MELROSE PARK HIGH SCHOOL

FLOOD IMPACT ASSESSMENT REPORT

Prepared for: SINSW
By: **en**struct group pty ltd
December 2024

MELROSE PARK HIGH SCHOOL

FLOOD IMPACT ASSESSMENT REPORT

ISSUE AUTHORISATION

PROJECT: Melrose Park High School

Project No: 140232

Rev	Date	Purpose of Issue / Nature of Revision	Prepared by	Reviewed by	Issue Authorised by
1	11/12/2024	Issue for information	ASE	TAH	PAL
2	22/01/25	Issue for REF	ASE	JAF	PAL

Executive Summary

enstruct have been engaged by Schools Infrastructure NSW (SINSW) to provide civil engineering consultancy services and design development of Melrose Park High School (hereafter MPHS).

The aim of the Flood Impact Assessment report is to assess the impact of a 1% Annual Exceedance Probability (AEP) storm and larger events up to and including the Probable Maximum Flood (PMF).

This report will raise awareness of the risk of flooding and must be read in conjunction with the Civil Engineering report as well as the Flood Emergency Management Plan (FEMP), which includes evacuation routes analysis, designated safe assembly areas and evacuation management plans.

This report supports the submitted development application documentation.

REF Checklist

Flooding	Y	N	N/A	Comments
Flood Hazard Does the REF include either: • information that demonstrates that the site and key access routes are free of flood risk; or • a Flood Risk and Impact Assessment (FIRA)?	☒	☐	☐	The REF includes a Flood Impact Assessment Report.
If a FIRA has been prepared, does it: • state that it has been prepared in accordance with the updated Floodplain Management Manual and Toolkit, including Planning Circular PD24-001?	☒	☐	☐	Refer to Section 2.
• detail consultation undertaken with the local council and any relevant agencies (i.e. State Emergency Service) to identify existing, draft and proposed flood studies relevant to the site?	☒	☐	☐	City of Parramatta Council's Development Control Plan and existing Parramatta River Flood Study has been consulted for this site's flood analysis. Additionally, the report is to be submitted to NSW SES for any comments.
• describe the flood potential of the site and key access routes having regard to available flood studies and information, the conditions of the site, and the types of flood: ○ mainstream flooding?	☒	☐	☐	Refer to Section 5 for analysis on flood potential of the site.
○ overland flows?	☒	☐	☐	Refer to Section 5 for analysis on flood potential of the site.
○ flash flooding?	☒	☐	☐	Refer to Section 5 for analysis on flood potential of the site.
• describe the key flood mechanisms?	☒	☐	☐	Refer to Section 5 for analysis on flood potential of the site.
• include flood modelling showing flood extent, levels, depths, velocities and hazard classifications for all relevant events, including:	☒	☐	☐	Refer to Section 5 for Flood modelling results.
○ 1% AEP / 1 in 100yr?	☒	☐	☐	Refer to Section 5.2.
○ 5% AEP / 1 in 20yr?	☐	☐	☒	Refer to Section 5.1.
○ 10% AEP / 1 in 10yr?	☐	☐	☒	Refer to Section 5.1.
○ 0.2% AEP / 1 in 500yr?	☐	☐	☒	Refer to Section 5.1.
○ 0.02% AEP / 1 in 5000yr?	☐	☐	☒	Refer to Section 5.1.
○ PMF?	☒	☐	☐	Refer to Section 5.5.
• consider the timeframe for flood waters to inundate the site and timeframe for water to hit peak levels?	☒	☐	☐	Inundation timeframes are considered in the flood models in Section 5.
• consider the impacts of climate change on future flood frequency and levels?	☒	☐	☐	Refer to Section 5.4 for information on the impacts of climate change on flood modelling.
Risk / impact of flood on the activity If a FIRA has been prepared, does it: • determine whether the proposal is in a high-risk catchment?	☒	☐	☐	Through an analysis of available LGA catchments and masterplan catchments, alongside the Parramatta River Flood Study (2024), the site is not in a high-risk catchment.
• the location of the proposal in relation to flood behaviour and constraints including floodway, flood storage area or flood fringe area?	☒	☐	☐	The location of the site has been selected with consideration of the catchment-wide flood study undertaken as part of the Parramatta River Flood Study (2024). Additionally, masterplan catchments have been analysed.
• the hazard vulnerability classification of the land?	☒	☐	☐	Refer to Section 5 for hazard classification of all modelled flood events.
• frequency of inundation?	☒	☐	☐	Refer to Section 5 for frequency of inundation of all modelled flood events.
• whether the proposal provides for safe occupation and efficient and effective evacuation in flood events and how it is to be achieved?	☐	☐	☒	Refer to Flood Emergency Management Plan for safe occupation and effective evacuation strategies.
• in high-risk catchments, whether the proposal is likely to result in a significant increase to the risk to life in other parts of the catchment in a PMF flood event?	☐	☐	☒	The site does not fall within a high-risk catchment as per the Parramatta River Flood Study (2024).
• any known evacuation constraints such as the flood emergency response classification for the area and available warning times (including rate of rise and when the evacuation route is cut off by floodwater)?	☐	☐	☒	Refer to Flood Emergency Management Plan.
• whether the proposal is for a sensitive or hazardous land use, or other higher risk uses and what mitigation strategies (if any) are proposed to reduce any identified risks?	☒	☐	☐	The proposal is for a sensitivie land use as outlined in Section 2. Refer to Section 7 for mitigation strategies.
Impact of the activity on flood outside of the site If a FIRA has been prepared, does it address the matters to consider set out in PS-24-001, including has it determined: • potential impacts of cut and fill and other building works on flood behaviour?	☒	☐	☐	Refer to Section 5.
• whether there may be adverse flooding impacts on surrounding properties?	☒	☐	☐	Refer to Section 5.
• ability of proposed development to withstand flood impacts?	☒	☐	☐	Refer to Section 5.

Flooding	Y	N	N/A	Comments
Building and structure design If a FIRA has been prepared, does it: • nominate a flood planning level (minimum floor level plus freeboard) for proposed buildings?	☒	☐	☐	Refer to Section 4 for Flood Planning Requirements where a flood planning level is nominated for proposed buildings.
• recommend any other mitigations such as flood resistant materials or structural requirements?	☐	☐	☒	The site is not flood affected, thus not requiring of flood resistant materials.
Conclusion Does the FIRA: • conclude that the proposal would not be likely to result in significant environmental effects?	☒	☐	☐	Refer to Sections 1.3 and 8.
• list any mitigation measures identified in the assessment?	☒	☐	☐	Refer to Section 7.
Does the REF list any mitigation measures identified in the assessment and incorporate them into the design where applicable (i.e. flood resistant structures and materials)?	☒	☐	☐	Refer to Section 7.

I. Contents

II. Abbreviations

The following abbreviations are used in this document:

AHD	Australian Height Datum
AEP	Annual Exceedance Probability
ARI	Average Recurrence Interval
COPC	City Of Parramatta Council
CDP	Development Control Plan
DoE	Department of Education
FERP	Flood Emergency Response Plan
FEMP	Flood Emergency Management Plan
FIAR	Flood Impact Assessment Report
FFL	Finished Floor Level
LGA	Local Government Area
OSD	On Site Detention
PMF	Probable Maximum Flood
SINSW	School Infrastructure NSW

1 Introduction

This Flood Impact Assessment Report (FIAR) has been prepared by Enstruct on behalf of the Department of Education (DoE) to assess the potential environmental impacts that could arise from the construction and use of the new Melrose Park High School project (the Activity) at 37 Hope Street, Melrose Park. This report supports the assessment of the proposed Activity under Part 5 of the Environmental Planning and Assessment Act 1979. The Activity is proposed by the DoE to meet the growth in educational demand in the Melrose Park precinct.

This report has been prepared to assess the impact of a 1% Annual Exceedance Probability (AEP) storm and larger events up to and including the Probable Maximum Flood (PMF).

This report will raise awareness of the risk of flooding and must be read in conjunction with the Civil Engineering report as well as the Flood Emergency Management Plan (FEMP), which includes evacuation routes analysis, designated safe assembly areas and evacuate on management plans.

1.1 Summary of the Activity

The proposed activity involves the construction and use of a new high school in two stages for approximately 1,000 students.

