



STORMWATER MANAGEMENT REPORT

PROJECT LOCATION

**10 Fullerton Cove Road, 21 Coxs Lane & 16 George Street,
Fullerton Cove, NSW, 2318**

CLIENT NAME

Roberts Development Group

DRB PROJECT NUMBER

244018

DISCLAIMER

Project Number: 244018

Client: Roberts Development Group

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Report Issues

Revision	Date	Description	Author	Reviewer	Approver
A	04/10/24	ISSUED FOR PLANNING PROPOSAL	JP	BR	BR
B	28/10/24	REISSUED FOR PLANNING PROPOSAL	MM	BR	MM
C	06/08/25	REISSUED FOR PLANNING PROPOSAL	BR	BR	MM
D	15/12/25	REISSUED FOR PLANNING PROPOSAL	BR	BR	MM

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1 INTRODUCTION

1.1 SITE DESCRIPTION

The subject site, 10 Fullerton Cove Road, 21 Coxs Lane and 16 George Street, Fullerton Cove, is located on the north-eastern corner of the intersection of Nelson Bay Road and Coxs Lane. The site covers an area of approximately 26.05ha in the Port Stephens Council Area and is currently zoned RU2 Rural Landscape.

The site is currently occupied by a sand mining operation and so has variable topography ranging from 11m AHD to lows of approximately 2m AHD. The area currently drains via low-lying table drains or via sheet flow into low lying wetlands. The site location can be seen below in Figure 1.

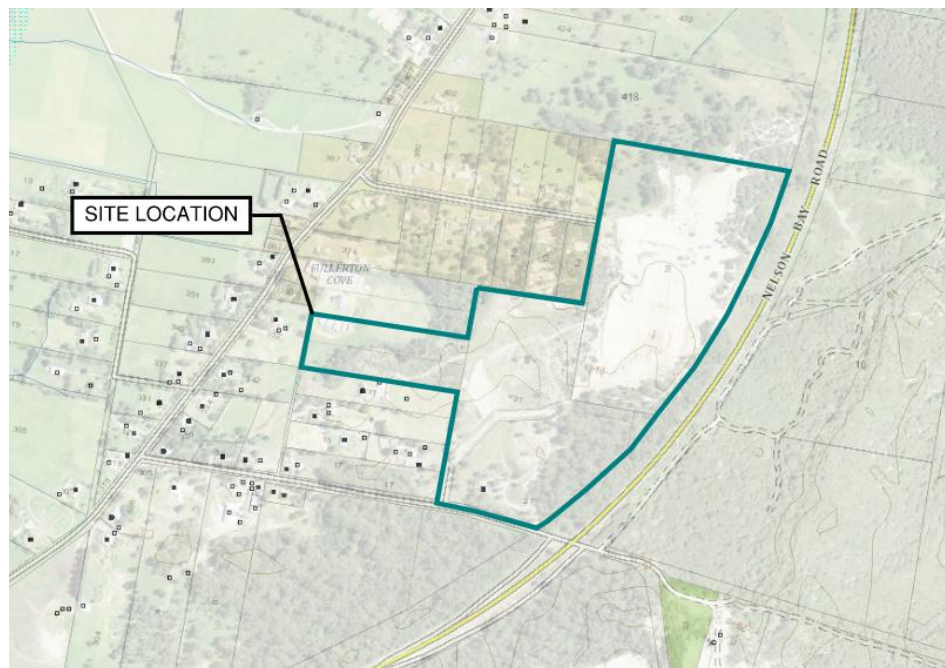


Figure 1 - Locality Plan

1.2 PROPOSED DEVELOPMENT

Rezoning of 10 Fullerton Cove Road, Fullerton Cove, 21 Coxs Lane, Fullerton Cove and 16 George Street, Fullerton Cove from RU2 Rural Landscape to R3 Medium Density Residential, R2 Low Density Residential and C2 Environmental Management under the PSLEP. This will enable the development of residential accommodation (low density, medium density and high density) or tourist and visitor accommodation use, supported by environmental management zones. The catchment plan provides a conceptual stormwater drainage solution that could support a Torrens title subdivision. It is anticipated that the same concept could support medium-high density buildings on the R3 zoned land adjoining Coxs Lane. The development will also include end of line stormwater biofiltration basins and infiltration basins across the development footprint. The proposed lots / development will cover approximately 11.565ha of the site.

