

25 November 2020

Katrina Burley
Manager, Place and Infrastructure
Greater Sydney Place Infrastructure, Eastern and South
Districts
Department of Planning, Industry and Environment
Level 18, 12 Darcy Street,
Parramatta NSW 2150

Dear Katrina,

Response to Lyall and Associates Independent Peer Review of flood related aspects of Planning Proposal for 7 Concord Avenue, Concord West

This letter refers to Lyall and Associates Independent Peer Review of flood related aspects of the Planning Proposal for 7 Concord Avenue, Concord West dated 24 November 2020 (peer review).

We would like to thank the Department of Planning, Infrastructure and Environment (DPIE) as well as Lyall and Associates for the professional manner in which the peer review was undertaken, and for the adherence by all parties involved to the Terms of Reference set by the Planning Panel.

It is acknowledged that the proposal was complex and therefore thank Lyall and Associates for their efforts in the review and understanding of the planning proposal and for providing written clarification and the report to DPIE.

We would like to reaffirm our absolute commitment to achieving the best outcomes on and for the site, its future residents and for the community alike.

Response

As part of the peer review process, Lyall and Associates sought clarifications and refinements on some aspects of the flood modelling to assist in their understanding of the flood mitigation measures and any potential flood impacts.

Any modelling refinements carried out only assisted in the understanding and review of the proposal and were not material to the planning proposal. The refinement of the flood modelling included the following and is referenced below to the relevant sections in the peer review (and is also included in the supporting advice and results included at **Attachment A**):

Sydney

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Australia

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consulting@elton.com.au
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ABN 56 003 853 101



1. Section 4.1.1 – Through the additional flood modelling of flood behaviour of storms more frequent than the 1% AEP event, it was confirmed that there would be no adverse flood impacts on adjacent properties resulting from the proposed development;
2. Section 4.1.1 – Provide more information regarding the stormwater control systems (On Site Detention and On Site Retention (OSD/OSR)) to facilitate connection of the proposed development to existing drainage infrastructure was able to confirm no impact on the drainage and flooding of adjacent properties as well as maintaining or reducing site runoff volumes under Existing Conditions;
3. Section 4.1.2 – refinement of the base case flood model of Existing Conditions to model flood waters to enter the existing industrial building located on the site;
4. Section 4.1.3 – refinement and clarification of details of the proposed flood void layout and floor levels included in the flood modelling;
5. Section 4.1.4 – refinement of the flood void modelling under Developed Case Conditions – the refinements made at points 3 and 5 (that is Section 4.1.2 and 4.1.4, respectively) were used to verify no adverse flood impacts on the adjacent properties for a range of more frequent floods up to the 1% AEP.

These refinements and clarifications assisted Lyall and Associates to reach their concluding statements in Section 4.1.5 as well as generally in the peer review.

At Section 4.2.3, the peer review appears to have used a non-industry standard quantitative approach to map “floodways”. As stated in the peer review: “*The presence of floodway areas on the site was identified by reducing the product of velocity and depth in the Howells et al, 2004 approach to a threshold value of 0.1 m²/s. This indicates that a floodway could only be mapped on the site if the industry accepted criteria are arbitrarily lowered.*”

The peer review approach has resulted in a discontinuous ‘floodway’ that traverses through residential properties upstream and over the site in a broken manner. Although this approach is inconsistent with industry-accepted methodologies for defining floodways, the peer review concluded that the development is appropriate in that:

- » it is elevated above the flooded area,
- » does not have an adverse impact on the flooding on adjacent properties, and
- » any inconsistency is considered to be of minor significance.

Overall, the peer review supports our previous conclusions that the proposed development incorporates appropriate flood mitigation measures which result in a development that is compliant with State and local government flood policies. The peer review also concludes that the flood mitigation measures largely maintains or improves upon Existing Conditions without the need for any upgrades external to the site.

Section 4.5.1 claims that the drainage system and flood void in the proposed development is inconsistent with Council’s minor/major drainage requirements particularly not having a pipe drainage system (minor) with a 10% AEP capacity. The site will be designed with an adequate pipe drainage system however, Council’s current drainage system in the surrounding roads has insufficient capacity to accommodate runoff from local properties and roads in a 10% AEP storm. As a consequence of this lack of capacity, there are overland flood flows entering the site from the four residential properties to the east in frequent storms e.g. 20% AEP – 10% AEP. The design of the flood mitigation measures on the subject site respond adequately to this existing flood behaviour and (even in the absence of infrastructure upgrade) and successfully mitigates any adverse impacts on adjacent properties.



We confirm that we will be providing pipe drainage on the site which collects the runoff from the proposed podium and into the OSD/OSR systems where it is then modulated into existing trunk drainage systems. This is consistent with the Council's minor/major drainage requirements.

Conclusion

We trust that the proposal submitted, and the information provided in response to request for clarification has demonstrated and resulted in an improved understanding of the proposed development and accordingly does not present any material change to the merit or intent of the Planning Proposal.

The information and material provided has been a joint effort between Mark Tooker of Tooker and Associates, Dr Brett C Phillips of Cardno and Tim Morrison of Catchment Simulation Solutions. The project has also been reviewed by the independent peer reviewer (carried out by Lyall and Associates) as appointed by DPIE and contains satisfactory conclusions and confirmation to the Panel that there is confidence as to the suitability of the proposed development's flood mitigation measures to comply with State and local government flood policies and not cause adverse flood impacts on adjoining properties over the full range of floods.

We trust the above demonstrates the approval of the applicants Proposal will result in a successful outcome for not only the surrounding community but also for the sites future residents alike.

Yours sincerely

A handwritten signature in black ink, appearing to read 'Jenny Rudolph', written in a cursive style.

Jenny Rudolph
Director - Urban and Regional Planning
Jenny.rudolph@elton.com.au



Catchment Simulation Solutions

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Jenny Rudolph
Director, Urban and Regional Planning
Elton Consulting Group Pty Ltd
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23rd November, 2020

Dear Jenny,

🔵 Model refinements as per Lyall and Associates Consulting Engineers request for further information (06/11/2020 FN517)

Further to our letter dated 20/11/2020, we have completed additional model runs as requested by Lyall and Associates Consulting Engineers (LACE) in their letter dated 06/11/2020.

The additional model runs include the 5, 20 and 50% AEPs as well as a revised 1% AEP for both the existing case and the proposed developed case. The existing and proposed developed cases also include the refinements requested by LACE and are detailed in our letter report dated 20 November 2020.




There is a minor trapped low point at the rear of the four northern most residences backing onto the site. In smaller storms, this trapped low point does not fill however, runoff on the proposed development site can be directed into this trapped low point. These impacts have been resolved with inclusion of a low impermeable wall (crest at 2.1 m AHD) along the eastern boundary of the development running approximately 45 m (see Plate 1). All the above flood models have been rerun and there are no adverse flood impacts on adjacent properties.

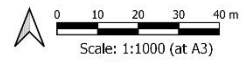


File Name: 09 Proposed Walls Using Lintec Concord West

PROPOSED WALL

LEGEND

-  Proposed Wall (2.1 mAHD)
-  Proposed Building
-  Cadastre



Notes:
Aerial photograph: NSW Six Maps

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Plate 1 Proposed low impermeable wall

Results

As discussed, the refined scenarios have been run for the 50, 20, 5 and 1% AEP event. The depth map and an afflux surface map has been prepared for each figure and attached to this letter.

