Flood Emergency Response Plan

for

Proposed Seniors Living Village – Newcastle Golf Club

for

Principle Living

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Contents

Flood Response Summary

The following provides a summary of the findings of this Flood Emergency Plan including a summary of the flood behaviour, and recommended measures for preparation, response, and recovery.

Finished Floor Level and Access Constraints

This development has dwellings with a minimum finished floor level of **2.90m AHD,** and the community centre has a finished ground floor level of **3.20m AHD**. **These are above all but the most extreme flood events from the Hunter River.**

The community centre has a first-floor level of 7.20m AHD, and there is flood free land even in the Hunter River PMF on the south of the site.

The access to Vardon Road becomes isolated in the 5% AEP event and greater. There is still a **H1 path of travel in the 1% AEP 2100** for emergency access, as well as a separate emergency access directly to Nelson Bay Road.

Nelson Bay Road becomes compromised in events greater than the 1% AEP for Hunter River flooding.

Flood Behaviour

The site is subject to flooding from both the Hunter River and local catchment. Details are included below. Developed local catchment flood figures are presented in **Appendix A**.

Hunter River Flood Event	Max Water Level (m AHD)
1% AEP	1.60
1% AEP Climate Change 2100	2.40
PMF	5.10
Flood Planning Level	2.90

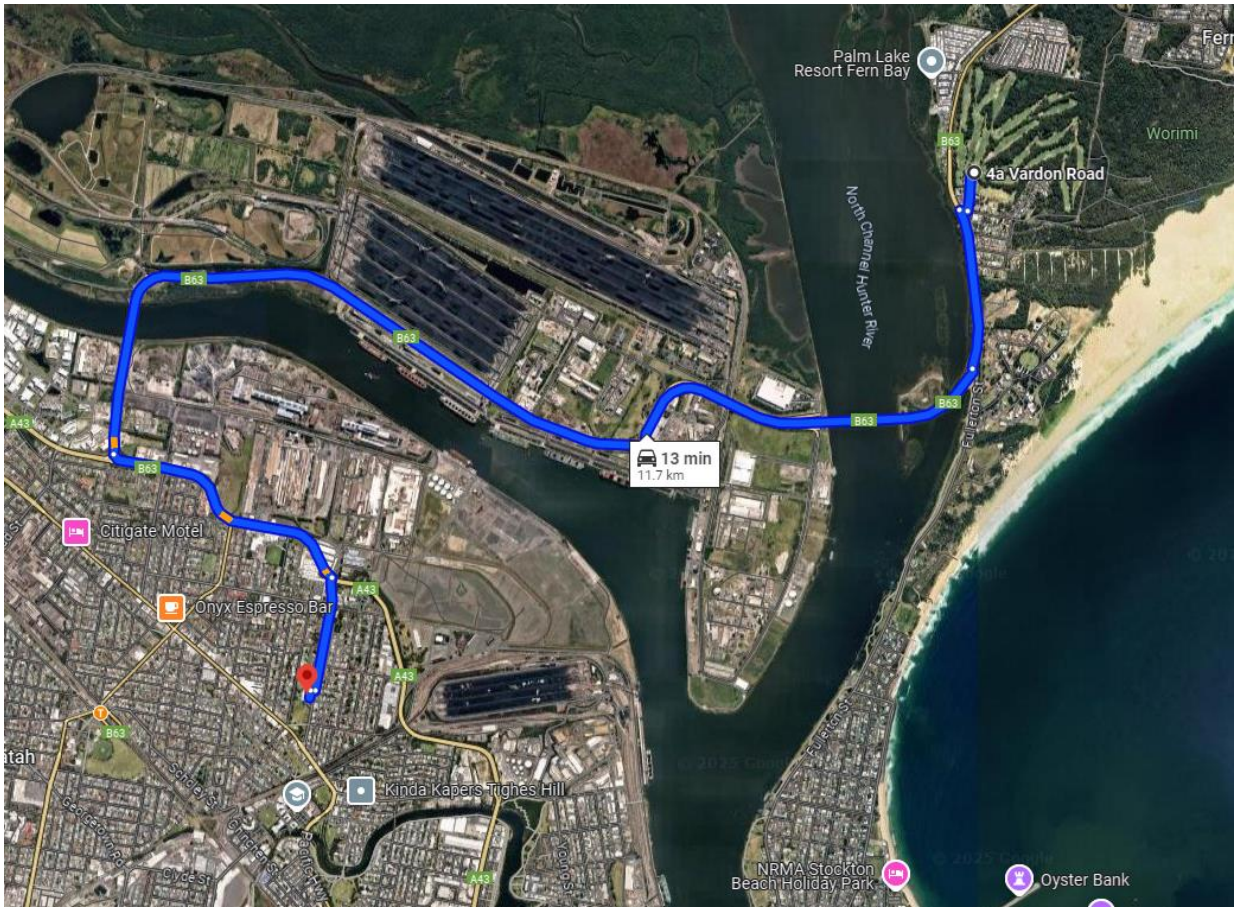
Local Flood Event	Max Water Level (m AHD)	Max Hazard (AR&R 2019)
5% AEP	1.71	H4
1% AEP	2.07	H4
1% AEP Climate Change 2100	2.27	H4
PMF	2.53	H4