2 STORMWATER MANAGEMENT

2.1 WATER QUANTITY CONTROL

Initial drainage calculations have been undertaken using DRAINS modelling to understand the expected pre-development and post-development peak flow rates of the site. Based on recent guidance provided by Council, the site has been modelled in such a way as to achieve 100% infiltration during the 1% AEP event for all storms up to and including the 72 hour event.

2.1.1 DRAINS MODEL AND ASSUMPTIONS

Stormwater quantity analysis was undertaken using the DRAINS software package to show the proposed development could adequately achieve Council's infiltration targets. Based on Council guidance, the modelling for the site has been setup based on SSP2-4.5 climate change factors and has adopted a 100% infiltration methodology in all storm events. As the area is covered by predominantly sand soils, an initial Loss of 100mm and Continuing Loss of 25mm/hr were adopted. A copy of the DRB DRAINS model has been provided with this submission for council's review.

The DRAINS model was prepared using assumed parameters for future residential lots. The post development catchments were broken down into two main areas being the residential lots and road reserve as is shown below.

LAND USE	TOTAL AREA	% IMPERVIOUS	% PERVIOUS
PROPOSED LOTS	11.565 ha	90 %	10 %
PROPOSED ROADWAYS	6.352 ha	65 %	35 %

These catchments were then linked to an end of line infiltration basin to understand the required size of a future infiltration basin. The current basin dimensions were set out based on the available land around the development footprint and are as follows:

- Basin invert surface area = 26,610 m²
- Basin top surface area = 38,100 m²
- Total Modelled Depth = 1.0m MAX
- Peak Water Depth in 1% AEP Event = 410mm
- Infiltration Rate = 200mm/hr

2.1.2 DRAINS RESULTS

Figures 2 and 3 below show the DRAINS model and results respectively. A copy of the DRAINS modelling file will be provided with this report for council review.

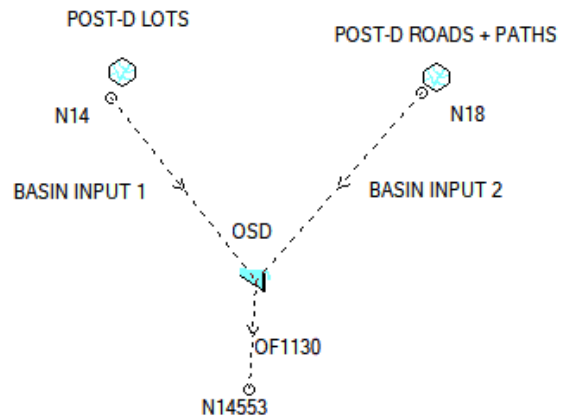


Figure 2 – DRAINS Model

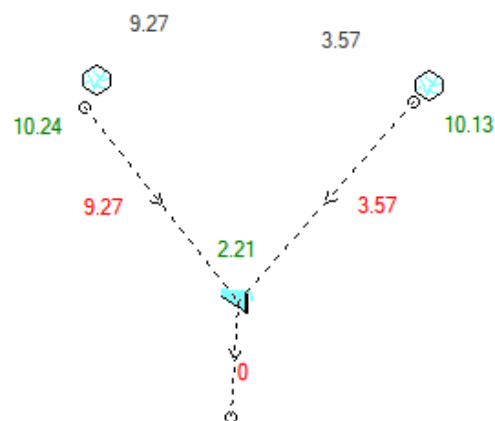


Figure 3 – DRAINS Results (1% AEP Event)