Stage 1 of the proposed activity includes the following:

- Site preparation works.
- Construction of Block A – a six-storey (with additional roof/plant level) school building in the south-western portion of the site containing staff rooms and General Learning Spaces (GLS).
- Construction of Block B – a one storey (double height) hall, gymnasium, canteen and covered outdoor learning area (COLA) building in the south-eastern portion of the site.
- Construction of Block C – a single storey plant and storage building at the north-eastern portion of the site.
- Associated landscaping.
- Construction of on-site car parking.
- Provision and augmentation of services infrastructure.
- Associated public domain infrastructure works to support the school, including (but not limited to):
- Provision of kiss and drop facilities along Wharf Road, and widening of the Wharf Road footpath.
- Raised pedestrian crossings on Wharf Road and Hope Street.

Stage 2 of the proposed activity includes the following:

- Construction of Block D – a five-storey (with additional roof/plant level) school building in the north-western portion of the site containing staff rooms and GLS:
- Additional open play spaces within the terrace areas of Building D.
- Minor layout amendments to Block A.

The Review of Environmental Factors prepared by Ethos Urban provides a full description of the proposed works.

1.2 Site Description

The site is located at 37 Hope Street, Melrose Park within the Parramatta LGA. The school covers an approximate area of 9,500m2 and is generally rectangular in shape. The site is currently cleared and vacant. The site is located approximately 8km east of the Parramatta CBD.

The subject site falls within the Local Government Area of the City of Parramatta Council (COPC). The site is bounded by a combination of low-height residential developments and future high rise residential developments.

On the western side, along Hope Street, high-rise developments are planned for the future. To the east, the site borders Wharf Road Reserve, with existing low-rise residential buildings located on the eastern side of Wharf Road. To the south, across Hope Street, there are existing industrial buildings, while to the north, the site adjoins a future communal sports field.

The site's topography generally slopes down to the north of the site at a relative constant slope of 0.5-1%. The maximum level is approximately RL 16.55 (m AHD) in the north-east corner and the minimum level is approximately RL15.25 (m AHD) in the north-west corner.

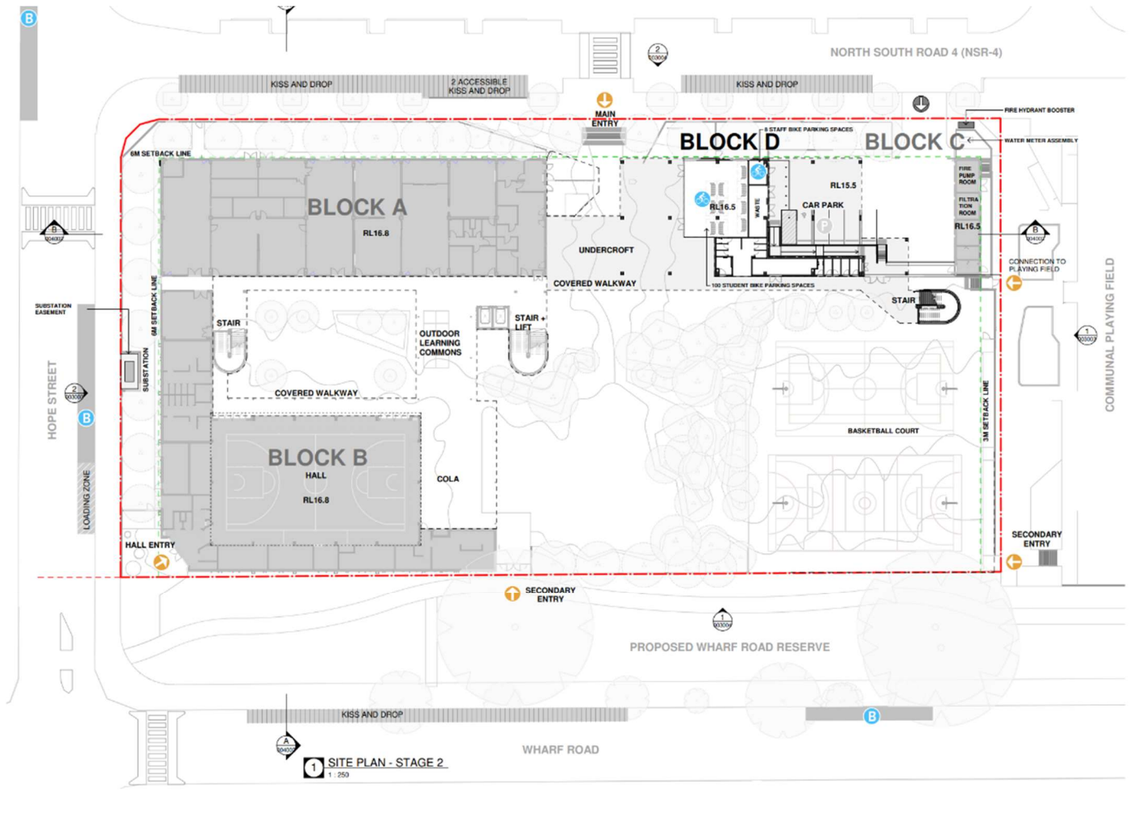

Figure 1: Site Plan (Source: NBRS)

1.3 Significance of Environmental Impacts

Based on the identification of potential issues, and an assessment of the nature and extent of the impacts of the proposed development, it is determined that:

- The extent and nature of potential impacts are low and will not have significant impact on the locality, community and/or the environment.
- Potential impacts can be appropriately mitigated or managed to ensure that there is no significant impact on the environment.

2 Standards List

This Flood Impact Assessment Report has been prepared in accordance with the following documentation:

- City of Parramatta Floodplain Risk Management Policy (2014)
- City of Parramatta Development Control Plan (DCP) (2023)
- Parramatta Local Environment Plan (LEP) 2023
- NSW Flood Risk Manual – It is noted that at the time of this flood impact assessment report, the latest City of Parramatta Floodplain Risk Management Policy (2014) applies the flood management principles of the NSW Government's Floodplain Development Manual (FDM) 2005 at a local level. A more recent version of the City of Parramatta Council Floodplain Risk Management Plan is noted to be currently under review (not available for public access), to be in accordance with the latest NSW Flood Risk Manual.
- Parramatta River Flood Study (2024).

3 Existing Flood Behaviour

The current flood behaviour on the school site and surrounding area is based on a Stormwater Quantity and Quality Assessment for the masterplan of the Melrose Park North Precinct, undertaken by "Lyall & Associates Consulting Water Engineers" (Ref: FG486.006 – Dated 26 July 2024). Alongside this, COPC flood hazard maps reflect key flood behaviour of the wider Melrose Park area, modelling conditions prior to the Melrose Park North Precinct Development. Key flood behaviour noted from these hazard maps include:

- Temporary ponding of stormwater at the southern end of the playing field is observed to the north of the high school site boundary, to a maximum depth of 0.6m, reaching a peak flood level of RL 14.46 (m AHD) during the 1% AEP storm event. Stormwater overland flow from the site travels in a north-westerly direction, towards the southern end of the playing field, where ponding occurs in a low-point valley.

- Overland flow from the Western Parklands Stormwater Detention Basin and Biofiltration Area travels down the playing field to the south during storms greater than 5% AEP in intensity. This overland flow is observed to travel in an easterly direction towards Ryde Parramatta Golf Club.

- The western boundary of the school site is subject to flooding in the PMF event, reaching a maximum inundation depth of 0.6m at the lowest point in the northwestern corner. This flood water is understood to accumulate at this location, from inundation at higher points upstream along the proposed Road NSR-4. Lower levels of inundation, reaching a depth of 0.3m is observed along the western boundary of the site, prior to reaching the northwestern boundary.

The aforementioned flood inundation along the site's western and northern boundaries, before travelling towards the existing Ryde Parramatta Golf Course, is supported by COPC's flood hazard map for the PMF event.

4 Flood Planning Requirements

The COPC Development Control Plan (DCP) requires any new development to provide suitable freeboard to habitable floor levels.The flood planning level under normal circumstances shall be the higher of the 1% AEP riverine flood level or the 1% AEP overland flow flood level, plus a minimum of 500mm freeboard safety factor as per the COPC DCP and COPC Floodplain Risk Management Policy (2014).

Based on Council's DCP Section 5.1, Table 5.1.1.1, the development is classed in the sensitive uses and facilities land use category. As per Council's DCP, it is understood that sensitive uses and facilities are typically not permitted on land subject to flooding in a PMF event. The proposed school is situated on land which is not flood affected in the PMF event. Hoewever, occupants might still need to find routes through PMF affected areas leading to the nearest hospital in case of an emergency. A Flood Emergency Management Plan was prepared to provide guidance and a safe strategy during the PMF event.