Summary

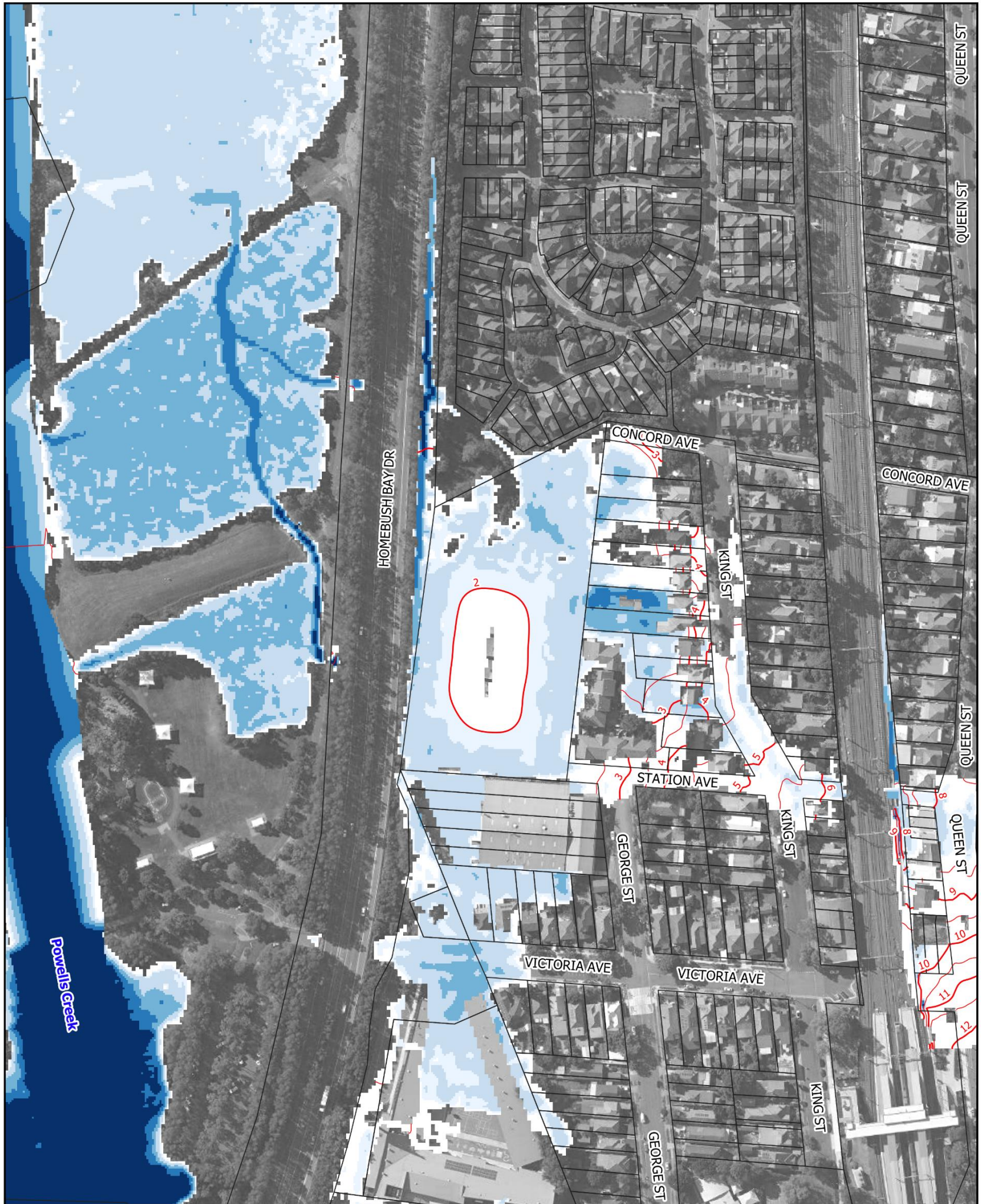
With the refinements to the flood model as requested by LACE as well as the low wall along the eastern boundary, there are no adverse flood impacts on adjacent properties. This result reinforces previous findings of no adverse impacts.

If you have any questions regarding this document, please feel to contact Tim Morrison to discuss (tim.morrison@csse.com.au, 0421 775 175).

Kind Regards,



Tim Morrison
(Catchment Simulation Solutions)



File Name: 01 Existing Flood Depth.aprx Using Layout: Concord West

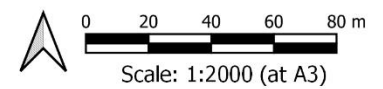
FIGURE 1 : CONCORD WEST EXISTING FLOOD DEPTH - 1% AEP

LEGEND

-99- Flood Level Contour (mAHD)

Flood Depth (m)

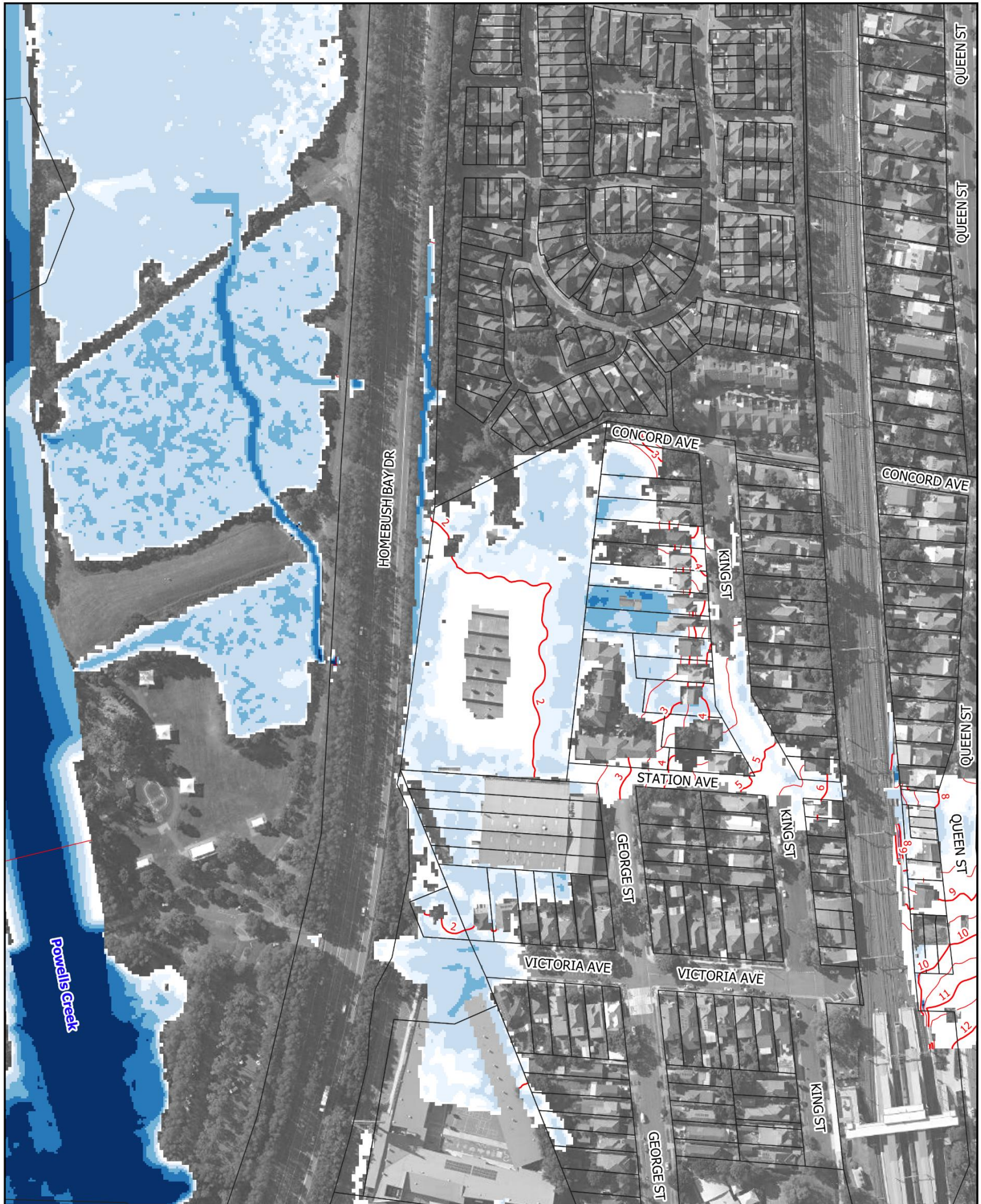
- <= 0.15
- 0.15 - 0.25
- 0.25 - 0.5
- 0.5 - 0.75
- 0.75 - 1
- > 1
- Cadastre



