

FLOOD IMPACT ASSESSMENT REPORT

81 GOW STREET PADSTOW

PROJECT NO: 7524

VERSION R.1



CANBERRA

Level 1 Equinox 4
Kent Street
DEAKIN ACT 2600
Phone: (02) 6285 1022

SYDNEY

Suite 2.03 Level 2
4 Parramatta Square, 12
Darcy Street
PARRAMATTA NSW 2150
Phone: (02) 9633 2273

WOLLONGONG

Suite 1 Ground Floor
25 Atchison Street
WOLLONGONG NSW 2500
Phone: (02) 4288 4401

Web: www.indesco.com.au

Email: Indesco@indesco.com.au

Base Template:

Version B October 2018

Prepared By: David Gunawan (DG) Date: 25/05/2021

Reviewed By: Luis Llorente (LL) Date: 26/05/2021

Approved By: Oliver Walsh (OW) Date: 27/05/2021

External Issue

Revision Control Register			
DSR Version No:	Issue Date:	Issued To:	Name:
Version R.0	27/05/2021	Benbow Environmental	Emma Hansma
Version R.1	30/06/2021	Canterbury Bankstown	Floodway Engineer

TABLE OF CONTENTS

1. INTRODUCTION	5
1.1 BACKGROUND	5
1.2 SITE DESCRIPTION	5
1.3 PROPOSED DEVELOPMENT	7
2. AVAILABLE DATA	9
3. OVERLAND FLOW PATH	9
3.1 CATCHMENT ANALYSIS	9
3.2 HYDROLOGY	9
4. FLOOD MODELLING	12
4.1 HYDRAULIC MODELLING	12
4.2 TOPOGRAPHY AND MODEL EXTENT	12
4.3 SURFACE ROUGHNESS	13
4.4 POST DEVELOPMENT STORMWATER SYSTEM.....	16
4.5 DOWNSTREAM BOUNDARY CONDITIONS	16
4.6 SUBJECT SITE RAINFALL DATA.....	16
4.7 SIMULATION.....	17
5. CONCLUSION	18

APPENDICES

APPENDIX A – PROPOSED SUBJECT SITE

APPENDIX B – STORMWATER PLAN

APPENDIX C – FLOOD MAPS - EXISTING

APPENDIX D – FLOOD MAPS - PROPOSED DEVELOPMENT

APPENDIX E – FLOOD MAPS 1%AEP DIFFERENCE PROPOSED DEVELOPMENT AND EXISTING

APPENDIX F – FLOOD MAPS 20%AEP DIFFERENCE PROPOSED DEVELOPMENT AND EXISTING

APPENDIX G – FLOOD MAPS PMF DIFFERENCE PROPOSED DEVELOPMENT AND EXISTING

LIST OF FIGURES

Figure 1 - Locality Plan.....	5
Figure 2 - Indicative Flood Extent 1%AEP	6
Figure 3 – Architectural Design, Existing Site plan extract.....	7
Figure 4 – Stormwater Design, Erosion and Sediment Control plan extract	8
Figure 5 - Indesco Cut-off TUFLOW 1D/2D Model 20%AEP Event	10
Figure 6 - Indesco Cut-off TUFLOW 1D/2D Model 1%AEP Event	10
Figure 7 - Indesco Cut-off TUFLOW 1D/2D Model PMF Event	11
Figure 8 - Existing Development topography	12
Figure 9 – Manning’s Roughness Coefficient ID GIS map from Council.....	13
Figure 10 – Deactivated 2D model grid / Blocks “0” – Existing.....	15
Figure 11 – Deactivated 2D model grid / Blocks “0” – Post development	15

LIST OF TABLES

Table 1 - 2D Flow Boundary (Overland Flow).....	11
Table 2 - 1D Flow Boundary Condition (Pit)	11
Table 3 – Manning’s Roughness Coefficient values from Council.....	14
Table 4 - 2D Rainfall Grid.....	17

1. INTRODUCTION

1.1 BACKGROUND

Indesco has been engaged by Gow Street Recycling Centre to undertake the Stormwater Design and Flood Impact Assessment to support an Environmental Impact Statement (EIS) for the demolition and alteration works required for the upgrade of the Recycling Facility at 81 Gow Street, Padstow NSW 2211.

Forming part of the EIS documentation, two dimensional (2D) flood modelling for the local overland flow was undertaken with the objectives to:

1. Identify if there is a flooding issue at the subject site due to local overland flow;
2. Identify if the proposed development leads to adverse flooding impacts on the surrounding areas; and
3. Identify if the proposed development creates safety issues at the subject site and the surrounding areas.

1.2 SITE DESCRIPTION

The subject site is located within the Canterbury-Bankstown Local Government Area and comprises a single rectangular lot with the legal description being lot A in DP103140, also known as 81 Gow Street, Padstow.

The site fronts Gow Street and backs onto lot SP22907. An easement containing two Council-owned stormwater pipes runs approximately south-west to north-east across the site, dividing the site in two halves. The two stormwater pipes have been surveyed and identified to be DN1500. Local overland flows run in a similar direction to the pipes.

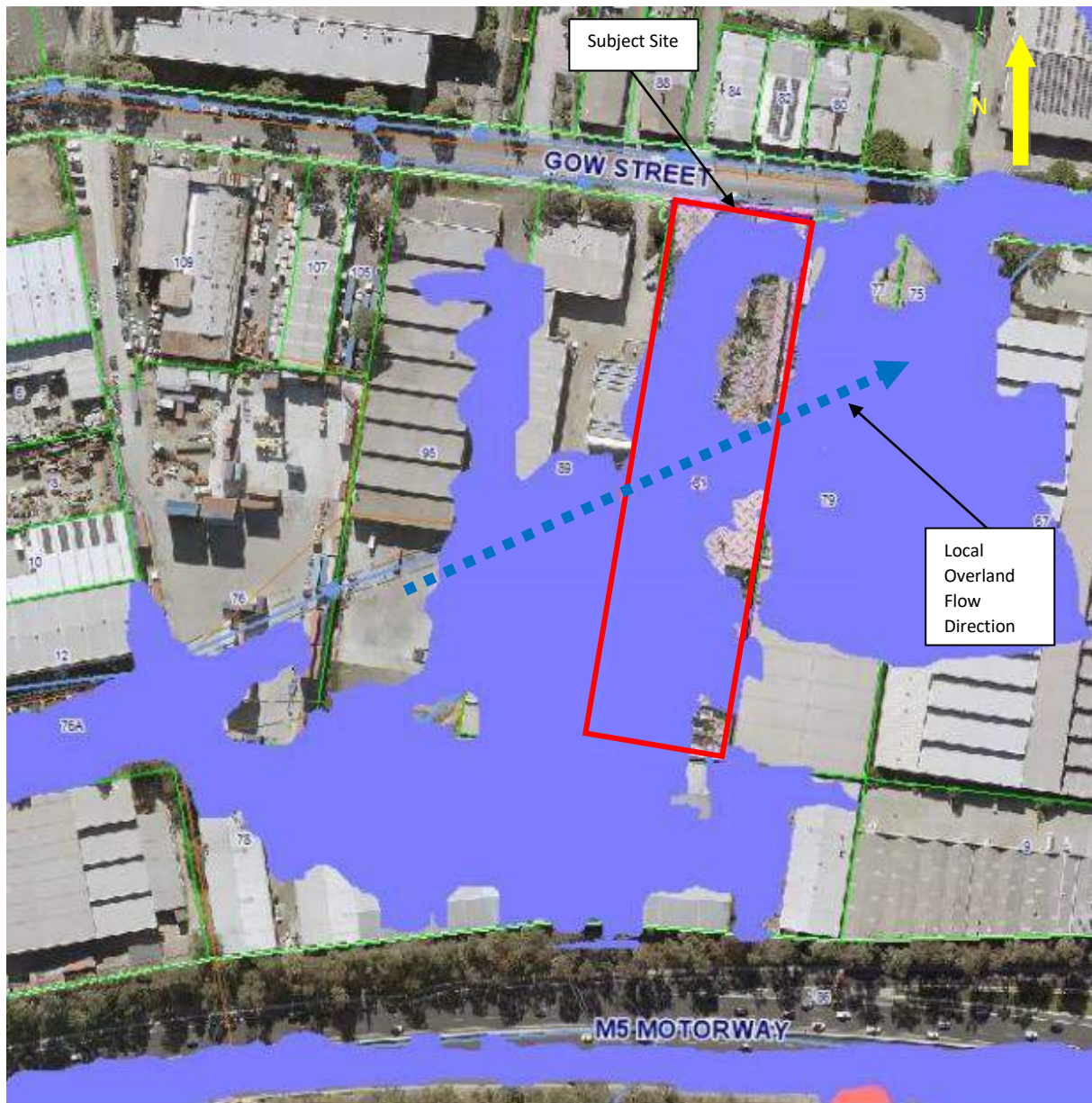


Figure 1 - Locality Plan

With respect to the overland flooding, the site receives local flows from upstream catchments at the middle of the western boundary and at the southern boundary.

TUFLOW Two dimensional floods modelling of these flooding sources has been undertaken to assess the impact of these flows and their interaction with the proposed development and is summarised in this report.

Current flood extent is presented in **Figure 2** below, based on information provided by Bankstown Canterbury City Council.



Sources: Liverpool Council Flood Risk Map

Figure 2 - Indicative Flood Extent 1%AEP

The site has an area of land of 1.01ha. The land is zoned as IN1 (General Industrial), under the Bankstown Local Environmental Plan (LEP) 2015.

Extracts from Architectural drawings and Stormwater Designs are shown on Figure 3 and Figure 4 below. These drawings are also presented in Appendix A and B respectively.



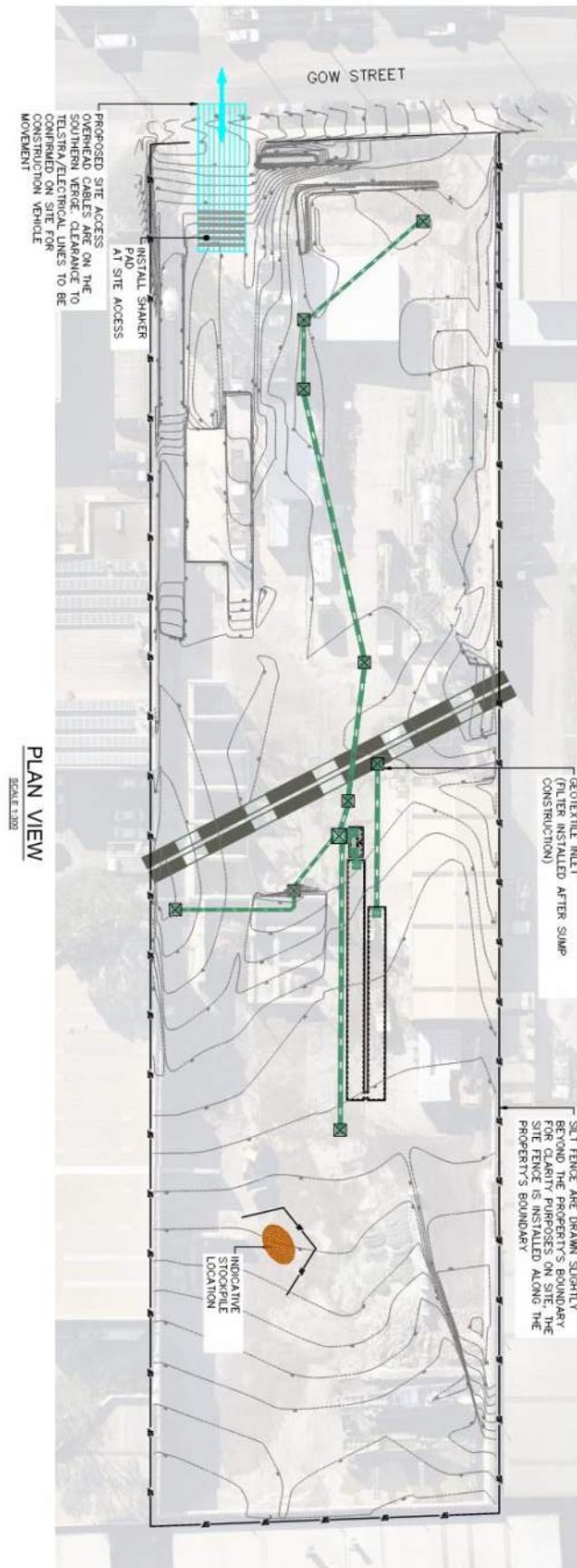


Figure 4 – Stormwater Design, Erosion and Sediment Control plan extract

2. AVAILABLE DATA

The following data was used for the study:

- TUFLOW flood model files accompanying the C23 Fairford Road Catchment Flood Study - BMT WBM, February 2010, Reference R.B17115.003.00);
- Detailed survey of the subject site – C & A Surveyors NSW Pty Ltd, dated 12/02/2020 Reference 13415-20 DET/ID;
- Proposed Resource Recovery 81-87 Gow Street, Padstow drawings – Style Developments Pty Ltd, dated 20/04/2021 Reference 0212/20;
- Engineering Drawings for Water Reuse and Drainage Upgrade – Indesco, Revision D, dated 26/06/2021 Reference 7524;
- Digital Cadastre - obtained from ALS ELVIS – Elevation and Depth Foundation Spatial Data;

3. OVERLAND FLOW PATH

3.1 CATCHMENT ANALYSIS

The catchment boundary was determined based on Council TUFLOW flood model files and QGIS watershed analysis of ALS, ELVIS - Elevation and Depth Foundation Spatial Data terrain map.