The closest ponding point in the 1% AEP storm event is noted to be more than 27m away from the site boundary, thus it is understood that the site is not flood affected in this storm event.

The Flood Planning Levels have been designed at FFL16.80 for Blocks A and B, and FFL16.50 for Blocks C and D. These floor levels are more than 500mm above the 1% AEP overland flow flood level of RL14.76, thereby meeting COPC DCP and COPC Floodplain Risk Management Policy (2014) requirements.

5 Flood analysis

Enstruct has modelled the flood behaviour based on the MPHS masterplan TUFLOW model in addition to the School development inputs such as geometry and OSD tank. Based on this analysis, depth maps have been prepared to showcase the extents of flooding. Similarly, hazard maps have been prepared to analyse the potential escape routes. Figure 2 below provides a visual representation of the hazard classification based on depths and velocity factors.

All building works, including cut and fill, as part of this school development are not affected by flood extents and do not impact or modify the existing flood behaviours or overflow paths.

As the floodway remains within the road, permanent building structures will not face considerable water forces and, therefore, will withstand flood impacts.

The development does not adversely impact any neighbouring properties, on the contrary, it provides additional water storage and a safe route for the overflow water to travel to the downstream park, which will be used as flood storage for the masterplan precinct.

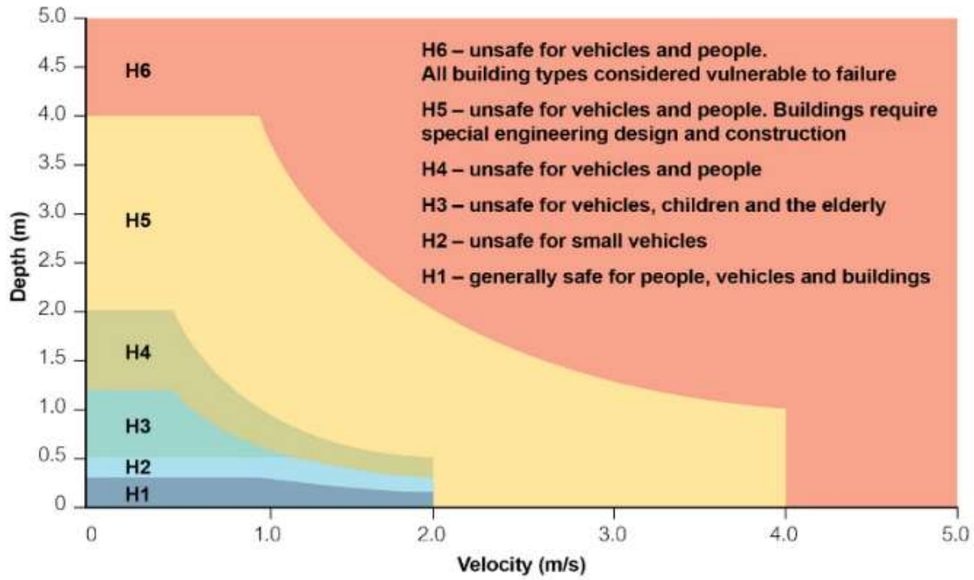

Figure 2: General flood hazard vulnerability curve

(Source: AIDR 2017)

5.1 Selection of Major Flood Events

This Flood Impact Assessment Report analyses flood modelling undertaken for the 100-year flood event (1% AEP) and PMF Flood event as per COPC DCP and COPC Floodplain Risk Management Policy (2014) requirements. Additionally, the 200-year storm event has been analysed as part of ESFG Design Framework requirements for site selection.

The 5% and 10% AEP flood events have not been modelled, as it is superseded by the 1% AEP Flood Model, where the site is noted to be unaffected by flood waters. Similarly, the 0.2% and 0.02% AEP flood events have not been modelled, as it is superseded by the PMF event.

All flood models include the flood extent, levels, depths, velocities and hazard classifications.

The relevant major flood events for the site will be detailed below in increasing order of importance.

5.2 100-year flood event (1%AEP)

Based on the flood study undertaken by 'Lyall & Associates' for Melrose Park North Precinct (Job No. FG486.006, dated 06/10/23), it is understood that the proposed neighbouring park site to the north is subject to flood in the 100-year (1%AEP) storm event, as seen in the Figure 3 below. This park will work as flood storage as part of the masterplan, with ponding depth to a maximum depth of 0.5-0.75m.

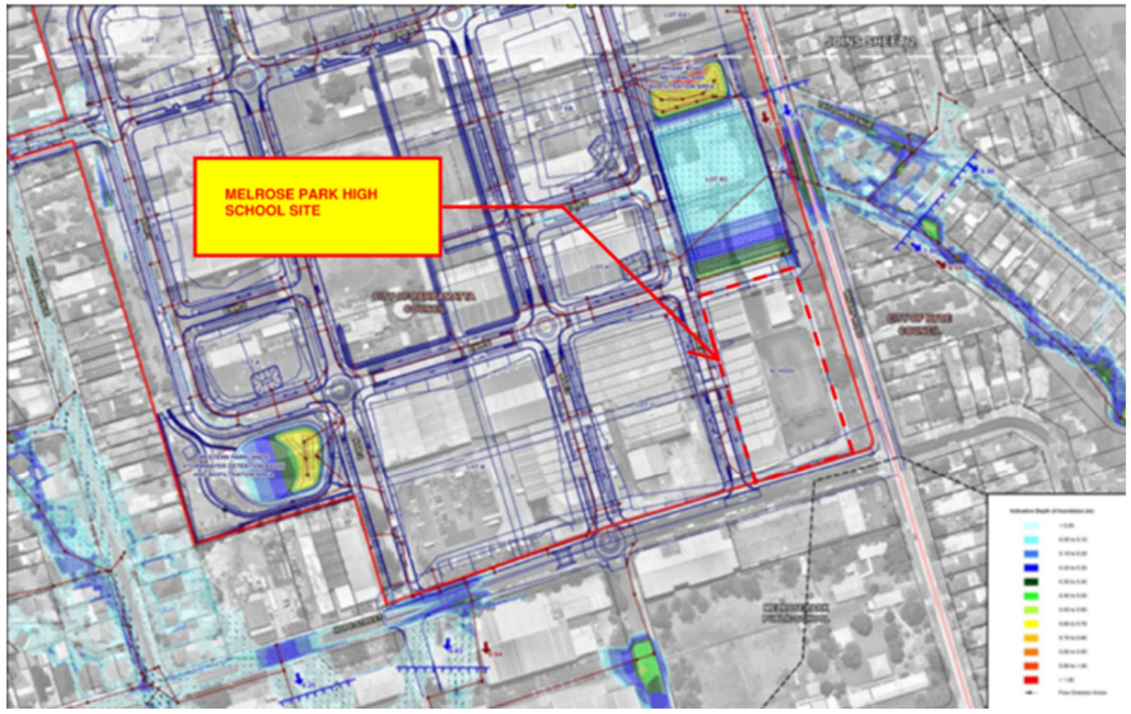

Figure 3: MPHS – Masterplan Scenario – 1:100-year Flood Depths

(Source: Lyall & Associates Updated Stormwater Quantity and Quality Assessment)

Enstruct has modelled the site with the proposed school in it for the 1%AEP storm, and the study shows that the high-school site is clear of flood inundation. The hazard maps indicate that there are safe H1 routes to exit the site to the north, given that the depth and/or velocity permits to do so. Refer to Appendix A for 1%AEP depth and hazard maps.

Figure 4: MPHS – 1:100-year Flood Depths Post Development

5.3 200-year flood event (0.5%AEP)

The 200-year storm event was analysed as part of ESFG Design Framework requirements for site selection. Enstruct has been provided with the flood model from the masterplan and the school site has been updated by incorporating the OSD tank, then re-run to obtain the 200-year scenario.

Enstruct prepared flood maps for both the depths and the hazards. The resulting flood analysis indicates that the depths are not affecting the site, and the hazard map shows that safe H1 routes out of the site are possible for this storm event. Refer to Appendix A for details.