2.2 WATER QUALITY CONTROL

Stormwater quality treatment analysis was undertaken using the MUSICX software package to show the proposed development could adequately achieve Council's stripping targets. As site specific soil data was not available the site was modelled utilising the nearest data available with MUSIC. MUSIC link data was used for the basis of the model and the adopted catchment type was taken as "Default Catchment Sandy Soil – Williamtown Raaf – Zone B". The MUSICX file has been provided with this submission for review by Council. The target treatment effectiveness for pollutants were taken as described in the MUSIC-Link files for Port Stephens Council and are as follows:

- Total Suspended Solids TSS = 90%
- Total Phosphorus TP = 60%
- Total Nitrogen TN = 45%
- Gross Pollutants GP = 90%

2.2.1 MUSICX MODEL AND ASSUMPTIONS

The MUSICX model was prepared using assumed parameters for future residential lots. The post development catchments were broken down into three main areas being the road reserve, residential roof and residential mixed ground areas.. The parameters, source nodes and percentage impervious assumptions associated with each area are outlined below in Table 1. The source node parameters can be seen below in Figures 2, 3, and 4 for the road reserve, lot roof, and lot driveway areas respectively. The parameters adopted are generally in line with the default values specified by Port Stephens Council within the MUSIC Link file.

Table 1 – MUSICX Model Parameters

LAND USE	SOURCE NODE	TOTAL AREA	% IMPERVIOUS	% PERVIOUS
ROAD RESERVE	Urban - Sealed Road	6.352 ha	65.0 %	35.0 %
RESIDENTIAL ROOF	Urban - Roof	8.0955 ha	100.0 %	0.0 %
RESIDENTIAL MIXED GROUND	Urban - Residential	3.4695 ha	66.7 %	33.3 %

2.2.2 MUSICX RESULTS

Figures 4 and 5 below show the MUSICX model and results respectively. A copy of the MUSICX file will be provided with this report.

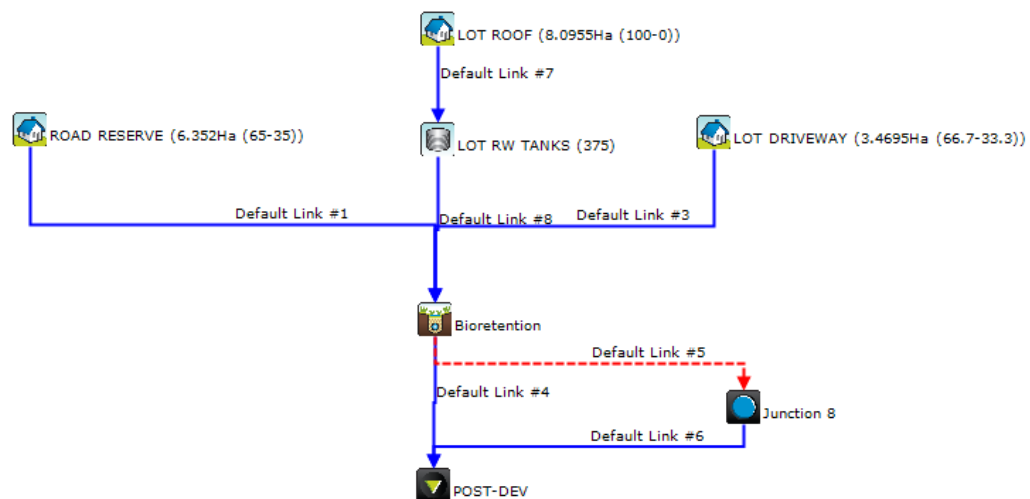


Figure 4 – MUSICX Model

Flow Reduction	None	None	81.487 %	✓
GP Reduction	90	None	100 %	✓
TN Reduction	45	None	81.769 %	✓
TP Reduction	60	None	86.768 %	✓
TSS Reduction	90	None	90.665 %	✓

Figure 5 – MUSICX Results

3 CONCLUSION

DRB Consulting Engineers has prepared this Stormwater Management report to outline the drainage strategy proposed for the site. It was found that Council's water quantity and quality requirements could be achieved through the use of an end of line system supporting the whole of the proposed development.

Should you require any further advice or clarification of any of the above, please do not hesitate to contact us.

Yours faithfully

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