Scale: 1:2000 (at A3)

Notes:
Aerial photograph: NSW SixMaps

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File Name: 01 Existing Flood Depth.aprx Using Layout: Concord West

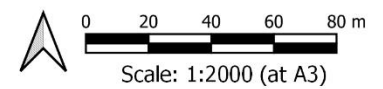
FIGURE 2 : CONCORD WEST EXISTING FLOOD DEPTH - 5% AEP

LEGEND

-99- Flood Level Contour (mAHD)

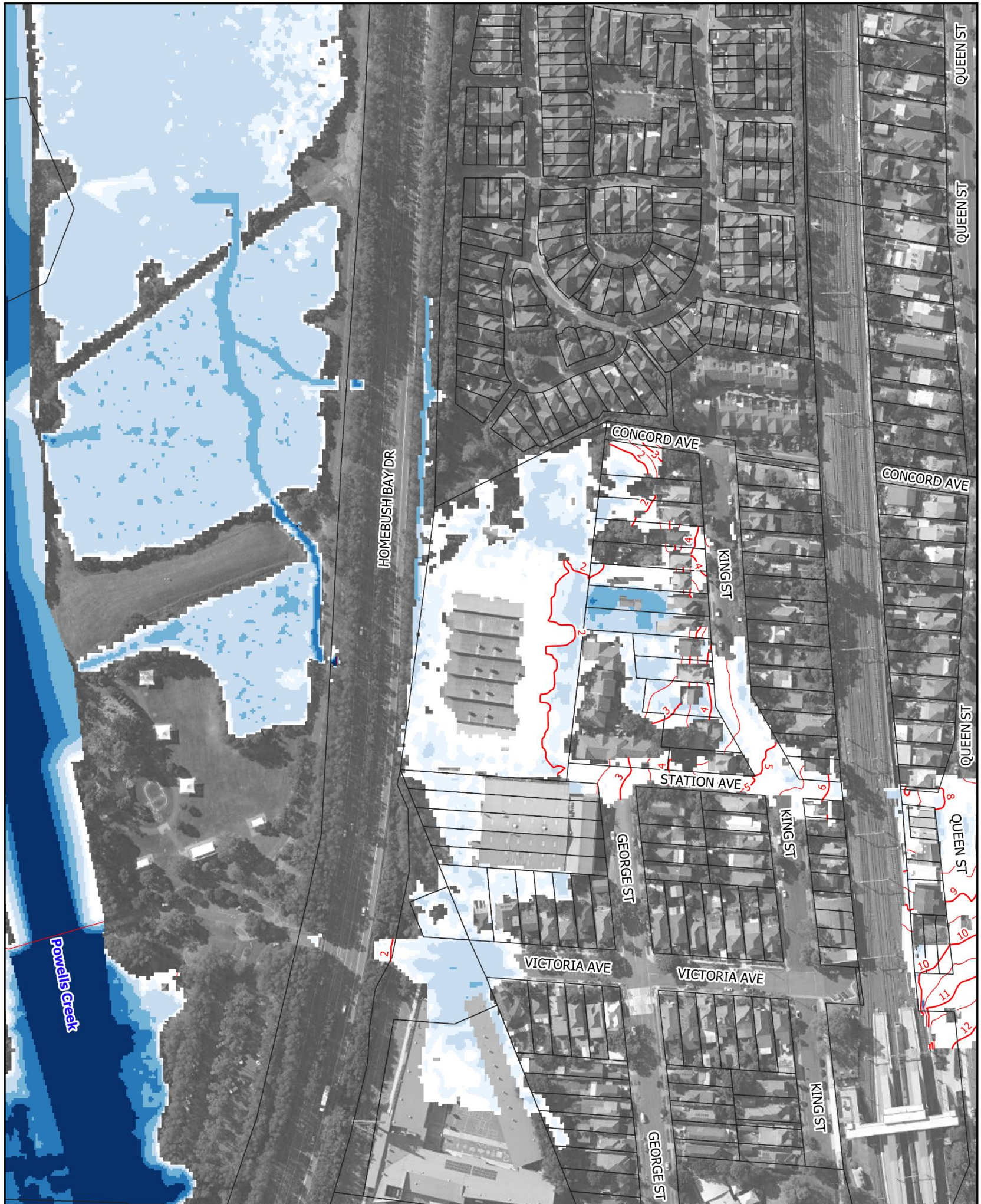
Flood Depth (m)

- <= 0.15
- 0.15 - 0.25
- 0.25 - 0.5
- 0.5 - 0.75
- 0.75 - 1
- > 1
- Cadastre



Notes:
Aerial photograph: NSW SixMaps

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File Name: 01 Existing Flood Depth.aprx Using Layout: Concord West

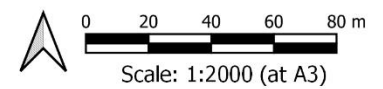
FIGURE 3 : CONCORD WEST EXISTING FLOOD DEPTH - 20% AEP

LEGEND

-99- Flood Level Contour (mAHD)

Flood Depth (m)

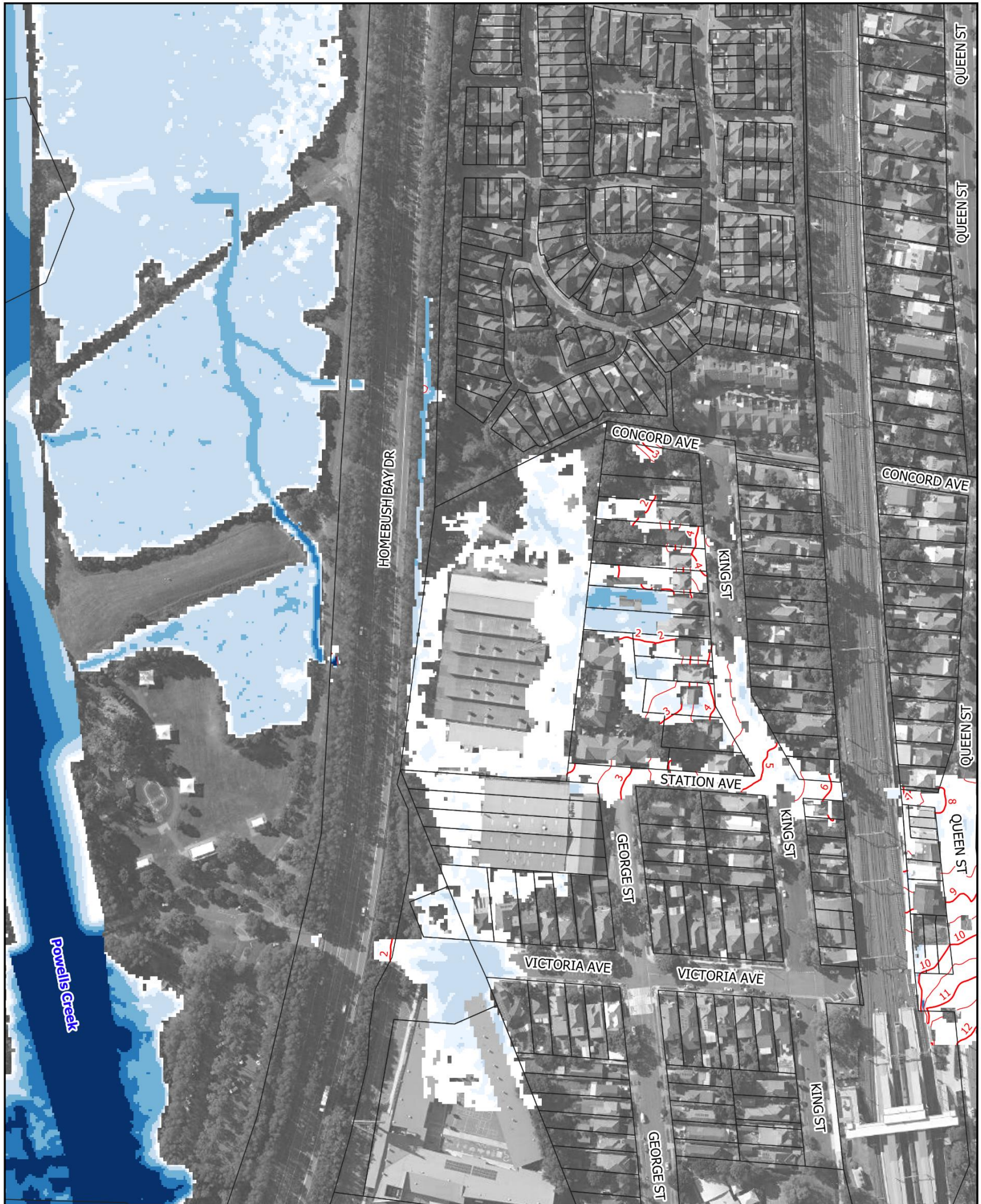
- <= 0.15
- 0.15 - 0.25
- 0.25 - 0.5
- 0.5 - 0.75
- 0.75 - 1
- > 1
- Cadastre