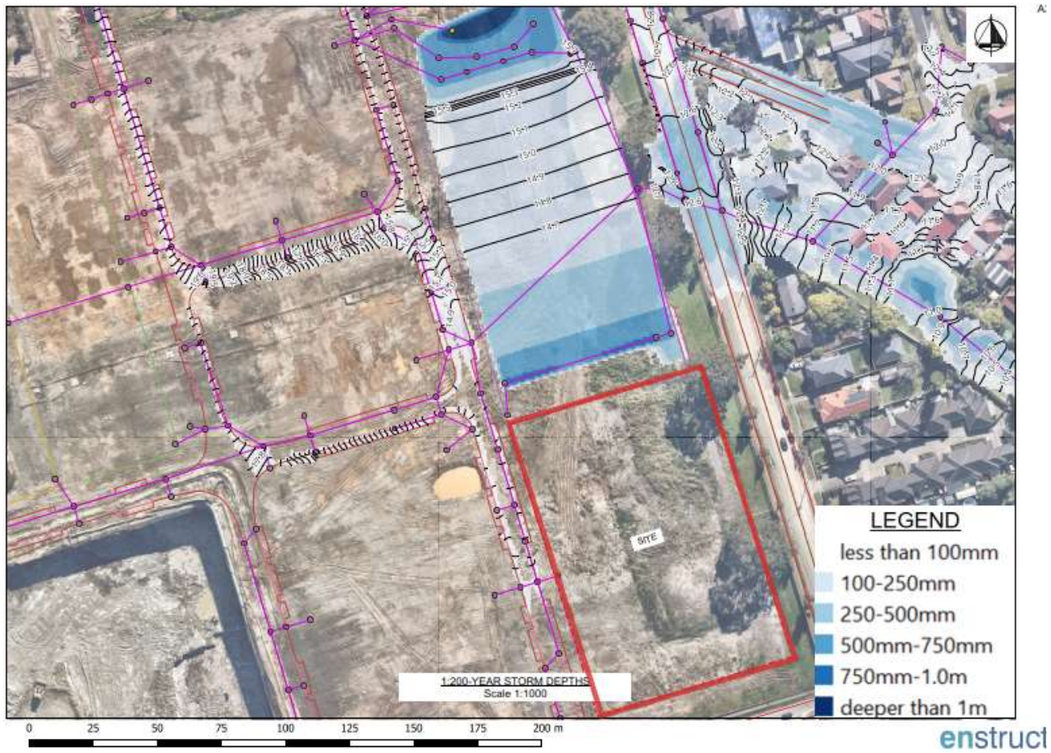

Figure 5: MPHS – Post development 1:200-year Flood Depths

Figure 6: MPHS – Post development 1:200-year Flood Hazards

5.4 Climate Change

Flood analysis prepared by Lyall and Associates includes climate change analysis. A climate change (CC) upscaling factor of 22.5% have been applied to 1% AEP design rainfall intensities. The results of the climate change analyses show that the site is resilient to climate change. The flood map shows some overland flow in the kerb and gutter outside of the proposed school under the 1% AEP plus climate change scenario, with a depth of less than 100mm. The site itself remains flood free, as reflected in Figure 7 below.

Figure 7: MPHS – 1:100-year with Climate Change factor Flood Depths Post Development

5.5 PMF

Based on the flood studies previously mentioned, it is noted that the proposed west road (NSR-4) adjacent to the site will be subject to flood risk at the north-western boundary in the PMF event, as seen in the Figure 8 below.

Lower levels of inundation, reaching a depth of 0.3m are observed in the public domain, along the western boundary of the site (NSR-4), prior to travelling towards the north-western boundary. In addition to this, Enstruct has run flood modelling with the proposed school development included, to check the PMF hazard maps for the site, which can be found in Appendix A.

As an early educational establishment, the development is classed as a “sensitive use” land zone, due to the age and potential risk of the occupants. It is noted that “Sensitive use and facilities’ are in general, not permitted on land subject to flooding in a PMF event as per the COPC DCP. Although, land which the school site sits on is not flood affected in the event of the PMF event, occupants might still need to find routes leading to the nearest hospital in case of an emergency. Consequently, a flood emergency management plan has been prepared by Enstruct and is recommended to be implemented in perpetuity to provide guidance regarding a safe strategy and the provision of refuge with sufficient area to shelter all occupants at the PMF level. Refer to the Flood Emergency Management Plan for further information.

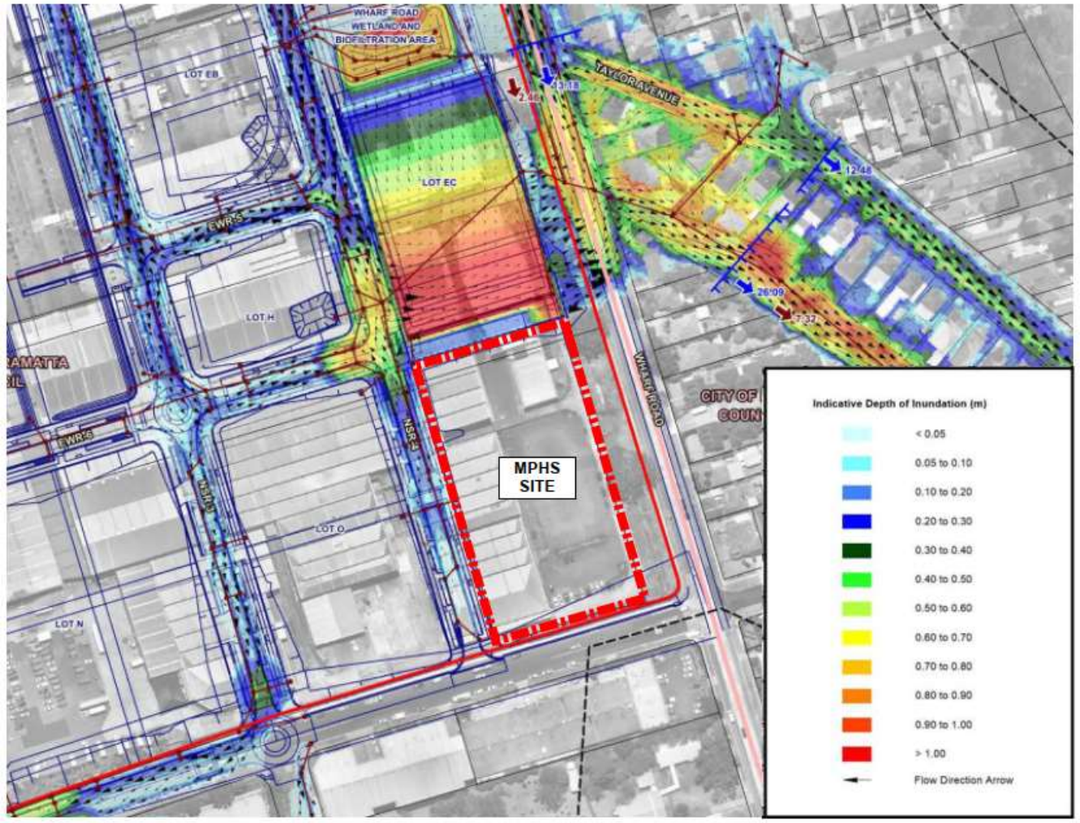

Figure 8: MPHS – Masterplan Scenario - PMF Flood Depths

(Source: Lyall & Associates Updated Stormwater Quantity and Quality Assessment)

Figure 9: PMF Hazard Map

6 Overland Flow Paths

The site is not subject to major overland flows from the upstream neighbouring properties, therefore there are no major risks associated with in this regards.

In case of blockages and/or events within the site and/of major rainfall events, the site overland flow will be directed towards the northern park which works as a major detention body.

7 Mitigation measures

The following table provides a summary of the adopted mitigation measures.

Project Stage D – Design C – Constrction O - Operation	Mitigation Measures	Relevant section of the report
D	Build above flood planning levels	Section 3
D, C, O	Stormwater Quantity Control measures: OSD tank to reduce peak flows	Refer to Civil Engineering Report, Stormwater design Section

Table 1: Mitigation measures related to Civil Engineering

8 Conclusion

Although the PMF does not inundate the site, water build up on the road and the accesses are routes are unsafe to travel. Refer to the flood Emergency Management Plan which includes designated safe assembly areas and evacuation management plans.

The 1:100-year and 1:200-year storm events do not flood the site, or the road in front of the site. This supports the selected site as per the ESFG guidelines. During these events is still safe to exit/enter the site with due caution.

Subject to implementing the recommendations/mitigation measures set out in Section 6 of this report, the conclusion of this assessment is that the proposed Activity is not likely to significantly affect the environment in relation to flooding matters.