Key Personnel

A summary of the key personnel is included below.

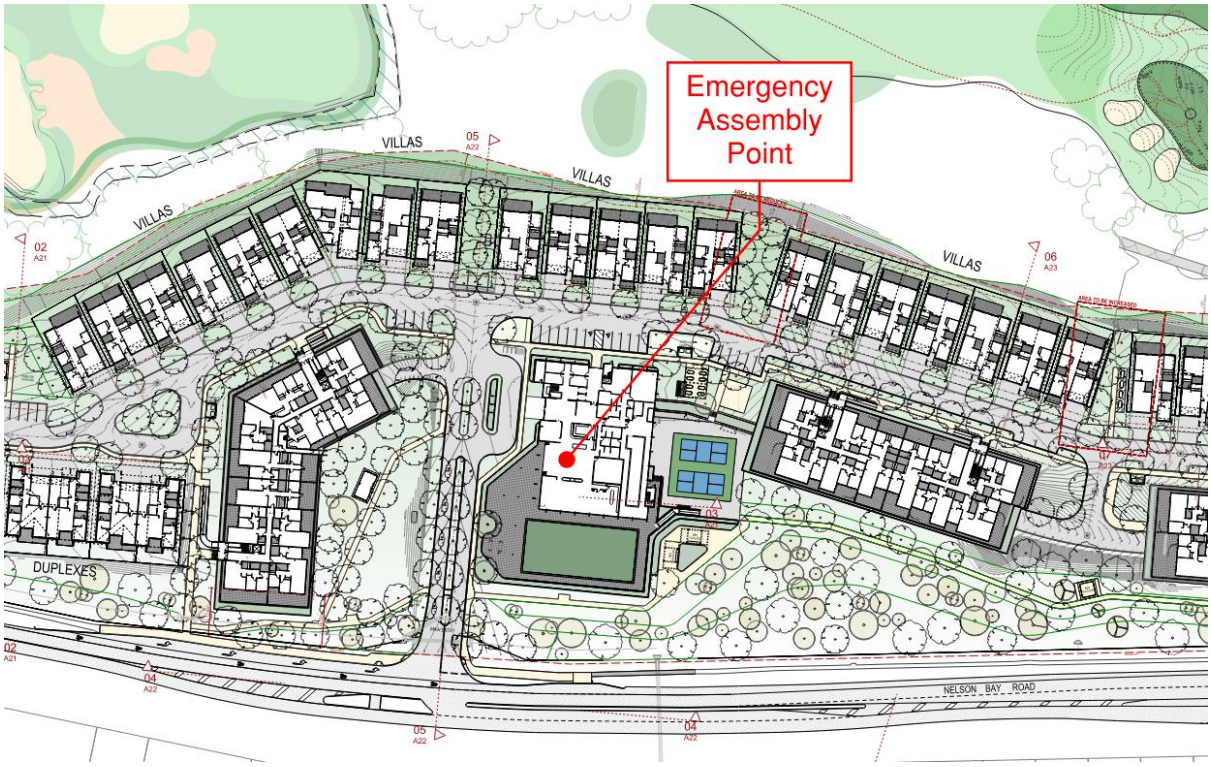
Person Organisation	Name	Number
Chief Flood Warden		
Deputy Chief Flood Warden		
First Aid Officer		
State Emergency Services (SES)	-	132 500
Police / Fire / Ambulance	-	000

