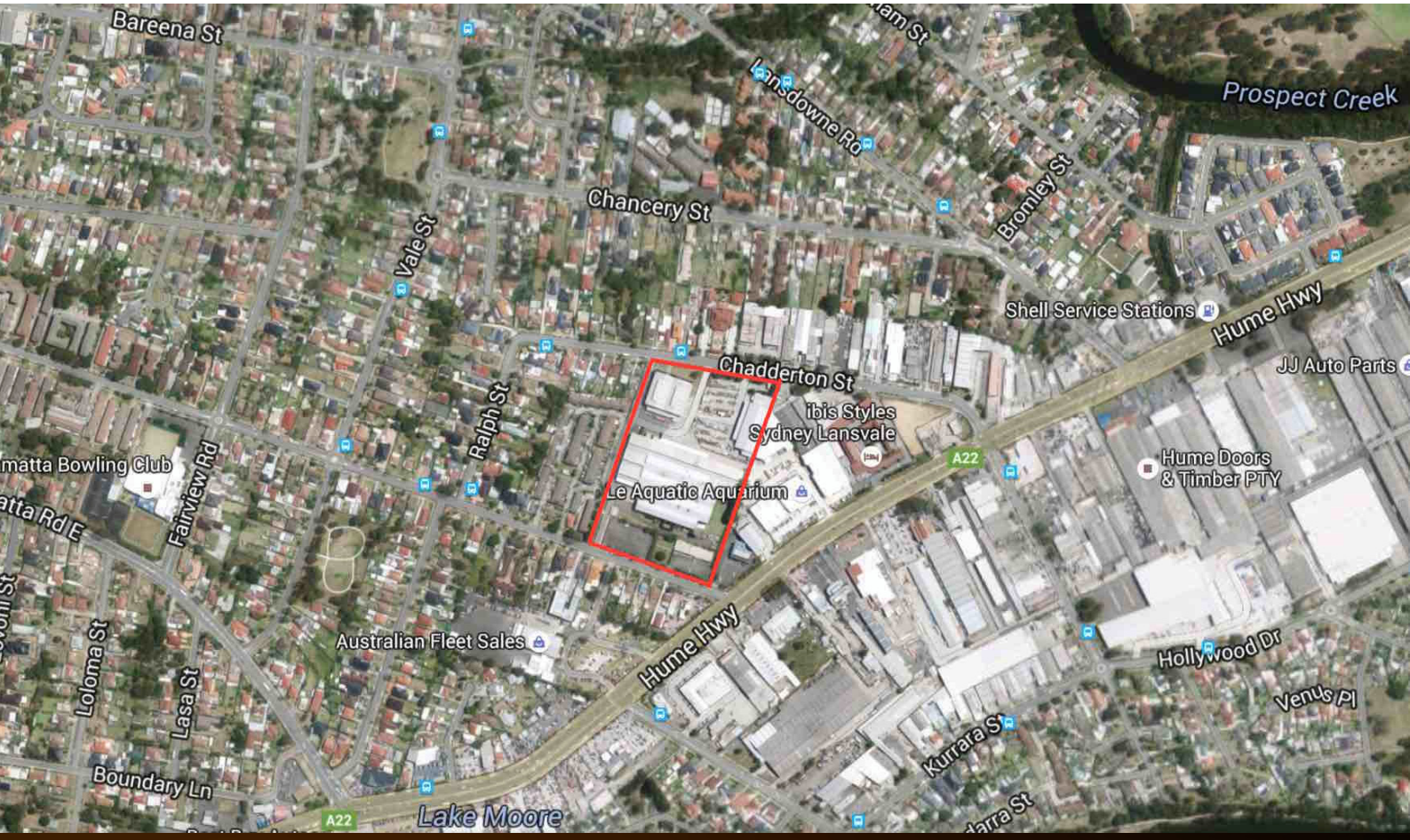
IGS INTEGRATED GROUP SERVICES



17-21 Longfield Street, Cabramatta

Flood Study

Job Number: EN - N15_136
November 2015
Rev 0.2

VALUE | INNOVATION | TRUST

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Document Control

Version	Date	Author		Reviewer	
0.1	06 November 2015	Sam Haddad	SH	Mays Chalak	MC
0.2	16 November 2015	Sam Haddad	SH	Mays Chalak	MC

CONTENTS

1 INTRODUCTION

IGS was commissioned to undertake an overland flood study for 17-21 Longfield Street, Cabramatta. This report outlines the approach taken for the development of the XP-Storm/XP-2D model for the local upstream catchment. The general location of the site is shown in Figure 1-1.

Figure 1-1 – Locality Plan (Aerial Image Source: Google Maps)

The site is currently occupied by an existing industrial warehouse and associated office space of brick construction. At this stage, there are no plans available for the proposed redevelopment of the site. The site is bounded by Chadderton Street to the North, Longfield Street to the South and adjoining industrial/commercial sites in the other directions.

The site falls within the local government area of Fairfield Council. Council engineer has advised that at present, Council has not undertaken an overland flood study for the area.

2 AVAILABLE DATA

2.1 Prospect Creek Floodplain Management Plan Review

In 2010, Council commissioned Bewsher Consulting to prepare a flood study for the Prospect Creek. The study identifies the site as located within the PMF flooding extent (Low Risk Precinct).

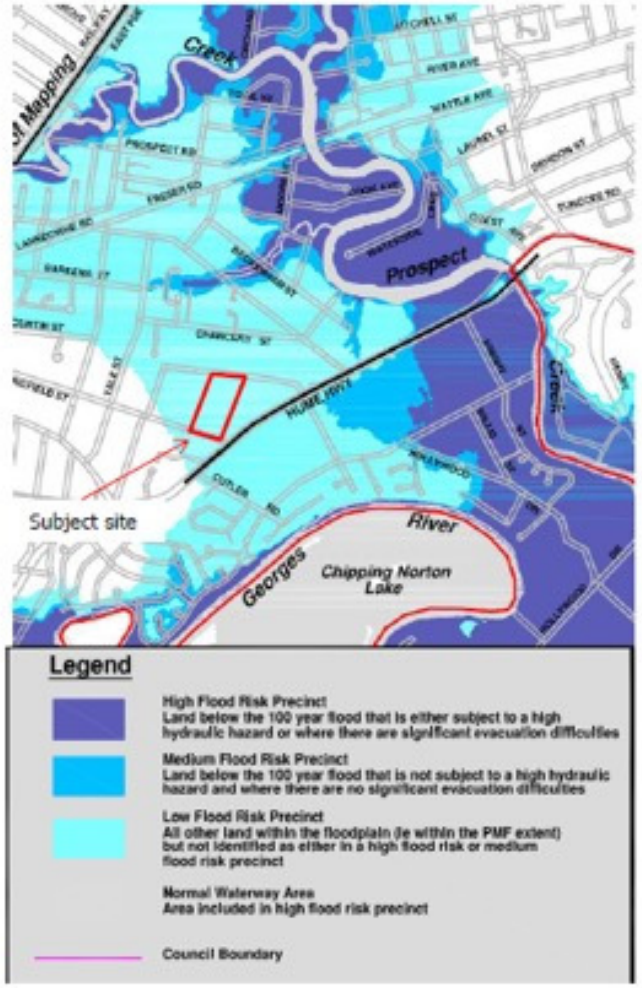


Figure 2-1 – Flood Extent Map *(Source: Prospect Creek Floodplain Management Plan Review)*

2.2 Ground Survey

Currently, there is no detailed ground survey available. An old survey of the site dating back to 2001 has been made available and is included in Appendix A for reference.

2.3 Proposed Development

The proposal seeks to rezone the 3.97 hectare industrial/business zoned site at 17 – 21 Longfield Street, Cabramatta for an innovative and multi-generational living precinct. Known as 'The Circle', this precinct will accommodate medium density residential, aged-care services, independent living units for seniors, child care, community facility, with associated small scale retail/commercial uses and employment generating services.