Supporting Information and External References

Northrop's IFC Civil masterplan drawings for 'Sekisui House'
150077-60_CC_COMBINED PACKAGE REVIEW.pdf

Lyall & Associates Masterplan Flood studies for 'Sekisui House'
MPNP_PP_USQ&QA_001 [Final].pdf

ESFG
https://efsg.det.nsw.edu.au/design
https://efsg.det.nsw.edu.au/spec
https://education.nsw.gov.au/about-us/efsg/design-framework

NSW LGA boundaries map
https://portal.spatial.nsw.gov.au/portal/home/webmap/viewer.html

Parramatta LGA flood maps
https://www.cityofparramatta.nsw.gov.au/flooding/2024-parramatta-river-flood-study/full-report
https://www.cityofparramatta.nsw.gov.au/sites/council/files/2024-06/prfs-file_4b.pdf
https://www.cityofparramatta.nsw.gov.au/sites/council/files/2024-06/prfs-file_9.pdf
https://www.cityofparramatta.nsw.gov.au/sites/council/files/2024-06/prfs-file_10.pdf
https://www.cityofparramatta.nsw.gov.au/sites/council/files/2024-06/prfs-file_11.pdf

Ryde LGA flood maps
https://www.ryde.nsw.gov.au/HaveyourSay/Past-Have-Your-Say/City-of-Ryde-Draft-Flood-Study-2023
https://www.ryde.nsw.gov.au/files/assets/public/v/1/have-your-say/planning/draft-flood-study-2023/230601_appendixf_merged.pdf

APPENDIX A: RELEVANT FLOOD MAPS

ENSTRUCT'S:

SITE 1-100 YEAR POST DEVELOPMENT STORM DEPTHS

SITE 1-100 YEAR WITH CLIMATE CHANGE FACTOR POST DEVELOPMENT STORM DEPTHS

SITE 1-200 YEAR POST DEVELOPMENT STORM DEPTHS

SITE 1-200 YEAR POST DEVELOPMENT STORM HAZARD MAP

SITE PMF POST DEVELOPMENT STORM HAZARD MAP

BY OTHERS:

MASTERPLAN POST DEVELOPMENT 1% FLOOD HAZARDS

MASTERPLAN POST DEVELOPMENT 1% FLOOD DEPTHS

MASTERPLAN POST DEVELOPMENT PMF FLOOD DEPTHS

MELROSE PARK HIGH SCHOOL SITE

LEGEND

- less than 100mm
- 100-250mm
- 250-500mm
- 500mm-750mm
- 750mm-1.0m
- deeper than 1m

0 25 50 75 100 125 150 175 200 m

1:100-YEAR STORM DEPTHS
Scale 1:1000

enstruct

A3

SITE

LEGEND

less than 100mm
100-250mm
250-500mm
500mm-750mm
750mm-1.0m
deeper than 1m

1:200-YEAR STORM DEPTHS
Scale 1:1000

26/09/2024

0 25 50 75 100 125 150 175 200 m

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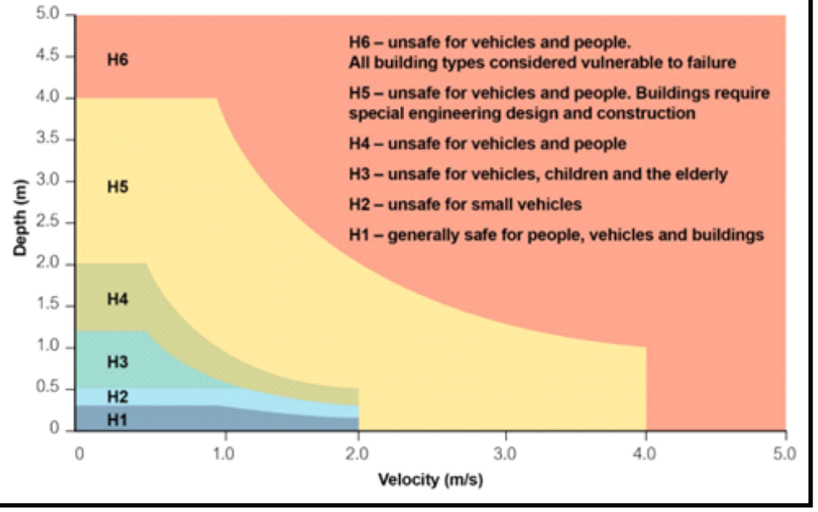
1:200-YEAR STORM HAZARD MAP
Scale NTS

LEGEND



04/10/2024

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A3

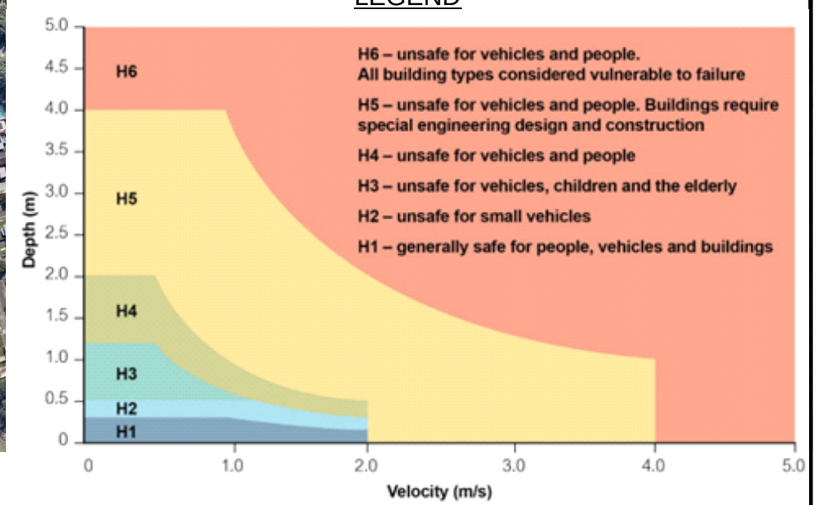
HOPE ST

WHARF RD

PMF HAZARD MAP
Scale 1:1000

0 100 200 300 400 500 600 700 800 900 1,000 m

LEGEND



H6 – unsafe for vehicles and people.
All building types considered vulnerable to failure

H5 – unsafe for vehicles and people. Buildings require special engineering design and construction

H4 – unsafe for vehicles and people

H3 – unsafe for vehicles, children and the elderly

H2 – unsafe for small vehicles

H1 – generally safe for people, vehicles and buildings

26/09/2024

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EVACUATION AND ASSEMBLY POINT MAP

LEGEND

- A — ASSEMBLY POINTS
- P — PEDESTRIAN EVACUATION POINT
- V — VEHICULAR EVACUATION POINT
- PEDESTRIAN EVACUATION PATH
- VEHICULAR EVACUATION PATH

EVACUATION PATHS FOR FLOODING EVENTS UPTO THE 1%AEP STORM ONLY. PERSONNEL TO SHELTER IN PLACE IN THE EVENT OF A PMF EVENT.

EXIT ROUTE IS H2 HAZARD CLASSIFIED IN THE PMF STORM EVENT, THEREFORE ALL PEDESTRIAN AND VEHICLES NOT TO BE USED.

PERSONNEL TO REMAIN AND ASSEMBLE WITHIN THE BUILDING DURING A PMF EVENT UNTILL THE STORM SUBSIDES.