Evacuation Route



Emergency Assembly Point

The emergency assembly point is presented below.



Flood Response Actions

WHEN	TRIGGER	RESPONSE	BY WHO
Prior to Flooding	Upon occupation and check every six months.	Assemble **Emergency Kit** and conduct routine checks. Install signage.	Chief Flood Warden / First Aid Officer
	Yearly	Coordinate Evacuation Drills.	All Flood Wardens
	Upon occupation and continuous.	Sign up to **Hazard Near Me / Hazard Watch** apps and portals.	All Flood Wardens
	Daily	Monitor weather and hazard situation.	All Flood Wardens
	New staff and residents	Inductions for new staff and residents to include flood risk.	All Flood Wardens
When Extreme Rainfall is Likely	**Either** of the following. • Severe weather/thunderstorm warning • Daily rainfall estimates greater than 100mm	**Monitor the weather** situation. Use caution travelling and do not walk or drive through floodwater.	All
Seek Temporary Refuge On-site	**All** of the following. • Severe weather/thunderstorm warning • Daily rainfall estimates greater than 100mm • Heavy rainfall commenced	1) **Make announcement** of weather situation. 2) **Seek temporary refuge** within dwellings or at Emergency Assembly Point.	Chief Flood Warden
Evacuate	**Either** of the following. • Hunter River Flooding Predicted Above Major Levels at Singleton Gauge • Daily rainfall estimates greater than 250mm	1) **Make announcement** of weather situation. 2) **Move** to **Emergency Assembly Point.** 3) **Evacuate** to higher ground.	Chief Flood Warden
Shelter as Last Resort	• Hexham gauge predicted above 2m AHD within the next 6 hours.	**1) Seek refuge** within the first floor of the community centre or units with floor level above the predicted flood level.	All
Once Risk has Passed / After a Flood	All Clear received from SES	Check all services and structural stability of buildings.	Qualified persons
	As required	Access state government flood recovery services.	All
	Check of structure and services complete	Return to normal operation.	Chief Flood Warden

1 Introduction

Northrop Consulting Engineers have been engaged by Principle Living to prepare a Flood Emergency Response Plan (FERP) for the proposed development at 4 & 4A Vardon Road, Fern Bay, herein referred to as the subject site or the site.

This FERP has been prepared to support the Development Application (DA) submission to Port Stephens Council. The purpose of this FERP is to promote a satisfactory awareness of expected flood behaviour and risks, identify measures to become flood prepared, and recommend a course of action during and after flood events.

This assessment has been prepared with the consideration of the following guidelines and documents:

- Port Stephens Council LEP and DCP.
- Australian Rainfall and Runoff 2019 Guidelines (ARR 2019).
- Flood Risk Management Manual – The Management of Flood Liable Land (NSW Government June 2023).
- Concept Flooding and Water Management Report for Proposed Seniors Living Village – Newcastle Golf Club (Northrop, 2024) and subsequent RFI responses.
- The Port Stephens Local Flood Emergency Sub Plan (SES, December 2022).
- Hunter River Branxton to Green Rocks Flood Study (WMA Water, September 2010)
- Upgrading of Lower Hunter Flood Model at Hexham (DHI Water and Environment, June 2008)
- Williamtown – Salt Ash Floodplain Risk Management Study and Plan (BMT WBM, September 2017).
- Service Level Specification for Flood Forecasting and Warning Services for New South Wales and the Australian Capital Territory – Version 3.15

1.1. Site Description

The subject site is located on the eastern side of Nelson Bay Road in Fern Bay. It includes the parcels of land at 4A Vardon Road, Fern Bay, otherwise known as Lot 4 DP 823114. The subject site is located within the Port Stephens Local Government Area (LGA). The locality is presented in Figure 1 below.