2.4 Aerial Photography

All aerial photography within this report is used under licence from Nearmap.

3 FLOOD MODELLING

A 2D hydraulic model was developed for the flood study to assess the overland flooding extent using XP-2D which uses TUFLOW as its 2D engine.

3.1 Study Extent

The extent of the study is as per Fig A under Appendix B, which also shows the topography of the catchment area.

3.2 Landuse

The 2D Landuse has been mapped using aerial photography. The following table shows the Manning's land roughness coefficients used and the losses for each use.

Table 3.1 Model Land Use Roughness & Losses

Land Use	Roughness	Initial Loss (mm)	Continuing Loss (mm/hr)
Road	0.018	0	0
Parks	0.10	10	2.5
Residential	0.08	5	1.5
Commercial	0.04	5	1.5
Buildings	0.3	0	0

Refer to Fig B in Appendix B for the 2D landuse map.

3.3 Pre-Development

The model does not take into consideration the 1D network (i.e. pit and pipe) and assumes conservatively that the in-ground drainage is fully blocked.

The model proposed for the existing site assumes the buildings block the flows completely and as such are modelled as inactive cells in the 2D grid.

3.4 Post-Development

No post development modelling has been undertaken at this stage.

4 PRELIMINARY RESULTS

The critical storm duration for the catchment was determined to be 120 minutes for the 1% AEP event. The peak discharge flows have been determined in Longfield Street, Chadderton Street and through the site. The flood levels have also been reported in the bounding streets and through the site at multiple locations as shown below.

The preliminary results indicate that the majority of the flows are conveyed by the road network mainly Longfield Street and Chadderton Street.

The flows overtop the street kerb on the western side of Longfield Street. Some flow exits the site again downstream of the car parking area only to overtop the kerb again from the driveway of the adjoining site to the east. Other flow continues east through the site before running north and then exiting the site to the east into adjoining sites to the east.

A minor flow continues along the western boundary of the site before it joins flows from the western adjoining site and discharge into Chadderton Street. Reference is made to Fig 4.11 for flow directions.

The other flooding within the site are related to low-lying areas within the site that would normally drain through the infrastructure servicing the site, which has been omitted for the purpose of this study.