BUILDING BLOCKS A & B ARE ABOVE THE PMF FLOOD LEVEL, PROVIDING REFUGE FOR PERSONNEL

HOPE STREET

WHARF ROAD

BLOCK A

BLOCK B

BLOCK C

BLOCK D

16175 15800 15456 16650 16510 16510 15300 16500 16500 16500 15500 16800 16800 15020 16440 16630 16800 16800 16380 16430 1:32 15915 1:32 16800 16210 16210 15450 1:28 1:15 1:14 1:14 EDB EDB EDB

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CONTINUES NEXT PAGE

RYDE LGA

PARRAMATTA LGA

POTENTIAL VEHICLE ONLY ROUTE

PEDESTRIANS ONLY ALTERNATIVE ROUTE

REFER TO PREVIOUS DRAWING FOR FLOOD EVACUATION ROUTES ON THIS MASTERPLAN PRECINCT

Melrose Park High School Site

WHARF RD

CEDAR PLACE
CHESTER PLACE
DELAWARE ROAD
FLINDERS STREET
BASS ST TREET
FLINDERS CRES
HUME AVENUE
MITCHELL STREET
STEVENS STREET
WENTWORTH STREET
PARKES STREET
FITZGERALD ROAD
COWELLS LANE
WILLIAM STREET
DEAN CRESCENT
BLAKEFORD AVENUE
KISSING POINT ROAD
VICTORIA ROAD
LINDEN GROVE
HUGHES AVENUE
ATKINS ROAD
TRUMPER STREET
FERRIS STREET
TURNER STREET
JERVIS STREET
HOPE STREET
WARATAH STREET
COBHAM LANE
COBHAM AVENUE
WHARF ROAD
TAY AVENUE

48m
E 49m
34m
33m
22m
35m
37m
38m
39m
35m
37m
34m
35m
37m
39m
40m
41m
42m
43m

enstruct

SCHEMATIC DESIGN
NOVEMBER 2024

Flood Depth (FFA 1% AEP)

Parramatta River Flood Study

Project Code: 59916074 / 304600102
Drawn By: AS
Map: 59916074-GS-006-100yDepth5k.mxd
Rev: 09
Date: 2024-06-20

Legend

- Study Area
- Watercourse
- Cadastre
- Building Footprint
- Tuflow Model Extent

Local upstream overland flow - obtained from preliminary ARR87 ROG

- 0-50mm
- 50-100mm
- 100-150mm
- >150mm

Max Max FFA 1% AEP Flood Depth (m)

- 0.00 - 0.15
- 0.15 - 0.30
- 0.30 - 0.50
- 0.50 - 0.70
- 0.70 - 1.00
- 1.00 - 1.50
- >1.50

Figure F5.27

Notes:
1. Coordinate System: GDA 1994 MGA Zone 56

References:
1. Base data supplied by NSW SS and Esri
2. Aerial imagery supplied by MetroMap
3. Cadastre (2015) supplied by PCC

Stantec

0 50 100 150 200 Metres

Scale at A3 1:5,000

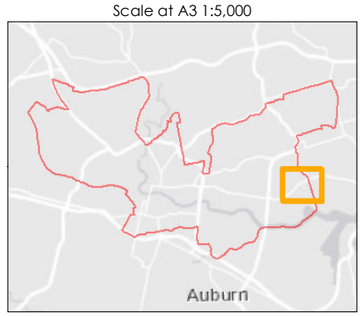
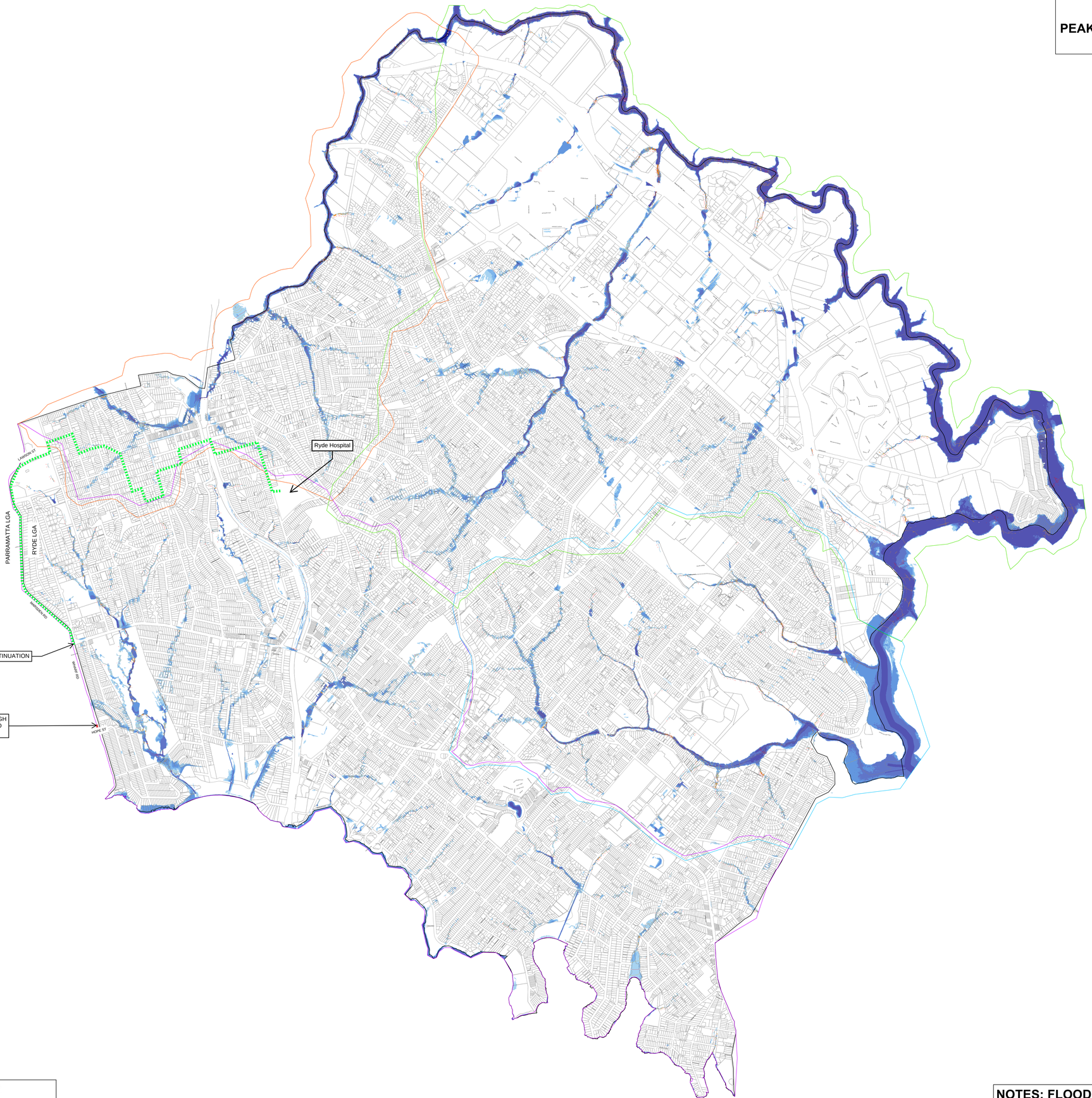


FIGURE F6

RYDE FLOOD HARMONISATION STUDY

PEAK FLOOD DEPTHS AND LEVEL CONTOURS

1% AEP EVENT



NOTES: FLOOD DEPTHS LESS THAN 100mm AND AREAS OF FLOODING LESS THAN 100m^2 HAVE BEEN REMOVED

FLOOD HAZARD VULNERABILITY CLASSIFICATION

H1	Generally safe for vehicles, people and buildings.
H2	Unsafe for small vehicles.
H3	Unsafe for vehicles, children and the elderly.
H4	Unsafe for vehicles and people.
H5	Unsafe for vehicles and people. All building types vulnerable to structural damage. Some less robust building types vulnerable to failure.
H6	Unsafe for vehicles and people. All building types considered vulnerable to failure.

