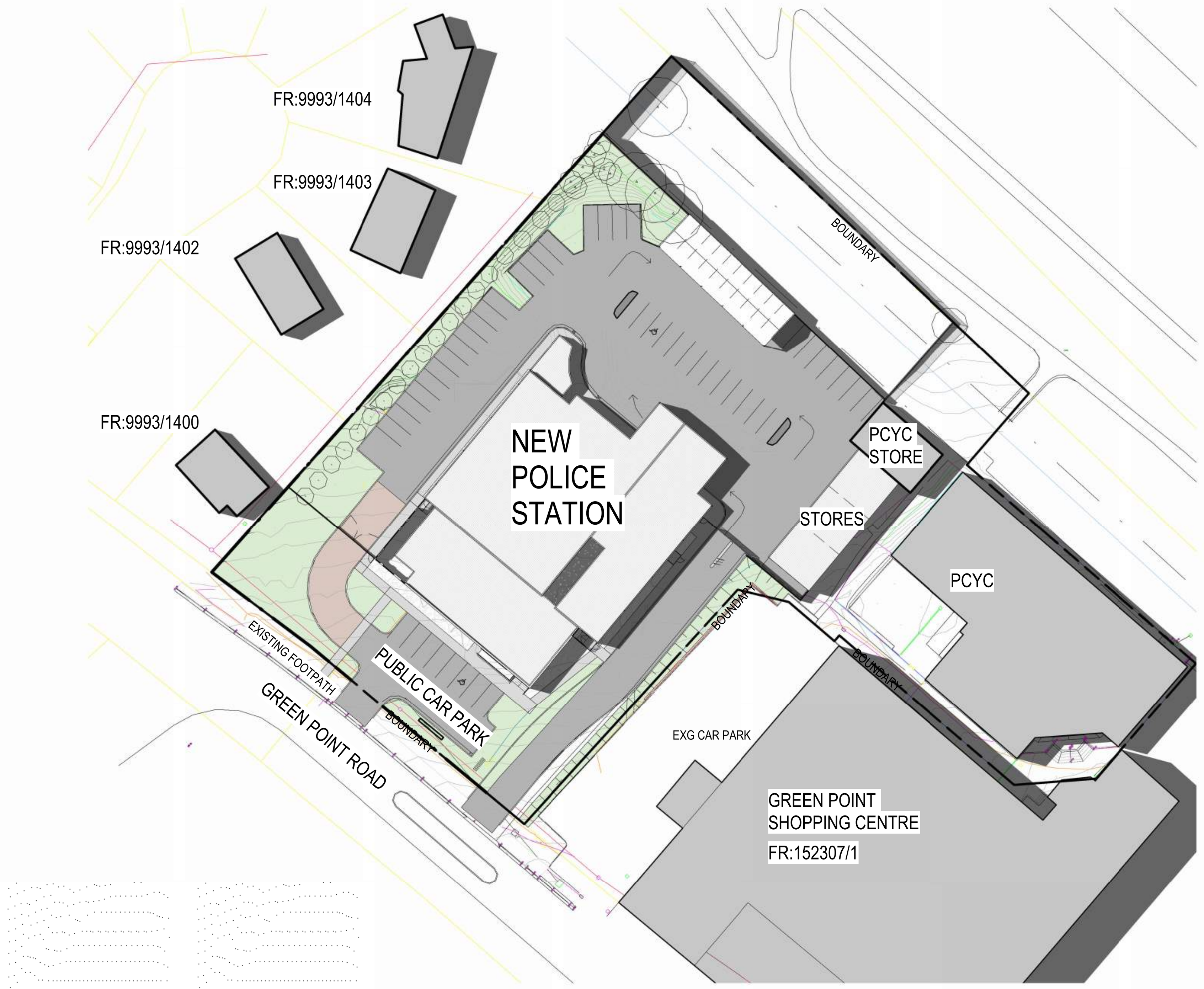

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DEVELOPMENT APPLICATION

PHILP LIGHTON ARCHITECTS

BRIDGEWATER POLICE STATION

CLIENT: DPFEM TASMANIA POLICE
ADDRESS: 20-22 GREEN POINT ROAD BRIDGEWATER TAS

NORTH

SHADOW DIAGRAMS

DRAWING No:	DA09
PROJECT No:	045.22138
SCALE:	1 : 750 @ A1
DATE:	
REVISION:	

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LIGHTON
ARCHITECTS

BRIDGEWATER POLICE STATION

CLIENT: DPFEM TASMANIA POLICE
ADDRESS: 20-22 GREEN POINT ROAD BRIDGEWATER TAS

DEVELOPMENT APPLICATION

3D VIEW 1

DRAWING No:	DA10
PROJECT No:	045.22138
SCALE:	@ A1
DATE:	
REVISION:	

DEVELOPMENT APPLICATION

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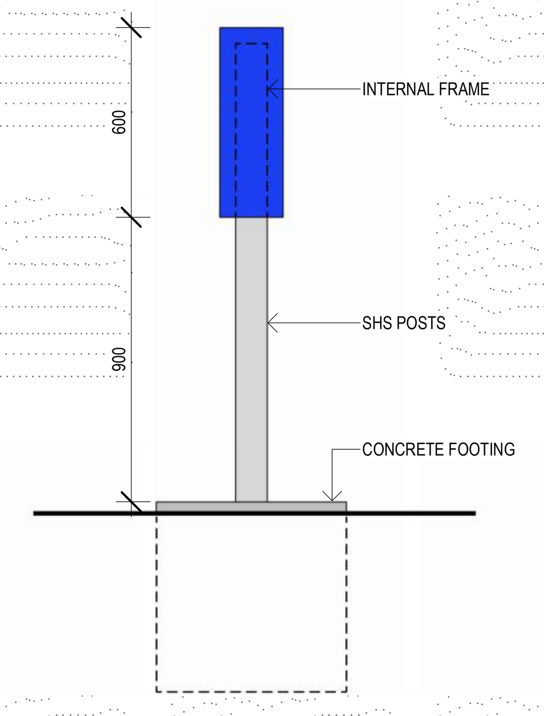
BRIDGEWATER POLICE STATION

CLIENT: DPFEM TASMANIA POLICE
ADDRESS: 20-22 GREEN POINT ROAD BRIDGEWATER TAS

3D VIEW 2

DRAWING No: DA11
PROJECT No: 045.22138
SCALE: @ A1
DATE:
REVISION:



1 SIGNAGE - SIDE VIEW
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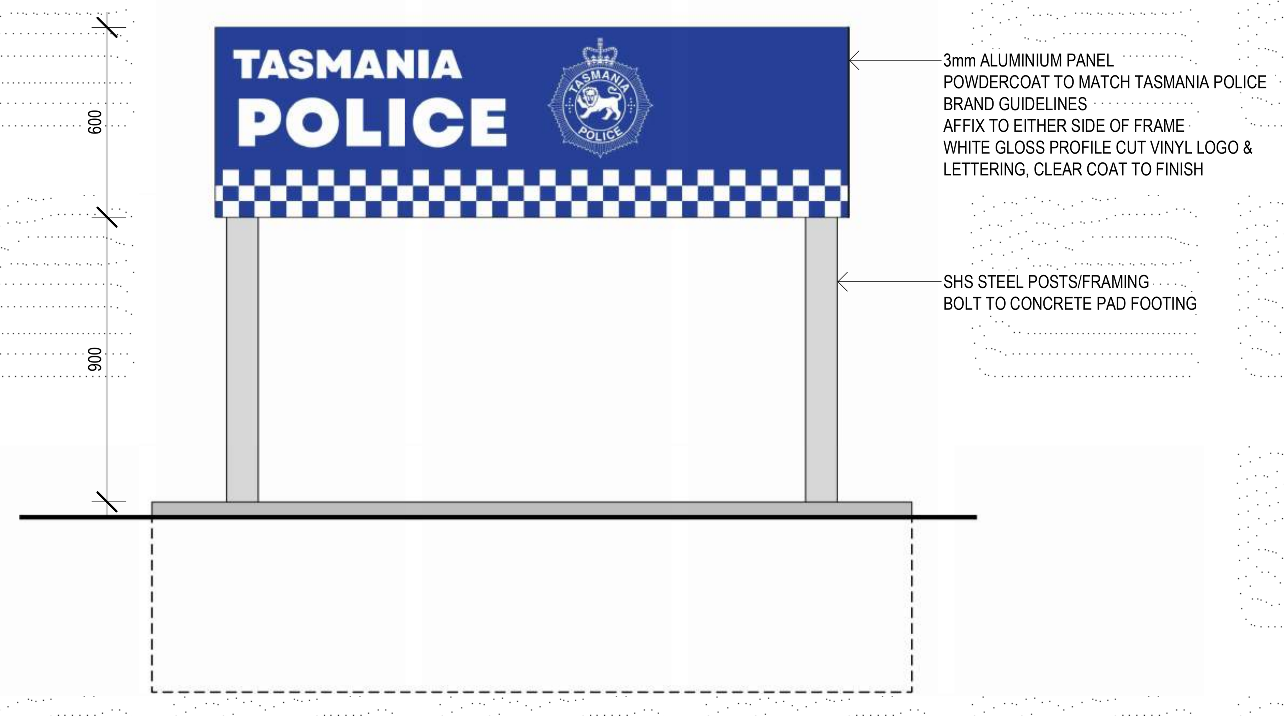

2 SIGNAGE - FRONT VIEW
1 : 20

DEVELOPMENT APPLICATION

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BRIDGEWATER POLICE STATION

CLIENT: DPFEM TASMANIA POLICE
ADDRESS: 20-22 GREEN POINT ROAD BRIDGEWATER TAS

MISCELLANEOUS

DRAWING No:	DA12
PROJECT No:	045.22138
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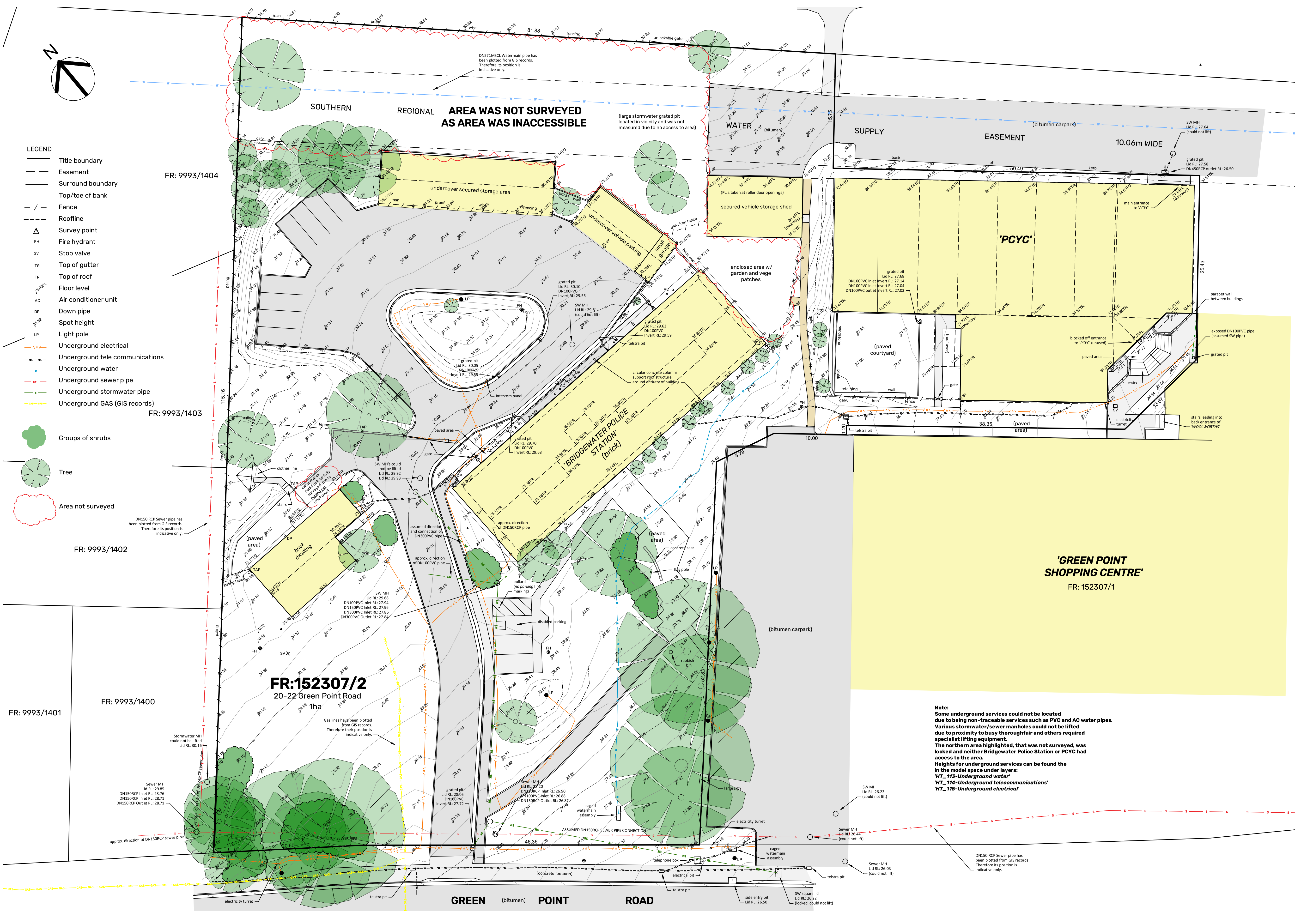
DATE:	
REVISION:	



NOTES

Date of Survey: 1,2 and 5 September 2022

Bearing datum is GDA2020 per RTK GNSS Observation.

Horizontal datum is MGA2020 per SPM7058, with coordinates of
E 519787.140
N 5268145 per SURCOM.
All other coordinates have been treated as plane.

Vertical datum is AHD per SPM 7058 with reputed RL 26.687m.

While reasonable effort has been made to locate all visible above ground services, there may be other services which were not located during survey.

Only those features/points specifically requested by Peter Gaggin of Philip Lighton Architects have been located and subsequently shown on this plan.

Some services have been plotted from council records, and as such are approximate only.

Prior to any demolition, excavation, final design or construction on this site, a comprehensive site investigation should be undertaken to locate all above and below ground service infrastructure.

All coordinates within this file, although stated to the nearest 0.001 metre, are approximate only and are only within 0.015m of the stated coordinate (horizontally and vertically).

The boundaries shown on this plan are compiled from SP152307 and, as such, are approximate only.

If any works are to be conducted on or near the boundary a re-establishment survey will be required.