Figure 4-1 – Reporting Location

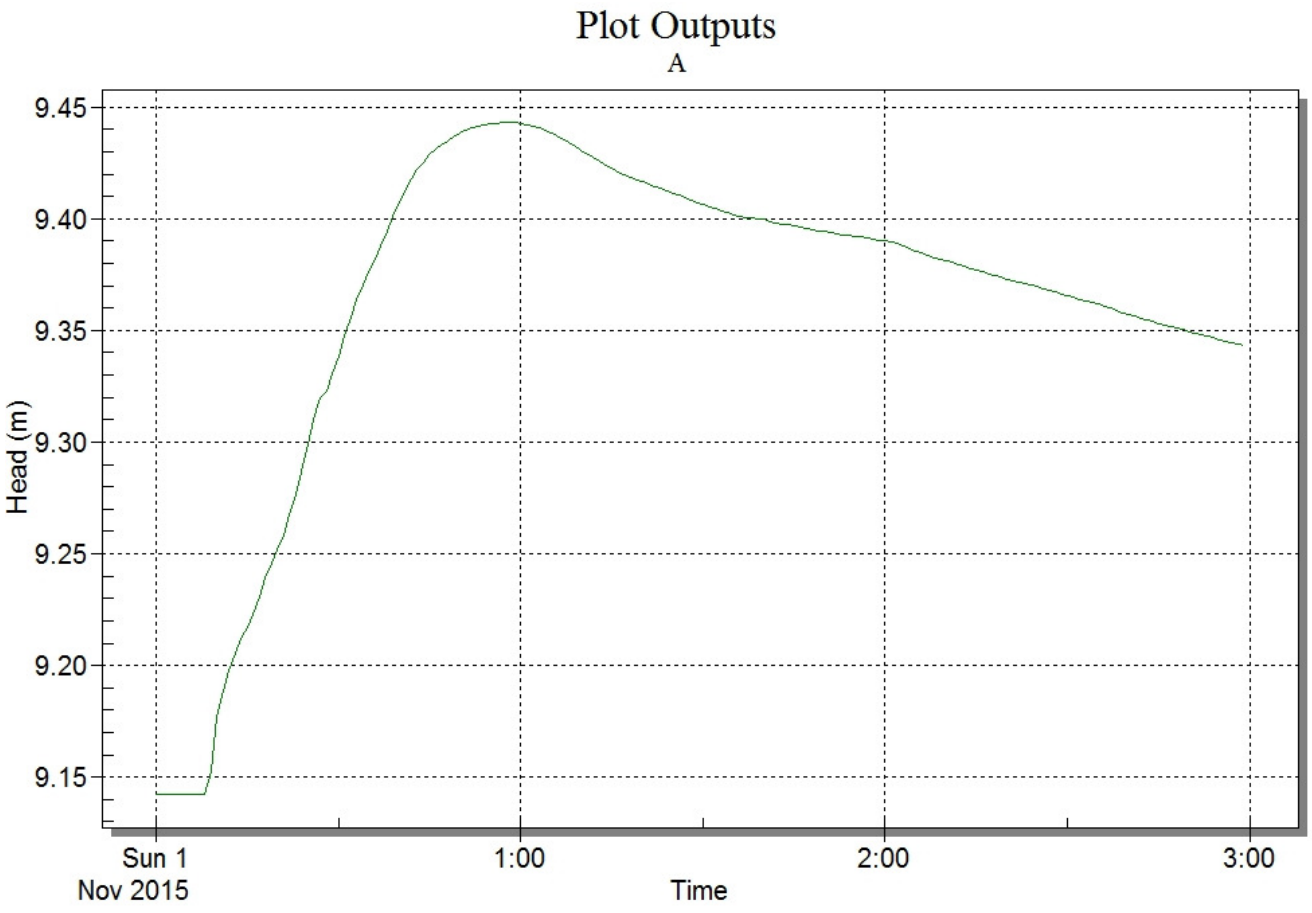


Figure 4-2 – Plot Outputs A

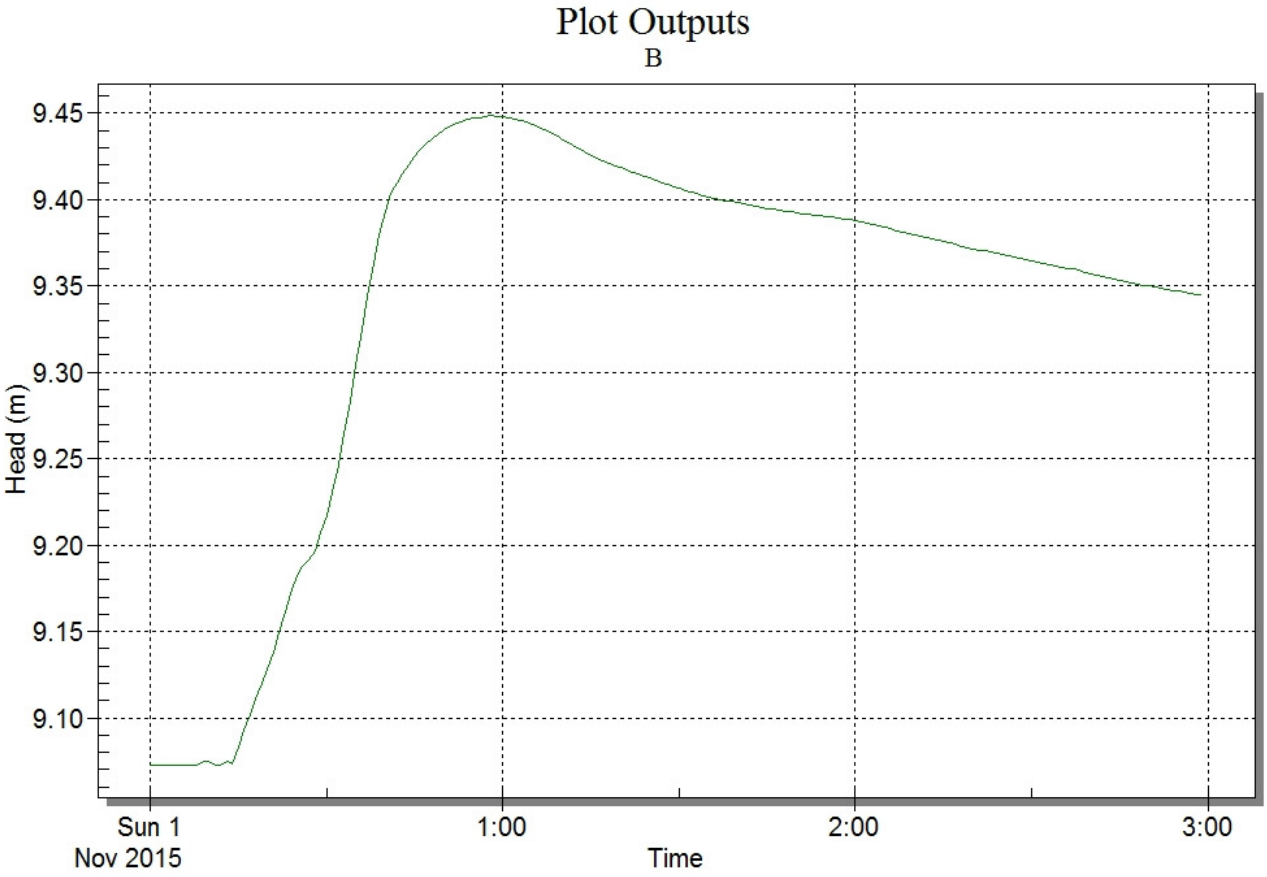


Figure 4-3 – Plot Outputs B

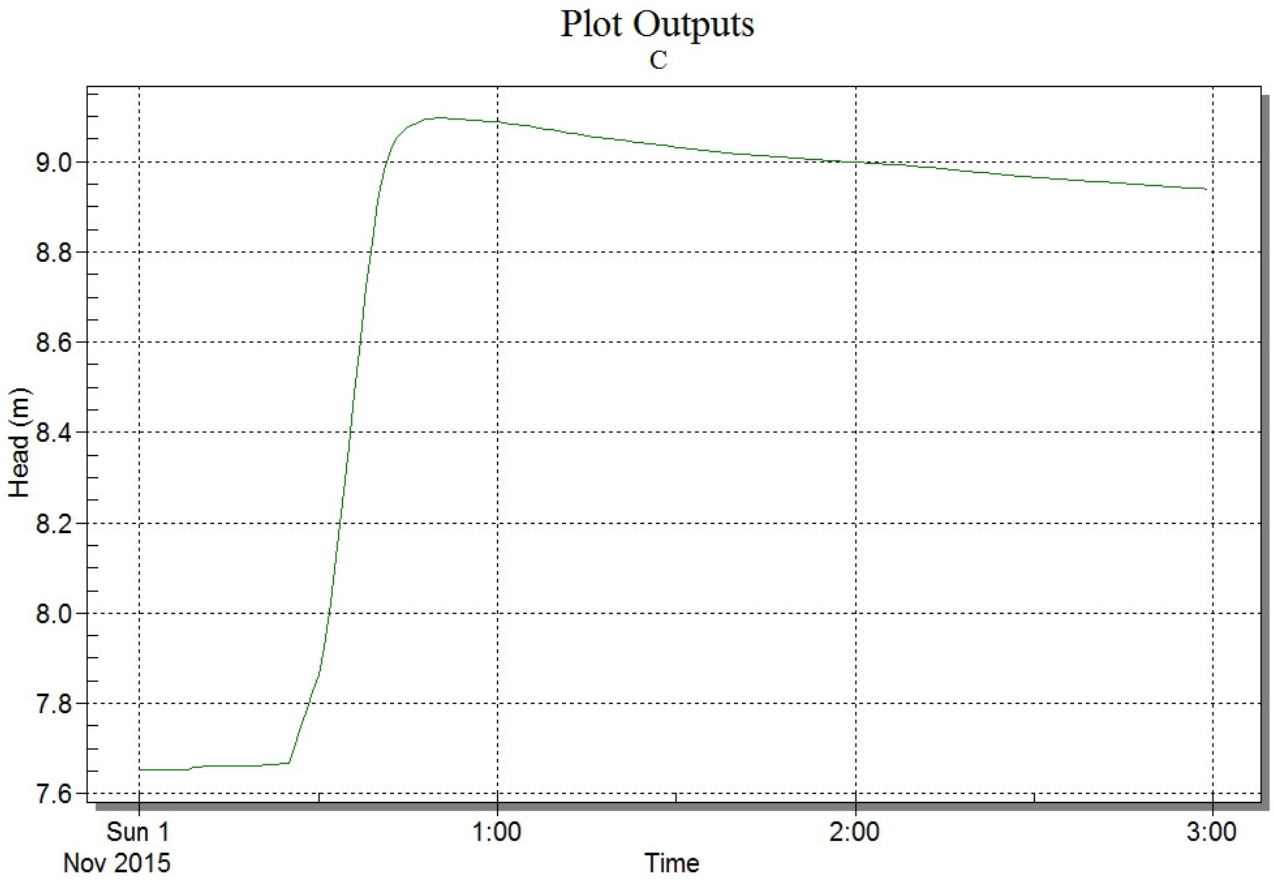


Figure 4-4 – Plot Outputs C

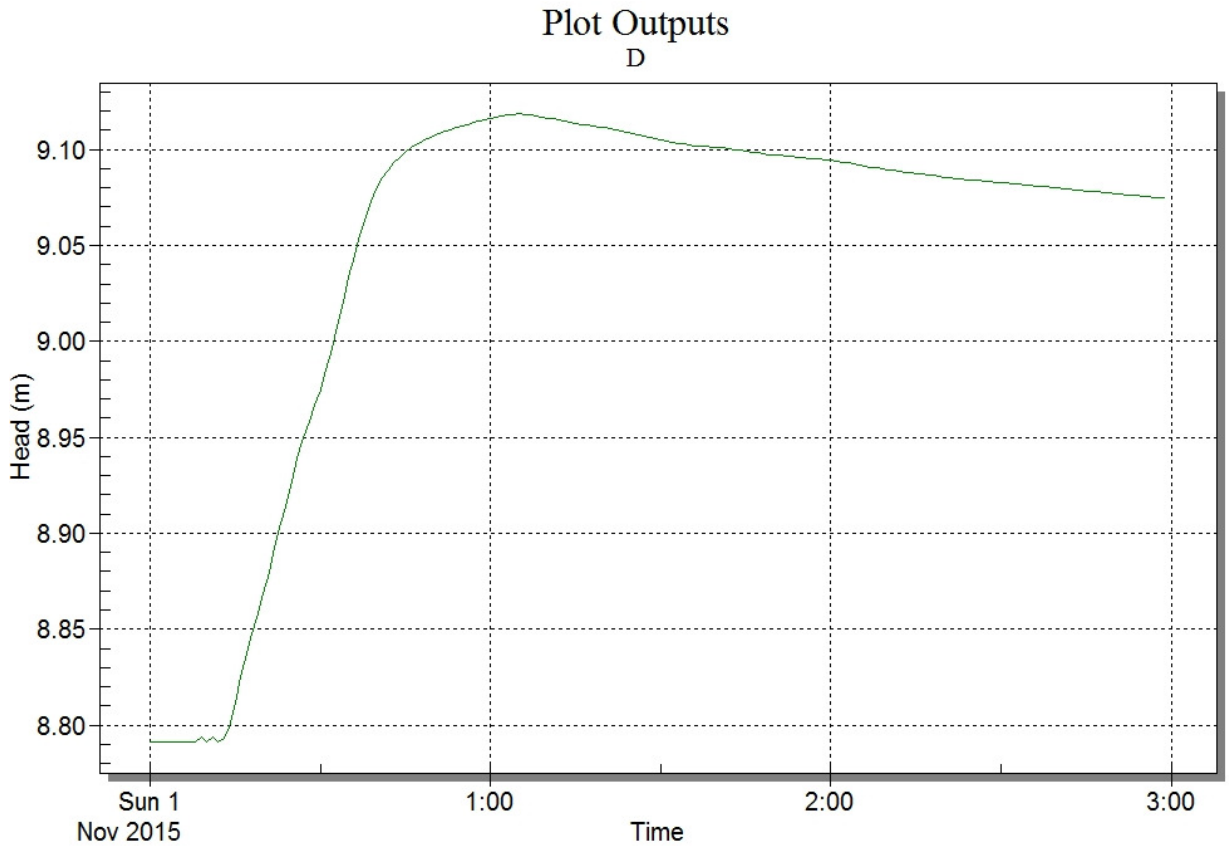


Figure 4-5 – Plot Outputs D

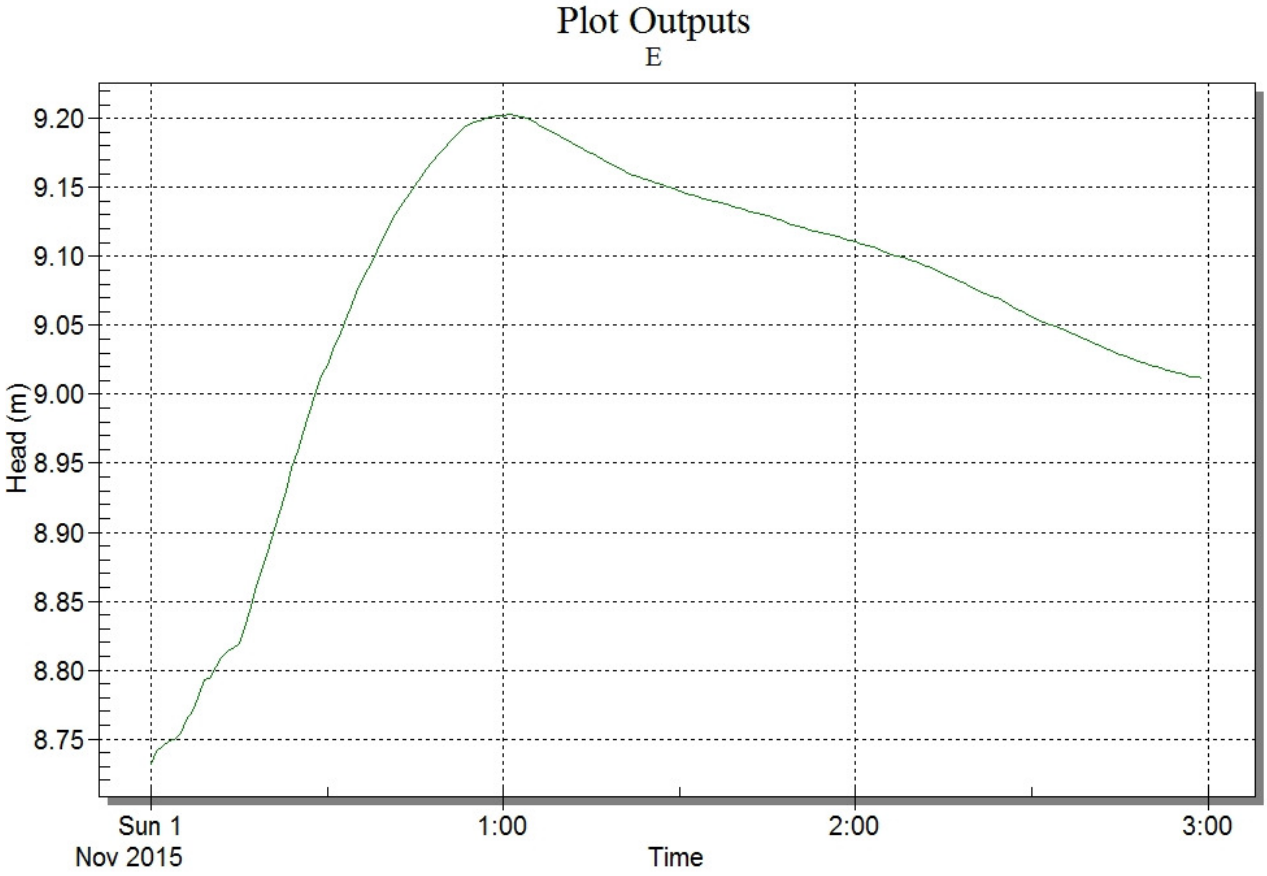


Figure 4-6 – Plot Outputs E

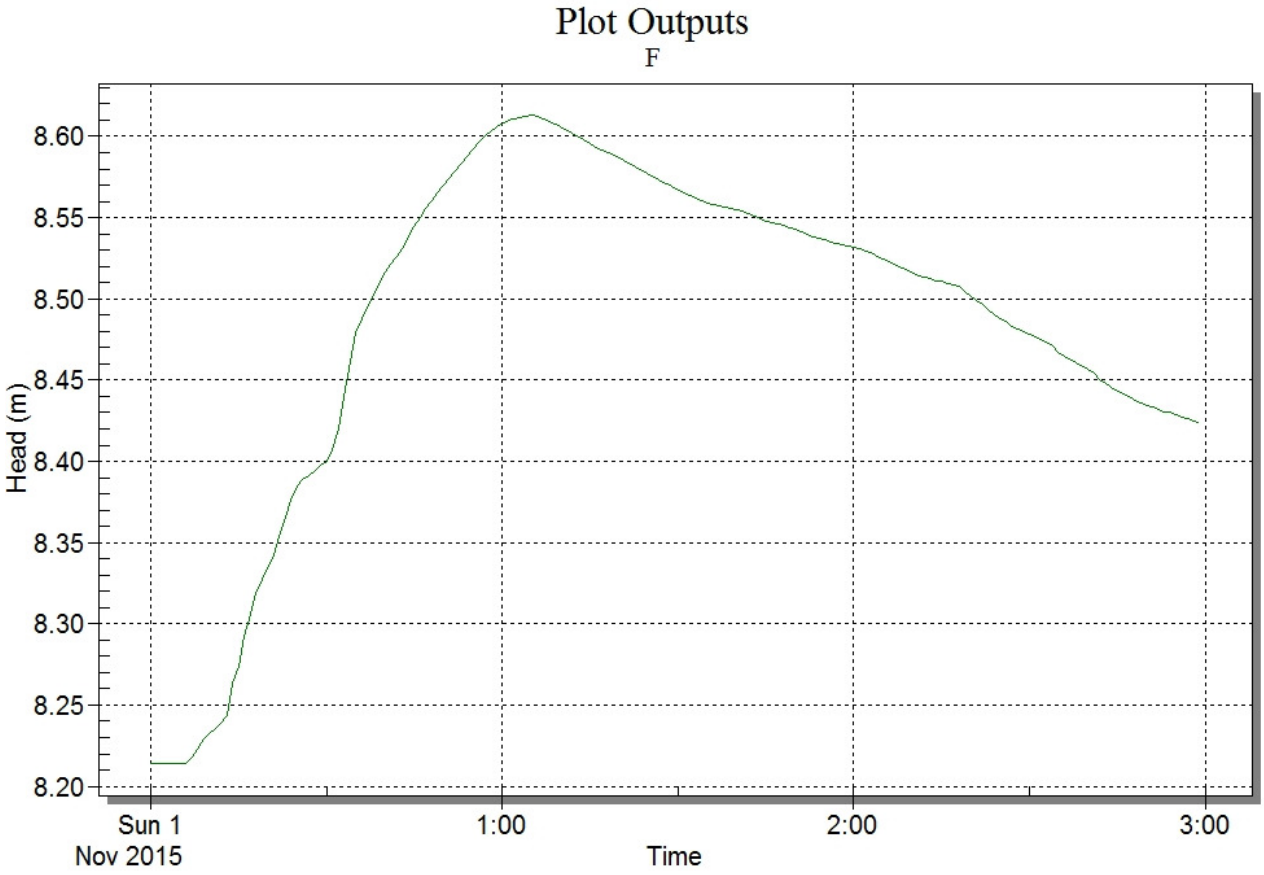


Figure 4-7 – Plot Outputs F

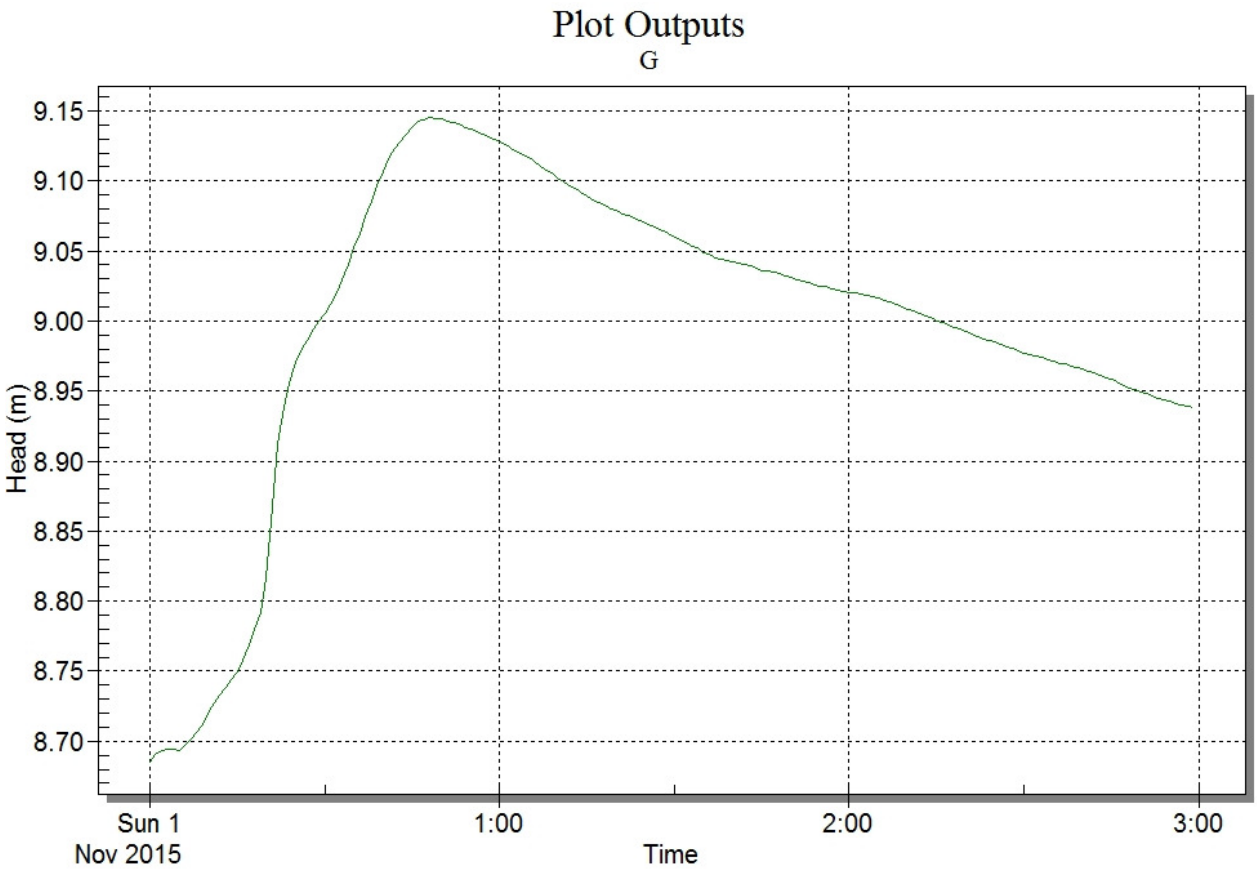