Scale: 1:2000 (at A3)

Notes:
Aerial photograph: NSW SixMaps

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File Name: 01 Existing Flood Depth.aprx Using Layout: Concord West

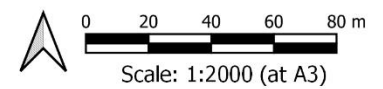
FIGURE 4 : CONCORD WEST EXISTING FLOOD DEPTH - 50% AEP

LEGEND

-99- Flood Level Contour (mAHD)

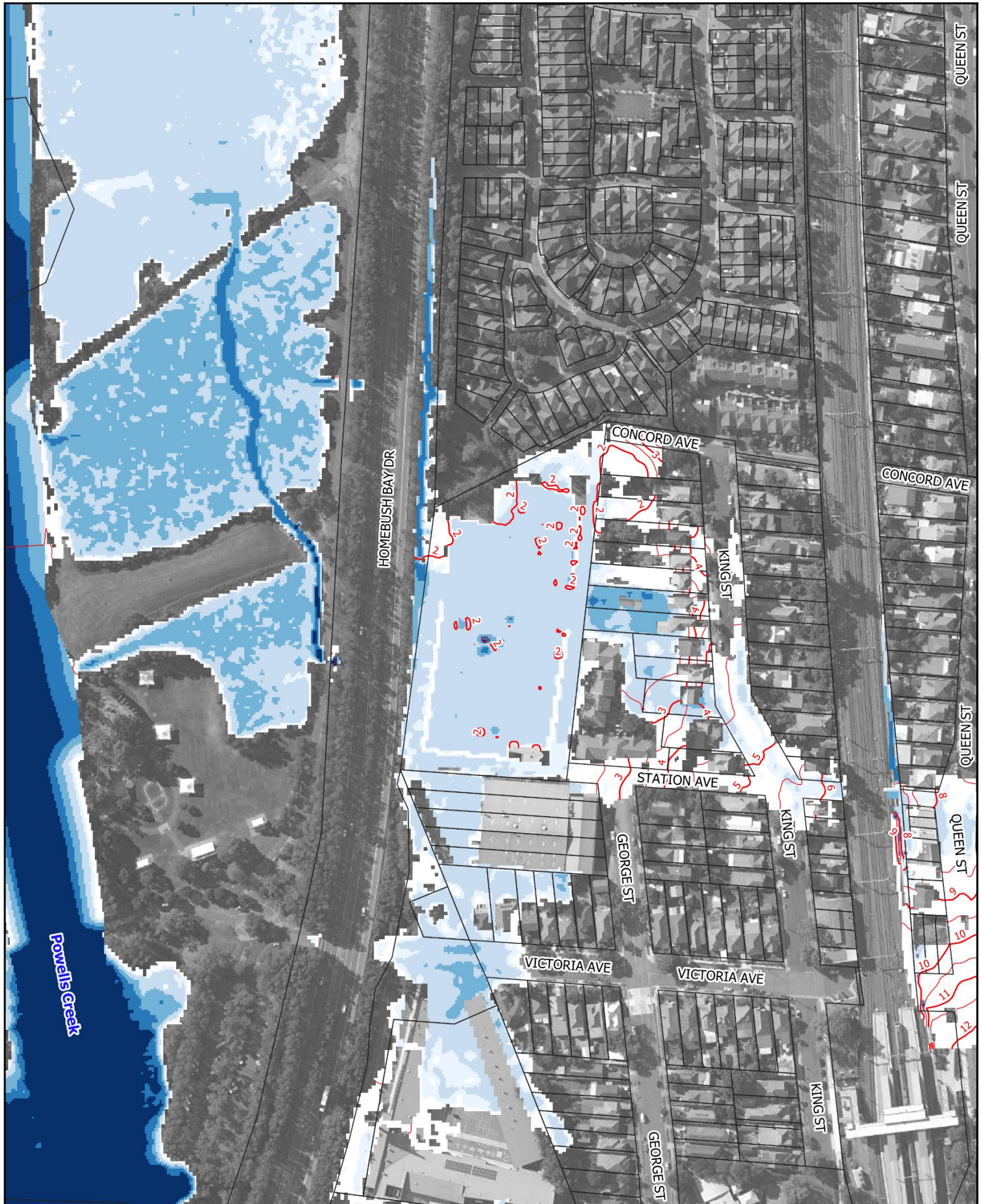
Flood Depth (m)

- <= 0.15
- 0.15 - 0.25
- 0.25 - 0.5
- 0.5 - 0.75
- 0.75 - 1
- > 1
- Cadastre



Notes:
Aerial photograph: NSW SixMaps

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File Name: 02_Developed Flood Depth.aprx Using Layout: Concord West

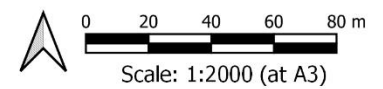
FIGURE 5 : CONCORD WEST DEVELOPED FLOOD DEPTH - 1% AEP

LEGEND

-99- Flood Level Contour (mAHD)

Flood Depth (m)