Contour Interval 0.25m

Any DTM modeling that is to be done from the accompanying 3D digital file must be done using only the layer TRIANGLE_1 SURFACE_F to ensure that surface matches that verified by PDA Surveyors, Engineers & Planners. No responsibility is taken for the use or interpretation of this data in any other format.

Some feature levels are not shown on this plan for clarity. These can be found turned on in model space or on the OFF Levels layer.

REV	AMENDMENTS	DRAWN	DATE	APPR.
E				
D				
C				
B				
A				

NOTES:

2.5 5 12.5 25m

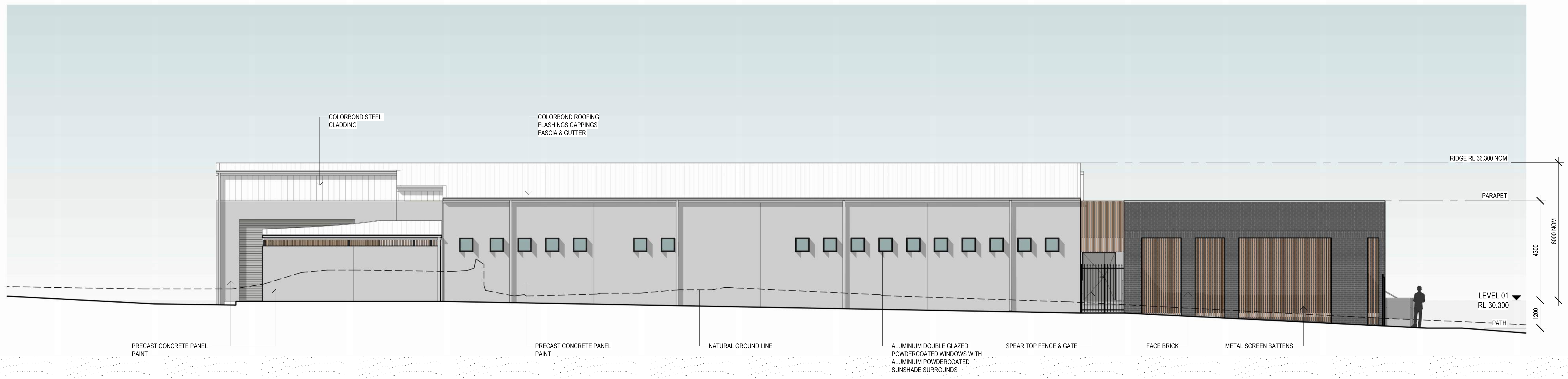
SURVEYOR	GEOCIVIL
JMC	50007MD
DRAWN	CHECKED
JMC	CT
DATE	16 September 2022

DETAIL SURVEY
BRIDGEWATER POLICE STATION
20-22 GREEN POINT ROAD, BRIDGEWATER, TAS
for PHILIP LIGHTON ARCHITECTS

PDA
SURVEYORS, ENGINEERS & PLANNERS
127 Bathurst Street
Hobart, Tasmania, 7000
PHONE: +61 03 6234 3217
FAX: +61 03 6234 5085
EMAIL: pda.hbt@pda.com.au
www.pda.com.au
Also at: Kingston, Launceston & Burnie

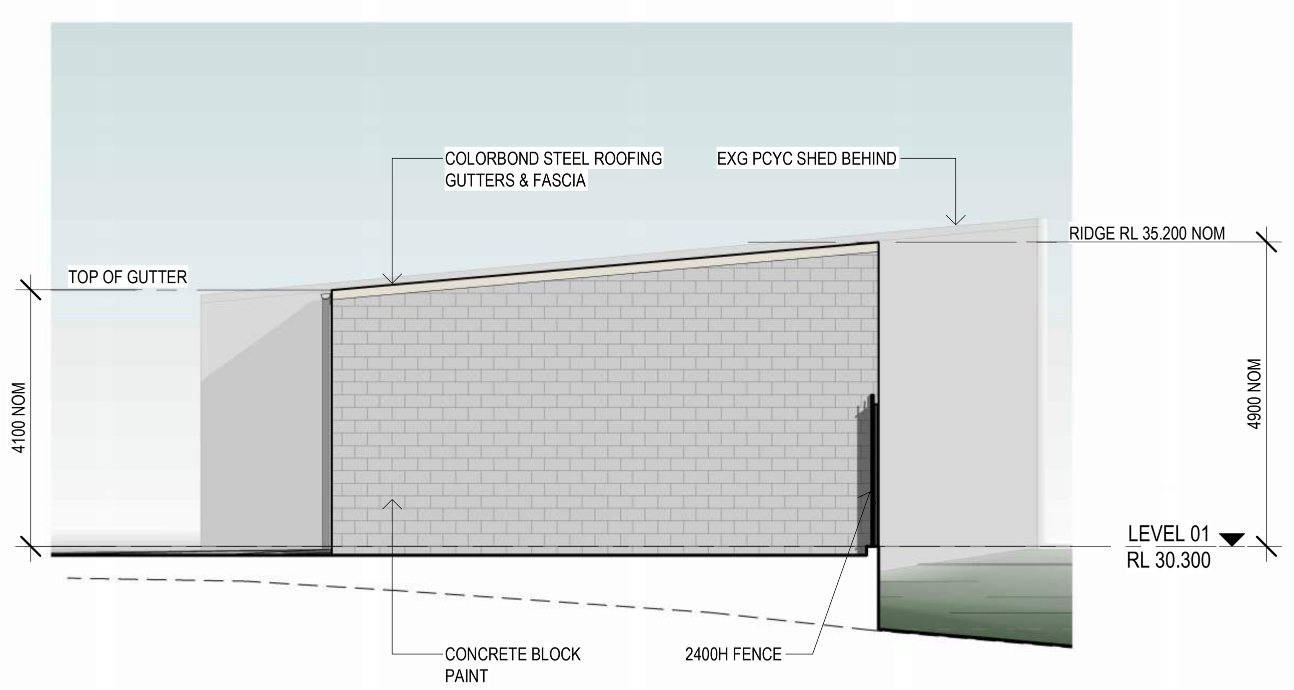
SCALE	PAPER
1:250	(A1)
JOB NUMBER	DRAWING
50007MD - 1	

NORTH ELEVATION
1 : 100



WEST ELEVATION
1 : 100

WEST ELEVATION - SHED
1 : 100



SOUTH ELEVATION - SHED
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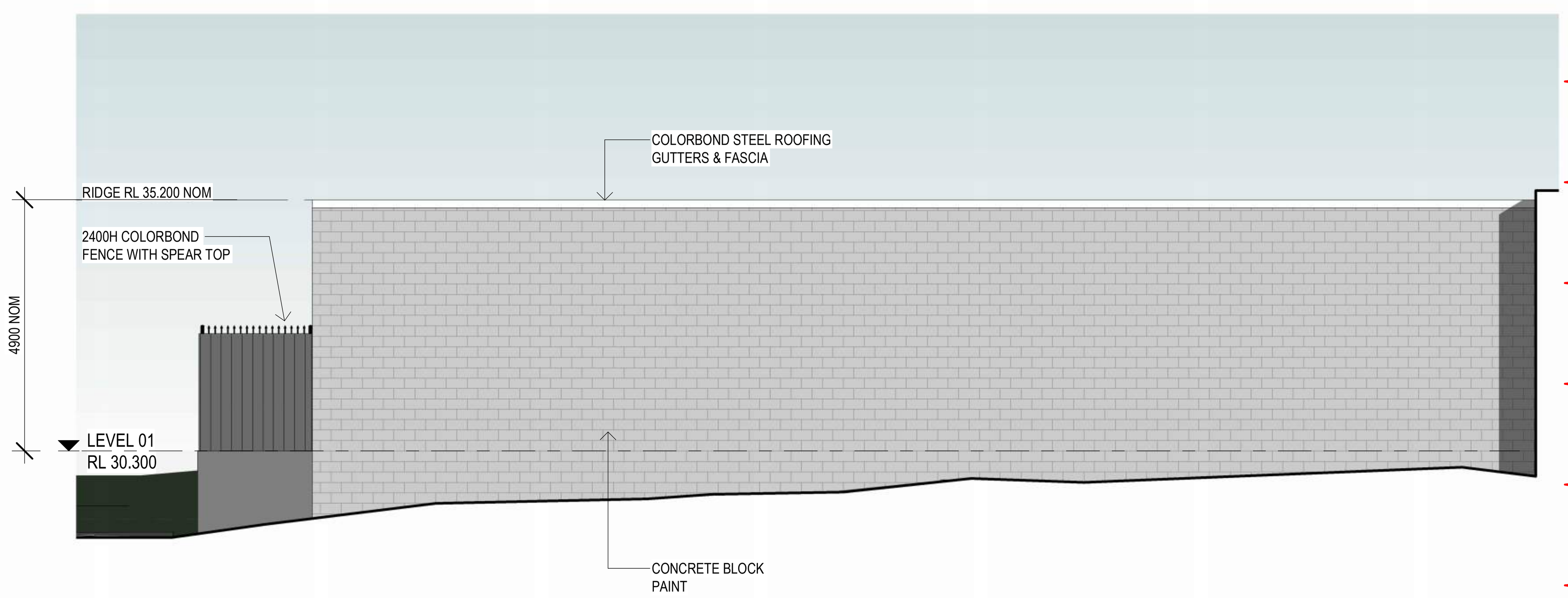

EAST ELEVATION - SHED
1 : 100

DEVELOPMENT APPLICATION

PHILP
LIGHTON
ARCHITECTS

BRIDGEWATER POLICE STATION

CLIENT: DPFEM TASMANIA POLICE
ADDRESS: 20-22 GREEN POINT ROAD BRIDGEWATER TAS

ELEVATIONS 2

DRAWING No:	DA05
PROJECT No:	045.22138
SCALE:	1 : 100 @ A1
DATE:	18.07.23
REVISION:	A

PHILP
LIGHTON
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49 Sandy Bay Road
Hobart Tasmania 7004
T +61(3) 6223 2333
hobart@philplighton.com.au

www.philplighton.com.au
Hobart/Launceston

ACN 009 515 182
ABN 82 009 515 182

General Manager

Brighton Council

1 Tivoli Road

OLD BEACH TAS 7017

Email: admin@brighton.tas.gov.au

23 June 2023

Dear Sir

Application for a Planning Permit

Department of Police Fire & Emergency Management – Tasmania Police

New Bridgewater Police Station and associated works

20-22 Green Point Road Bridgewater

Further to instructions from the landowners, Department of Police Fire and Emergency Management (DPFEM), and from our discussions with senior Council staff, 09 May 2023, please find attached *Planning Permit Application* documents at the above property.

Proposal

The proposed works include, but are not limited to:

- Demolition of the existing station building, police house and miscellaneous outbuildings
- Removal of trees for security reasons
- Excavation and site works to new levels
- Construction of a new Police Station Building, carparking, security fencing and gates, outbuildings
- Associated services

Whilst the new Bridgewater Police Station is under construction the services provided will relocate to temporary premises at Glenorchy Police Station and a shop-front Station at the Civic Centre.

Building height

The building is single storey and its maximum height to roof ridge above natural ground is 6500mm.

Site and Floor Areas

The site area of the property CT152307/2 is one hectare. This includes the police station, police house, outbuildings, carpark, landscaped areas and the (adjacent) PCYC infrastructure.

The floor area of the existing Station, house and outbuildings is 847m^2

The floor area of the proposed Station and outbuildings is 1889m^2

There is no work proposed to the PCYC buildings, carpark or associated infrastructure.

Setbacks

The building setbacks are:

South to Green Point Road 18m

This provides for visitor parking to the front of the station with secure station staff parking behind, minimizing opportunities for crime and anti-social behaviour

East (to Woolworth's carpark) 9.9m

West to adjacent residences 19.4m

North to East Derwent Hwy 28.3m to fenceline plus 17m to boundary (45.3m)

Staffing

At any one peak time there will be on site a maximum of 30 sworn police officers and state service staff.

Carparking

Currently there are 24No. carparking spaces comprising:

Station personnel parking	20No.
Visitor parking	4No.

The drawings indicate 57No. proposed carparking spaces comprising:

Station personnel parking	50No. including two accessible spaces
Visitor parking	7No. including one accessible space

Provision is made for future EV charging stations

External Materials and Finishes

The new station is designed as a fit for purpose contemporary building to accommodate current and future police operations and has been *"future proofed"* for the projected policing requirements of the Bridgewater Division.

Refer also to the Plans, Elevations and 3D views.

The external materials and finishes include:

Floor

- reinforced concrete slab

External Walls

- stretcher bond face brickwork – similar to *Austral Bricks Metallix Graphite* with dark grey mortar
- precast concrete panels – light grey high build roller-stippled paint similar to *Colorbond Shale Grey*
- ribbed steel sheet cladding over panels – *Colorbond Dover White*
- metal screening battens – finished in a timber / ochre colour
- powdercoated aluminium window frames and hood surrounds – dark grey green similar to *Colorbond Monument*
- Steel powdercoated roller doors - *Colorbond Shale Grey*

Roof

- ribbed steel sheet cladding and flashings – *Colorbond Dover White*
- gutters and downpipes - *Colorbond Shale Grey*

Fencing

- powdercoated proprietary *spear top* fencing with ribbed steel sheet attached – dark grey green similar to *Colorbond Monument*

Internal Fit-out

- contemporary office accommodation standard

Landscaping

The existing trees on the western corner of the property present an unacceptable security and safety risk and are to be removed.

To the western boundary screening evergreen trees will be planted inside the fenceline to obscure views into the operation of the station. These are proposed to be up to 4m high when fully grown.

The Forecourt and address to the street of the station will be professionally landscaped and maintained.

Program

The indicative program for the works is:

Submit this *Planning Application* for the Bridgewater Police Station	June 2023
Obtain the *Planning Permit*	August 2023
Parliamentary Standing Committee on Public Works Approval	December 2023
Tender the works for the Bridgewater Station build	Dec 2023 – Jan 2024
Sign a contract to build the Bridgewater Station	March - April 2024
Decant Station Bridgewater Staff to Glenorchy	April - May 2024
Build the temporary shop front at the Bridgewater Civic Centre	Jan-Apr 2024
Commence Bridgewater operations at Glenorchy Station	May 2024
Build Bridgewater Station (approx. 18 months)	May 2024 – Dec 2025
Commissioning and occupation of Bridgewater Station	January 2026
Decant staff from Glenorchy to Bridgewater	February 2026
Cease Bridgewater operations at Glenorchy	March 2026
Decommission temporary station at Glenorchy	March 2026

This program is indicative only and may be subject to change as there are some variables outside the project's control.