3.2 HYDROLOGY

The TUFLOW Hydrologic upstream input was adopted from Council TUFLOW data of 1D and 2D Boundary Conditions of the subject site, approximately 270 metres to the west, 200 metres to the east, 300 metres to the north and 200 metres to the south boundaries. This is shown overleaf on **Figure 5**, **Figure 6** and **Figure 7** for each storm event (20%AEP, 1%AEP and PMF respectively) in the Indesco TUFLOW Cut-off Model. The TUFLOW 1D nodes and 2D flows arriving to the subject site have replicated Council flood results, as shown on Table 1 and Table 2 below.

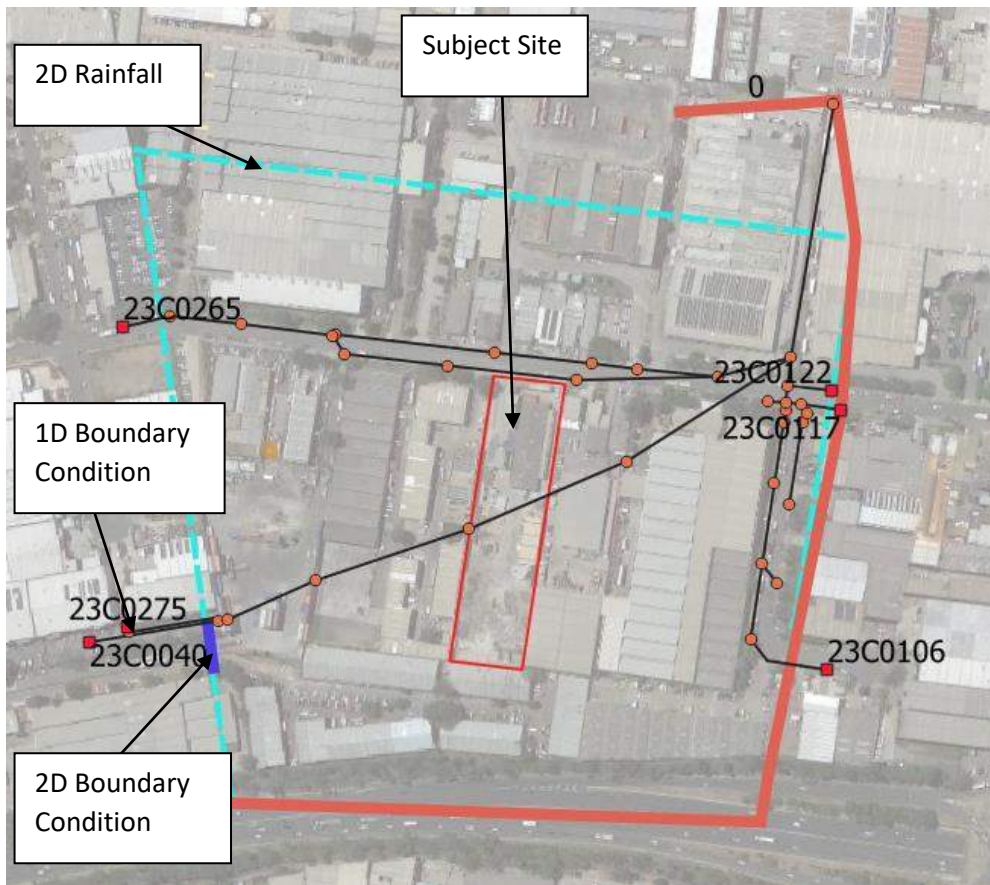


Figure 5 - Indesco Cut-off TUFLOW 1D/2D Model 20%AEP Event

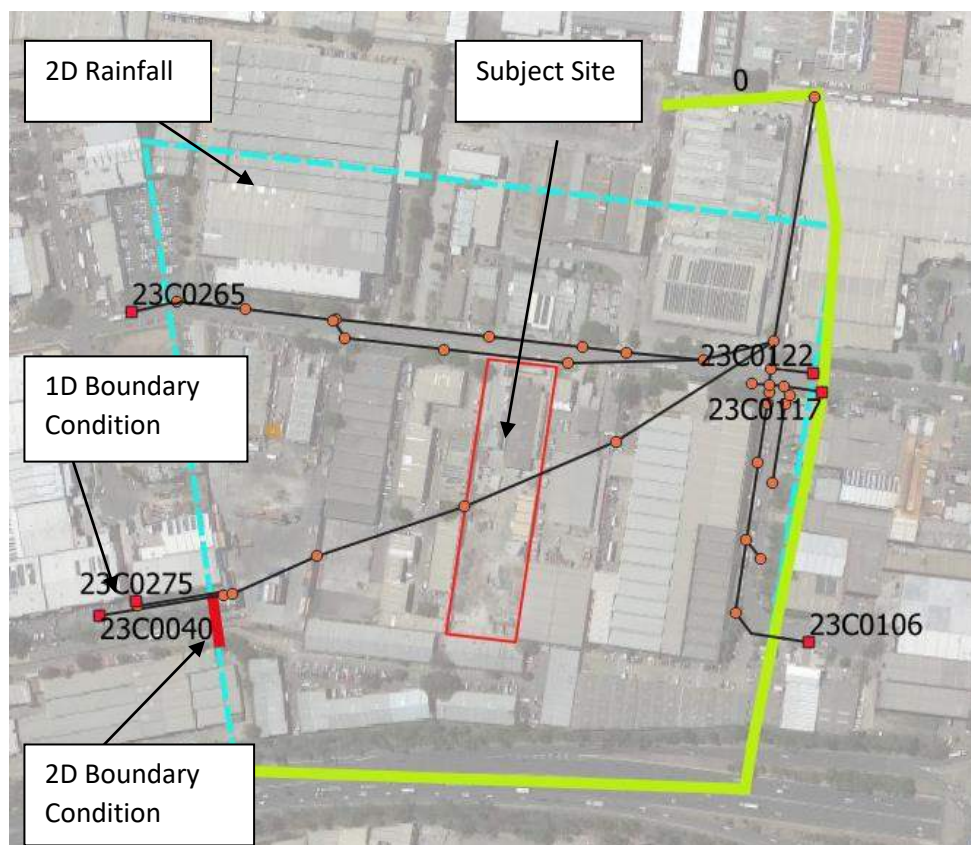


Figure 6 - Indesco Cut-off TUFLOW 1D/2D Model 1%AEP Event

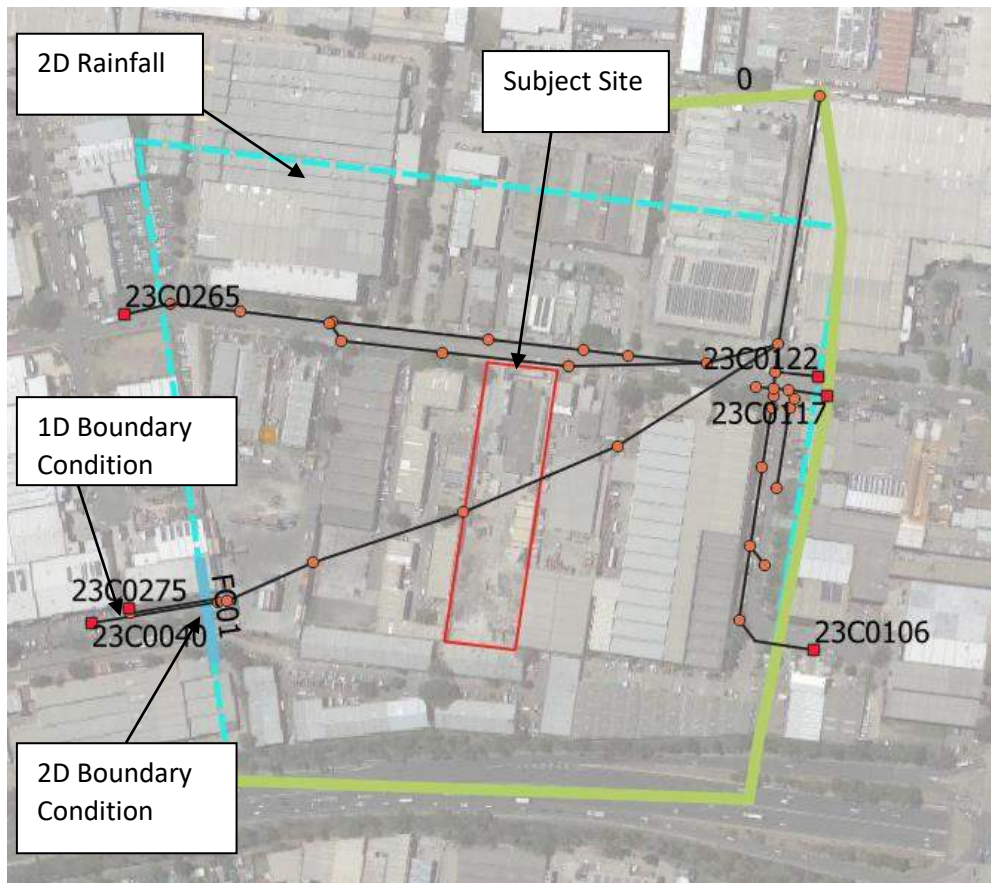


Figure 7 - Indesco Cut-off TUFLOW 1D/2D Model PMF Event

Details of the boundary conditions are shown on Table 1 and Table 2 below, as replicated from Council TUFLOW flood model.

Table 1 - 2D Flow Boundary (Overland Flow)

STORM EVENT	PEAK FLOW (m3/s)	FACTOR TO BUILD HYDROGRAPH
20%AEP	0.061	0.773
1%AEP	0.224	0.928
PMF	1.292	1.187

Table 2 - 1D Flow Boundary Condition (Pit)

STORM EVENT	Peak Flow Q 23C0265 (m3/s)	Peak Flow Q 23C0275 (m3/s)	Peak Flow Q 23C0040 (m3/s)	Peak Flow Q 23C0122 (m3/s)	Peak Flow Q 23C0117 (m3/s)	Peak Flow Q 23C0106 (m3/s)
20%AEP	Max 0.161	Max 0.262	Max 3.417	Max 0.172	Max 0.134	Max 0.017
1%AEP	Max 0.261	Max 0.420	Max 5.409	Max 0.176	Max 0.139	Max 0.025
PMF	Max 0.334	Max 0.701	Max 5.527	Max 0.196	Max 0.161	Max 0.037

4. FLOOD MODELLING

4.1 HYDRAULIC MODELLING

The flood modelling software TUFLOW was used to simulate the flooding depth and extent.