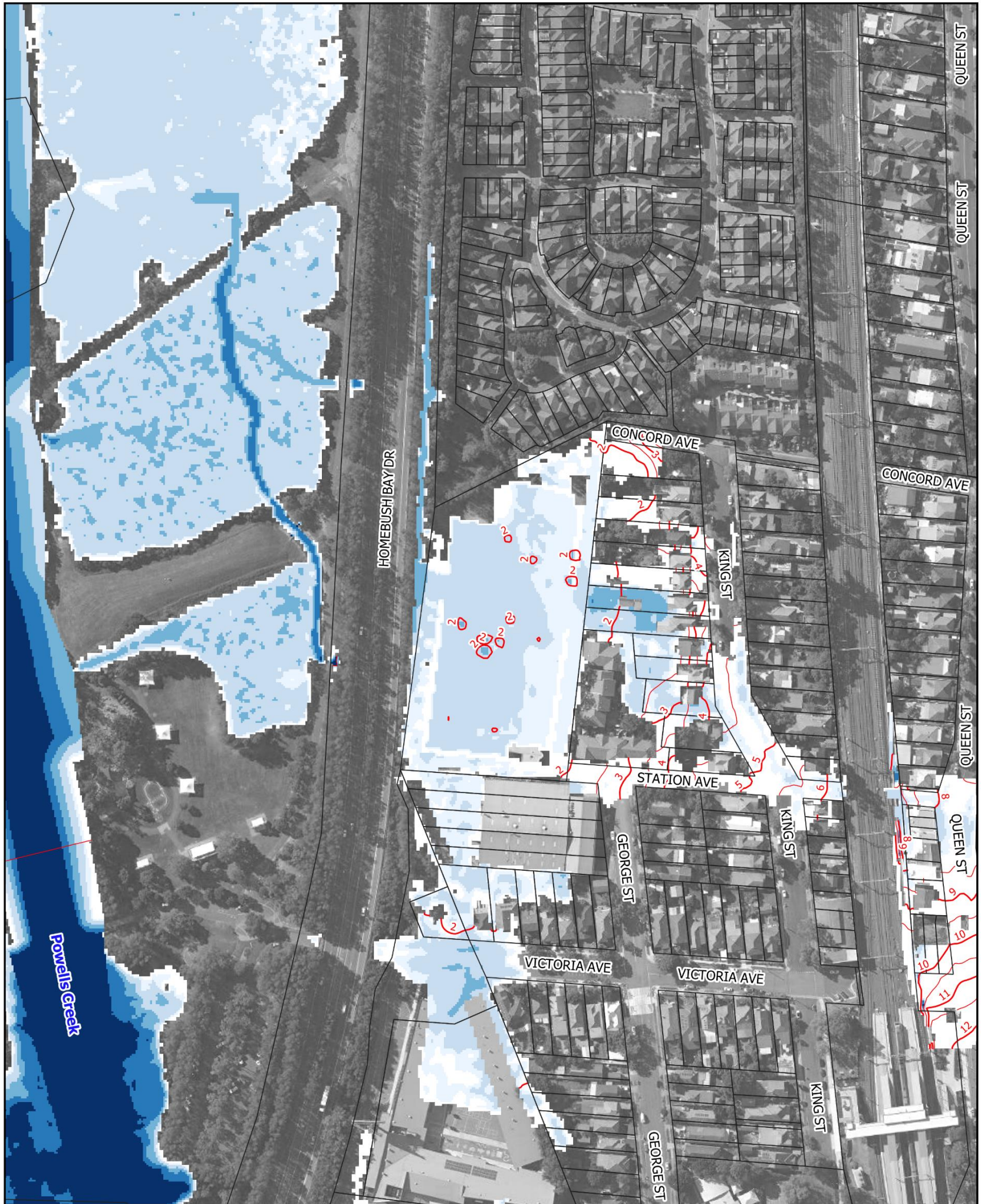
- <= 0.15
- 0.15 - 0.25
- 0.25 - 0.5
- 0.5 - 0.75
- 0.75 - 1
- > 1
- Cadastre



Scale: 1:2000 (at A3)

Notes:
Aerial photograph: NSW SixMaps

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File Name: 02_Developed Flood Depth.aprx Using Layout: Concord West

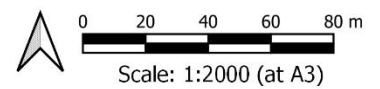
FIGURE 6 : CONCORD WEST DEVELOPED FLOOD DEPTH - 5% AEP

LEGEND

-99- Flood Level Contour (mAHD)

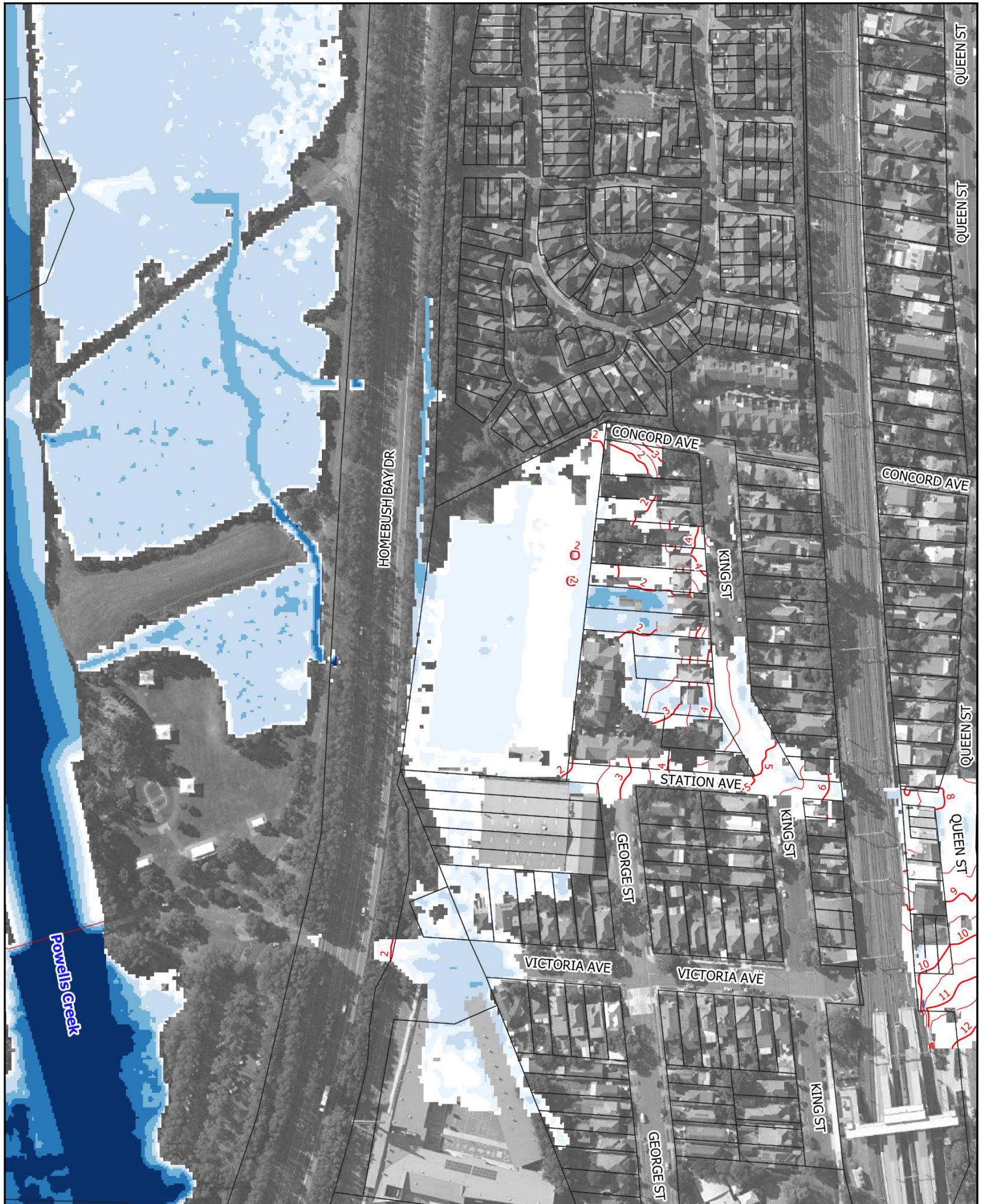
Flood Depth (m)

- <= 0.15
- 0.15 - 0.25
- 0.25 - 0.5
- 0.5 - 0.75
- 0.75 - 1
- > 1
- Cadastre



Notes:
Aerial photograph: NSW SixMaps

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File Name: 02 Developed Flood Depth.aprx Using Layout: Concord West