Estimated Cost

The estimated construction cost of the building is $10.5M + GST inclusive of:

- Preliminaries and site set-up
- Contractor's profit and margins
- Demolition
- Construction and fit-out
- Buildings Services
- Civil works
- Landscaping

Planning Documents

The documents to inform the *Planning Application* for the Bridgewater Police Station Staff are:

a. This letter *Philp Lighton Architects to Brighton Council*, 20 June 2023

b. Brighton Council *Application Form*, submitted by the undersigned obo the Landowners

c. Landowner *Consent to lodge* documents

d. Title Information CT152307/2

e. PLA Drawings:

DA	Cover Sheet and aerial 3D View from SE corner
DA00	Project Information + Location Plan
DA01	Site Plan - Demolition
DA02	Site Plan - Proposed
DA03	Floor Plan
DA04	Elevations 1
DA05	Elevations 2
DA06	Site Sections
DA07	Sections 1
DA08	Sections 2
DA09	Shadow Diagrams
DA10	3D View 1 – Looking North West from Green Point Road
DA11	3D View 2 – Looking North East from Green Point Road
DA12	Miscellaneous
PDA	Surveyors' Drawing 50007MD1

Applicable Fees

Council's advice as to applicable fees is requested so payment may be made, and we seek Council's earliest approval. Should you have any queries please do not hesitate to contact Project Architect Maciek Salacinski of this Office, or the undersigned.

Yours faithfully

Philp Lighton Architects Pty Ltd

Peter Gaggin
Director I Architect

BRIDGEWATER POLICE STATION

20-22 GREEN POINT ROAD

BRIDGEWATER

TRAFFIC IMPACT ASSESSMENT

Hubble Traffic

August 2023

Disclaimer: This report has been prepared based on and in reliance upon the information provided to Hubble Traffic Consulting by the client and gathered by Hubble Traffic Consulting during the preparation of the report. Whilst all reasonable skill, care and diligence has been used in preparation of the report, Hubble Traffic Consulting take no responsibility for errors or omissions arising from misstatements by third parties.

This report has been prepared specifically for the exclusive use of the client named in the report and to the extent necessary, Hubble Traffic Consulting disclaim responsibility for any loss or damage occasioned by use of or reliance upon this report, or the date produced herein, by any third party.

Version	Date	Reason for Issue
Draft	August 2023	Draft issued for client feedback
Final	Augus 2023	Final issued

Contents

1. Introduction

Philp Lighton Architects have engaged Hubble Traffic Consulting to prepare an independent Traffic Impact Assessment, to consider the traffic impacts of the construction of a new Police Station at 20-22 Green Point Road, Bridgewater.

The proposed development is to replace the existing station and out buildings currently on-site, with improved infrastructure and increased on-site parking, to meet current staffing needs and accommodate future growth. The station operates 24 hours, 7 days a week, and currently has 58 staff members, with no changes to staffing and services expected in the near future. The reception opening hours are 8:40am to 4:30pm.

This report has been prepared to satisfy the requirements of Austroads, Guide to Traffic Management Part 12: Traffic Impacts of Developments 2019, and referred to the following information and resources:

- Tasmanian Planning Schemed (Brighton)
- LGAT (IPWEA) standard drawings
- Road Traffic Authority NSW (RTA) Guide to Traffic Generating Developments
- Australian Standards 2890 parts 1 and 6.
- Austroads series of Traffic Management and Road Design
  - Part 4: Intersection and crossings, General
  - Part 4a: Unsignalised and Signalised Intersections
  - Part 12: Traffic Impacts of Development
- Department of State Growth crash database
- SIDRA traffic modelling software
- Google Earth imagery

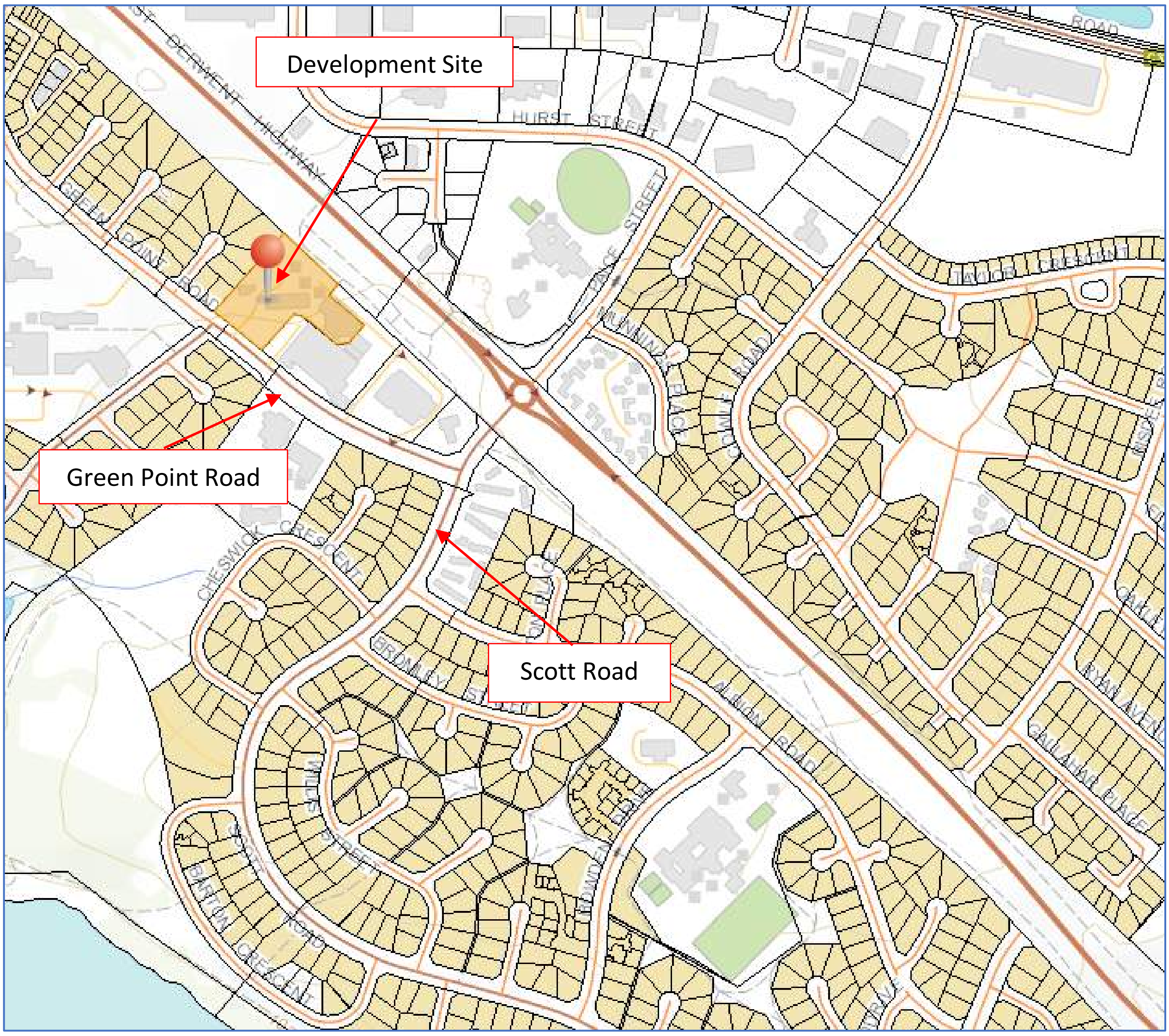
2. Site description

The development site is 20-22 Green Point Road, currently occupied by the existing Bridgewater Police Station with several outbuildings, and the Bridgewater PCYC. The site is located in close proximity to community services, general retail stores, bus services, and residential catchments.

The site is well connected to the East Derwent Highway, providing motorists with an efficient route to access the State Road network, with majority of vehicles expected to commuter along Green Point Road, Scott Road, turning at the highway roundabout.

According to the LIST (land information database), the land is zoned as General Business.

Diagram 2.0 – Extract from the List showing the development site



3. Development proposal

The development is for the demolition and replacement of the existing Bridgewater Police Station and several outbuildings, with a new Police Station and storage sheds, while retaining the existing PCYC buildings and existing access. Included within the development are:

- reception, meeting spaces, amenities, and operational areas,
- two vehicular accesses, one allocated for police vehicles and employees with 50 parking spaces located at the rear of the building, with the second access to customer parking area at the front of the building,
- four parking spaces for future EV charging,
- pedestrian pathways around the perimeter of the building,
- security gates to secure police operational areas, and landscaping

The developer has advised the current number of 58 employees will be retained, with no increase in employees expected, but the facilities have been designed to accommodate future growth. While 58 employees are employed by the station, there are 31 are operational officers operating over three shifts per day, with a maximum of 30 staff on-site at any one time.

Diagram 3.0 – Layout of proposed development

4. Trip generation by this development

A trip in this assessment is defined as a one-way vehicular movement from one point to another, excluding the return journey. Therefore, a return trip to and from a land use is counted as two trips.

It is difficult to determine the number of daily vehicles this facility is likely to generate, as it is dependent on demand, with the critical traffic aspect being how many trips could be generated in any one hour period. The best assumption is to base the trips on the number of employees, customers, and police vehicles. To determine a worst case scenario the following information gained from the developer has been used.

- Based on 58 employees, noting that 30 employees will be on-site at any one time, it is assumed that all employees will use their own private vehicle to travel to and from the site, arriving at the start, and leaving at the end of their shift.
- Employees to operate the nine police vehicles, with each vehicle leaving and returning to the site an estimated six times a day, generating 54 daily trips.
- Each of the seven customer parking spaces during daytime business hours of 8:40am to 4:30pm, have the potential to generate three customers per hour, per parking space, generating 168 trips.

As a worst case scenario this assessment predicts this facility has the potential to generate 338 daily trips, with 60 of these trips expected to occur in the morning and evening when the reception area operates.

Table 4.0 – Predicted number of trips likely to be generated

Trips generated by	Rate	Trip generation rate	Number	Daily trips	Peak hour trips
Employees arriving and leaving	Per day	2 trips	58 employees	116	30
Police vehicle – leaving and returning	Per day	6 trips per police vehicle	9 Police vehicles	54	9
Customers – 8:40am to 4:30pm	Per hour	3 trips per space, per hour	8 hours	168	21
			Total	**338**	**60**

The developer has advised this development is replacing an existing Police Station, and additional vehicular trips are not expected to be generated.

5. Existing traffic conditions of the surrounding roads

The development site is in close proximity to the East Derwent Highway (Highway), which is the nearest arterial road, and part of the State Road network. The majority of vehicles generated by the development is expected to commute along Green Point and Scott Roads, turning at the East Derwent Highway roundabout.

5.1 Scott Road characteristics

Scott Road is a local collector road linking residential catchments to the highway. The road is of an urban road standard with bitumen seal, concrete kerb and guttering, and footpaths on both sides. A solid central medium strip runs along the section of road from the highway to the Green Point Road junction, moderating traffic movements into and out of the service station located on the corner of the Green Point Road junction. The alignment for this section of road is straight, and the road operated under the urban default speed limit of 50 km/h.

Photograph 5.1 – Scott Road – Typical road standard

5.2 Green Point Road characteristics

Green Point Road runs in an east to west orientation, turning into Gunn Street just past Eddington Street. This road would be considered a minor collector road within the surrounding street network, connecting the residential area to Scott Road. The development site is situated on the same site as the Bridgewater PCYC, next to Bridgewater Community Market and Woolworths shopping centre, opposite to the Brighton Civic Centre, Service Tasmania, and Kutalayna Health, and within 285 metres from Scott Road.

The road alignment is reasonable straight, with a bitumen sealed carriageway, concrete kerb and channel, concrete footpath on both sides, and street lighting. A 50 km/h speed limit operates as the urban default speed.

Between the development site and Scott Road, the road is heavily managed, with a single traffic lane operating in each direction, separated by a two-way central turning lane, supplemented with short solid islands. There are two road humps, both marked with a zebra crossing located on top of the hump, these are generally known as a Wombat crossing. These Wombat crossings provide a high level of service for pedestrians, connecting the shopping precinct, with the commercial services located on the opposite side. There are indented bus lay-bys on either side, with no on-street parking along this section as shown in the photograph below.

Photograph 5.2A – Green Point Road viewing north

The central two-way turning lane continues to Eddington Street, which is located north of the development site on the opposite side of the road, with the central two-way turning lane and solid median operating pass the development site as shown in the photograph 5.2B below. Beyond Eddington Street the road reverts to standard local urban street as shown in the photograph 5.2C

Photograph 5.2B – Green Point Road viewing south outside of development site

Photograph 5.2B – Green Point Road viewing south at junction of Eddington Street

5.3 Green Point Road and Scott Road intersection

Green Point Road intersects Scott Road forming a standard T-Junction, with Green Point Road motorists required to give way. There are median traffic islands on all three legs of the junction, there is unrestricted sight lines for all motorists to turn in a safe and efficient manner. Vehicles generated by the development is expected to turn left on to Scott Road when leaving, and returning by turning right in to Green Point Road.