4.2 TOPOGRAPHY AND MODEL EXTENT

Digital terrain models were built merging the Aerial LiDAR Survey (ALS) with the detailed survey Triangulated Irregular Network (TIN).

Extract of the 2D analysis is shown on **Figure 8** below.



Figure 8 - Existing Development topography

As no earthworks are proposed, the topography has been maintained unchanged from pre to post development scenarios. A grid size of 2 meters has been used to simulate these scenarios. This model resolution is considered adequate to represent the flood behaviour.

4.3 SURFACE ROUGHNESS

Manning coefficient values adopted in the model are detailed in **Figure 9** and **Table 3** below.



Figure 9 – Manning's Roughness Coefficient ID GIS map from Council

Table 3 – Manning's Roughness Coefficient values from Council

Manning ID	n	IL	CL	y1	n1	y2	n2	Description
1	0.030	10.0	2.5	0.030	0.100	0.100	0.030	! Grass (maintained)
2	0.040	10.0	2.5	0.030	0.100	0.100	0.040	! Parkland
3	0.020	0.0	0.0	0.030	0.020	0.100	0.020	! Roads / railway
4	0.020	0.0	0.0	0.030	0.020	0.100	0.020	! Open concrete (flood default)
5	0.100							! Riparian vegetation
6	0.090	10.0	2.5	0.030	0.100	0.100	0.090	! Dense vegetation
7								
8	1.000	0.0	0.0	0.030	0.015	0.100	1.000	! Building (low flow)
9	0.070	10.0	2.5	0.030	0.100	0.100	0.070	! Urban block (low flow)
10	0.020							
11	0.031							
12	1.000							
13	0.045	10.0	2.5	0.030	0.100	0.100	0.045	! Bare earth / unkempt low-level foliage
14	0.022	0.0	0.0	0.030	0.022	0.100	0.022	! Harbour
15	0.080	10.0	2.5	0.030	0.100	0.100	0.080	! Railway corridor
16	1.000	0.0	0.0	0.030	0.015	0.100	1.000	! Building (floodway)
17	0.070	10.0	2.5	0.030	0.100	0.100	0.070	! Urban block (floodway)
18	0.070	0.0	0.0	0.030	0.015	0.100	0.070	! Additional rooves

Figure 10 and **Figure 11** below show the deactivated 2D model grid adopted for both scenarios, which represent the buildings and bunker walls footprints.



Figure 10 – Deactivated 2D model grid / Blocks “0” – Existing



Figure 11 – Deactivated 2D model grid / Blocks “0” – Post development

4.4 POST DEVELOPMENT STORMWATER SYSTEM

In the post development scenario, the proposed stormwater system will provide onsite detention and water quality treatment with the following assets:

- 1) 2 x underground storage tanks with a total of 200 kL storage capacity;
- 2) 1 x 10 kL rainwater tank with Silt Arrestor Pit and BCP SAP-4000.

These on-site storage nodes have been added in Indesco Cut-off TUFLOW 1D model.

Proposed pit and pipes, as shown in Appendix B have also been incorporated in the above-mentioned model.

4.5 DOWNSTREAM BOUNDARY CONDITIONS

The downstream boundary conditions were based on ALS TIN and has grades which vary between 0.001 and 6% .

4.6 SUBJECT SITE RAINFALL DATA

TUFLOW council direct rainfall was applied to 2D grids. Critical storm events and durations used are:

- 20%AEP - 120min;
- 1%AEP - 120min; and
- PMF - 120min.

Details of the rainfall grid values are shown on Table 4 overleaf.

Table 4 - 2D Rainfall Grid

Time (h)	Time (minutes)	Q005_120min (20%AEP)	Q100_120min (1%AEP)	Q1000_120min (PMF)
0	0	0	0	0
0.083	5	0	0	0
0.167	10	1.3	2.5	4.2
0.250	15	3.2	5.4	9.1
0.333	20	1.9	3.5	5.9
0.417	25	3	5.1	8.6
0.500	30	5.8	9.5	15.9
0.583	35	3.2	5.4	9.1
0.667	40	10.9	17.5	29.4
0.750	45	7.5	12.5	21
0.833	50	3.4	5.5	9.2
0.917	55	1.9	3.5	5.9
1	60	2	3.6	6
1.083	65	2.5	4.5	7.6
1.167	70	2.6	4.5	7.6
1.250	75	1.3	2.5	4.2
1.333	80	1.3	2.5	4.2
1.417	85	2.1	3.6	6
1.500	90	1.2	2.5	4.2
1.583	95	0.7	1.3	2.2
1.667	100	0.6	1.3	2.2
1.750	105	1.4	2.6	4.4
1.833	110	0.5	1.3	2.2
1.917	115	0.8	1.4	2.4
2	120	0.7	1.4	2.4
2.083	125	0.8	1.5	2.5
2.167	130	0	0	0

4.7 SIMULATION

With the inputs detailed in the previous sections, the following scenarios have been simulated.

- Existing (20%AEP, 1%AEP, PMF);
- Post development (20%AEP, 1%AEP, PMF);
- The 1%AEP Difference of Post Development and Existing;
- The 20%AEP Difference of Post Development and Existing; and
- The PMF Difference of Post Development and Existing.

Flood maps results for the above scenarios are presented in Appendix C, D, E, F and G.

5. CONCLUSION

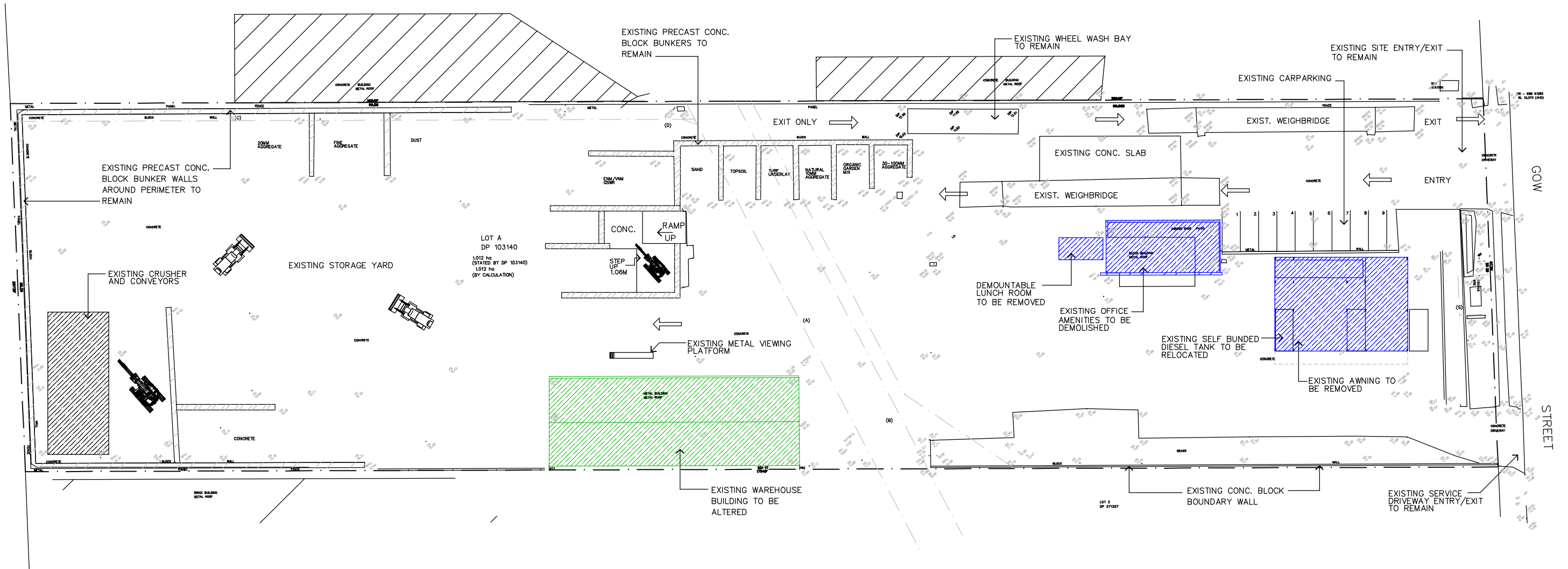
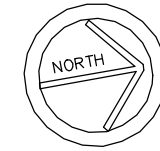
The results of the flood assessment generally indicate that the proposed development:

1. Do not generate flooding issues at the subject site due to local overland flow;
2. Do not lead to adverse flooding impacts on the surrounding areas; and
3. Does not create safety issues at the subject site and the surrounding areas.

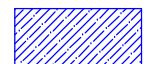

It is noted that minor ponding difference reflected from existing to post development scenarios, occurs at the north west of the subject site area, possibly due to the removal of the existing building in that specific area. The flood hazard maps for the 100 year storm event evidences no difference from the existing to the developed scenarios, as shown on the appendices. Also, there is no flood hazard detected in the ponding area. For these reasons, it is concluded that the ponding is negligible and does not represent any flooding hazard.

APPENDIX A

PROPOSED SUBJECT SITE



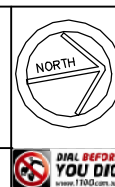
EXISTING SITE PLAN
SCALE 1:250

-  STRUCTURES TO BE DEMOLISHED
-  STRUCTURES TO BE ALTERED

ISSUE	BY	DESCRIPTION	DATE
A	GR	ISSUE FOR DA	20-4-21


GOW STREET
RECYCLING CENTRE
REV 1/20

COPYRIGHT: THIS DESIGN AND THE ASSOC. DOCUMENTATION IS
SUBJECT TO COPYRIGHT LAWS AND MAY NOT BE REPRODUCED IN
ANY FORM WITHOUT WRITTEN CONSENT FROM STYLE DEVELOPMENTS



- GENERAL NOTES:
1. ALL DIMENSIONS AND FLOOR AREAS ARE TO BE VERIFIED BY THE BUILDER PRIOR TO THE COMMENCEMENT OF ANY BUILDING WORKS. ANY DISCREPANCIES ARE TO BE BROUGHT TO THE ATTENTION OF THE DESIGNER
 2. LEVELS SHOWN ARE APPROXIMATE UNLESS ACCOMPANIED BY REDUCED LEVELS FROM A DETAILED SURVEY
 3. FIGURED DIMENSIONS MUST BE TAKEN IN PREFERENCE TO SCALING
 4. ALL BOUNDARY CLEARANCES MUST BE VERIFIED BY THE SURVEYOR PRIOR TO COMMENCEMENT OF ANY BUILDING WORK
 5. WHERE ENGINEERING DRAWINGS ARE REQUIRED SUCH MUST TAKE PRECEDENCE OVER THIS DRAWING
 6. STORMWATER TO BE DISCHARGED TO COUNCIL'S REQUIREMENTS AND AS 3500.3-2003
 7. ALL SERVICES TO BE LOCATED AND VERIFIED BY THE BUILDER WITH RELEVANT AUTHORITIES BEFORE ANY BUILDING WORK COMMENCES
 8. ALL WORKS TO BE COMPLETED IN ACCORDANCE WITH THE AUSTRALIAN STANDARDS
 9. TERMITE PROTECTION TO BE INSTALLED IN ACCORDANCE WITH AS3660.1-1996 PART 1 NEW BUILDINGS
 10. SMOKE ALARMS TO BE INSTALLED BY A LICENSED ELECTRICIAN IN ACCORDANCE WITH THE

STYLE DEVELOPMENTS PTY LTD
2051-2053 THE NORTHERN ROAD
GLENMORE PARK NSW 2745
M: +61 2 419 404 103
E: info@styledevelopments.com.au
W: www.styledevelopments.com.au