The existing improvements on the site include a golf course, practice area and clubhouse. There are three drainage lines which connect the local catchment to the discharge locations in Nelson Bay Road. Elevations range from less than 1m AHD in the low-lying northern areas to approximately 10m AHD in the east. Vegetated coverage ranges from manicured turf grass to dense wooded vegetation. Characteristics of the area are presented overleaf in Photo 1, Photo 2 and Photo 3.

Figure 1 - Site Locality (Six Maps)

Photo 1 - Looking south along the existing 17th fairway towards the area of proposed development

Photo 2 - Looking west along the existing drain along the existing 17th fairway

Photo 3 - Looking west from the existing 18th fairway towards Nelson Bay Road

1.2. Proposed Development

The proposal is to develop a Seniors Living Development and operate it under the provisions of the Retirement Villages Act, 1999. The key facilities and features of the retirement village are as follows:

- Site preparation & establishment activities – clearing existing vegetation, demolition of existing golf course via earthworks, bulk earthworks.
- Construction and occupancy of a seniors living development comprising:
  - Three (3) apartment buildings containing 125 serviced self-care dwellings.
  - Forty-seven (47) single storey (villas) serviced self-care dwellings.
- Carparking - 294 spaces across the site with each villa being provided with a double garage (94 spaces) and 202 basement carparking spaces within the three apartment buildings.
- A combined entry / egress driveway connecting to Nelson Bay Road and required intersection works.
- Provision of pedestrian and vehicular access to and from the site.
- Establishment of a Community Centre including games room, pool, cinema, dining room, bar, lounge areas, offices.
- Pickle ball courts, lawn bowls facility, open space, landscaping, picnic shelter, public art, open lawn area for passive recreational activities and formal striking planting.
- Civil works including internal access roads, pedestrian linkages to Nelson Bay Road and the golf club, stormwater infrastructure.
- Connection to Country ‘Keeping Place’.
- Extension and enhancement of physical infrastructure utilities as needed.

For further details, refer to the architectural drawings prepared by EJE Architecture and dated March 2025.

2 Methodology

This plan was developed based on the flood information available in the Concept Flooding and Water Management Report for Proposed Seniors Living Village – Newcastle Golf Club (Northrop, 2024).

The expected flood behaviour for the subject site is based on the above flood information and is summarised in the **Section 3 - Flood Behaviour**.

A review of the Bureau of Meteorology (BoM) and Sate Emergency Service (SES) guidelines have been undertaken to report on the likely warning types described in **Section 4 - Flood and Evacuation Warnings**.

Consideration has been given to the personnel most likely to be on site and responsible for the flood emergency response. This is outlined in **Section 5 - Flood Response Personnel**.

Analysis of the site, nearby topography and likely flood behaviour has informed the assembly point on-site refuge locations, and evacuation route nominated in **Section 6 - Emergency Assembly Point and Evacuation Routes.**

Contact numbers for relevant emergency response agencies are noted in **Section 7 - Emergency Contact**.

This Flood Emergency Response Plan (FERP) has been prepared to:

- Promote satisfactory awareness of expected flood behaviour and flood risks associated with the subject site
- Nominated roles and responsibilities when preparing for and responding to a flood emergency.
- Identify measures to monitor weather forecast and highlight warning systems available.
- Provide education and awareness material for training programs with respect to flooding f the subject site.
- Identify potential evacuation and evasion procedures including floor refuge opportunities.

Contained herein is a description of the likely flood behaviour, recommendations for flood preparation and recommended response actions during a flood event.

3 Flood Behaviour

3.1 Flood Mechanisms

The site is subject to flooding from both the Hunter River / Fullerton Cove, and local catchment flooding mechanisms. Riverine flooding is expected to have extended warning, with flood water expected to rise relatively slowly, and remain elevated for an extended period. Local catchment flooding is expected to peak quickly with rainfall and recede relatively soon after rainfall ceases.