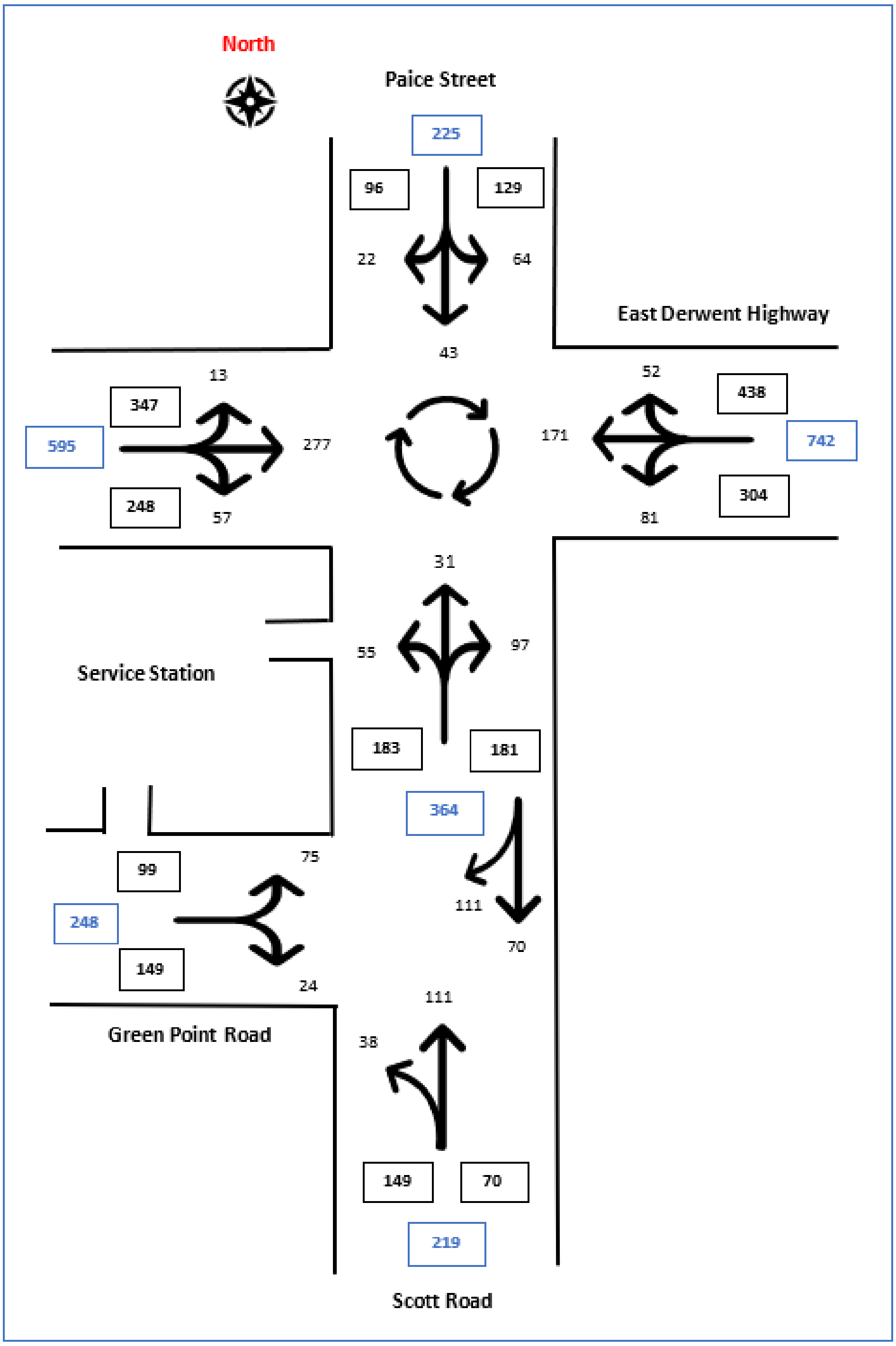
5.4 East Derwent Highway Roundabout

East Derwent Highway forms a cross intersection with Scott Road and Paice Street, controlled by a medium size roundabout.

5.5 Current vehicle movements on the surrounding road network

A manual traffic survey was undertaken at the highway roundabout and the junction of Scott Road and Green Point Road during the morning peak period to capture traffic movements on the surrounding road network. The survey found 248 two-way vehicle movements on Green Point Road, indicating the road is moderately trafficked.

Diagram 5.5 – Morning peak hour traffic movements (8:10am to 9:10am)



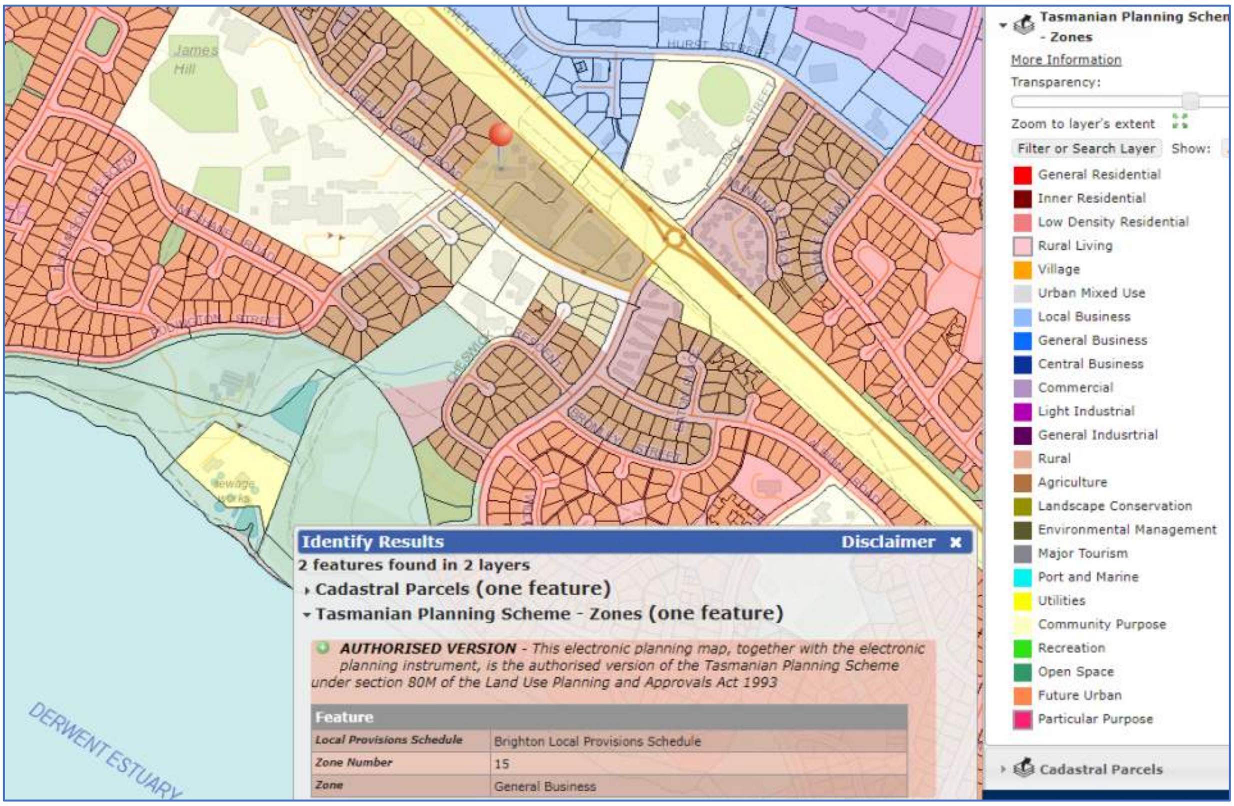
5.6 On-street parking

Green Point Road adjacent to the development site has a single lane in each direction, with two-way central turning lane, supplemented with solid islands, leaving insufficient width for on-street parking.

5.7 Surrounding land-use

Along Green Point Road there is a range land-use zones, including general business, residential, and community purpose, as shown in the diagram below.

Diagram 5.7 - Extract from the LIST land information database shows the land-uses



5.8 Crash Data along Green Point Road and Scott Road intersection

The Department of State Growth maintains a database of reported road crashes. A check of this database found no crashes reported on Green Point Road, or the intersection of Green Point and Scott Roads in the last five years.

This indicates motorists are not having any difficulty with negotiating this section of Green Point Road, or the intersection of Green Point and Scott Roads.

5.9 Access to the PCYC building

While the PCYC building is located within the development site, access to this building is available from the adjoining property. A rear access is available from an existing car parking area as shown in the photograph below. The development of the police station will not cause any changes to the PCYC building access.

Photograph 5.9 – Access to PCYC building

6. Traffic efficiency of the surrounding roads

Although the development is not expected to generate additional vehicle movements, it would be appropriate to quantify the current performance of the traffic flow on the surrounding road network. This is done by evaluating the traffic flows captured by the recent manual traffic survey. The roads that are important to this development is Green Point Road, the junction of Green Point Road and Scott Road and highway roundabout.

6.1 Traffic flow and efficiency on the surrounding roads

Traffic performance for road links within urban environments can be quantified by comparing the two-way peak hour traffic flow against RTA performance standards. With the RTA Guide indicating the environment goal for a collector road within an urban environment is 300 two-way vehicle movements per peak hour, and maximum of 500 vehicles, as shown in the RTA extract below.

Extract 6.1 – RTA Guide performance standards for urban roads

Environmental capacity performance standards on residential streets

Road class	Road type	Maximum Speed (km/hr)	Maximum peak hour volume (veh/hr)
Local	Access way	25	100
	Street	40	200 environmental goal
			300 maximum
Collector	Street	50	300 environmental goal
			500 maximum

With the manual traffic survey finding 248 two-way traffic movements during the morning peak hour, is well below the RTA Guide performance standards, demonstrating the traffic flow on Green Point Road between the development site and Scott Road is efficient, and not causing adverse traffic impact. Also, there is spare traffic capacity to absorb future traffic growth, that may be generated by adjacent land uses.

6.2 Traffic efficiency at the junction and roundabout

The simplest method to determine the traffic performance at a junction, intersection or roundabout is to use SIDRA Intersection traffic modelling software, which uses gap acceptance theory to determine the average delay, queue lengths and degree of saturation, which are all measures of traffic congestion and level of service. The RTA has considered the traffic performance of signalised and unsignalised sites and provides guidance on the likely performance as detailed in the extract below.

Extract 6.2 – RTA Level of Service for controlled and uncontrolled sites

Table 4.2
Level of service criteria for intersections

Level of Service	Average Delay per Vehicle (secs/veh)	Traffic Signals, Roundabout	Give Way & Stop Signs
A	< 14	Good operation	Good operation
B	15 to 28	Good with acceptable delays & spare capacity	Acceptable delays & spare capacity
C	29 to 42	Satisfactory	Satisfactory, but accident study required
D	43 to 56	Operating near capacity	Near capacity & accident study required
E	57 to 70	At capacity; at signals, incidents will cause excessive delays Roundabouts require other control mode	At capacity, requires other control mode

Traffic models of the junction of Scott and Green Point Roads and the highway roundabout was developed within the SIDRA software for the morning peak hour, based on the manual traffic data. Traffic modelling found both sites are providing motorists with the highest level of service for the type of traffic control operating. This demonstrates the surrounding road network is facilitating efficient traffic flow, with motorists not encountering any significant traffic delays or traffic queues.

The Degree of Saturation (DOS) is a measure of traffic congestion at the site, at the highway roundabout the DOS of 0.313, is equivalent of the roundabout operating at 31 percent of its traffic capacity, while DOS of 0.114 represents the junction is operating at 11 percent of its traffic capacity. This demonstrates the surrounding road network has sufficient spare traffic capacity to absorb additional traffic growth. The traffic modelling results is available in appendix A.

Table 6.2 – Traffic modelling

Location	Total vehicles	DOS	Worst delay	LOS	Max queue length
Highway roundabout	1,014	0.313	11.2 seconds	A	14.8 metres
Green Point Rd junction	452	0.114	6.8 seconds	A	3.8 metres

7. Development layout

7.1 Access arrangement

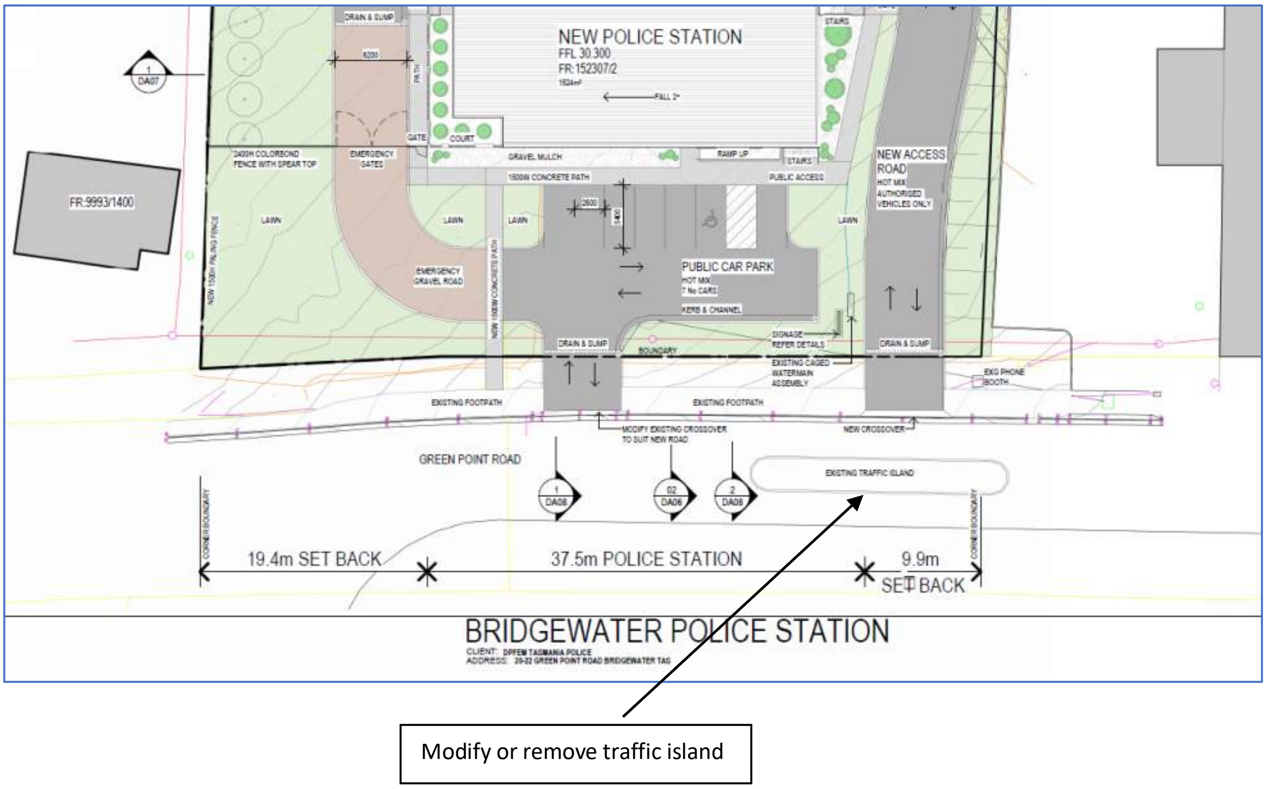
The development has direct frontage to Green Point Road, the existing vehicular access to the site will be modified and this access will provide two-way vehicular access to the customer car park.

A new second vehicular access will be created on the eastern boundary of the site, this will provide a two-way access for police vehicles and employees contained within an enclosed compound, separated from the customer access.

Both accesses will comply with LGAT standard crossover for an urban street, with concrete kerb and gutter, minimum six metres wide to accommodate two-way traffic movements, waste collection and emergency service vehicles.

Adjacent to the new police vehicle access there is a solid traffic island located in the middle of Green Point Road, this island will need to be modified, or removed to enable police vehicles to enter and leave the site from both directions. This traffic island is shown in photograph 5.2B, is not a pedestrian refuge and removal is not expected to cause any adverse traffic impact.