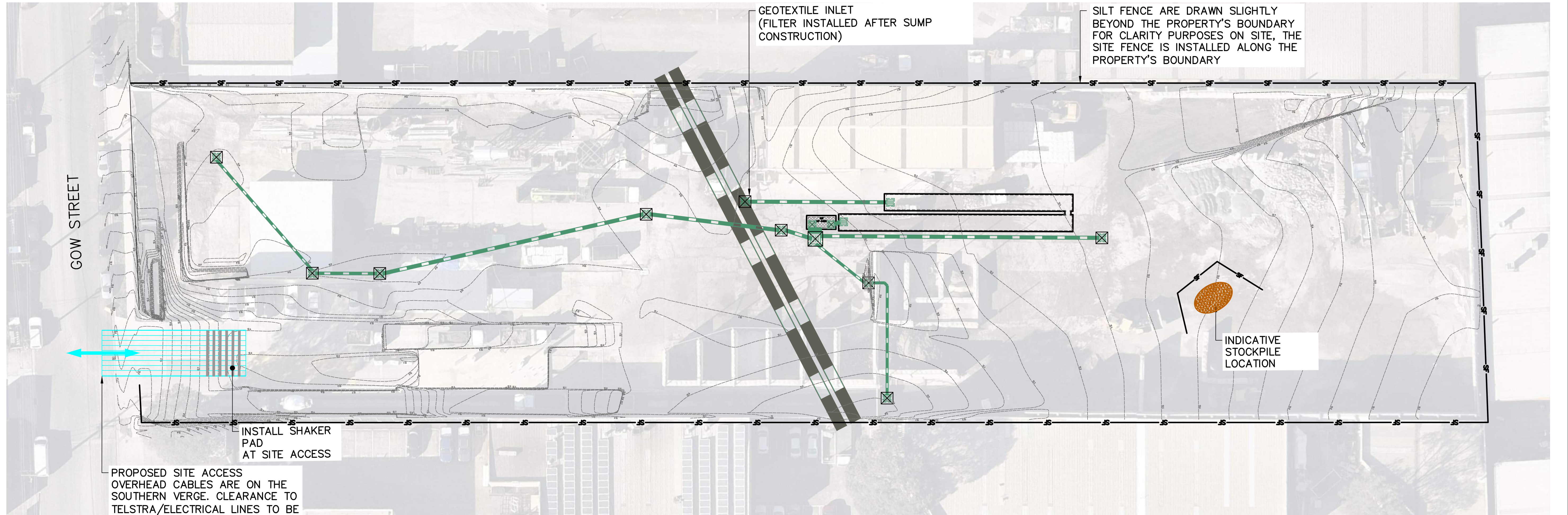
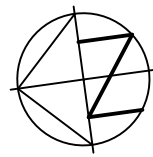
 styledevelopments

ARCHITECTURAL DESIGN | ENGINEERING
CONSTRUCTION | PROJECT MANAGEMENT

PROJECT	PROPOSED RESOURCE RECOVERY 81-87 GOW STREET PADSTOW LOT A DP103140	PROJECT NO.	1730
CLIENT	GOW STREET RECYCLING PTY LTD	SCALE	1:250
TITLE	EXIST. SITE PLAN	JOB NO.	0212/20
		SHEET NO.	A01
		ISSUE	A

APPENDIX B

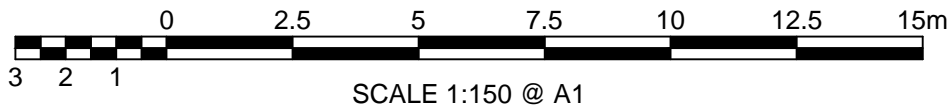
STORMWATER PLAN



PLAN VIEW
SCALE 1:300

NOTES

1. SILT FENCE AND STOCKPILE LOCATION ARE SHOWN INDICATIVELY. CONTRACTOR IS TO ADJUST THEM TO SUIT SITE CONDITIONS AND WORK SEQUENCE.



No.	AMENDMENT	APPROVED	DATE	AMEND BY	DEVELOPMENT TEAM
C	ISSUED FOR DA APPROVAL	LL	29.06.2021	AR	
B	ISSUED FOR DA APPROVAL	SB	27.05.2021	EJ	
A	ISSUED FOR DA APPROVAL	KN	23.07.2020	SB	

CLIENT

GOW STREET
RECYCLING
CENTER

INDESCO
CANBERRA | SYDNEY | WOLLONGONG
www.indesco.com.au

CONSULT AUSTRALIA

QHSAS 18001
QHSAS 18001
QHSAS 18001

APPROVED	DF	DATE	02.06.2020
CHECKED	KN	DATE	02.06.2020
DESIGNED BY	SB		
DRAWN BY	SB		
CAD FILE: \\ind-syd-dc-01\Sydney_Projects\7524 81 Gow St. Padstow\Acad\Working\7524-C-104.dwg			
SCALE	AS SHOWN	SHEET No.	