3.2 Hunter River Flood Elevation

Hunter River flood levels have been obtained from the Flood Certificate provided by Port Stephens Council (Certificate Number 83-2018-251-1 dated 14 August 2018). These are summarised below in Table 1.

Table 1 - Subject Site Riverine Flood Behaviour

Flood Event	Max Water Level (m AHD)
1% AEP	1.60
PMF	5.10
Flood Planning Level	2.90

3.3 Local Catchment Flood Elevation and Hazard

The local catchment flood behaviour is summarised below in Table 2, and the guidance on characteristics for hazard is presented overleaf in Figure 2.

Table 2 - Subject Site Local Catchment Flood Behaviour

Flood Event	Max Water Level (m AHD)	Max Hazard (AR&R 2019)
5% AEP	1.71	H4
1% AEP	2.07	H4
1% AEP Climate Change 2100	2.27	H4
PMF	2.53	H4

3.4 Relationship with Finished Floor Level

The development has a minimum finished floor level of **2.90m AHD** which is above all events considered except for very rare to extreme events **well in excess of the 1% AEP 2100 up to the PMF**.

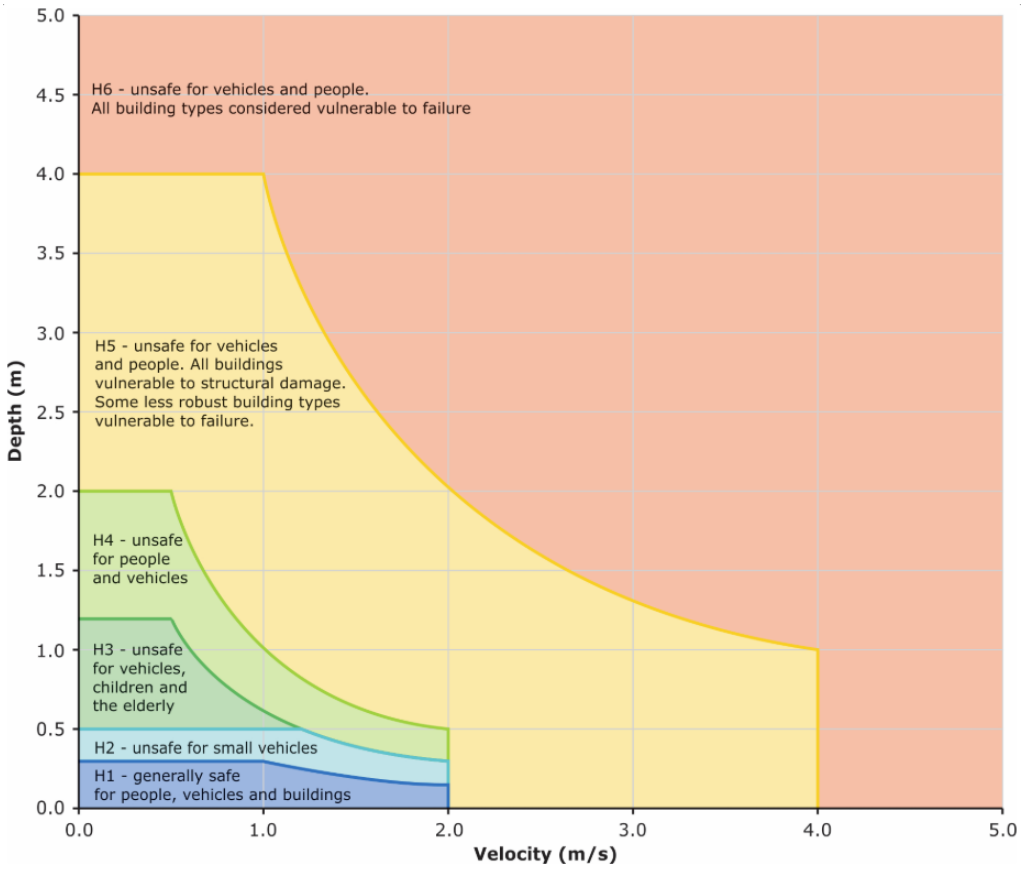


Figure 2 - Australian Rainfall and Runoff (2019) Hazard Categories

3.5 Flood Warning Time

The flooding from the local catchment is likely to occur **within six hours** of rainfall commencing, and the warning for this mechanism is likely to come from Bureau of Meteorology forecasts the day before. This mechanism does not inundate the proposed floor level even in extreme events.