Diagram 7.1 – Proposed development site vehicular accesses

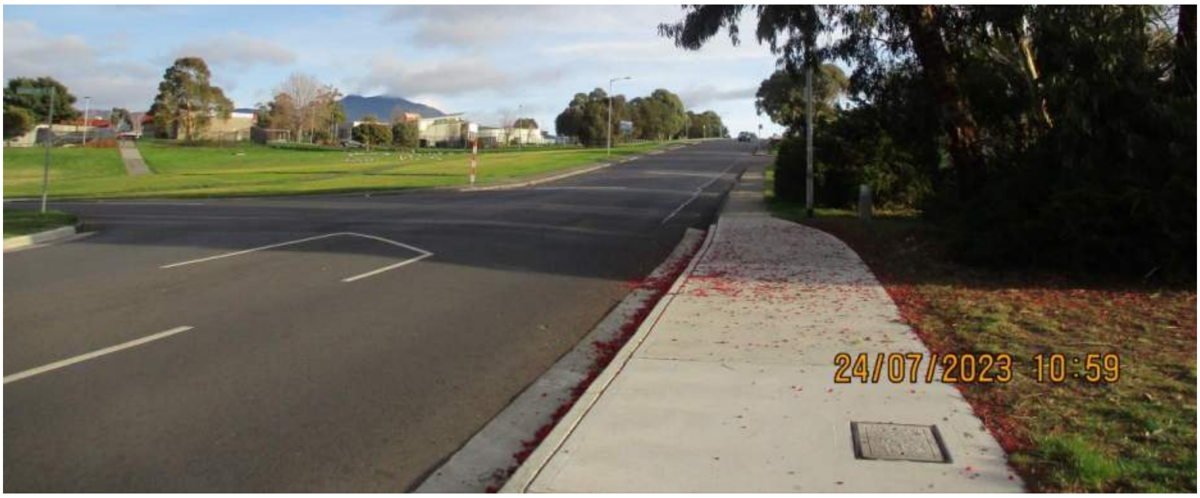


7.2 Safe Intersection Sight Distance for development accesses

It is important that drivers leaving the development site have suitable sight distance to undertake turning manoeuvres in a safe manner, without impacting other motorists. Austroads Guide to Road Design (part 4a Unsignalised and signalised intersections) provide guidance of sight distance, and indicates Safe Intersection Sight Distance (SISD) for urban environment within a 50 km/h speed environment is 90 metres.

Available sight distance was measured on site, based on the driver leaving the development site being 1.05 metres above the driveway surface, with approaching vehicles being 1.2 metres high. The available sight distance for both the customer and police vehicle access exceeded 100 metres in both directions, demonstrating motorists can enter and leave the development site in a safe and efficient manner, without causing impact to other users.

Photograph 7.2A – View for drivers looking right from the development site customer access



Photograph 7.2B – View for drivers looking left from the development site police vehicle access

7.3 Number of on-site parking spaces

Under the planning scheme table C2.1, this use would be classified as Emergency Services, which is use of land for police, fire, ambulance, and other emergency services including storage and deployment of emergency vehicles and equipment. Examples include ambulance, fire, and police stations.

While the planning scheme specifies no requirement for on-site parking for this use, it is necessary for the development to provide sufficient supply of parking for customers, employees, and police vehicles, to prevent parking overflow.

The developer has advised, based on the existing police station currently operating, seven customer parking spaces will meet the reasonable demand for customers.

The police station operates nine police vehicles, although the police station employs 58 staff, due to operational staff working on three shifts, normally there is a maximum of 31 staff on-site at any one time.

While no increase in functions or staff is to occur with this development, it would be prudent to consider future staff increase, so the development will provide 50 on-site car parking spaces, which will meet the current and future parking demand.

7.4 On-site parking layout

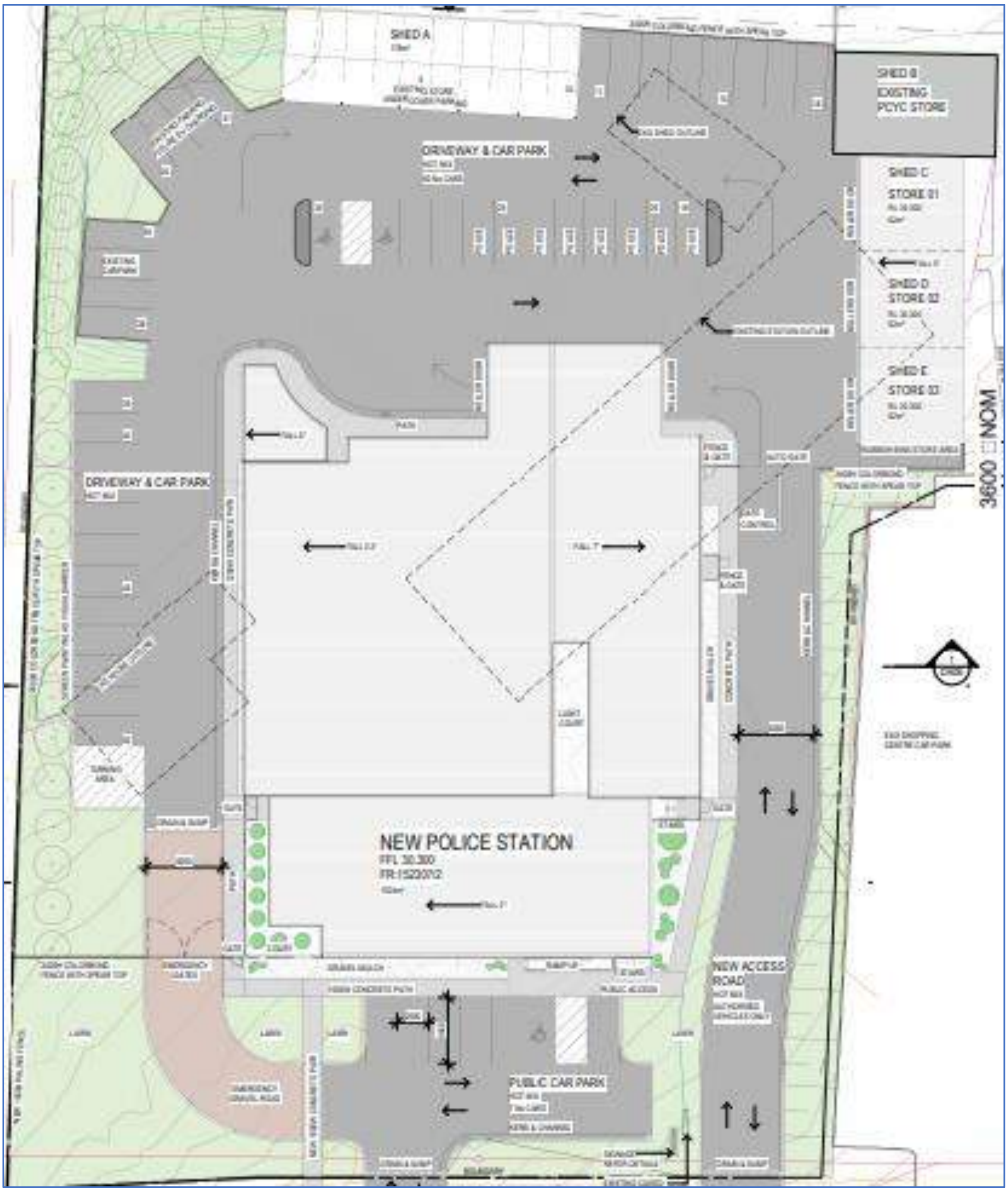
All parking spaces are designed to comply with dimensions specified in table C2.3 of the planning scheme, minimum 2.6 metres wide, 5.4 metres long and supported with 6.4 metre manoeuvring area, to ensure vehicles can enter and leave the spaces in an efficient manner.

The seven customer car parking spaces at the front of the building will be accessed from a single two-way access, and the blind parking aisle will be extended by at least one metre to access with vehicles accessing the last parking spaces.

All parking spaces will be located on all-weather hard-wearing bitumen road surface, with the gradient of the parking spaces situated on gradient less than five percent. paces will be delineated with line markings and supported with wheel stops.

The parking layout ensures all vehicles can enter and leave the development site in a forward-driving direction. Landscaping will be completed on the western boundary to obscure the view of the station and to the forecourt of the station to minimise the impact to the streetscape.

Diagram 7.4 – Proposed parking layout



7.5 Internal driveways

The internal driveway, parking, and manoeuvring areas will be an all-weather hard wearing bitumen surface, with appropriate kerbing and drainage pits to ensure surface water can be collected and directed to an approved stormwater drainage system. Longitudinal trench drains will be provided to the commencement of the two driveways, to prevent surface water from reaching Green Point Road.

The width of the driveway providing connection between Green Point Road and the parking area at the rear of the building, will be a minimum 6.2 metres wide, complying with table C.2.2 of the planning scheme. The driveway will have sufficient width to accommodate two-way traffic flow, and movement of medium rigid vehicles. The width of the access leading to the customer car parking area will be 6.5 metres wide. With the site being relatively flat, the grades along the driveways are expected to be reasonably flat and not create any adverse impact for vehicles.

The developer has advised that should the police station access to the car park area to the rear of the building becomes blocked either accidentally or with criminal intent, the layout includes an emergency access on the western side to allow for police vehicles to egress. This emergency access will be gated, used infrequently, it will have an all-weather gravel surface as the most cost-effective material, and is considered appropriate.

7.6 Access for waste collection and emergency service vehicles

The driveway and manoeuvring area at the rear of the building will have sufficient area to accommodate a medium rigid vehicle, allowing for standard waste collection and emergency vehicles to enter, turn around, and leave the development site in a forward-driving direction.

7.7 Active transport

Given the location to the shopping centre and surrounding services, it is important that employees and customers of the development site have suitable walking access. The development will provide a suitable pathway connecting the main building entrance with the existing footpaths along Green Point Road.

7.8 Internal pedestrian access

The seven customer parking spaces will generate a medium to high turnover, with a dedicated 1.5 metre wide pedestrian pathway connecting the spaces with the main building entrance. Wheel stops will provide adequate separation between the parking spaces and the pathway. Access from the customer car park to the main building entrance will include steps and an accessible ramp.

Around the perimeter of the building, a 1.2 metre wide concrete pathway will be constructed that is separated from the driveway by kerbing, and provide connection to the employee and police vehicles parking spaces.

The rear parking module will only be accessed by police employees and police vehicles, with the operating speed of these vehicles are expected to be low, this parking area is expected to operate as shared zone, enabling employees to access the parking spaces in a safe manner.

7.9 Pedestrian sight distance at the driveway access

As vehicles leave the on-site parking area, it is important that there is sufficient sight distance between the drivers and pedestrians walking along the footpath, which is known as the pedestrian sight triangle. Either side of the driveway entrance to Green Point Road there will be no physical obstructions, and motorists will have a sufficient pedestrian sight triangle to comply with the Australian Standards 2890.1:2004 figure 3.3.

7.10 Other parking requirements

The development will provide three accessible parking spaces, one accessible space within the customer parking area, and two accessible in the rear parking area. All accessible spaces will be provided with shared space.

The planning scheme specifies any use that generate a need for more than 20 car parking spaces, is required to provide dedicated motorcycle parking spaces, and with total of 57 on-site car parking spaces, the development will provide two motorcycle parking spaces.

The planning scheme table C2.1 specifies Emergency Services Use doesn't required to provide bicycle parking spaces.

8. Planning scheme

8.1 C2.0 Parking and Transport Code

C2.5.1 Car parking numbers

The development is providing a total of 57 on-site car parking spaces, including seven visitor parking spaces. This number of parking spaces is expected to meet the reasonable demand generated by the development, eliminating overflow parking.

The number of on-site car parking spaces complies with the acceptable solution under the planning scheme.

C2.5.2 Bicycle parking numbers

Bicycle parking is not required for this use, complying with acceptable solution under the planning scheme table C2.1.

C2.5.3 Motorcycle parking numbers

The development will provide two dedicated motorcycle parking spaces, complying with the planning scheme table C2.4 and satisfying the acceptable solution requirement.

C2.5.4 Loading bays

Emergency Services do not generate a need for a loading bay.

C2.6. Development standards

C2.6.1 Construction of parking areas.	The parking areas, driveway, and manoeuvring areas will be an all-weather hard wearing bitumen surface, with suitable grade, kerbing, and pits, to collect and direct surface water to an approved stormwater system. The design complies with the acceptable solution A1.
C2.6.2 Design and layout of parking areas.	All car parking spaces on-site will be designed to comply with the planning scheme table C2.3. Each space will be 2.6 metres wide, 5.4 metres long and have a minimum manoeuvring area of 6.4 metres. The parking spaces shall have a gradient of less than five percent, which will be delineated with line markings where possible and supported with wheel stops. The width of the driveway access will exceed the minimum of 5.5 metres, as prescribed in table C2.2 of the planning scheme. All parking, and manoeuvring areas will have minimum vertical clearance exceeding 2.1 metres, including the roller doors at the rear of the

	building. Overall, the car parking layout complies with the acceptable solution and ensures safe and efficient access.
C2.6.3 Number of accesses for vehicles.	The development has an existing access and will require the creation of an additional access with Green Point Road to cater for two-way traffic movements. This will need to be assessed against the performance criteria P1 in the following table.
C2.6.4 Lighting of parking areas within the general business zone and central business zone	The undercover and open parking spaces, circulating driveway, and pedestrian pathways, will be lit with an appropriate level of lighting to ensure vehicles and pedestrians can move around the site in a safe and efficient manner, minimising crime, or anti-social behaviour. The design complies with the acceptable solution.
C2.6.5 Pedestrian access.	The development is providing sufficient pedestrian pathways to connect all the parking spaces to the building entrances. Within the customer car park, 1.5 metre wide concrete pathway will be provided at the front of the parking spaces, and protected by wheel stop, and includes a ramp to main entrance. Within the employee car parking area, 1.2 metre concrete footpath, separated from the driveway by kerbing, will be provided around the perimeter of the building, providing suitable connection between the parking spaces and employee entrances. A pathway will connect the main entrance to the existing footpath along Green Point Road. This number of internal pathways complies with the acceptable solution A1.1. The pathway from the accessible car parking spaces to the main entry point will be 1.5 metres wide, with a gradient less than 1 in 14, complying with acceptable solution A1.2.
C2.6.6 Loading bays.	Emergency Service Use do not generate a loading bay requirement.
C2.6.7 Bicycle parking and storage facilities	Not required for this use.
C2.6.8 Siting of parking and turning areas.	Landscaping will be provided at forecourt of the station to minimise the visual impact on the streetscape. Complying with the acceptable solution.