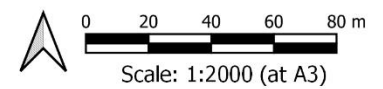
FIGURE 7 : CONCORD WEST DEVELOPED FLOOD DEPTH - 20% AEP

LEGEND

-99- Flood Level Contour (mAHD)

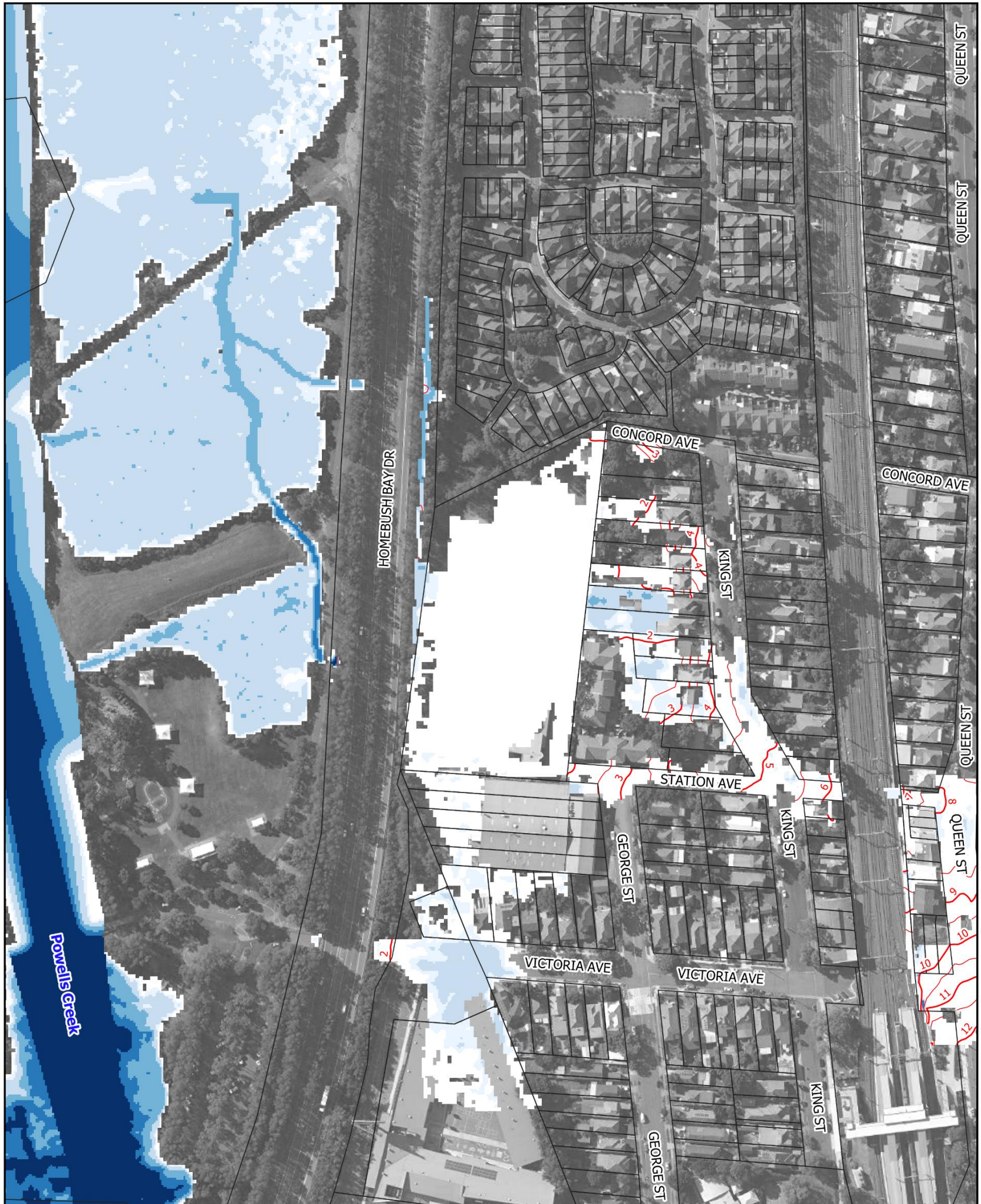
Flood Depth (m)

- <= 0.15
- 0.15 - 0.25
- 0.25 - 0.5
- 0.5 - 0.75
- 0.75 - 1
- > 1
- Cadastre



Notes:
Aerial photograph: NSW SixMaps

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File Name: 02_Developed Flood Depth.ags; Using Layout: Concord West

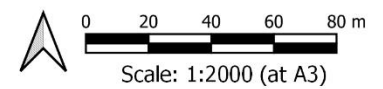
FIGURE 8 : CONCORD WEST DEVELOPED FLOOD DEPTH - 50% AEP

LEGEND

-99- Flood Level Contour (mAHD)

Flood Depth (m)

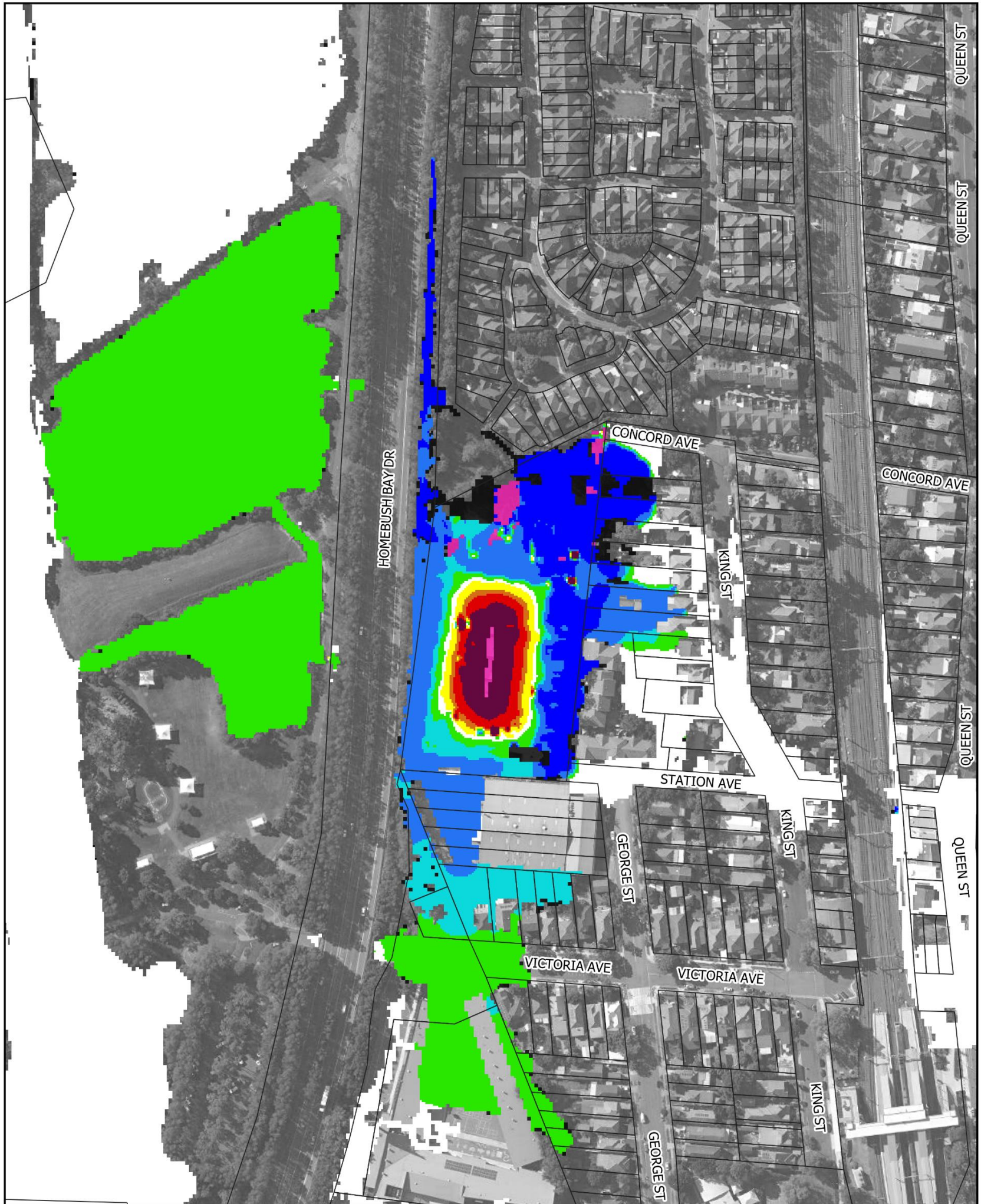
- <= 0.15
- 0.15 - 0.25
- 0.25 - 0.5
- 0.5 - 0.75
- 0.75 - 1
- > 1
- Cadastre