Flooding from the Hunter River will have significant warning time due to the gauges within the catchment. The trigger for evacuation is based on **Major Flooding** at the Singleton Gauge. The Bureau Service Level Specification notes warning times of greater than 24 hours to time of peak. Furthermore, the *Hunter River to Green Rocks Flood Study (September, 2010 – WMA Water)* notes travel times of the flood peak from Singleton to Maitland of between 11 and 28 hours.

Assuming six hours to mobilise an evacuation, there is in excess of 24 hours warning time to evacuate until the evacuation route is cut from Hunter River flooding.

3.6 Flood Duration

Flood duration for the **local flood mechanism** is likely to drain within a day and not cause significant disruption to the regional road network over a sustained period. Isolation of the development from Nelson Bay Road for this mechanism is expected to be less than six hours.

Flooding from the **Hunter River mechanism** is likely to be in the order of **three to seven days** and evacuation is required prior to this event occurring.

4 Flood and Evacuation Warnings

Rainfall gauge stations are maintained within the Port Stephens LGA region and provide information to the Bureau of Meteorology (BoM) as a source of information, informing their flood warning systems.

The Bureau should issue one of five types of warnings through local radio, television and through their website http://www.bom.gov.au. In addition, the SES may issue either an advice, watch and act, or emergency warning.

It is recommended that Flood Wardens download the Hazards Near Me and BoM apps on their mobile device and enable push notifications for warnings in the area that covers the subject site.

4.1 Bureau of Meteorology Warnings

4.1.1 Severe Weather Warning

Severe weather warnings are issued by the Bureau for potentially dangerous weather conditions. A description of the threat will be included in the warning along with the time for next issue. It is noted that a severe weather warning does not imply that flooding will eventuate. Warnings are generally updated every six hours, or as the event dictates.

This type of warning should be accompanied by a predicted rainfall depth and storm period as discussed in the Flood Response section. They are also accompanied by observed rainfall values from rainfall that has already occurred across the state.

4.1.2 Severe Thunderstorm Warning

A severe thunderstorm warning will be issued if there is strong evidence that a severe thunderstorm will develop, or if a severe thunderstorm is reported. Flash flooding may occur during severe thunderstorms. Warnings are generally updated every three hours or shorter as required.

4.1.3 Flood Alert/ Watch/ Advice

A flood alert/ watch/ advice is one of the earliest warnings that will be issued by the BoM with advice provided up to four days in advance of the expected onset of flooding (BoM). Although four days warning may be available, they are also occasionally issued during and after the rainfall has occurred, depending on where the rainfall has fallen within the catchment.

4.1.4 Generalised Flood Warning

A generalised flood warning is to be issued when flooding is expected to occur in a given area. Three hours warning time is expected from issue of warning to peak flood level as per the “Service Level Specification for Flood Forecasting and Warning Services for New South Wales – Version 3.15” (Bureau of Meteorology, 2024).

4.1.5 Minor/ Moderate/ Severe Flood Warning

A Minor / Moderate / Severe Warning typically provides more information than a generalised flood warning and is issued when flooding is expected to occur in a given area. These warnings are usually accompanied by a flood gauge level and timing for the peak to occur.

A more detailed flood warning may be issued based on any additional information available. Three hours warning time is expected from issue of warning to peak flood level.

All warnings will be issued through the SES/BOM website, radio and television. All public and commercial television stations should broadcast warnings. Radio Frequencies include 1233AM (ABC Newcastle), 1143AM (2HD), 105.3FM (New FM), 106.9FM (HIT 106.9), 103.7FM (2NUR FM).