PROJECT

81 GOW STREET
PADSTOW
WATER REUSE AND
DRAINAGE UPGRADE

DRAWING TITLE		
EROSION AND SEDIMENT CONTROL PLAN		
PROJECT No.	DRAWING No.	AMDT
7524	104A	C

APPENDIX C

FLOOD MAPS - EXISTING



LEGEND

SITE

7524_Existing_2m_Q5_120m_

0.0500

0.1000

0.3000

0.5000

0.8000

1.0000

1.3000

1.5000

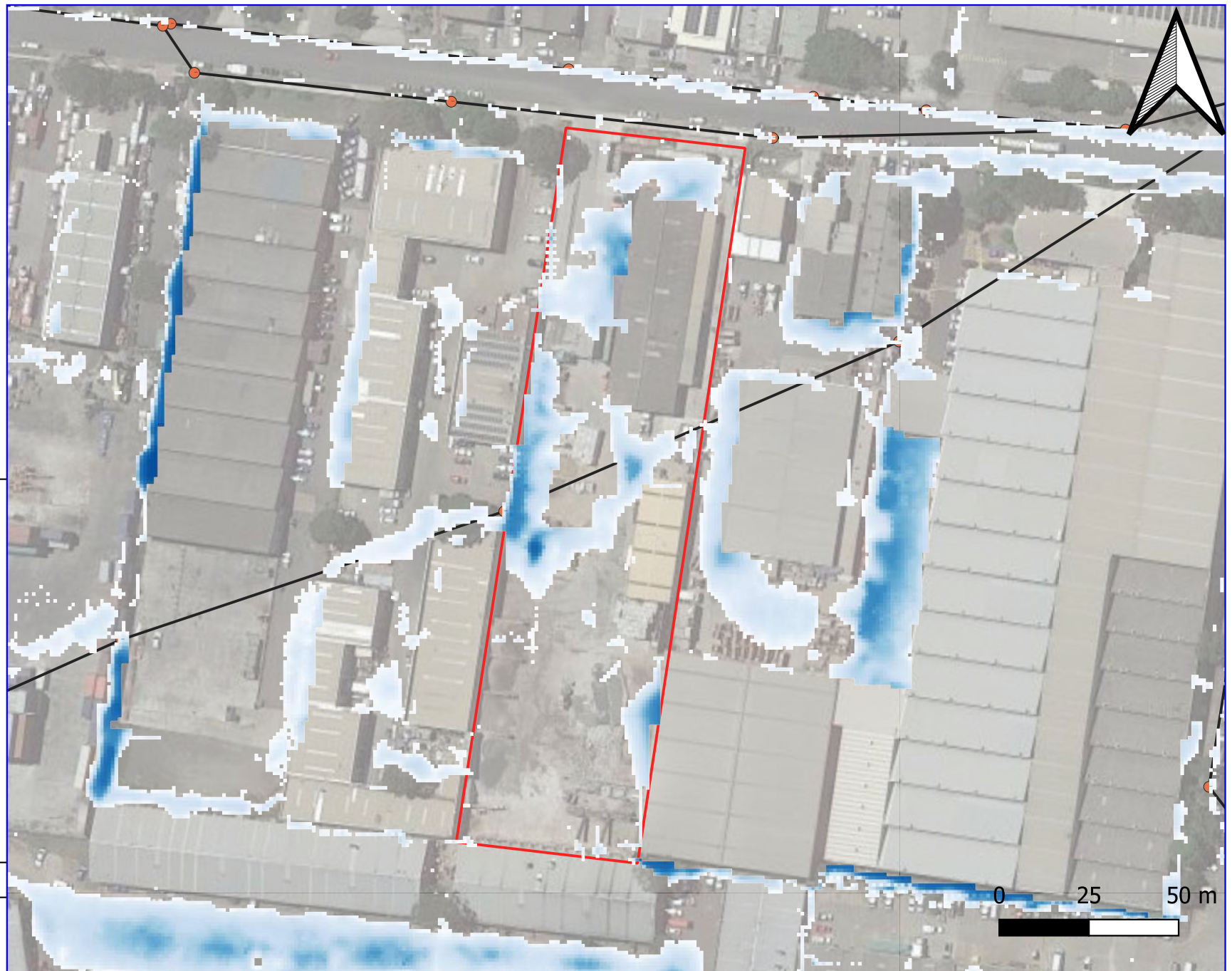
5.0000

1d_bc_7524_P

1d_nwk_7524_proposed_

1d_nwk_7524_proposed_

Google Satellite

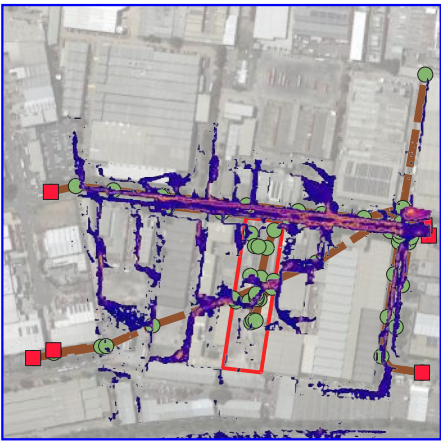


Project Name: 81 Gow St, Padstow

Project No: 7524

TUFLOW Result 20%AEP Existing Scenario

Maximum Depth



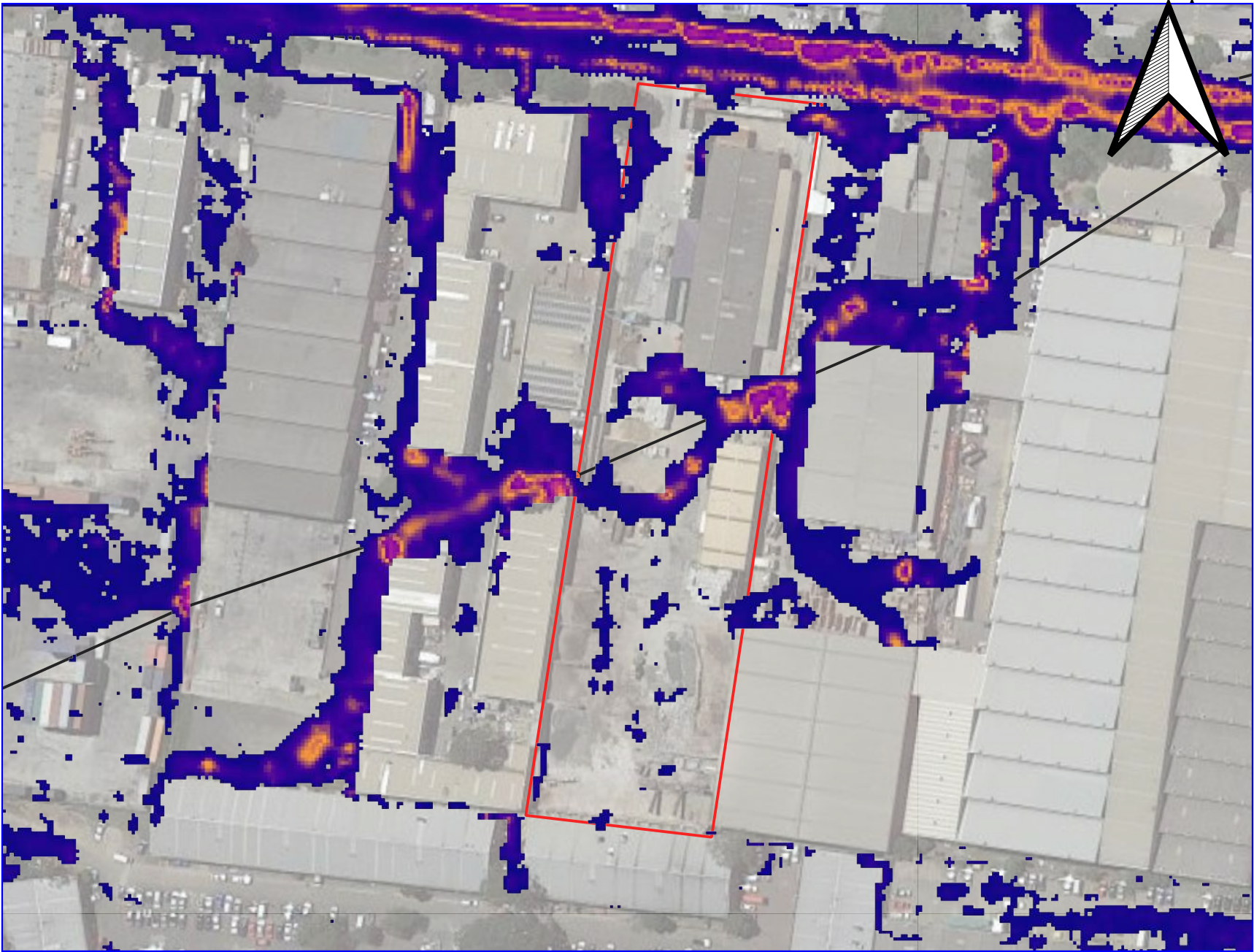
LEGEND

TUFLOW

7524_Existing_2m_Q5_120m_V.

- 0.1000
- 0.4160
- 0.8000
- 1.0000
- 1.2000
- 1.5000
- 1.7000
- 2.0000
- 2.9442
- 3.0000

- 1d_nwk_7524_pit_P
- 1d_nwk_7524_pipe_L



Project Name: 81 Gow St, Padstow
Project No: 7524
TUFLOW Result 20%AEP Existing Scenario
Maximum Velocity



LEGEND

TUFLOW

7524_Existing_2m_Q5_120m_ZI

0.1000

0.4000

0.8000

8.0000

1d_bc_7524_P

1d_nwk_7524_pit_P

1d_nwk_7524_pipe_L



Project Name: 81 Gow St, Padstow
Project No: 7524
TUFLOW Result 20%AEP Existing Scenario
Maximum Hazard





LEGEND


 SITE


TUFLOW


7524_Existing_2m_Q100_120


 0.0500


 0.1000


 0.3000


 0.5000


 0.8000


 1.0000


 1.3000

 1.5000

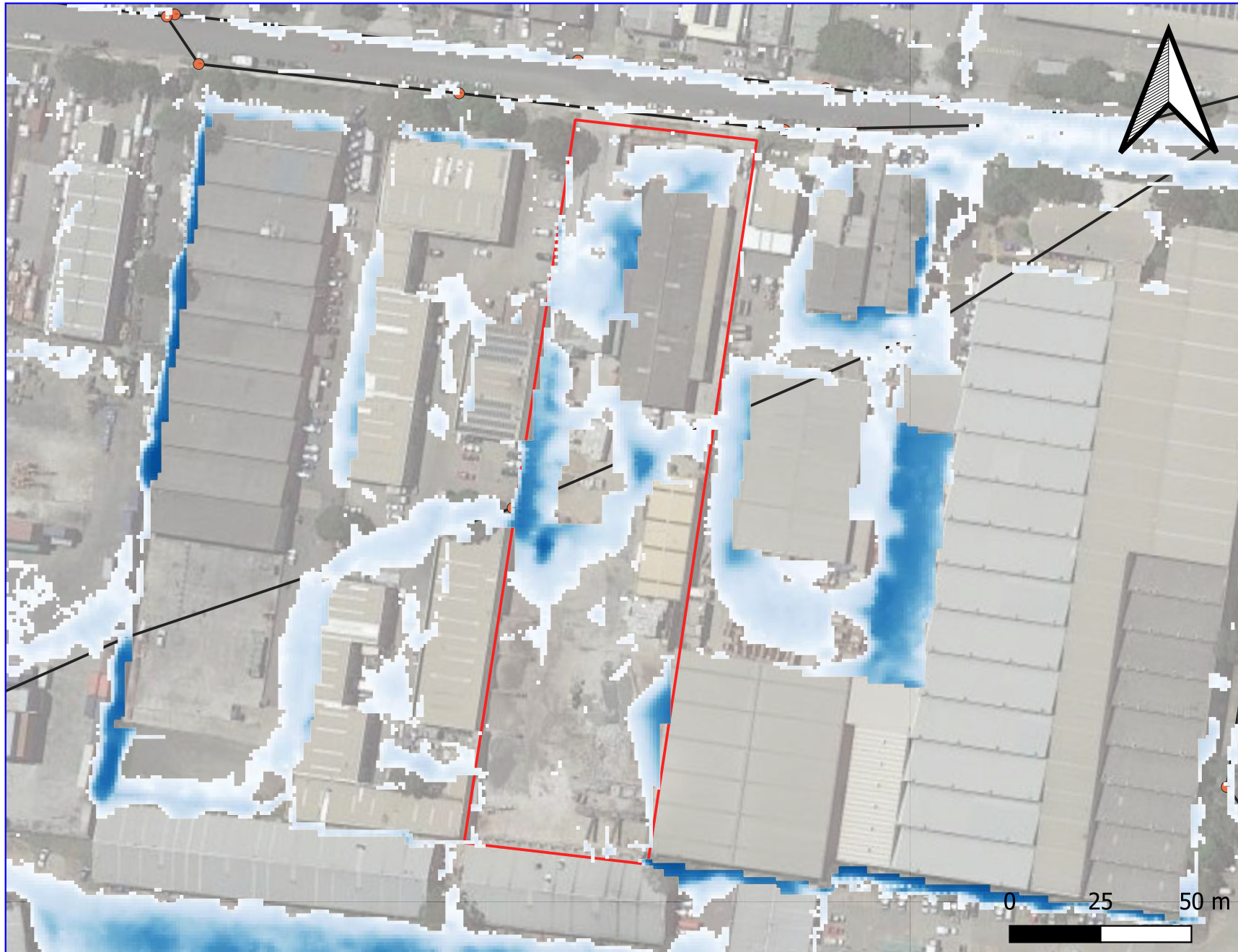
 5.0000

 1d_bc_7524_P

 1d_nwk_7524_proposed

 1d_nwk_7524_proposed

Google Satellite

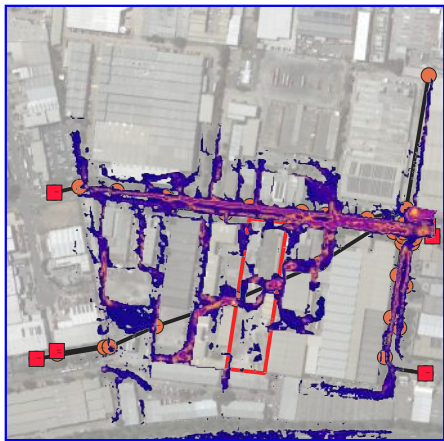


Project Name: 81 Gow St, Padstow

Project No: 7524

TUFLOW Result 1%AEP Existing Scenario

Maximum Depth



LEGEND

TUFLOW

7524_Existing_2m_Q100_120m

0.1000

0.4160

0.8000

1.0000

1.2000

1.5000

1.7000

2.0000

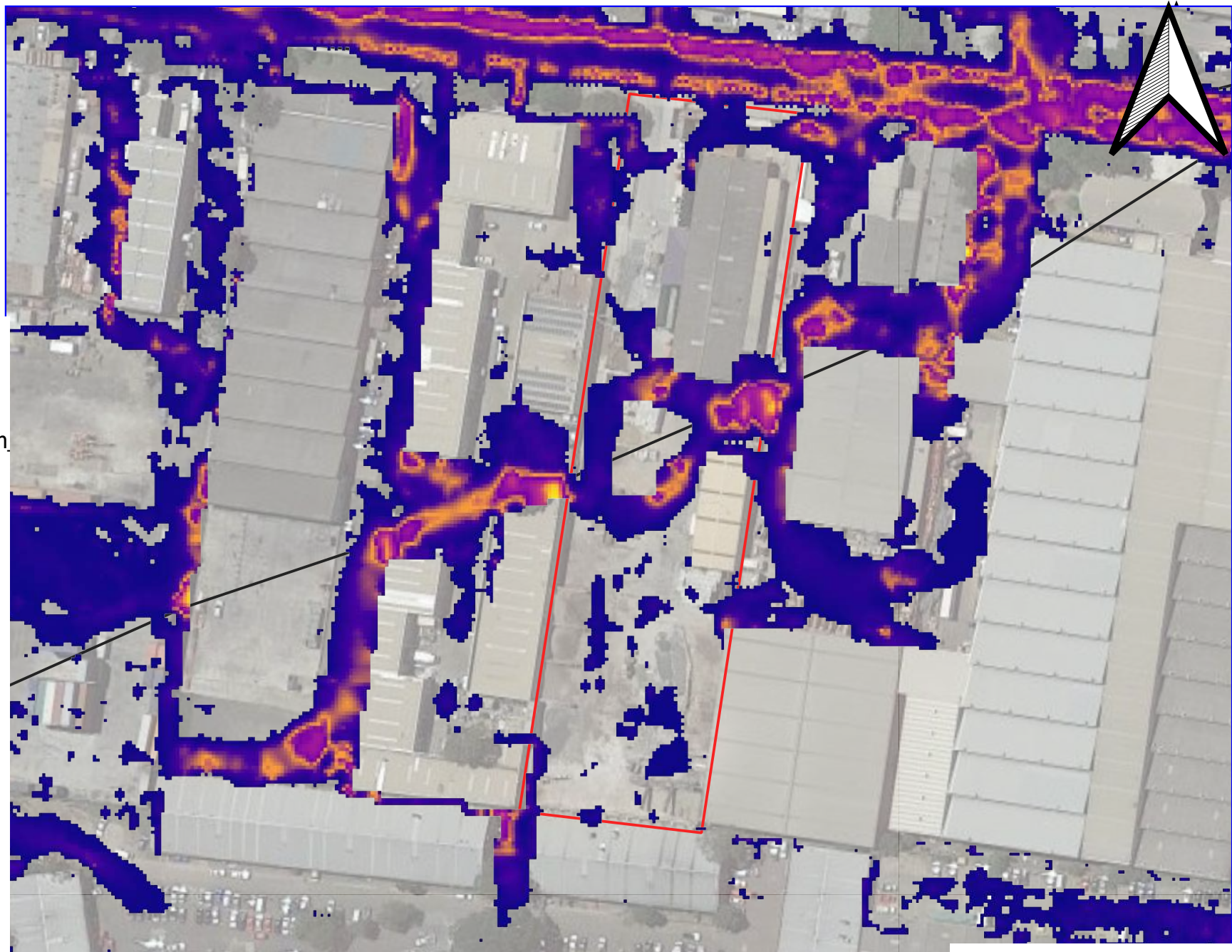
2.9442

3.0000

1d_bc_7524_P

1d_nwk_7524_pit_P

1d_nwk_7524_pipe_L



Project Name: 81 Gow St, Padstow

Project No: 7524

TUFLOW Result 1%AEP Existing Scenario

Maximum Velocity



LEGEND

TUFLOW

7524_Existing_2m_Q100_120m.