Scale: 1:2000 (at A3)

Notes:
Aerial photograph: NSW SixMaps

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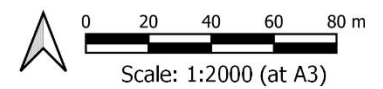


File Name: C03 Flood Level Difference.ogz Using Layout: Concord West

FIGURE 9 : CONCORD WEST FLOOD LEVEL DIFFERENCE - 1% AEP

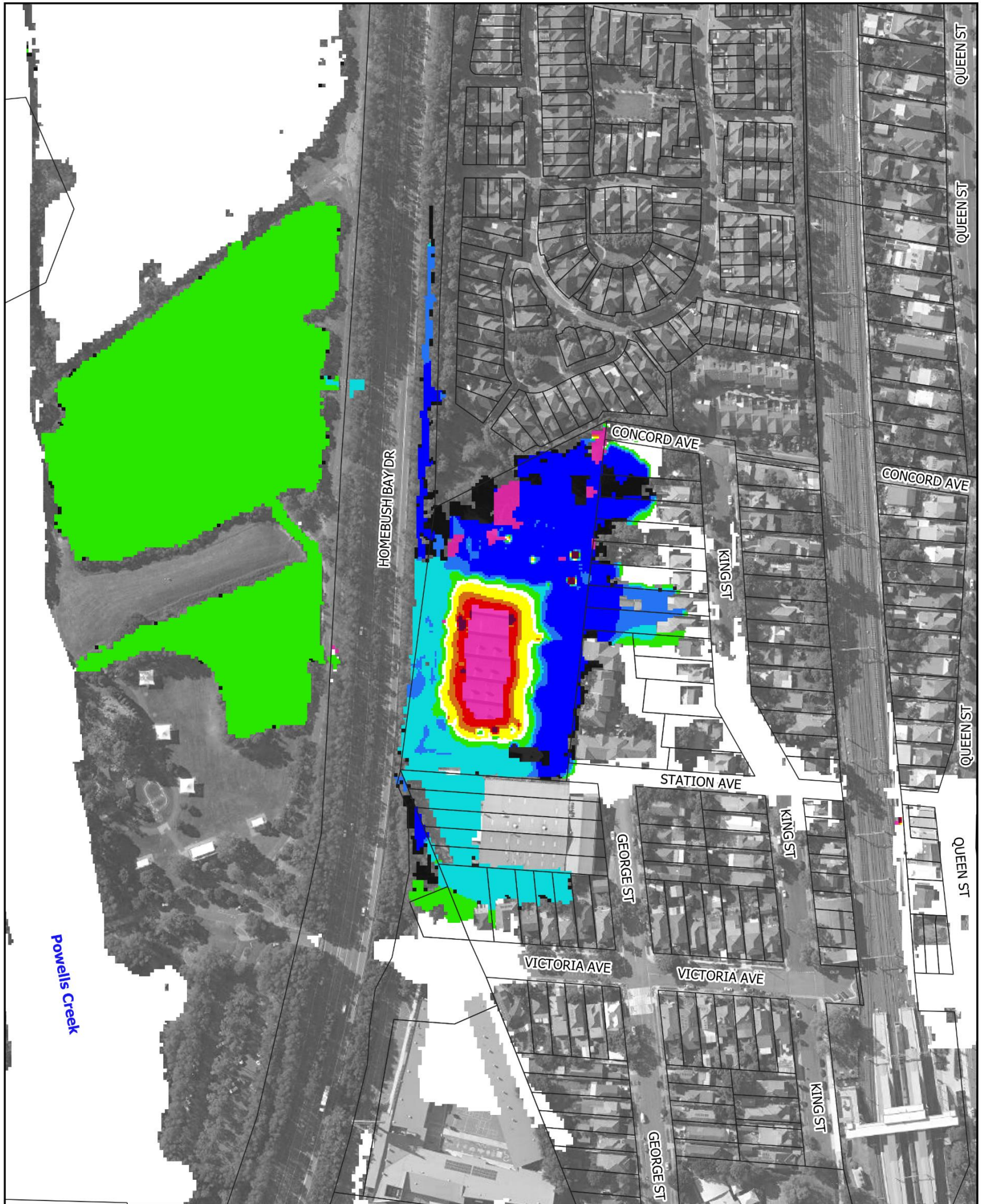
LEGEND

Flood Level Difference (m)	Previously wet now dry
≤ -0.1	Previously dry now wet
-0.1 - -0.06	Cadastre
-0.06 - -0.04	
-0.04 - -0.01	
-0.01 - 0.01	
0.01 - 0.04	
0.04 - 0.06	
0.06 - 0.1	
> 0.1	



Notes:
Aerial photograph: NSW SixMaps

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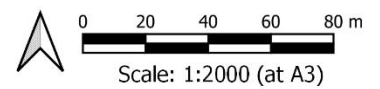