4.2 SES Warnings

The SES uses a nationally consistent set of icons from the Australian Warning System (AWS). These are presented below in Figure 3.

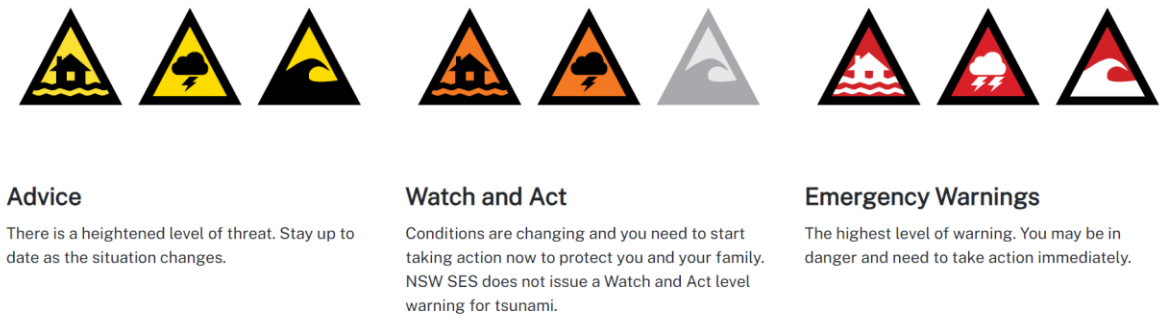


Figure 3 – SES Warning icons

4.2.1 Advice

This is typically the first alert that will be issued by the SES and indicates a flood or severe weather event may develop. Stay up to date with SES / BoM warnings and monitor conditions in case the situation changes.

4.2.2 Watch and Act

The SES will issue a Watch and Act warning when flood conditions are changing and the purpose of this warning is to prepare for evacuation or avoid the area that is expected to be impacted by flooding.

4.2.3 Emergency Warnings

Emergency warnings issued by the SES indicate the highest level of warning. These are issued typically if evacuation is required immediately.

4.3 Other Warning Types / Resources

4.3.1 On-Site Emergency Communication

The village has an interactive village management system to be used in disseminating the developing weather situation or any warnings received. In the event of power being out or the system being not operational, an air horn and handheld loudspeaker is located within the Flood Emergency Kit. These will be used to obtain people's attention and direct them to the emergency assembly point or facilitate evacuation offsite.

4.3.2 Hazard Watch

The NSW SES and NSW Government have recently created the Hazard Watch online portal where the user can review predicted and current flood emergencies. This can be accessed from https://www.hazardwatch.gov.au/. The application is expected to provide SES and BoM warnings for NSW and should be used by Flood Wardens to monitor flood events and receive any of the aforementioned warnings.

4.3.3 Hazards Near Me App

Recently the NSW SES and NSW Public Works have created a tool called Hazards Near Me App NSW which is both a webpage and Phone Application. The application filters BoM and SES warnings relevant to the user and may be used by the Flood Wardens to monitor flood events and receive any of the aforementioned warnings. An area of interest can be specified in the app.

5 Flood Response Personnel

Summarised in Table 3 below are the facilities nominated emergency personnel, their location and responsibilities in managing flood response.

Table 3 - Flood Response Personnel

	Location	Responsibilities
Chief Flood Warden	On-site	• Coordinate flood evacuation drills and site inductions. • Monitor weather at 4pm daily for upcoming extreme rainfall events. • Receive notifications BoM / Hazards Near Me apps. • Decide when Evacuation / Refuge is required. • Communicate Evacuation / Refuge to residents, staff and visitors. • Liaison with SES or Emergency Services personnel if they attend site. • Remain calm and direct residents, staff and visitors through the evacuation procedures.
First Aid Officer	On-Site	• Prepare and maintain Flood Emergency Kits. • Coordinate assistance for residents with mobility difficulties
Deputy Chief Flood Warden	On-Site	• Undertake Chief Flood Warden duties when Chief Flood Warden is unavailable. • Maintain calm and direct residents, staff and visitors through the evacuation process.