0.1000

0.4000

0.8000

8.0000

1d_bc_7524_P

1d_nwk_7524_pit_P

1d_nwk_7524_pipe_L

Project Name: 81 Gow St, Padstow
Project No: 7524
TUFLOW Result 1%AEP Existing Scenario
Maximum Hazard



LEGEND

SITE

TUFLOW

7524_Existing_2m_PMF_120m_

0.0500

0.1000

0.3000

0.5000

0.8000

1.0000

1.3000

1.5000

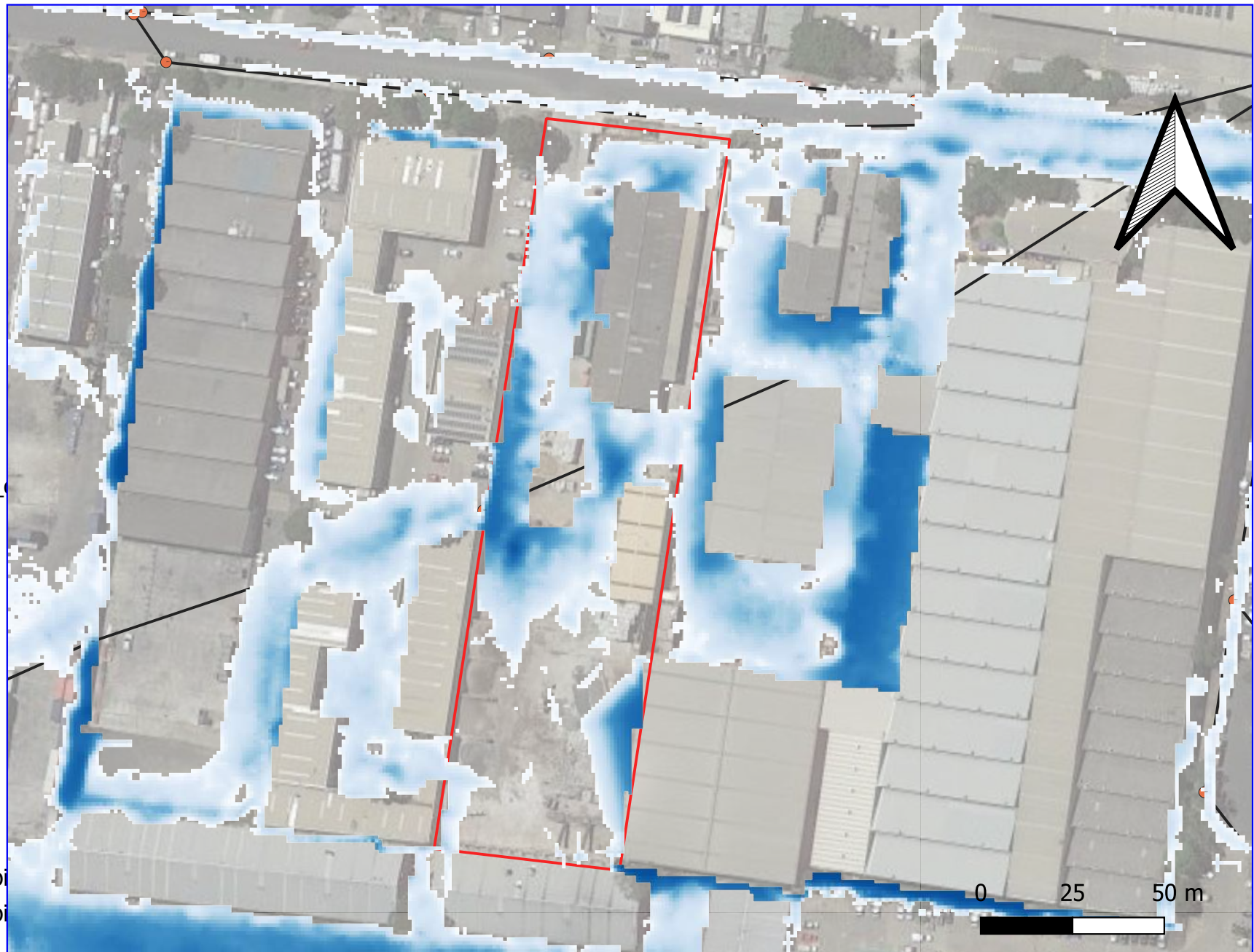
5.0000

■ 1d_bc_7524_P

— 1d_nwk_7524_proposed_pi

● 1d_nwk_7524_proposed_pi

Google Satellite

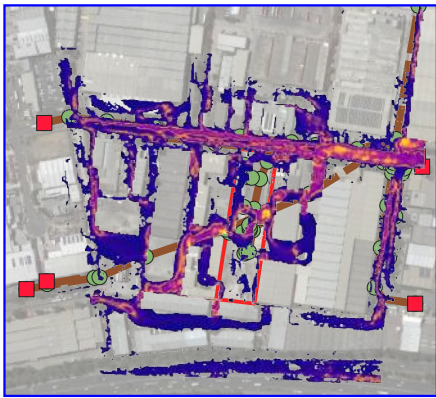


Project Name: 81 Gow St, Padstow

Project No: 7524

TUFLOW Result PMF Existing Scenario

Maximum Depth



SITE

TUFLOW

7524_Existing_2m_PMF_120m_

0.1000

0.4160

0.8000

1.0000

1.2000

1.5000

1.7000

2.0000

2.9442

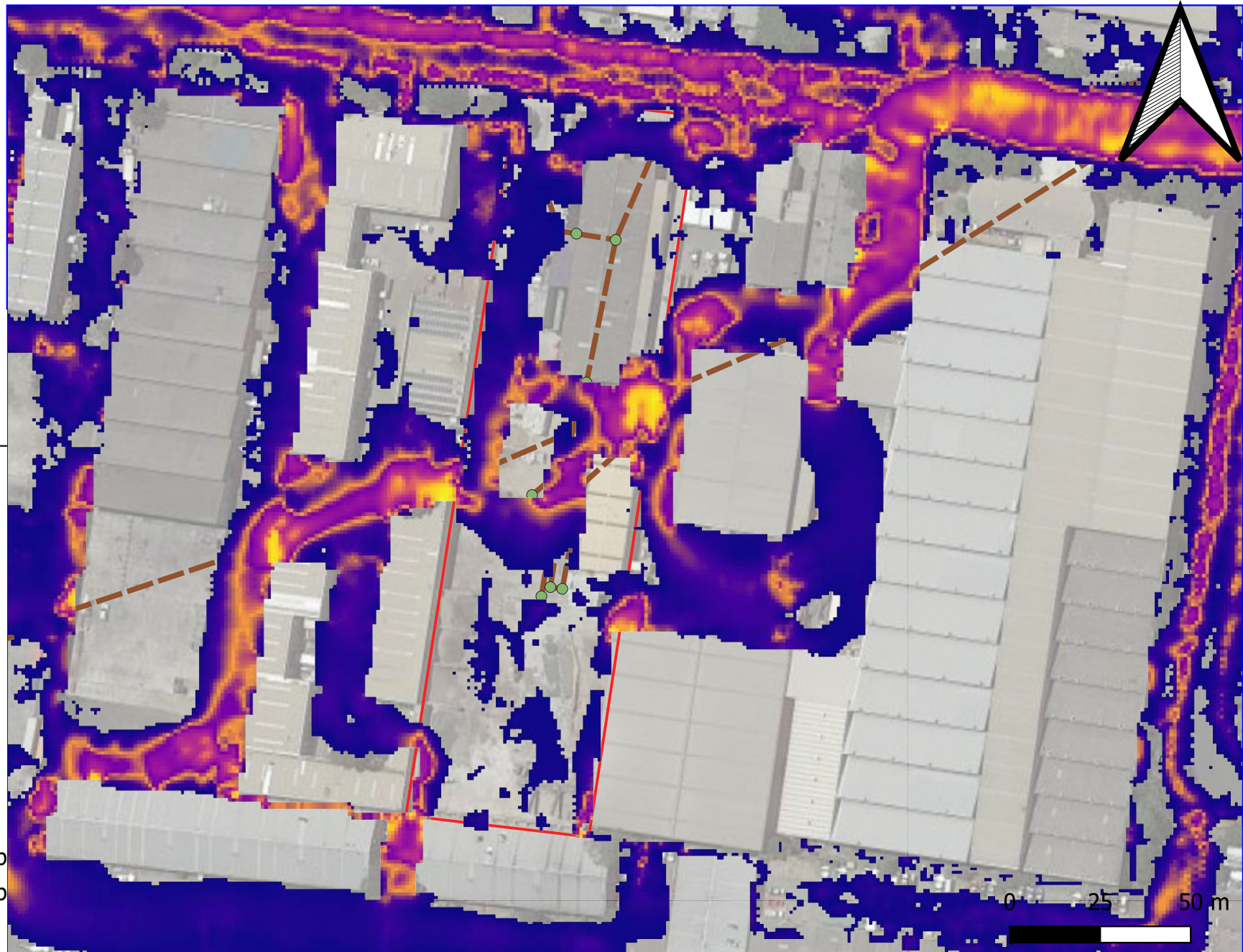
3.0000

1d_bc_7524_P

1d_nwk_7524_proposed_p

1d_nwk_7524_proposed_p

Google Satellite

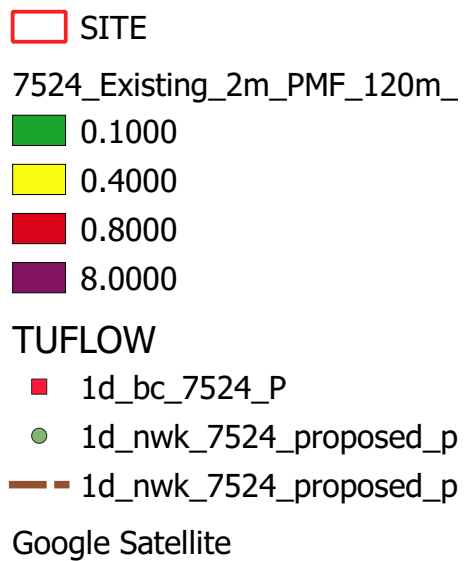
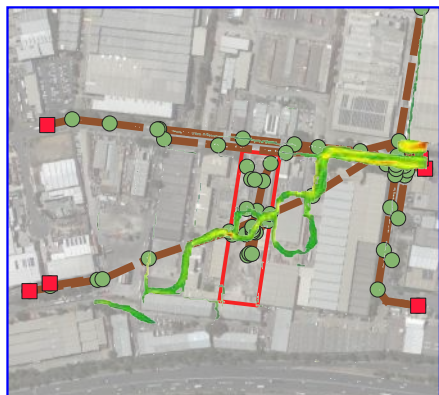


Project Name: 81 Gow St, Padstow

Project No: 7524

TUFLOW Result PMF Existing Scenario

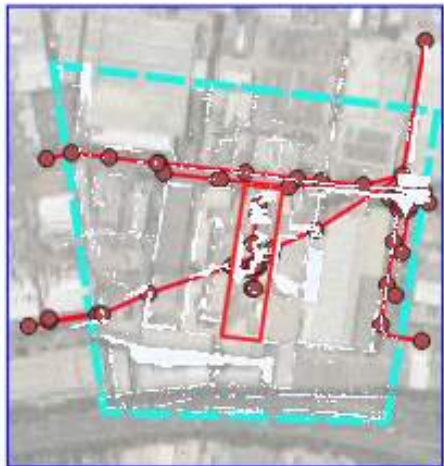
Maximum Velocity



Project Name: 81 Gow St, Padstow
 Project No: 7524
 TUFLOW Result PMF Existing Scenario
 Maximum Hazard