File Name: C03 Flood Level Difference.ogz Using Layout: Concord West

FIGURE 10 : CONCORD WEST FLOOD LEVEL DIFFERENCE - 5% AEP

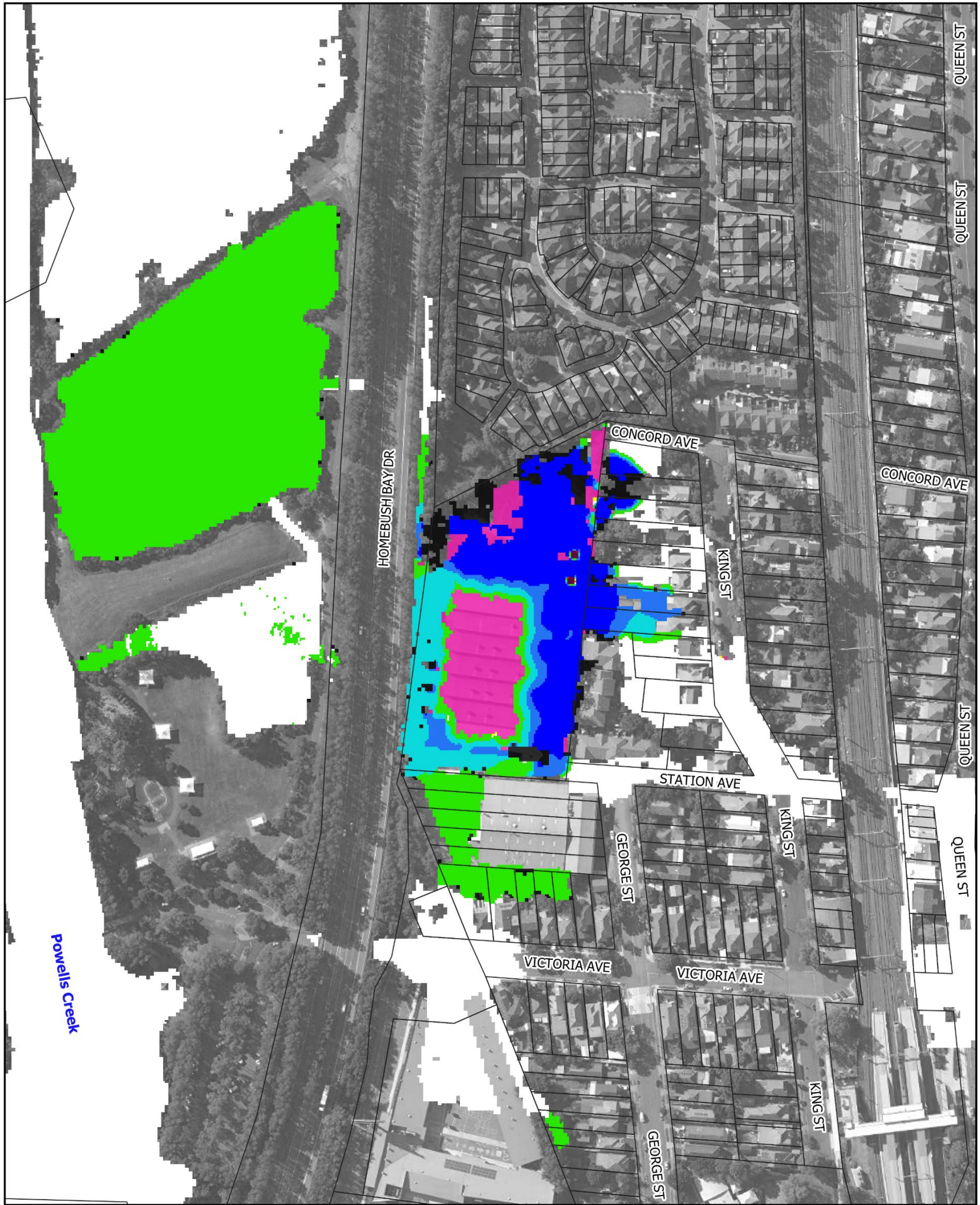
LEGEND

Flood Level Difference (m)	Previously wet now dry
Dark Blue: ≤ -0.1	Pink: Previously dry now wet
Blue: $-0.1 - -0.06$	White outline: Cadastre
Cyan: $-0.06 - -0.04$	
Green: $-0.04 - -0.01$	
White: $-0.01 - 0.01$	
Yellow: $0.01 - 0.04$	
Orange: $0.04 - 0.06$	
Red: $0.06 - 0.1$	
Purple: > 0.1	



Notes:
Aerial photograph: NSW SixMaps

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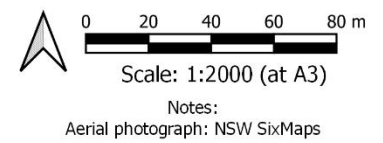


File Name: C03 Flood Level Difference.ogr Using Layout: Concord West

FIGURE 11 : CONCORD WEST FLOOD LEVEL DIFFERENCE - 20% AEP

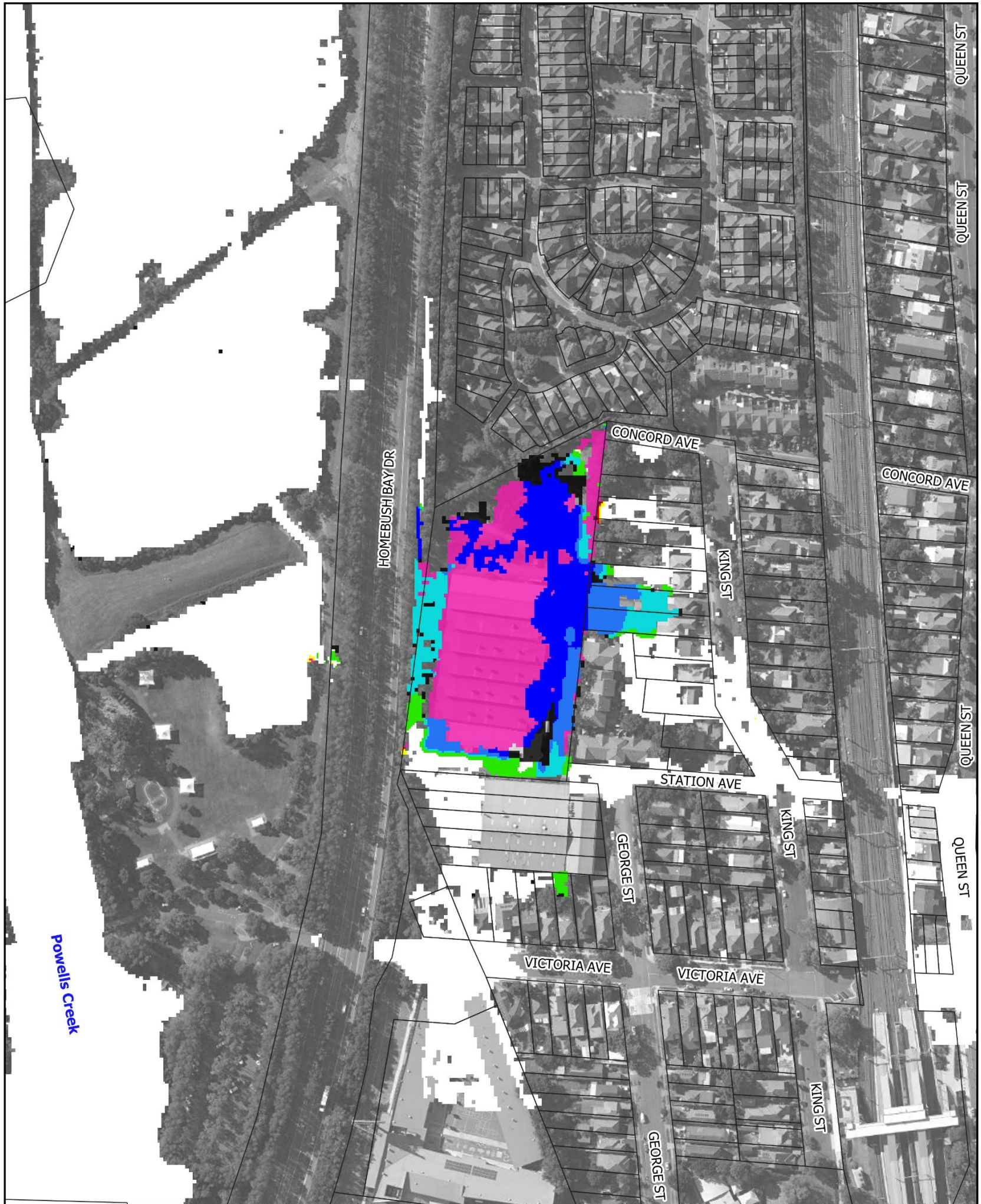
LEGEND

Flood Level Difference (m)	Previously wet now dry
≤ -0.1	Previously dry now wet
-0.1 - -0.06	Cadastre
-0.06 - -0.04	
-0.04 - -0.01	
-0.01 - 0.01	
0.01 - 0.04	
0.04 - 0.06	
0.06 - 0.1	
> 0.1	



Notes:
Aerial photograph: NSW SixMaps

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File Name: C3 Flood Level Difference.ogr Using Layout: Concord West

FIGURE 12 : CONCORD WEST FLOOD LEVEL DIFFERENCE - 50% AEP

LEGEND

Flood Level Difference (m)	Previously wet now dry
Black	Previously dry now wet
Blue	White
Dark Blue	Black
Cyan	White
Light Cyan	Black
Green	White
White	Black
Yellow	Black
Orange	Black
Red	Black
Purple	Black

Scale: 1:2000 (at A3)
 Notes:
 Aerial photograph: NSW SixMaps

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