8.2 C2.6.3 Number of accesses for vehicles

The development site currently operates with a single vehicular access, and with the new development requiring the creation of a second access point, and must be assessed under the performance criteria P1.

Performance criteria	Assessment
The number of accesses for each frontage must be minimised having regard to:	
a) Any loss of on-street parking; and	There is no on-street parking along Green Point Road adjacent to the development site, the creation of second vehicular access will have no adverse impact to on-street parking.
b) Pedestrian safety and amenity;	Along Green Point Road there is a footpath, while the second access will cross this footpath, sight lines between pedestrians and drivers leaving the access will be unrestricted, providing excellent visibility and no adverse safety impact is expected.
c) Traffic safety;	The second access will separate police customers, away from police operational and employee vehicles. No adverse traffic safety impact is expected with the additional vehicle access.
d) Residential amenity on adjoining land;	The surrounding land-use is mainly commercial and community services, with no adverse impact to residential amenity expected.
e) The impact on the streetscape.	There is sufficient area at the front of the building to accommodate landscaping, and the additional vehicular access is not expected to cause adverse visual impact to the streetscape.

8.3 C3.5.1 Traffic generation at a vehicle crossing, level crossing or new junction

The development is replacing an existing police station, there will be no increase in functions or staff at the new facility, and traffic generated from the site is not expected to increase. The development will comply with the acceptable solution A1.4, based on the planning scheme table C3.1.

This traffic assessment predicts the development has the potential to generate 338 daily trips, with 60 of these trips likely to occur during both morning and evening peak periods. This number of vehicle trips is currently operating on the surrounding road network, particularly using the junction of Green Point Road and Scott Road, and the roundabout at East Derwent Highway and Scott Road. Recent manual traffic surveys found the traffic flows are moderate, traffic modelling found the junction and roundabout are both providing road users with a high level of service, where users incur slight delays, with minimal traffic queues.

No traffic deficiencies were identified on the surrounding road network.

9. Conclusion

From a traffic engineering and road safety perspective, the development is not expected to cause any adverse safety, amenity, or traffic efficiency impacts as:

- the amount of traffic generated by the existing Police Station will be similar to the new development, with no planned increase in staffing,
- there is sufficient spare traffic capacity at the intersection of Green Point and Scott Roads to absorb the increase in traffic movements, without causing any deterioration in the level of traffic performance, and there is spare traffic capacity at the intersection to accommodate future traffic growth in the area,
- the additional access onto Green Point Road will have Safe Intersection Sight Distance that will exceed the planning scheme requirements, ensuring vehicles can enter and leave in a safe and efficient manner,
- the design of the internal layout will enable all vehicles to enter and leave in a forward-driving direction,
- the width of both driveways will facilitate two-way traffic movements, and there will be sufficient manoeuvring area to accommodate a medium rigid vehicle to enter, turnaround and leave, and
- there will be sufficient supply of on-site car parking spaces to meet the reasonable demand, eliminating the risk of parking overflow.

This Traffic Impact Assessment found no reason for this development not to proceed.

10. Appendix A – Traffic modelling results

Traffic modelling for the highway roundabout – existing traffic flow for morning peak hour

MOVEMENT SUMMARY

Site: 101 [East Derwent Hwy, Scott Road and Paice St - existing morning peak hour]

New Site
Site Category: (None)
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	Demand Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m
South: Scott Road								
1	L2	58	0.0	0.173	5.1	LOS A	1.0	6.7
2	T1	33	0.0	0.173	5.3	LOS A	1.0	6.7
3	R2	102	0.0	0.173	10.1	LOS A	1.0	6.7
Approach		193	0.0	0.173	7.8	LOS A	1.0	6.7
East: East Derwent Highway								
4	L2	85	0.0	0.254	4.4	LOS A	1.5	11.2
5	T1	180	10.0	0.254	4.7	LOS A	1.5	11.2
6	R2	55	0.0	0.254	9.4	LOS A	1.5	11.2
Approach		320	5.6	0.254	5.5	LOS A	1.5	11.2
North: Paice Street								
7	L2	67	0.0	0.143	6.2	LOS A	0.8	5.7
8	T1	45	0.0	0.143	6.3	LOS A	0.8	5.7
9	R2	23	0.0	0.143	11.2	LOS A	0.8	5.7
Approach		136	0.0	0.143	7.1	LOS A	0.8	5.7
West: East Derwent Highway								
10	L2	14	0.0	0.313	4.8	LOS A	2.0	14.8
11	T1	292	10.0	0.313	5.2	LOS A	2.0	14.8
12	R2	60	0.0	0.313	9.9	LOS A	2.0	14.8
Approach		365	8.0	0.313	5.9	LOS A	2.0	14.8
All Vehicles		1014	4.7	0.313	6.3	LOS A	2.0	14.8

Traffic modelling for the Green Point junction – existing traffic flow for morning peak hour

MOVEMENT SUMMARY

Site: 101 [Scott and Green Point Roads - Esixting morning peak hour]

New Site
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	Demand Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m
South: Scott Road								
1	L2	40	0.0	0.081	5.5	LOS A	0.0	0.0
2	T1	117	0.0	0.081	0.0	LOS A	0.0	0.0
Approach		157	0.0	0.081	1.4	NA	0.0	0.0
North: Scott Road								
8	T1	74	0.0	0.114	0.4	LOS A	0.5	3.8
9	R2	117	0.0	0.114	6.0	LOS A	0.5	3.8
Approach		191	0.0	0.114	3.8	NA	0.5	3.8
West: Green Point Road								
10	L2	79	0.0	0.080	5.9	LOS A	0.3	2.1
12	R2	25	0.0	0.080	6.8	LOS A	0.3	2.1
Approach		104	0.0	0.080	6.1	LOS A	0.3	2.1
All Vehicles		452	0.0	0.114	3.5	NA	0.5	3.8

STORMWATER REPORT

20-22 GREEN POINT ROAD, BRIDGEWATER
BRIDGEWATER POLICE STATION

JMG PROJECT NO. 220422BS

BRIGHTON COUNCIL
07.09.2023

TABLE OF CONTENTS

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1	07.09.2023	Development Approval	JFB		MJR		JMB	JMB

1. Introduction

JMG have been engaged by Philp Lighton Architects Pty Ltd, to provide a stormwater management report in response to an RFI received from Brighton Council Planner, Jo Blackwell, dated 14/07/2023. The proposed development is the demolition and construction of new emergency services buildings located at 20-22 Green Point Road, Bridgewater. The report addresses, in detail, dot point 3, Stormwater, of the RFI.

The existing site consists of emergency services buildings, the existing police station to be demolished and a new station constructed. The site has an area of 1.08ha and is located on the north-eastern side of Green Point Road, between East Derwent Highway. The site falls from the north-western corner of the property to the south-eastern corner adjacent Green Point Road. It is covered with existing buildings (police station, PCYC building and ancillary structures), sealed carpark and roadways, landscaped areas and some plantings of trees and shrubs.

The site is currently serviced with power, communications, gas, water, sewer, and stormwater connections.

1.1 Preliminary Planning Assessment Comment

The report addresses the following comment:

"*Please provide a stormwater management report and drawings, prepared by a suitably qualified person, in accordance with section 2.6 of DEP &LGAT (2021). Tasmanian Stormwater Policy Guidance and Standards for Development. Derwent Estuary Program and Local Government Association of Tasmania (Hobart, Australia).*

The piped stormwater drainage system must be designed to comply with all of the following:

(a) be able to accommodate a storm with a 2% AEP, when the land serviced by the system is fully developed.

(b) stormwater runoff will be no greater than pre-existing runoff or any increase can be accommodated within existing or upgraded public stormwater infrastructure.

The development must consider an overland flow path to accommodate a storm with a 1% AEP."

JMG Response:

Stormwater Report:	Included herein
Stormwater Design:	Refer Appendix B.
Stormwater Calculations:	Refer Appendix C.

2. Concept Stormwater Design

2.1 Design Standards

Drainage has been designed in accordance with the Tasmanian Stormwater Policy & Guidance and Standards for Developments (2021), IPWEA standard drawings and Derwent Estuary Program.

An 18.3% increase in rainfall intensity has been applied to this catchment in line with information from the Australian Rainfall & Runoff Data Hub to account for the impacts of climate change.

2.2 Existing Stormwater Drainage System

The 20-22 Green Point Road property has a land area of approximately 1.08ha, with a third of this area (3420m^2) occupied by PCYC buildings and a service easement, which are to be retained during the new development. The remaining area consists of existing emergency service buildings with a sealed driveway/ parking lot occupying 2416m^2. The remaining 4245m^2 of the site is mostly landscaped area that is not directly connected to the stormwater system and is assumed to be pervious area. The site currently grades to the southeast towards Green Point Road.

There is an existing Brighton Council stormwater main within Green Point Road and an existing DN225 property connection that has been located by UDM surveyors using locating equipment, refer Appendix B for location and details. This connection will be replaced as it traverses the adjacent property, 26-28 Green Point Road and is located within an existing TasWater easement (or implied easement area).

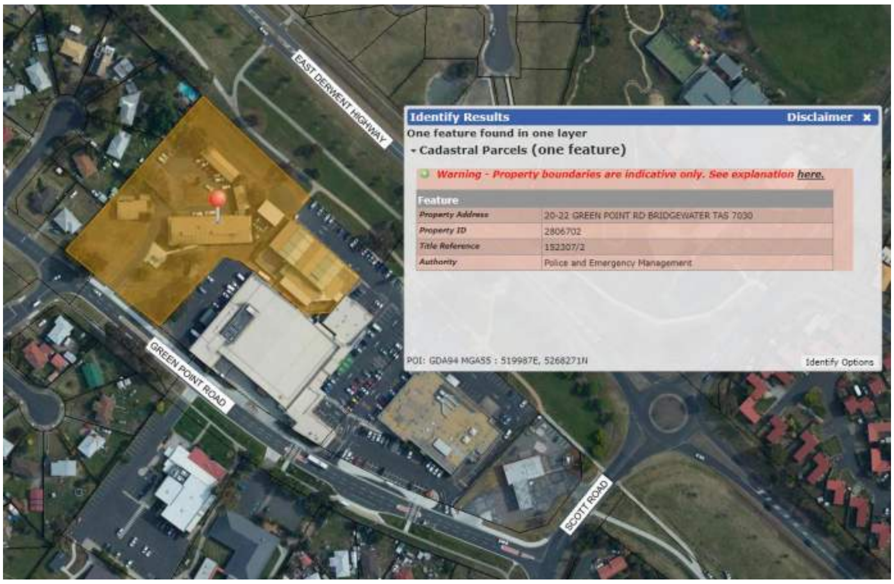

Figure 1 - Existing Site Layout

There is a second existing stormwater property connection that services the existing PCYC buildings that are located on the eastern side of the property that connects to existing Council infrastructure to the east of the site, through the Green Point Plaza as shown in Figure 2. As such, it is assumed all runoff generated from the PCYC buildings is collected into the stormwater system through the second property connection and has been excluded from the catchment areas and stormwater calculations.

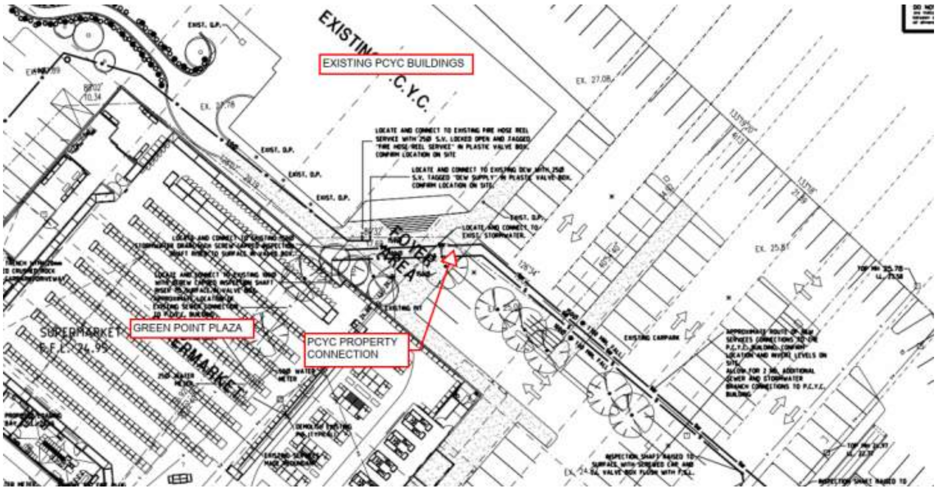

Figure 2 - Existing PCYC Stormwater Property Connection

2.3 Proposed Stormwater Drainage System

Minor System

Catchment areas (and subsequently flow rates) were determined based on surface areas that are changing, with regions that are not changing excluded from calculations. However, hydraulic connectivity was maintained for the site (i.e. the overall catchment does not include isolated areas). As a result, the analysed catchment was reduced to 6660m^2.

The development proposes to demolish the existing emergency service building and driveway and construct a new emergency service building, roofed store sheds as well as a large driveway and carpark area (refer Figure 2 and Appendix A – Philp Lighton Architects).

This will result in 992m^2 of additional roofed area and 1948m^2 of driveway area that will be directly connected (from a hydraulic perspective) to the existing stormwater system.

Figure 3 - Proposed Site Layout (Philp Lighton Architects)

Due to the site naturally grading towards the southern corner, the proposed driveway access to the site is positioned at the low point of the site. Thus, detaining runoff generated from the first 15m of the driveway is considered unrealistic and will be directly collected into the stormwater system, bypassing the detention tank. As such the restricted outflow from the detained area will be reduced to “over-detain” this area to compensate for the 100m^2 of driveway that is not being detained and reduce the site runoff to the pre-development flows.

The proposed detention volume will be connected into the existing Council stormwater main in Green Point Road through the new proposed property connection in accordance with the drawings attached in Appendix B.

Flows

The area of the site that is changing from pervious to impervious surface is 2940m^2 and comprises of roof and driveway areas.

In the post development case, assuming a runoff coefficient of 0.81, this area will generate a 2% AEP, 5-minute storm duration runoff of 202.0l/s (including 18.3% Climate Change). This is an increase of 111.9l/s (up from 90.1l/s) from the pre-development 16min critical storm (including 18.3% Climate Change). Critical storm duration of 16 min was provided by Brighton Council following a detailed analysis of the catchment.