APPENDIX D

FLOOD MAPS - PROPOSED DEVELOPMENT



LEGEND

SITE

TUFLOW

7524_Proposed_2m_Q5_120m_

0.0500

0.1000

0.3000

0.5000

0.8000

1.0000

1.3000

1.5000

5.0000

■ 1d_bc_7524_P

— 1d_nwk_7524_proposed_pi

● 1d_nwk_7524_proposed_pi

Google Satellite

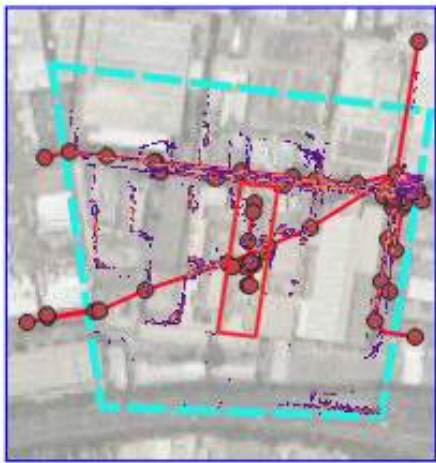


Project Name: 81 Gow St, Padstow

Project No: 7524

TUFLOW Result 20%AEP Post Development Scenario

Maximum Depth



SITE

7524_Proposed_2m_Q5_120m_

0.1000

0.4160

0.8000

1.0000

1.2000

1.5000

1.7000

2.0000

2.9442

3.0000

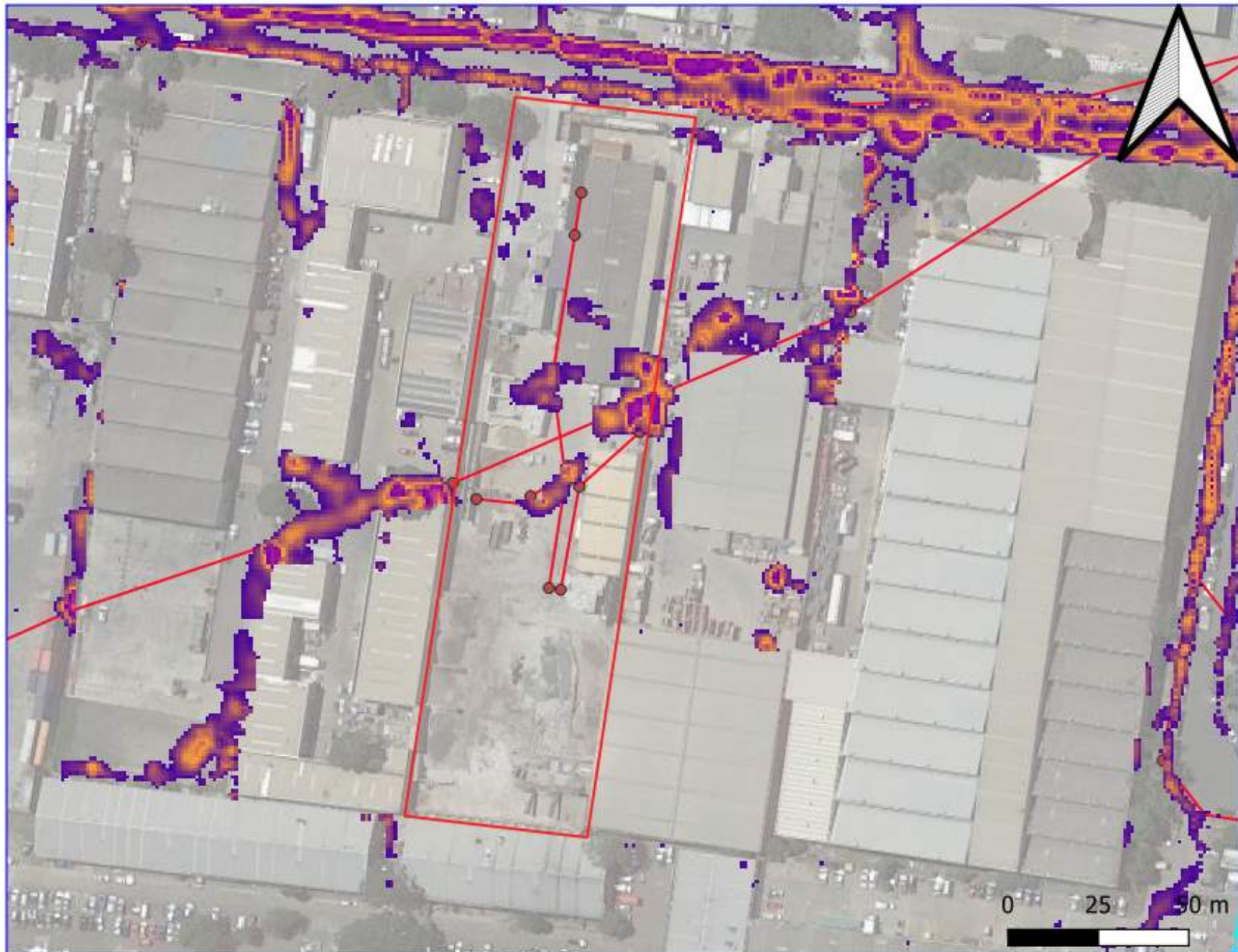
TUFLOW

1d_bc_7524_P

1d_nwk_7524_proposed_p

1d_nwk_7524_proposed_p

Google Satellite



Project Name: 81 Gow St, Padstow

Project No: 7524

TUFLOW Result 20%AEP Post Development Scenario

Maximum Velocity



SITE

7524_Proposed_2m_Q5_120m_

0.1000

0.4000

0.8000

8.0000

TUFLOW

1d_bc_7524_P

1d_nwk_7524_proposed_p

1d_nwk_7524_proposed_p

Google Satellite

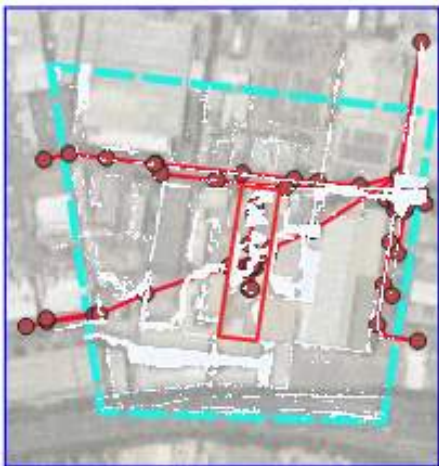


Project Name: 81 Gow St, Padstow

Project No: 7524

TUFLOW Result 20%AEP Post Development Scenario


Maximum Hazard





LEGEND


 SITE


7524_Proposed_2m_Q100_120r


 0.0500


 0.1000


 0.3000


 0.5000


 0.8000


 1.0000


 1.3000

 1.5000

 5.0000

 1d_bc_7524_P

 1d_nwk_7524_proposed_pi

 1d_nwk_7524_proposed_pi

Google Satellite

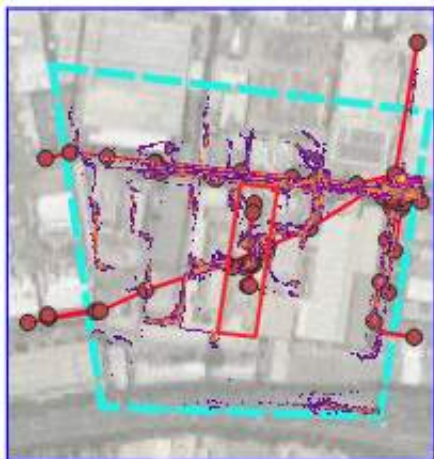


Project Name: 81 Gow St, Padstow

Project No: 7524

TUFLOW Result 1%AEP Post Development Scenario

Maximum Depth



SITE

7524_Proposed_2m_Q100_120

0.1000

0.4160

0.8000

1.0000

1.2000

1.5000

1.7000

2.0000

2.9442

3.0000

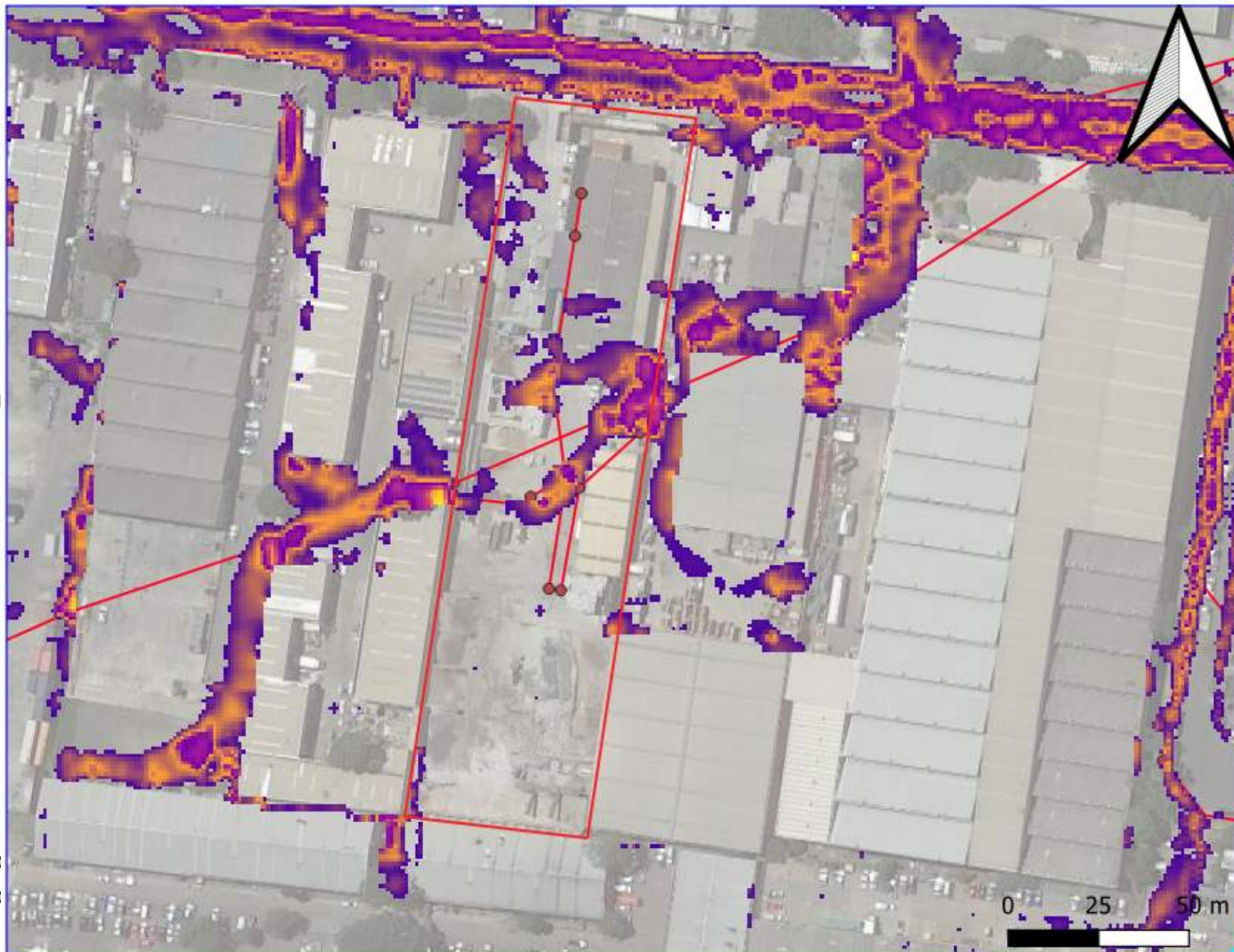
TUFLOW

1d_bc_7524_P

1d_nwk_7524_proposed_p

1d_nwk_7524_proposed_p

Google Satellite

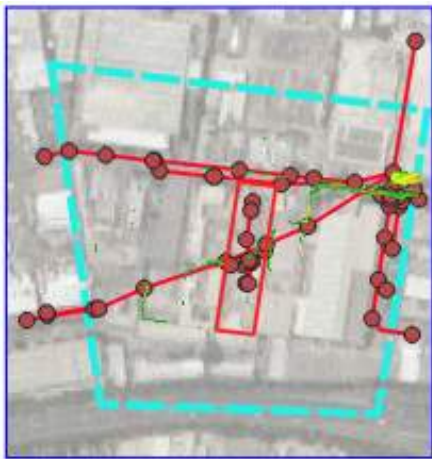


Project Name: 81 Gow St, Padstow

Project No: 7524

TUFLOW Result 1%AEP Post Development Scenario

Maximum Velocity



SITE

7524_Proposed_2m_Q100_120r

0.1000

0.4000

0.8000

8.0000

TUFLOW

1d_bc_7524_P

1d_nwk_7524_proposed_p

1d_nwk_7524_proposed_p

Google Satellite

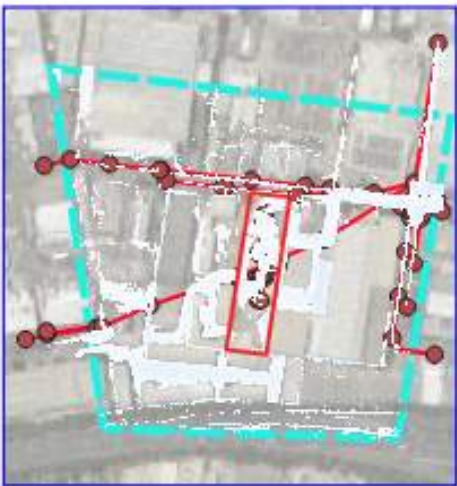


Project Name: 81 Gow St, Padstow

Project No: 7524

TUFLOW Result 1%AEP Post Development Scenario

Maximum Hazard





LEGEND


 SITE


TUFLOW


7524_Proposed_2m_PMF_120m


 0.0500


 0.1000


 0.3000


 0.5000