REFER SHEET 2

REFER SHEET 3

N

80 0 80 160 240

Scale: 1:8,000

LEGEND

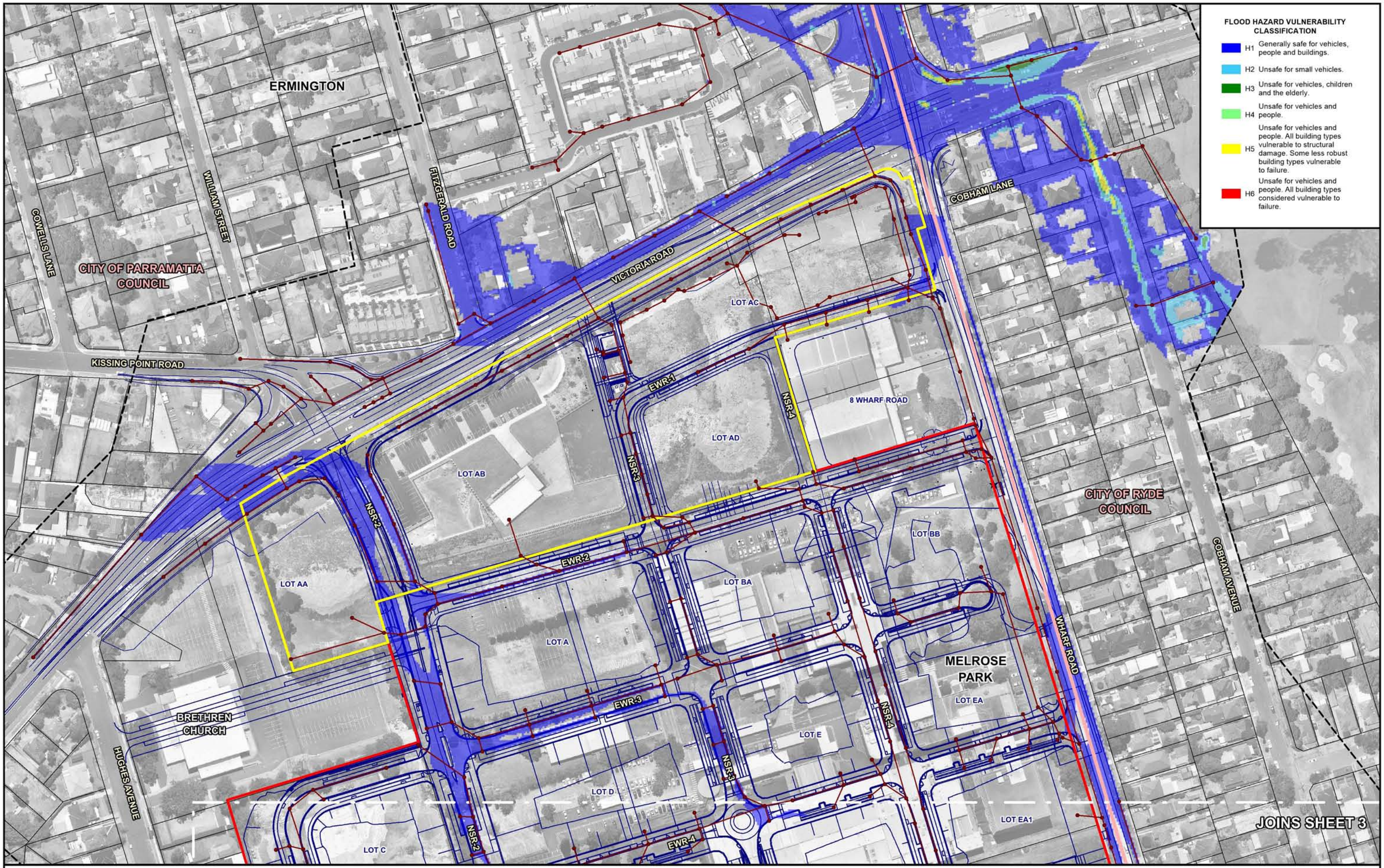
- LGA Boundary
- Modelled Stormwater Drainage Network
- Two-Dimensional Model Extent
- Proposed VRS Development Site
- Proposed PP Development Site
- Melrose Park North Design

Lyall & Associates

MELROSE PARK STORMWATER DRAINAGE STRATEGY

Figure 7
(Sheet 1 of 3)

FLOOD HAZARD VULNERABILITY CLASSIFICATION
POST-MELROSE PARK NORTH DEVELOPMENT CONDITIONS - 1% AEP



N

20 0 20 40 60

Scale: 1:2,000

Lyall & Associates

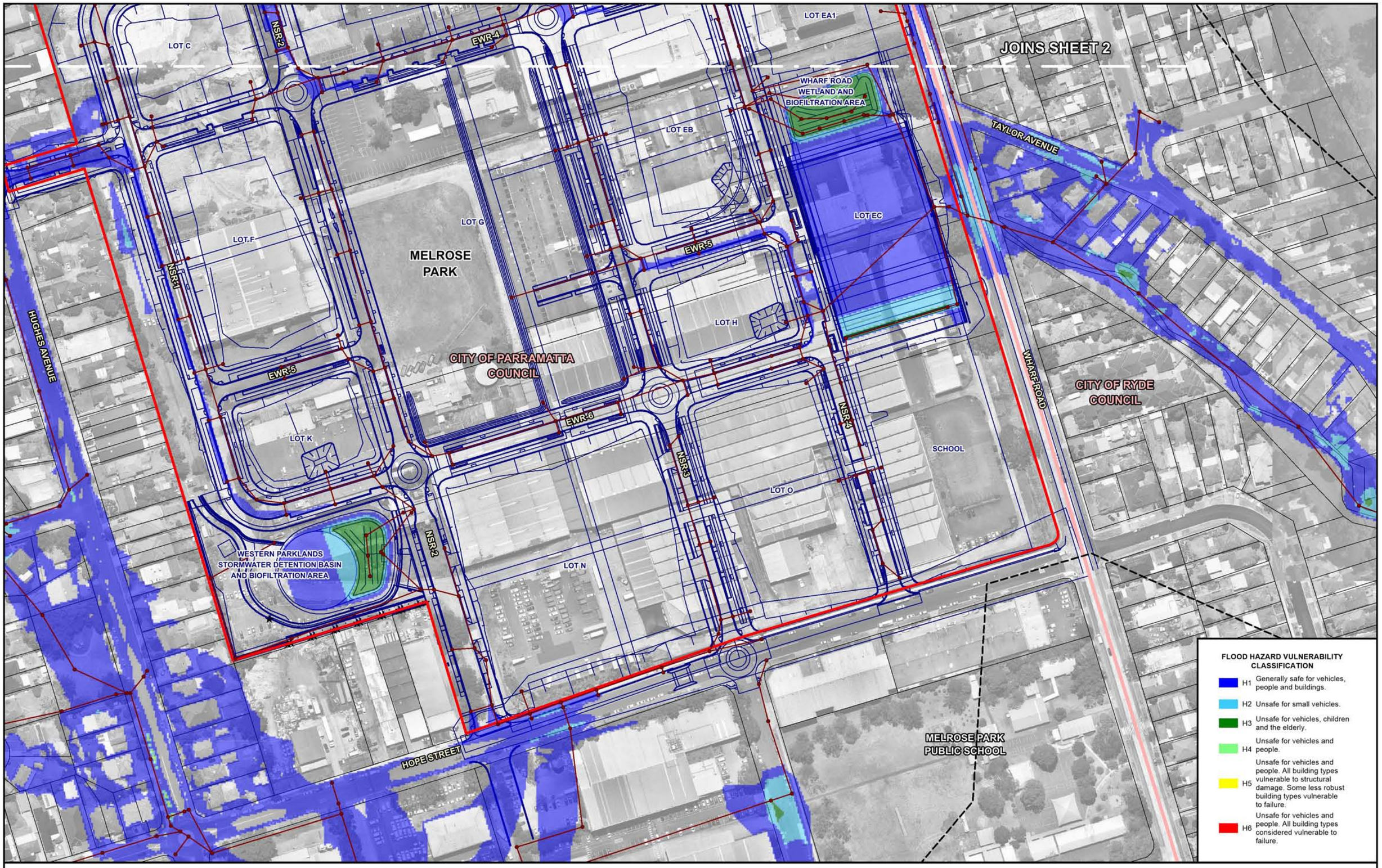
LEGEND

- LGA Boundary
- Modelled Stormwater Drainage Network
- Two-Dimensional Model Extent
- Proposed VRS Development Site
- Proposed PP Development Site
- Melrose Park North Design

MELROSE PARK STORMWATER DRAINAGE STRATEGY

Figure 7
(Sheet 2 of 3)

FLOOD HAZARD VULNERABILITY CLASSIFICATION
POST-MELROSE PARK NORTH DEVELOPMENT CONDITIONS - 1% AEP



N

20 0 20 40 60

Scale: 1:2,000

LEGEND

- LGA Boundary
- Modelled Stormwater Drainage Network
- Two-Dimensional Model Extent
- Proposed PP Development Site
- Melrose Park North Design

Lyall & Associates

MELROSE PARK STORMWATER DRAINAGE STRATEGY

Figure 7
(Sheet 3 of 3)

FLOOD HAZARD VULNERABILITY CLASSIFICATION
POST-MELROSE PARK NORTH DEVELOPMENT CONDITIONS - 1% AEP

Indicative Depth of Inundation (m)

- < 0.05
- 0.05 to 0.10
- 0.10 to 0.20
- 0.20 to 0.30
- 0.30 to 0.40
- 0.40 to 0.50
- 0.50 to 0.60
- 0.60 to 0.70
- 0.70 to 0.80
- 0.80 to 0.90
- 0.90 to 1.00
- > 1.00

REFER SHEET 2

REFER SHEET 3

N

80 0 80 160 240

Scale: 1:8,000

LEGEND

- LGA Boundary
- Modelled Stormwater Drainage Network
- Two-Dimensional Model Extent
- Proposed VRS Development Site
- Proposed PP Development Site
- Melrose Park North Design