Table 1 - Summary of Pre & Post Development Calculations

Site Area (m^2)	Pre Development Run-off Coefficient	Post Development Run-off Coefficient	Pre Development 2% AEP flow (16 min TOC)	Peak Post Development 2% AEP flow incl 18.3% CC (5 min TOC)	Development Detention Volume (m^3)
6660 m^2	0.59	0.81	90.1l/s	202.0l/s	41.0m^3

Detention

Therefore, the post development flow from the entire site must be restricted to the allowable outflow of 90.1l/s.

The total area of new hardstand is 2940m^2, of which 2840m^2 will be collected and detained onsite, leaving 100m^2 of driveway area that is not being detained. This results in a flow of 3.4l/s generated from the unrestricted area and dictates the allowable outflow from the detained runoff to be no greater than 86.7l/s.

A detention volume of 41.0m^3 is thus required to detain a 2% AEP storm to the restricted allowable outflow specified. This will be achieved through the installation of an underground detention tank to be specified in detailed design along with an adequately sized orifice plate to restrict the outflow accordingly.

Refer Appendix C – JMG Stormwater Calculations for all details.

3. Treatment

Onsite stormwater treatment will be provided for the proposed development using a proprietary inground treatment product that will meet the requirements outlined in table 3, Water quality Treatment Targets, in DEP LGAT Tasmanian Stormwater Policy Guidance and Standards for Development 2021. The targets to be met by this site will be as follows.

- 90% reduction in the average annual load of litter/gross pollutants based on typical urban stormwater concentrations.
- 80% reduction in the average annual load of total suspended solids (TSS) based on typical urban stormwater TSS concentrations.
- 45% reduction in the average annual load of total phosphorus (TP) based on typical urban stormwater TP concentrations.
- 45% reduction in the average annual load of total nitrogen (TN) based on typical urban stormwater TN concentrations

4. Overland Flow

Currently the overland flow through the site is assumed to follow the path of the existing driveway which grades from the northwest of the site (high point) to the southeast (low point), discharging onto Green Point Road. The new overland flow path for the proposed development will follow a similar path maintaining where the overland flow will enter and exit the site. However, the path will be split at the northern point of the site into two separate paths on either side of the new building. One path will be diverted down the new access road on the eastern boundary (refer figure 4) with the remaining path diverted along the new driveway and car park on the western boundary (refer figure 4).

Figure 4 - Proposed Site Overland Flow Paths (red dash-dot lines)

5. Conclusions and Recommendations

The proposed stormwater system complies with best practices and the Tasmanian Stormwater Policy Guidance & Standards for Development in all aspects. The proposed stormwater detention tank ensures adequate storage volume to ensure the post development 2% AEP runoff will be restricted to the pre-development levels for the critical storm duration.

APPENDIX A

Philp Lighton Architects Drawings

DEVELOPMENT APPLICATION

PHILP LIGHTON ARCHITECTS

BRIDGEWATER POLICE STATION

CLIENT: DPFEM TASMANIA POLICE
ADDRESS: 20-22 GREEN POINT ROAD BRIDGEWATER TAS

NORTH

SITE PLAN

DRAWING No: DA02
PROJECT No: 045.22138
SCALE: 1 : 250 @ A1
DATE:
REVISION:

APPENDIX B

JMG Stormwater Design

REV	DATE	REMARK
DA1	04/09/2023	DEVELOPMENT APPLICATION

SAFETY IN DESIGN REPORT PER WHS REGULATIONS

The following risks which are unique to this design have been identified:	NIL
This report does not relieve contractors from their responsibilities under the Act to identify, report, mitigate and manage all aspects of risk and safety.	

Johnstone McGee & Gandy Pty. Ltd.

ACN 009 547 139 ABN 76 473 834 852

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49-51 Elizabeth Street, Launceston, Tas (03) 6334 5548
www.jmg.net.au infohbt@jmg.net.au infoltn@jmg.net.au

PROJECT
DPFEM TASMANIA POLICE BRIDGEWATER POLICE STATION 20-22 GREEN POINT ROAD

TITLE
SITE STORMWATER SERVICES PLAN

Accepted CJM (Discipline Head)	Date
Accepted CGP (Team Leader)	Date
Approved CJM (Principal)	Date

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SCALES @ A1	DESIGNED BY	DRAWN BY
1:250	MJR	JFB
	PLOT DATE	05/09/2023

DO NOT SCALE. Use only figured dimensions. Locations of structure, fittings, services etc on this drawing are indicative only. CONTRACTOR to check Architects & other project drawings for co-ordination between structure, fabric, fixtures, fittings, services etc. CONTRACTOR to site check all dimensions and exact locations of all items. JMG accepts no responsibility for dimensional information scaled or digitally derived from this document.

PLOT DETAILS J220422BS - GA PLANS.DWG

PROJECT NO. J220422BS

DWG NO. C01 REVISION DA1

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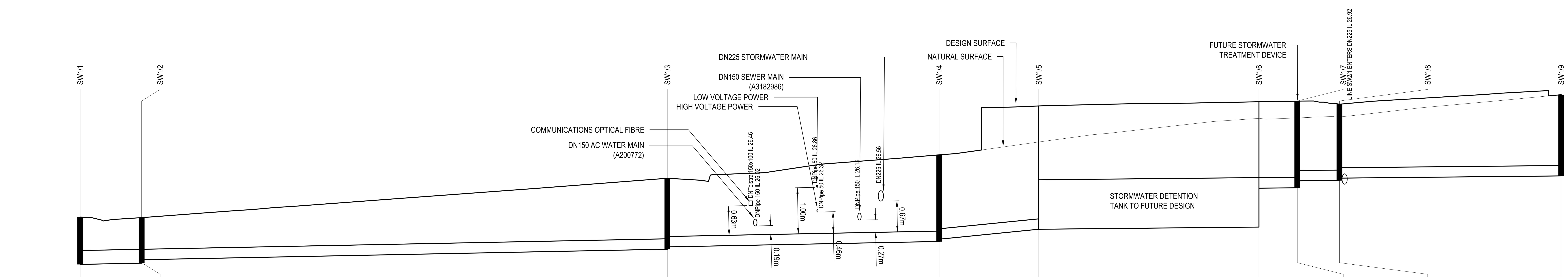
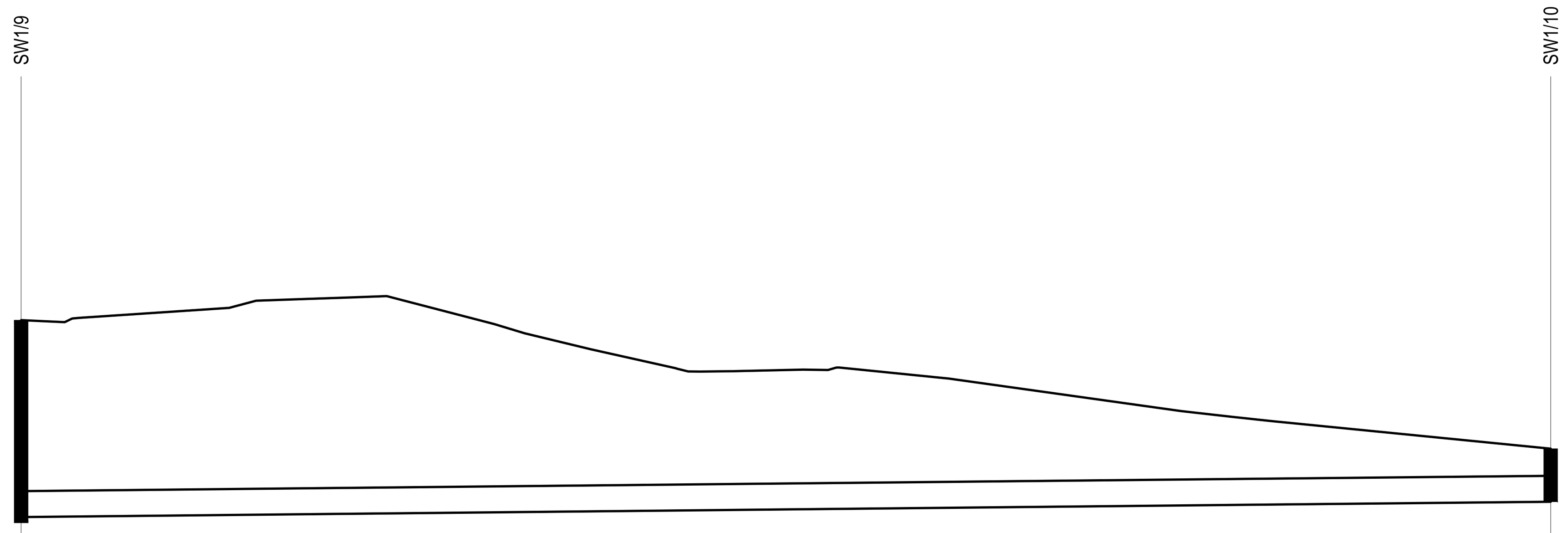


RL 24.00m

	SW1/1 – SW1/2	SW1/2 – SW1/3	SW1/3 – SW1/4	SW1/4 – SW1/5	SW1/5 – SW1/6	SW1/6 – SW1/7	SW1/7 – SW1/8	SW1/8 – SW1/9
PIPE DETAILS SLOPE/GRADE	DN300 SW-PVC SN8 1.0% (1:100.0)	DN225 SW-PVC SN8 1.0% (1:100.0)	DN225 SW-PVC SN8 1.0% (1:100.0)	DN225 SW-PVC SN8 5.0% (1:20.0)	DN1050 SW-Class 2 RRJ 0.5% (1:200.0)	DN225 SEW-PVC SN8 0.5% (1:200.0)	DN225 SEW-PVC SN8 0.5% (1:202.2)	DN225 SW-PVC SN8 0.5% (1:199.5)
PIPE VELOCITY (m/s)	0.00m/s	0.00m/s	0.00m/s	0.00m/s	0.00m/s	0.00m/s	0.00m/s	0.00m/s
PIPE HGL CAPACITY (l/s)	138l/s	65l/s	65l/s	150l/s	2647l/s	45l/s	45l/s	45l/s
DEPTH TO INVERT	1.03 – 0.99	0.91 – 1.54	1.49 – 1.87	1.83 – 2.67	2.71	1.87 – 1.88	1.73 – 1.65	1.60 – 1.76
INVERT LEVEL	25.19 – 25.22	25.29 – 25.52	25.57 – 25.68	25.73 – 25.95	26.00	26.84 – 26.85	27.00 – 27.01	27.06 – 27.10
DESIGN SURFACE	26.21 – 26.20	27.05	27.56	28.62	28.71	28.72	28.65	28.86
EXISTING SURFACE	26.21 – 26.20	27.05	27.56	27.84	28.35	28.36	28.38	28.86
CHAINAGE	0.00 – 2.65	25.36	37.10	41.39	50.91	52.56	54.38	63.96
LENGTH	2.65	22.70	11.74	4.30	9.51	1.66	1.82	9.58

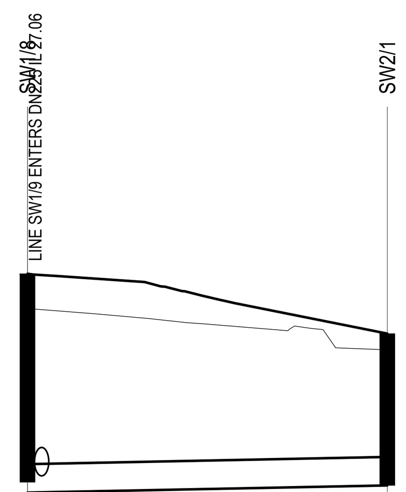
STORMWATER PROFILE
SCALES: 1:100(H) 1:50(V)



RL 26.00m

	SW1/9	SW1/10
PIPE DETAILS SLOPE/GRADE	DN225 SW-PVC SN8 0.5% (1:199.6)	
PIPE VELOCITY (m/s)	0.00m/s	
PIPE HGL CAPACITY (l/s)	45l/s	
DEPTH TO INVERT	1.71	0.46
INVERT LEVEL	27.15	27.29
DESIGN SURFACE	28.86	27.75
EXISTING SURFACE	28.86	27.75
CHAINAGE	63.96	90.50
LENGTH	26.54	

STORMWATER PROFILE
SCALES: 1:100(H) 1:50(V)



RL 25.00m

	SW1/8	SW2/1
PIPE DETAILS SLOPE/GRADE	DN225 SW-PVC SN8 1.0% (1:100.0)	
PIPE VELOCITY (m/s)	0.00m/s	
PIPE HGL CAPACITY (l/s)	65l/s	
DEPTH TO INVERT	1.73	1.20
INVERT LEVEL	26.92	26.98
DESIGN SURFACE	28.65	28.18
EXISTING SURFACE	28.38	28.05
CHAINAGE	54.38	60.08
LENGTH	5.69	

STORMWATER PROFILE
SCALES: 1:100(H) 1:50(V)

REV	DATE	REMARK
DA1	04/09/2023	DEVELOPMENT APPLICATION

SAFETY IN DESIGN REPORT PER WHS REGULATIONS

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PROJECT
DPFEM TASMANIA POLICE
BRIDGEWATER POLICE STATION
20-22 GREEN POINT ROAD

TITLE
SITE STORMWATER

Accepted CJM (Discipline Head) Date
Accepted CGP (Team Leader) Date
Approved CJM (Principal) Date

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SCALES @ A1	DESIGNED BY	DRAWN BY
1:100, 1:50	MJR	JFB
	PLOT DATE	05/09/2023

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PROJECT NO. J220422BS

DWG NO. C02 REVISION DA1

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APPENDIX C

JMG Stormwater Calculations

Stormwater Calculations
Sheet Name: IFD Table

Metadata:

Copyright Commonwealth of Australia 2016	
Bureau of Meteorology	
(ABN 92 637 533 532)	
IFD Design Rainfall Intensity (mm/h)	
Issued:	26-Jul-23
Requested coordinate:	
Latitude	-42.7375
Longitude	147.2431
Nearest grid cell:	
Latitude	42.7375 (S)
Longitude	147.2375 (E)