Figure 4-8 – Plot Outputs G

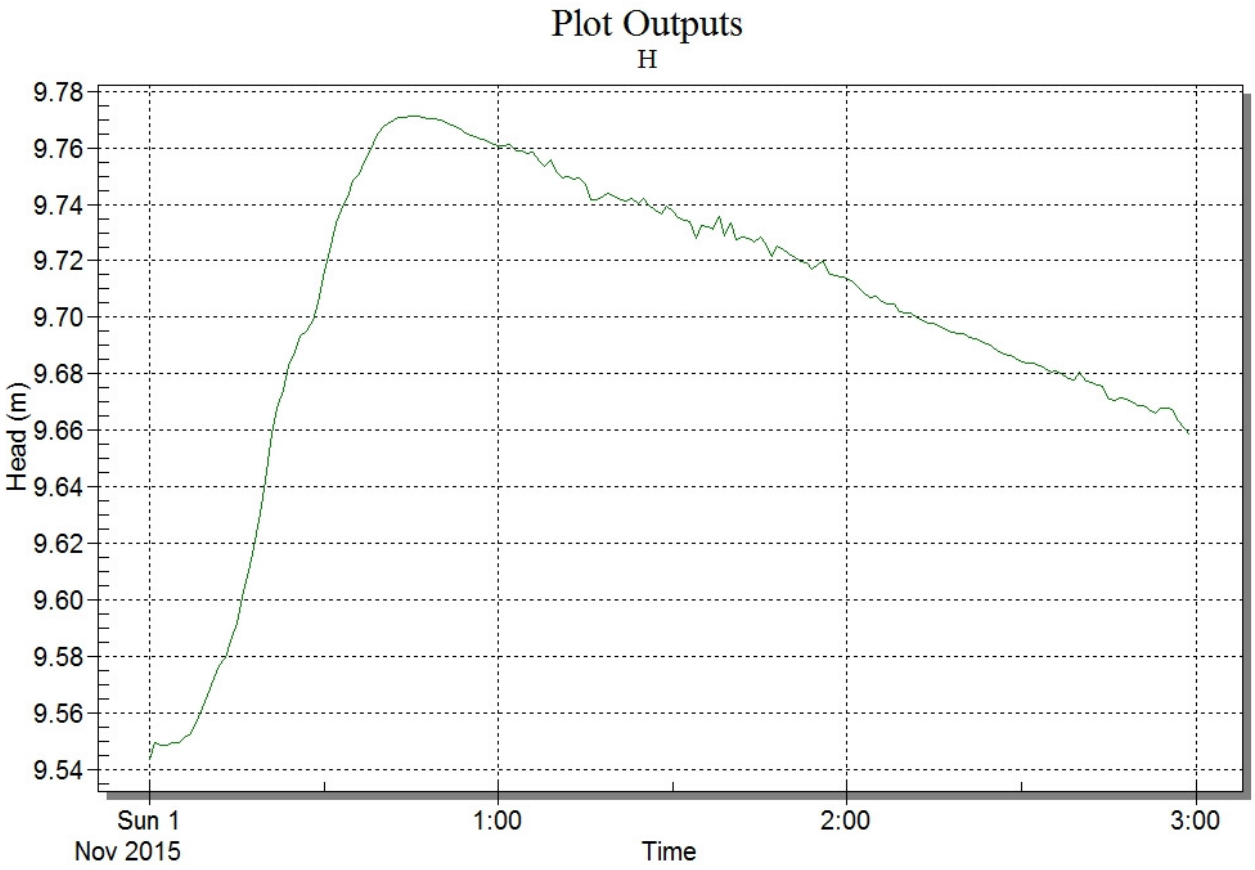


Figure 4-9 – Plot Outputs H

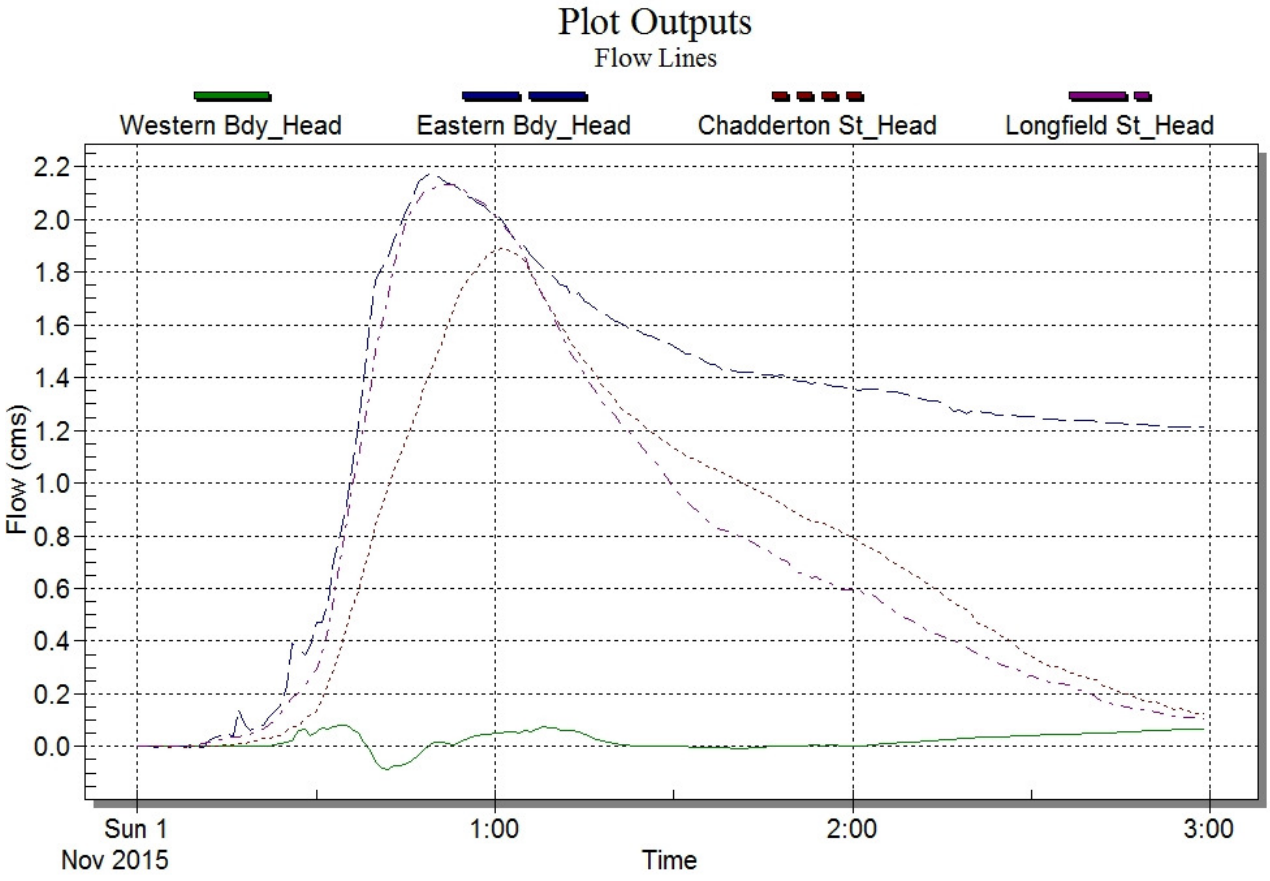


Figure 4-10 – Plot Outputs Flow Lines

Figure 4.11 – Flood Velocities

4.1 Habitable Floor Levels

Overland flooding in the 1% AEP event occurs at the boundaries of the site. The flood extent in the 1% AEP event for the pre-development (existing) scenario is shown in Fig C in Appendix B. Minor flows of depth less than 50mm have been omitted from the results.