 0.8000


 1.0000


 1.3000

 1.5000

 5.0000

 1d_bc_7524_P

 1d_nwk_7524_proposed_pi

 1d_nwk_7524_proposed_pi

Google Satellite

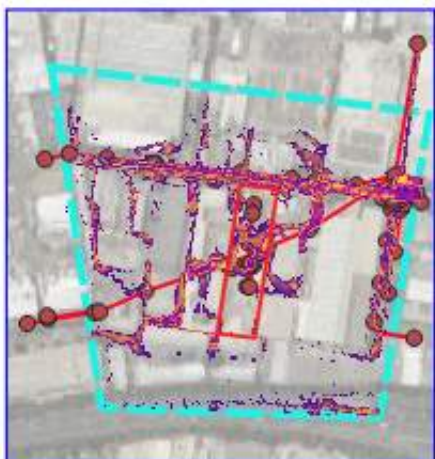


Project Name: 81 Gow St, Padstow

Project No: 7524

TUFLOW Result PMF Post Development Scenario

Maximum Depth



SITE

7524_Proposed_2m_PMF_120r

0.1000

0.4160

0.8000

1.0000

1.2000

1.5000

1.7000

2.0000

2.9442

3.0000

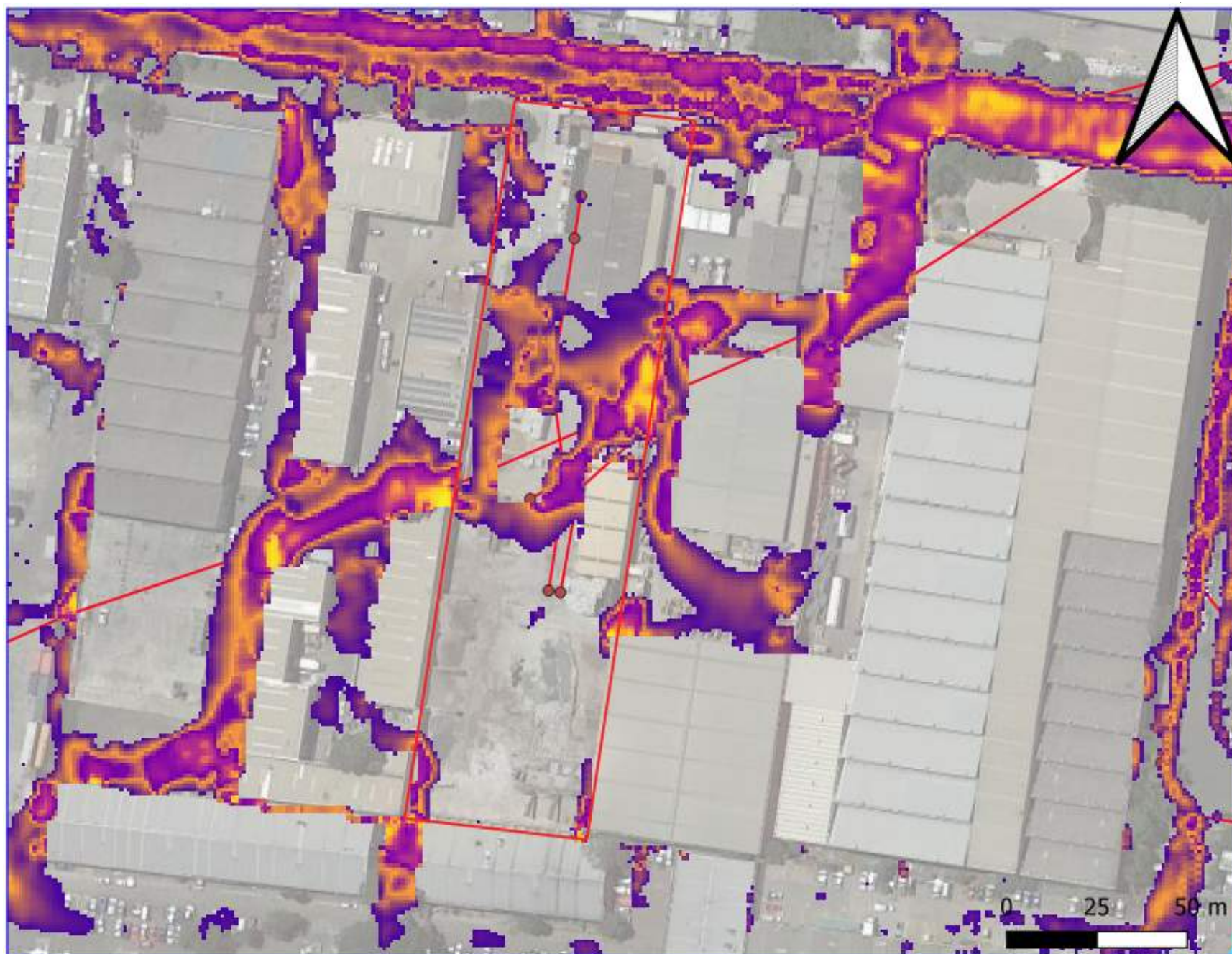
TUFLOW

1d_bc_7524_P

1d_nwk_7524_proposed_1

1d_nwk_7524_proposed_1

Google Satellite

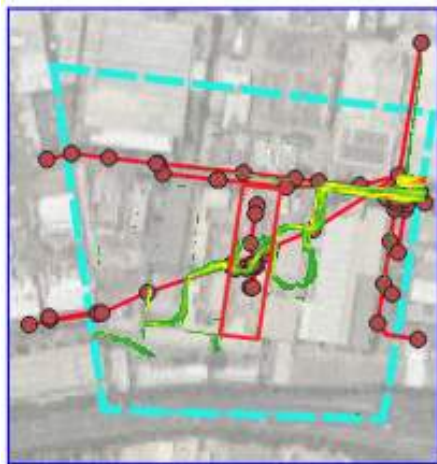


Project Name: 81 Gow St, Padstow

Project No: 7524

TUFLOW Result PMF Post Development Scenario

Maximum Velocity



SITE

7524_Proposed_2m_PMF_120r

0.1000

0.4000

0.8000

8.0000

TUFLOW

1d_bc_7524_P

1d_nwk_7524_proposed_1

1d_nwk_7524_proposed_1

Google Satellite



Project Name: 81 Gow St, Padstow

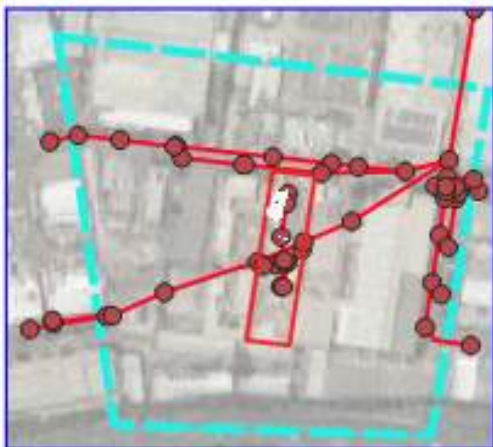
Project No: 7524

TUFLOW Result PMF Post Development Scenario

Maximum Hazard

APPENDIX E

FLOOD MAPS 1%AEP DIFFERENCE PROPOSED DEVELOPMENT AND EXISTING



SITE

Diff5YR

0.0500

0.6000

1.1500

1.7000

2.2500

2.8000

3.3500

3.9000

4.4500

5.0000

TUFLOW

1d_bc_7524_P

1d_nwk_7524_proposed_pit

1d_nwk_7524_proposed_pipe

Google Satellite



Project Name: 81 Gow St, Padstow

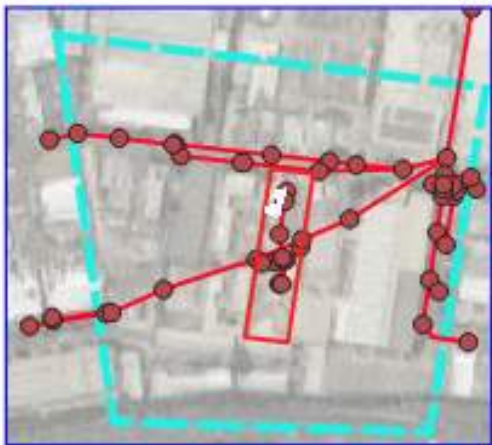
Project No: 7524

TUFLOW Result 1%AEP Difference Post Development & Existing Scenario

Maximum Depth

APPENDIX F

FLOOD MAPS 20%AEP DIFFERENCE PROPOSED DEVELOPMENT AND EXISTING



SITE

Diff5YR

0.0500

0.6000

1.1500

1.7000

2.2500

2.8000

3.3500

3.9000

4.4500

5.0000

TUFLOW

1d_bc_7524_P

1d_nwk_7524_proposed_pit_

1d_nwk_7524_proposed_pipe

Google Satellite



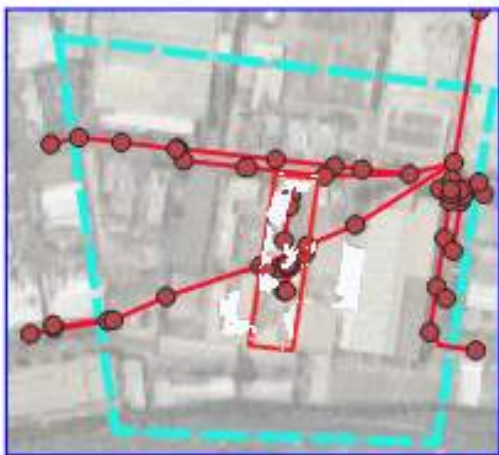
Project Name: 81 Gow St, Padstow

Project No: 7524

TUFLOW Result 20% AEP Difference Post Development & Existing Scenario
Maximum Depth

APPENDIX G

FLOOD MAPS PMF DIFFERENCE PROPOSED DEVELOPMENT AND EXISTING



SITE

Diff5YR

0.0500

0.6000

1.1500

1.7000

2.2500

2.8000

3.3500

3.9000

4.4500

5.0000

TUFLOW

1d_bc_7524_P

1d_nwk_7524_proposed_pit_

1d_nwk_7524_proposed_pipe

Google Satellite



Project Name: 81 Gow St, Padstow

Project No: 7524

TUFLOW Result PMF Difference Post Development & Existing Scenario

Maximum Depth