Lyall & Associates

MELROSE PARK STORMWATER DRAINAGE STRATEGY

Figure 6
(Sheet 1 of 3)

INDICATIVE DEPTH AND EXTENT OF INUNDATION
POST-MELROSE PARK NORTH DEVELOPMENT CONDITIONS - 1% AEP

Indicative Depth of Inundation (m)

< 0.05
0.05 to 0.10
0.10 to 0.20
0.20 to 0.30
0.30 to 0.40
0.40 to 0.50
0.50 to 0.60
0.60 to 0.70
0.70 to 0.80
0.80 to 0.90
0.90 to 1.00
> 1.00
Flow Direction Arrow

ERMINGTON
CITY OF PARRAMATTA COUNCIL
CITY OF RYDE COUNCIL
GOWELLS LANE
WILLIAM STREET
FITZGERALD ROAD
VICTORIA ROAD
KISSING POINT ROAD
COBHAM LANE
COBHAM AVENUE
WHARF ROAD
HUGHES AVENUE
BRETHREN CHURCH
MELROSE PARK
8 WHARF ROAD
LOT AA
LOT AB
LOT AC
LOT AD
LOT A
LOT BA
LOT BB
LOT C
LOT D
LOT E
LOT EA
LOT EA1
EWR-1
EWR-2
EWR-3
EWR-4
NSR-1
NSR-2
NSR-3
NSR-4
3.40
1.26
1.27
0.00
JOINS SHEET 3

N
20 0 20 40 60
Scale: 1:2,000

Lyall & Associates

LEGEND

LGA Boundary
Modelled Stormwater Drainage Network
Two-Dimensional Model Extent
Proposed VRS Development Site
Proposed PP Development Site
Melrose Park North Design
0.12 Peak Piped Flow (m³/s)
0.78 Peak Overland Flow (m³/s)
Peak Overland Flow Location

MELROSE PARK STORMWATER DRAINAGE STRATEGY

Figure 6
(Sheet 2 of 3)

INDICATIVE DEPTH AND EXTENT OF INUNDATION
POST-MELROSE PARK NORTH DEVELOPMENT CONDITIONS - 1% AEP

JOINS SHEET 2

LOT C
NSR-2
EWR-4
LOT EA1
WHARF ROAD WETLAND AND BIOFILTRATION AREA
LOT EB
TAYLOR AVENUE
1.60
0.19
0.40
LOT EC
LOT G
LOT F
MELROSE PARK
EWR-5
NSR-1
HUGHES AVENUE
LOT H
1.69
6.59
CITY OF PARRAMATTA COUNCIL
CITY OF RYDE COUNCIL
EWR-5
EWR-6
NSR-4
WHARF ROAD
LOT K
SCHOOL
NSR-3
LOT O
WESTERN PARKLANDS STORMWATER DETENTION BASIN AND BIOFILTRATION AREA
NSR-2
LOT N
HOPE STREET
0.63
0.64
0.25
MELROSE PARK PUBLIC SCHOOL

Indicative Depth of Inundation (m)
- < 0.05
- 0.05 to 0.10
- 0.10 to 0.20
- 0.20 to 0.30
- 0.30 to 0.40
- 0.40 to 0.50
- 0.50 to 0.60
- 0.60 to 0.70
- 0.70 to 0.80
- 0.80 to 0.90
- 0.90 to 1.00
- > 1.00
- Flow Direction Arrow

N

20 0 20 40 60

Scale: 1:2,000

LEGEND

- LGA Boundary
- Modelled Stormwater Drainage Network
- Two-Dimensional Model Extent
- Proposed PP Development Site
- Melrose Park North Design
- 0.12 Peak Piped Flow (m³/s)
- 0.78 Peak Overland Flow (m³/s)
- Peak Overland Flow Location

Lyall & Associates

MELROSE PARK STORMWATER DRAINAGE STRATEGY

Figure 6
(Sheet 3 of 3)

INDICATIVE DEPTH AND EXTENT OF INUNDATION
POST-MELROSE PARK NORTH DEVELOPMENT CONDITIONS - 1% AEP

N

80 0 80 160 240

Scale: 1:8,000

Lyall & Associates

LEGEND

- LGA Boundary
- Modelled Stormwater Drainage Network
- Two-Dimensional Model Extent
- Proposed VRS Development Site
- Proposed PP Development Site
- Melrose Park North Design

MELROSE PARK STORMWATER DRAINAGE STRATEGY

Figure 8
(Sheet 1 of 3)

INDICATIVE DEPTH AND EXTENT OF INUNDATION
POST-MELROSE PARK NORTH DEVELOPMENT CONDITIONS - PMF

Indicative Depth of Inundation (m)

- < 0.05
- 0.05 to 0.10
- 0.10 to 0.20
- 0.20 to 0.30
- 0.30 to 0.40
- 0.40 to 0.50
- 0.50 to 0.60
- 0.60 to 0.70
- 0.70 to 0.80
- 0.80 to 0.90
- 0.90 to 1.00
- > 1.00
- Flow Direction Arrow

ERMINGTON
COWELLS LANE
WILLIAM STREET
FITZGERALD ROAD
CITY OF PARRAMATTA COUNCIL
KISSING POINT ROAD
VICTORIA ROAD
COBHAM LANE
30.88
1.32
LOT AC
EWR-1
NSR-4
8 WHARF ROAD
LOT AD
NSR-3
LOT AB
NSR-2
EWR-2
LOT AA
LOT BA
LOT BB
2.47
4.20
CITY OF RYDE COUNCIL
COBHAM AVENUE
LOT A
EWR-3
MELROSE PARK
LOT EA
WHARF ROAD
BRETHREN CHURCH
HUGHES AVENUE
LOT E
NSR-4
NSR-3
LOT D
LOT EA1
JOINS SHEET 3
NSR-2
EWR-4
LOT C

N

20 0 20 40 60

Scale: 1:2,000

LEGEND

- LGA Boundary
- Modelled Stormwater Drainage Network
- Two-Dimensional Model Extent
- Proposed VRS Development Site
- Proposed PP Development Site
- Melrose Park North Design
- 0.12 Peak Piped Flow (m^3/s)
- 0.78 Peak Overland Flow (m^3/s)
- Peak Overland Flow Location

Lyall & Associates

MELROSE PARK STORMWATER DRAINAGE STRATEGY

Figure 8
(Sheet 2 of 3)

INDICATIVE DEPTH AND EXTENT OF INUNDATION
POST-MELROSE PARK NORTH DEVELOPMENT CONDITIONS - PMF

JOINS SHEET 2

LOT C
LOT EA1
LOT EB
LOT EC
LOT F
LOT G
LOT H
LOT K
LOT N
LOT O
SCHOOL

MELROSE PARK

CITY OF PARRAMATTA COUNCIL

CITY OF RYDE COUNCIL

WHARF ROAD WETLAND AND BIOFILTRATION AREA

WESTERN PARKLANDS STORMWATER DETENTION BASIN AND BIOFILTRATION AREA

MELROSE PARK PUBLIC SCHOOL

HUGHES AVENUE
HOPE STREET
TAYLOR AVENUE
WHARF ROAD

NSR-1
NSR-2
NSR-3
NSR-4
EWR-4
EWR-5
EWR-6

2.46
13.18
12.48
26.09
7.32
19.55
0.67
6.32

Indicative Depth of Inundation (m)

- < 0.05
- 0.05 to 0.10
- 0.10 to 0.20
- 0.20 to 0.30
- 0.30 to 0.40
- 0.40 to 0.50
- 0.50 to 0.60
- 0.60 to 0.70
- 0.70 to 0.80
- 0.80 to 0.90
- 0.90 to 1.00
- > 1.00
- Flow Direction Arrow

N

20 0 20 40 60

Scale: 1:2,000

Lyall & Associates

LEGEND

- LGA Boundary
- Modelled Stormwater Drainage Network
- Two-Dimensional Model Extent
- Proposed PP Development Site
- Melrose Park North Design
- 0.12 Peak Piped Flow (m^3/s)
- 0.78 Peak Overland Flow (m^3/s)
- Peak Overland Flow Location

MELROSE PARK STORMWATER DRAINAGE STRATEGY

Figure 8
(Sheet 3 of 3)

INDICATIVE DEPTH AND EXTENT OF INUNDATION
POST-MELROSE PARK NORTH DEVELOPMENT CONDITIONS - PMF