Habitable floor levels shall be at or above the 1% AEP flood level plus 0.5m freeboard in accordance with Council's Specification for the Management of Stormwater.

4.2 Structural Soundness and Utilities

Any portion of the building that is lower than the nominated flood planning level (FPL) shall be constructed from flood compatible materials. Materials suitable for construction of flood affected walls may comprise of reinforced concrete, solid brickwork or blockwork construction.

All services associated with the development are to be flood proofed to the nominated FPL.

A suitably qualified engineer is to certify that the structure can withstand the forces of floodwater, debris and buoyancy in the PMF event.

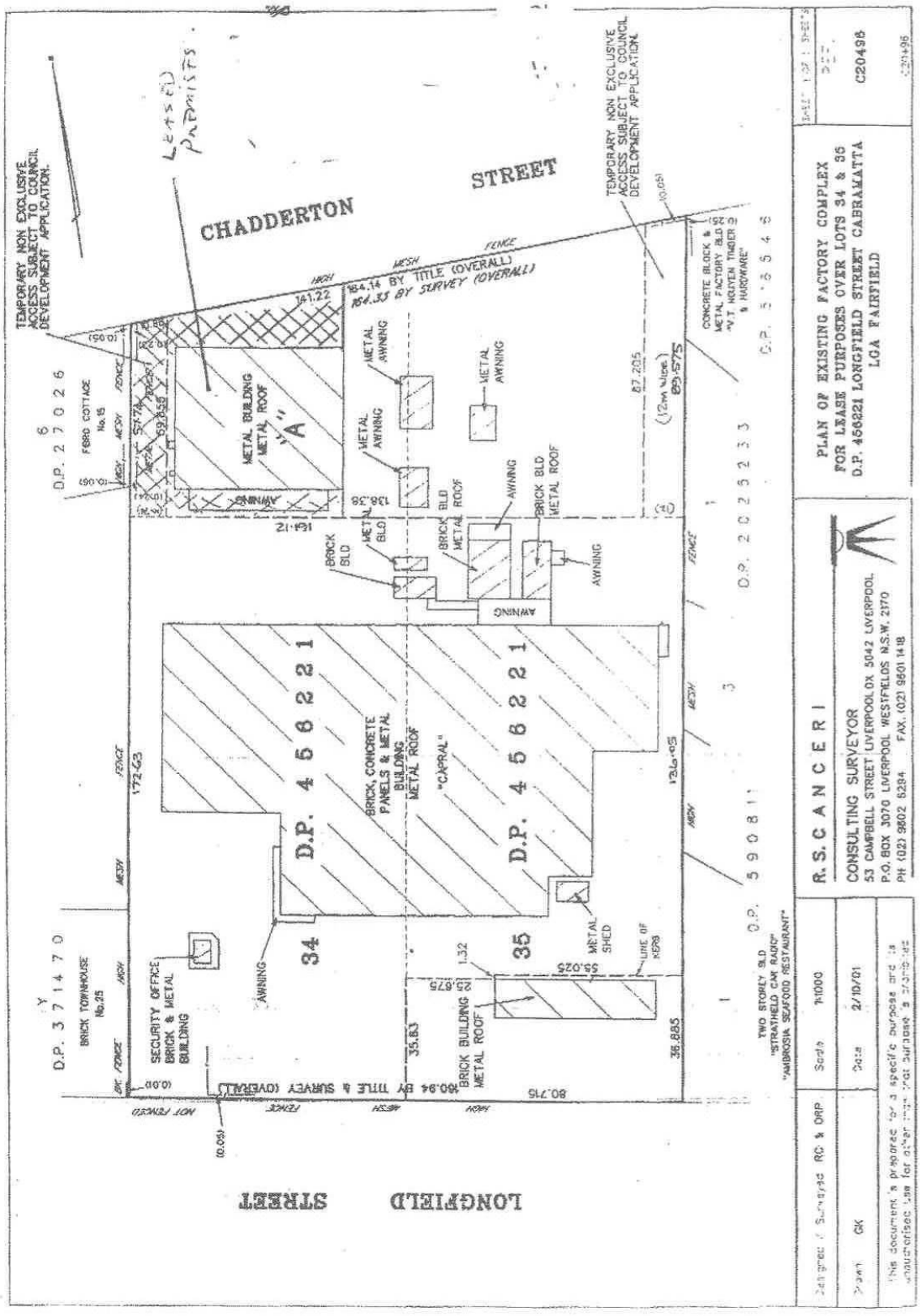
5 CONCLUSIONS

An overland flood study has been undertaken for the site at 17-21 Longfield Street Cabramatta using a 2D model. The results of the modelling indicate that the site does not convey an active overland flow. The overland flows are conveyed mainly in the bounding streets.