	Rainfall mm/hr						
	Annual Exceedance Probability (% AEP)						
	1	2	3	4	5	6	7
Duration (min)	**63.20%**	**50%**	**20%**	**10%**	**5%**	**2%**	**1%**
1	59.3	67.3	94	114	135	164	189
2	51.2	57.7	78.6	93.3	108	126	140
3	45.2	51	69.9	83.3	96.9	114	128
4	40.6	46	63.5	76.1	89	106	120
5	37.1	42.1	58.4	70.3	82.6	99.5	113
10	26.9	30.6	43	52.2	62	76.4	88.5
16	21.1	24	33.7	41	48.8	60.2	69.9
20	18.7	21.2	29.8	36.3	43.1	53.1	61.4
25	16.6	18.8	26.3	31.9	37.8	46.4	53.5
30	15	17	23.7	28.7	33.9	41.4	47.6
45	11.9	13.5	18.7	22.5	26.4	31.9	36.3
60	10.1	11.5	15.8	18.9	22.1	26.4	29.8
90	8.06	9.12	12.5	14.8	17.2	20.3	22.7
120	6.86	7.75	10.6	12.5	14.4	16.9	18.8
180	5.45	6.17	8.4	9.89	11.3	13.2	14.6
270	4.32	4.9	6.68	7.85	8.97	10.4	11.5
360	3.65	4.15	5.67	6.67	7.62	8.88	9.84
540	2.86	3.26	4.48	5.29	6.06	7.11	7.91
720	2.39	2.73	3.77	4.47	5.13	6.06	6.79
1080	1.83	2.09	2.92	3.48	4.03	4.81	5.42
1440	1.5	1.71	2.41	2.88	3.36	4.03	4.57
1800	1.27	1.46	2.06	2.47	2.89	3.49	3.96
2160	1.11	1.27	1.8	2.17	2.54	3.07	3.5
2880	0.89	1.02	1.44	1.74	2.05	2.49	2.83
4320	0.642	0.733	1.03	1.25	1.48	1.78	2.03
5760	0.506	0.576	0.807	0.975	1.15	1.38	1.56
7200	0.42	0.477	0.663	0.797	0.934	1.12	1.26
8640	0.361	0.409	0.565	0.675	0.786	0.935	1.06
10080	0.318	0.36	0.494	0.586	0.677	0.802	0.908

Stormwater Calculations
Sheet Name: ToC (PreD)

Time of Concentration - Sheet, Channel and Pipe								
Section	**Description**	**Method**					**Unit**	**Comment**
1	Roof	Assumed			ToC	**16.00**	min	Assumed roof and downpipe

Time of Concentration - Selection for future use			
Total ToC	**16**	**min**	**Small catchment assumption**

Stormwater Calculations
Sheet Name: %Imp (PreD)

Total Site Area 6660 m^2
0.666 Ha

	Buildings/Roof	Roads	Gravel	Grass/Landscape	
1	985	1430		4245	
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
					Total
Sum	985	1430	0	4245	6660
Factor	1	1	0.8	0.4	N/A
Impervious Area	985	1430	0	1698	4113
				% Impervious	**62%**
Buildings/Roads Total	2415				

Stormwater Calculations
Sheet Name: Flows (PreD)

Time of Concentration			
C_1,10	25	mm	10% AEP, 60min Rainfall
A=	6660	m2	Insert Catchment Area
A=	0.00666	Km^2	Calculated in Km2
tc=	16	mins	Whole Number Tc

Impervious Area		
Existing Hardstand Area=	4113	m2
Total Area =	6660	m2
Fraction Impervious =	62%	

Runoff Coefficient		
Fraction impervious =	62%	
C1,10 =	0.100	*Formula - Refer ARR Book VIII*
C10 =	**0.59**	**Runoff Coefficient**

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

Peak Catchment Flows For Varied 5% AEP Storm Durations

AEP	Duration (min)	Flow (m^3/s)	Flow + CC (m^3/s)
2%	1	0.207	0.245
2%	2	0.159	0.189
2%	3	0.144	0.171
2%	4	0.134	0.159
2%	5	0.126	0.149
2%	10	0.097	0.114
2%	16	0.076	0.090
2%	20	0.067	0.079
2%	25	0.059	0.069
2%	30	0.052	0.062
2%	45	0.040	0.048
2%	60	0.033	0.040
2%	90	0.026	0.030

Peak Catchment Flows For Given AEP at T.O.C.

	AEP	$I_{tc,Y}$ (mm/h)	Flow (m^3/s)	Flow + CC (m^3/s)	Flow + CC (l/s)
1	63.20%	21.1	0.0186	0.0220	21.96
2	50.00%	24.0	0.0224	0.0265	26.54
3	20.00%	33.7	0.0352	0.0417	41.66
4	10.00%	41.0	0.0451	0.0533	53.35
5	5.00%	48.8	0.0564	0.0667	66.67
6	2.00%	60.2	0.0761	0.0901	90.08
7	1.00%	69.9	0.0923	0.1091	109.14

Stormwater Calculations
Sheet Name: ToC (PostD)

Time of Concentration - Sheet, Channel and Pipe								
Section	**Description**	**Method**					**Unit**	**Comment**
1	Roof	Assumed			ToC	**5.00**	min	Assumed roof/road and downpipe/pipe

Time of Concentration - Selection for future use			
Total ToC	**5**	**min**	**Sheet, Channel & Pipe**

Stormwater Calculations
Sheet Name: %Imp (PostD)

Total Site Area	6660	m^2
	0.666	Ha

	Buildings/Roof	Roads	Gravel	Grass/Landscape	Total
1	1977	3378	0	1305	
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
Sum	1977	3378	0	1305	6660
Factor	1	1	0.8	0.4	N/A
Impervious Area	1977	3378	0	522	5877
				% Impervious	**88%**
Buildings/Roads Total	5355				

Stormwater Calculations
Sheet Name: Flows (PostD)

Time of Concentration			
C_1,10	25	mm	10% AEP, 60min Rainfall
A=	6660	m2	Insert Catchment Area
A=	0.00666	Km^2	Calculated in Km2
tc=	5	mins	Whole Number Tc

Impervious Area		
Existing Hardstand Area=	5877	m2
Total Area =	6660	m2
Fraction Impervious =	88%	

Runoff Coefficient		
Fraction impervious =	88%	
C1,10 =	0.100	*Formula - Refer ARR Book VIII*
C10 =	**0.81**	**Runoff Coefficient**

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

Peak Catchment Flows For Varied 5% AEP Storm Durations

AEP	Duration (min)	Flow (m^3/s)
2%	1	0.281
2%	2	0.216
2%	3	0.196
2%	4	0.182
2%	5	0.171
2%	10	0.131
2%	16	0.103
2%	20	0.091
2%	25	0.080
2%	30	0.071
2%	45	0.055
2%	60	0.045
2%	90	0.035
2%	120	0.029

Peak Catchment Flows For Given AEP at T.O.C.

	AEP	$I_{tc,Y}$ (mm/h)	Flow (m^3/s)	Flow + CC (m^3/s)	Flow + CC (l/s)
1	63.20%	37.1	0.0443	0.0524	52.39
2	50.00%	42.1	0.0534	0.0632	63.17
3	20.00%	58.4	0.0828	0.0979	97.94
4	10.00%	70.3	0.1049	0.1241	124.10
5	5.00%	82.6	0.1294	0.1531	153.10
6	2.00%	99.5	0.1707	0.2020	201.99
7	1.00%	113.0	0.2023	0.2394	239.37

Stormwater Calculations
Sheet Name: ToC (PostD)_UD

Time of Concentration - Sheet, Channel and Pipe								
Section	**Description**	**Method**					**Unit**	**Comment**
1	Roof	Assumed			ToC	**5.00**	min	Assumed roof/road and downpipe/pipe

Time of Concentration - Selection for future use			
Total ToC	**5**	**min**	**Sheet, Channel & Pipe**

Stormwater Calculations
Sheet Name: %Imp (PostD)_UD

Total Site Area	100	m^2
	0.01	Ha

	Buildings/Roof	Roads	Gravel	Grass/Landscape	
1		100	0	0	
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
					Total
Sum	0	100	0	0	100
Factor	1	1	0.8	0.4	N/A
Impervious Area	0	100	0	0	100
				% Impervious	**100%**
Buildings/Roads Total	100				

Stormwater Calculations
Sheet Name: Flows (PostD)_UD

Time of Concentration			
C_1,10	25	mm	10% AEP, 60min Rainfall
A=	100	m2	Insert Catchment Area
A=	0.00010	Km^2	Calculated in Km2
tc=	5	mins	Whole Number Tc

Impervious Area		
Existing Hardstand Area=	100	m2
Total Area =	100	m2
Fraction Impervious =	100%	

Runoff Coefficient		
Fraction impervious =	100%	
C1,10 =	0.100	*Formula - Refer ARR Book VIII*
C10 =	**0.90**	**Runoff Coefficient**

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

Peak Catchment Flows For Varied 2% AEP Storm Durations

AEP	Duration (min)	Flow (m^3/s)
2%	1	0.005
2%	2	0.004
2%	3	0.003
2%	4	0.003
2%	5	0.003
2%	10	0.002
2%	16	0.002
2%	20	0.002
2%	25	0.001
2%	30	0.001
2%	45	0.001
2%	60	0.001
2%	90	0.001
2%	120	0.000

Peak Catchment Flows For Given AEP at T.O.C.

	AEP	$I_{tc,Y}$ (mm/h)	Flow (m^3/s)	Flow + CC (m^3/s)	Flow + CC (l/s)
1	63.20%	37.1	0.0007	0.0009	0.88
2	50.00%	42.1	0.0009	0.0011	1.06
3	20.00%	58.4	0.0014	0.0016	1.64
4	10.00%	70.3	0.0018	0.0021	2.08
5	5.00%	82.6	0.0022	0.0026	2.57
6	2.00%	99.5	0.0029	0.0034	3.39
7	1.00%	113.0	0.0034	0.0040	4.01

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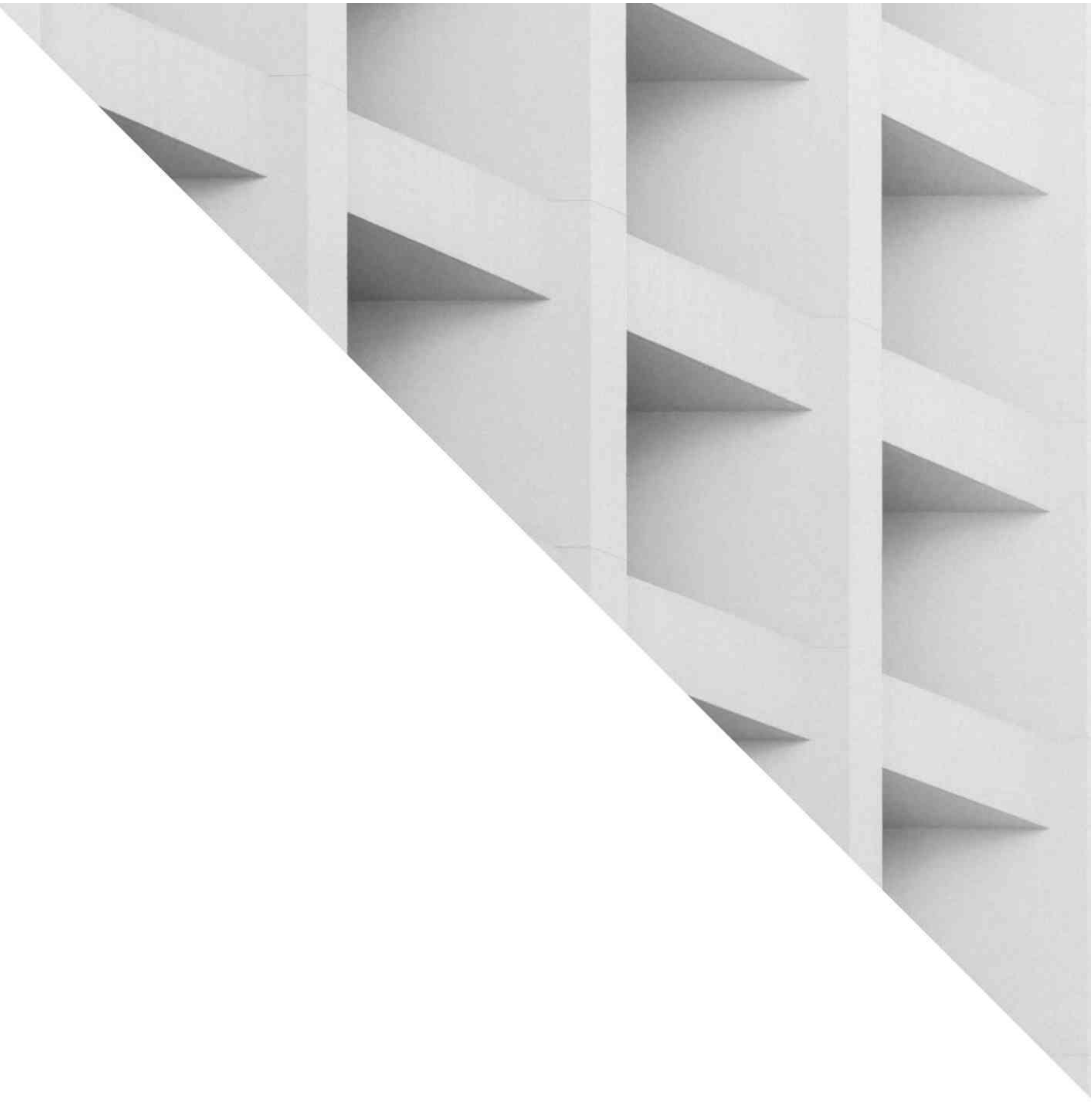
Stormwater Calculations
Sheet Name: Boyd's Formula (5%)

Catchment & Flow Details			Comments
Catchment Area =	0.6660	Ha	
10 Year Runoff Coefficient =	0.81	-	
20 Year Effective Catchment Area =	0.62	Ha	
Restricted Outflow Requirement =	0.087	m^3/s	*Pre development critical catchment storm duration flow minus the unrestricted flow from the post development site.

Detention Calculation						
Storm Duration	**2% AEP**	**2% AEP + CC**	**Q_i**	**Q_o**	**V_1**	**S_{max}**
(min)	**Intensity (mm/hr)**	**Intensity (mm/hr)**	**(m3/s)**	**(m3/s)**	**(m3)**	**(m3)**
~~1~~	~~164.00~~	~~194.0~~	~~0.333~~	~~0.087~~	~~19.96~~	~~14.76~~
~~2~~	~~126.00~~	~~149.1~~	~~0.256~~	~~0.087~~	~~30.67~~	~~20.27~~
~~3~~	~~114.00~~	~~134.9~~	~~0.231~~	~~0.087~~	~~41.62~~	~~26.02~~
~~4~~	~~106.00~~	~~125.4~~	~~0.215~~	~~0.087~~	~~51.60~~	~~30.80~~
5	99.50	117.7	0.202	0.087	60.55	34.54
10	76.40	90.4	0.155	0.087	92.98	40.97
16	60.20	71.22	0.122	0.087	117.23	34.00
20	53.10	62.8	0.108	0.087	129.25	25.22
25	46.40	54.9	0.094	0.087	141.18	11.14



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