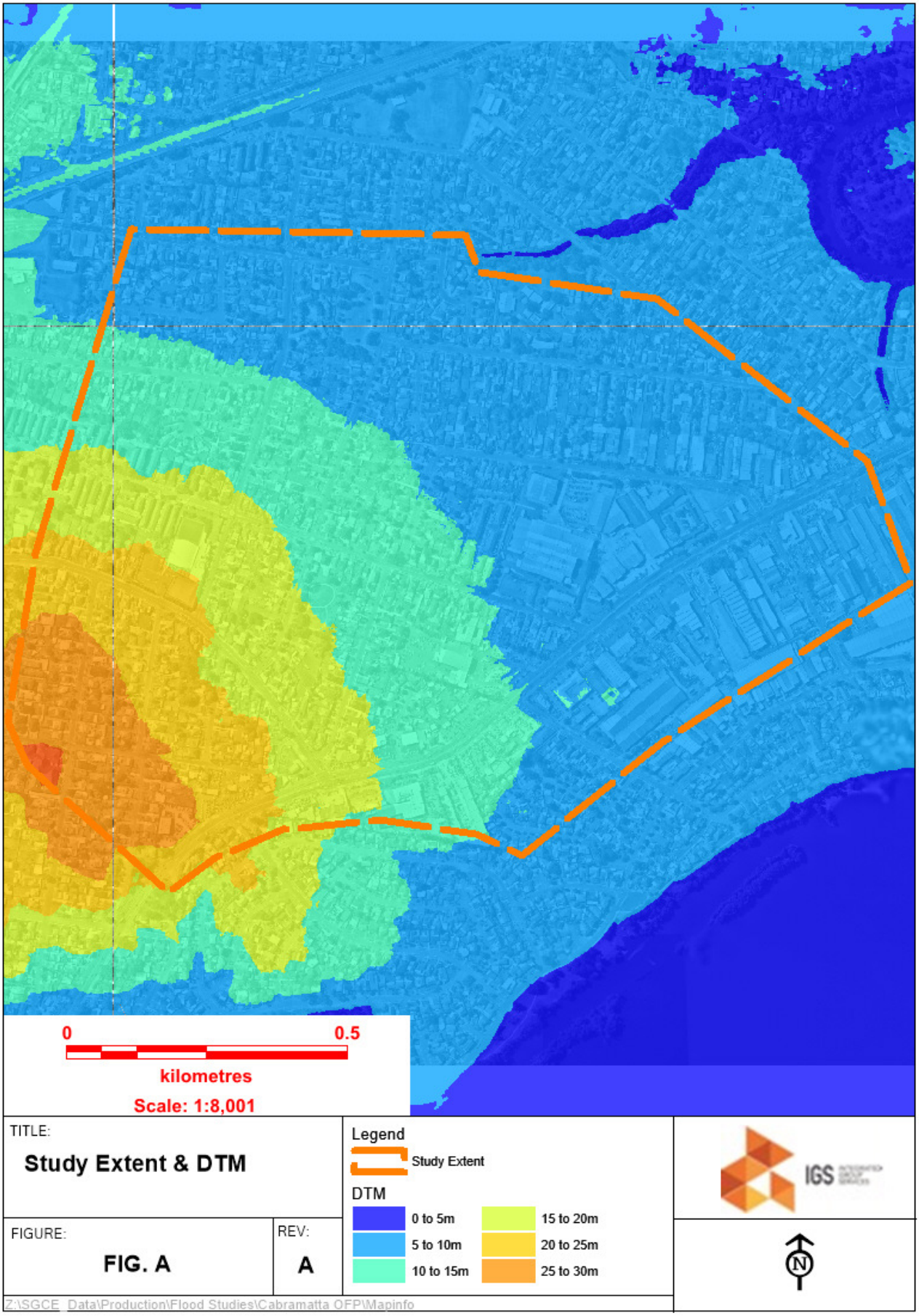
In our opinion, based on the preliminary results of the pre-development modelling, the development of the site is feasible without major impacts on flooding behaviour elsewhere in the floodplain. This will need to be confirmed through a detailed modelling and assessment of the post-development conditions.

Appendix A

Site Survey


CHADDERTON STREET
LEASED PREMISES
TEMPORARY NON EXCLUSIVE ACCESS SUBJECT TO COUNCIL DEVELOPMENT APPLICATION
TEMPORARY NON EXCLUSIVE ACCESS SUBJECT TO COUNCIL DEVELOPMENT APPLICATION
184.14 BY TITLE (OVERALL)
184.33 BY SURVEY (OVERALL)
141.22
D.P. 270026
FORD COTTAGE No.15
METAL BUILDING METAL ROOF "A"
METAL AWNING
BRICK BLD METAL ROOF
AWNING
87.205
(12m Wide) ES575
CONCRETE BLOCK & METAL FACTORY BLD 9 "V.T. NGUYEN TIMBER & HARDWARE"
C.P. 5 3 5 5 4 8
D.P. 202533
D.P. 456821
BRICK, CONCRETE PANELS & METAL BUILDING METAL ROOF "CAPRAL"
34
35
172.63
136.05
D.P. 590811
D.P. 371470
BRICK TOWNHOUSE No.25
SECURITY OFFICE BRICK & METAL BUILDING
AWNING
METAL SHED
LINE OF KERB
55.025
1.32
15.675
35.83
BRICK BUILDING METAL ROOF
38.885
80.715
80.94 BY TITLE & SURVEY (OVERALL)
TWO STOREY BLD "STRATHFIELD CAR RADIO" "AMBROSIA SEAFOOD RESTAURANT"
LONGFIELD STREET
PLAN OF EXISTING FACTORY COMPLEX
FOR LEASE PURPOSES OVER LOTS 34 & 35
D.P. 456821 LONGFIELD STREET CABRAMATTA
LGA FAIRFIELD
C20498
R. S. CANCERI
CONSULTING SURVEYOR
53 CAMPBELL STREET LIVERPOOL NSW 2170
P.O. BOX 3070 LIVERPOOL WESTFIELDS N.S.W. 2170
PH (02) 9602 6284 FAX (02) 9601 1418
Scale 1:1000
Date 2/10/01
Drawn GK

Appendix B
Mapping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Study Extent & DTM
FIGURE:
FIG. A
REV:
A
Legend
Study Extent
DTM
0 to 5m
5 to 10m
10 to 15m
15 to 20m
20 to 25m
25 to 30m
N
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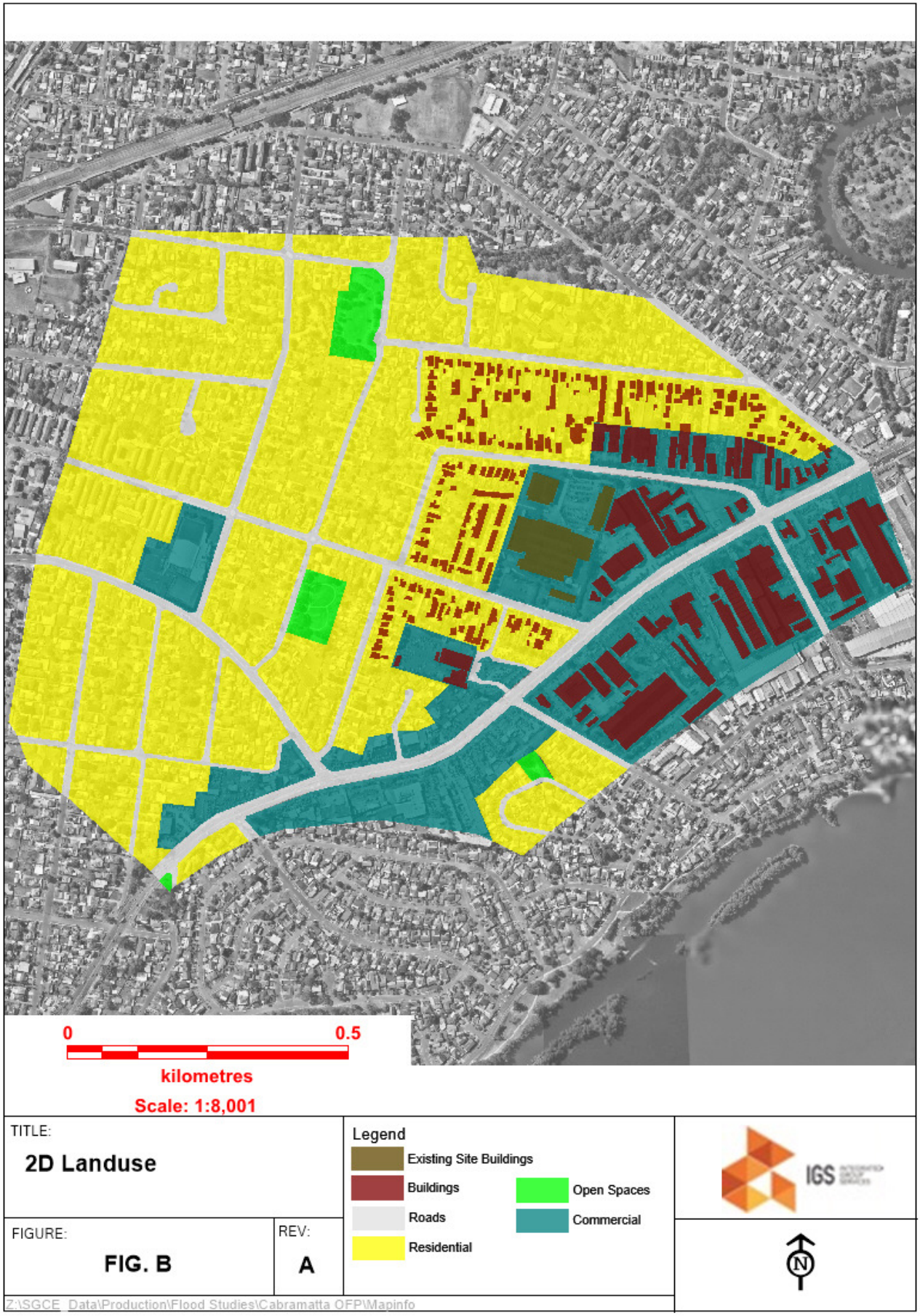
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kilometres
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2D Landuse
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FIG. B
REV:
A
Legend
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Buildings
Roads
Residential
Open Spaces
Commercial
N
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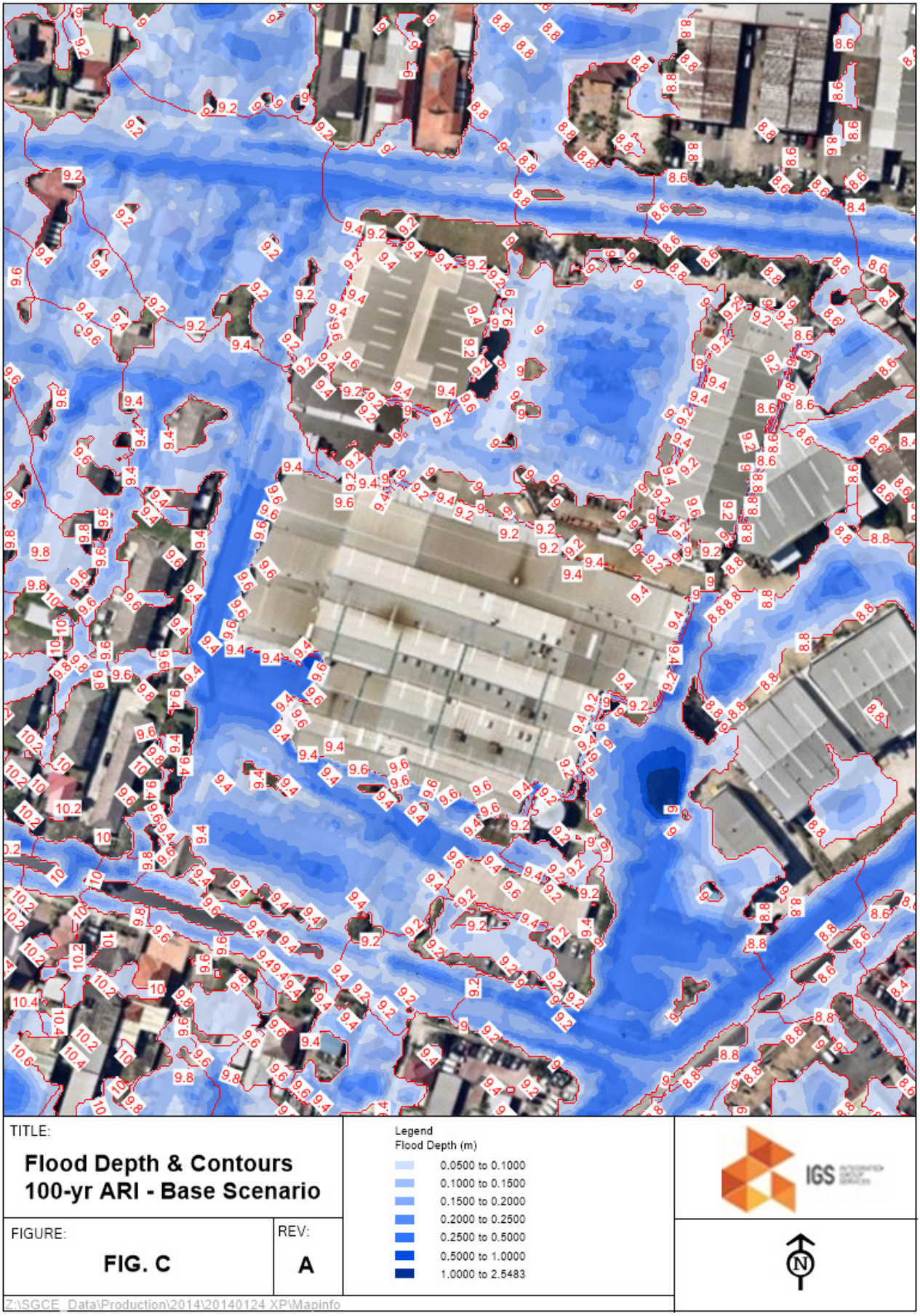
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Flood Depth & Contours
100-yr ARI - Base Scenario
FIGURE:
FIG. C
REV:
A
Legend
Flood Depth (m)
0.0500 to 0.1000
0.1000 to 0.1500
0.1500 to 0.2000
0.2000 to 0.2500
0.2500 to 0.5000
0.5000 to 1.0000
1.0000 to 2.5483
Z:\SGCE Data\Production\2014\20140124 XP\Mapinfo


TITLE:
Provisional Flood Hazard
100-yr ARI - Base Scenario
FIGURE:
FIG. D
REV:
A
Legend
Velocity x Depth (m2/s)
0.0000 to 0.4000
0.4000 to 3.9980
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