6 Emergency Assembly Point and Evacuation Routes

6.1 Emergency Assembly Point

The nominated Emergency Assembly Point is the Community Centre as noted in Figure 4 below. As outlined above, this area has a finished floor level of 3.20m AHD which is above all local flood events and the Hunter River 1% AEP 2100 plus freeboard.

This area is suitable for refuge in all but the very rare to extreme Hunter River flood events.

The first floor of the community centre is located at 7.20m AHD which is above all flood events.

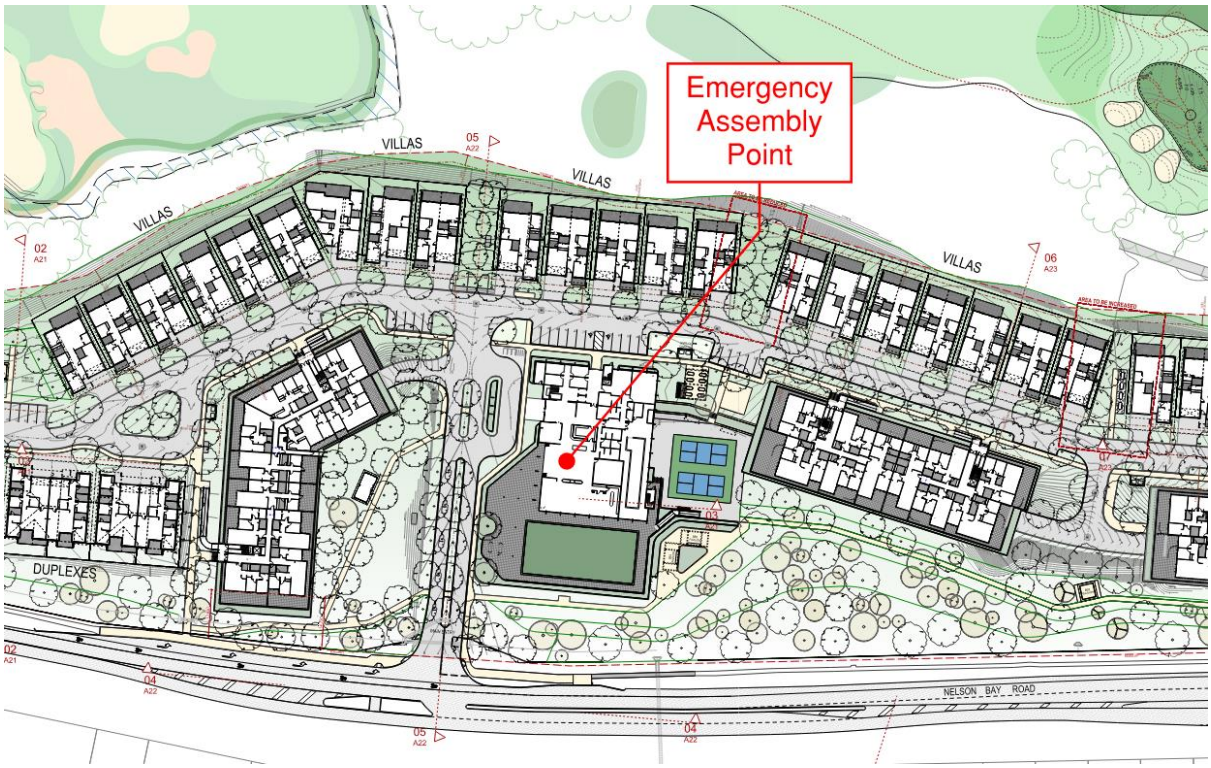


Figure 4 - Emergency Assembly Point

6.2 Evacuation Route

Once the decision has been made to evacuate, we recommend evacuation to the south over the Hunter River away from the Hunter River floodplain. A suggested route is included below in **Figure 5**. As this evacuation should occur in advance of the flooding arriving a single evacuation destination has not been specified.

It is imperative that evacuation occur prior to the flood peak. Many roads in the vicinity of the site are expected to be cut by floodwater and evacuation will become increasingly difficult as flood water rises.

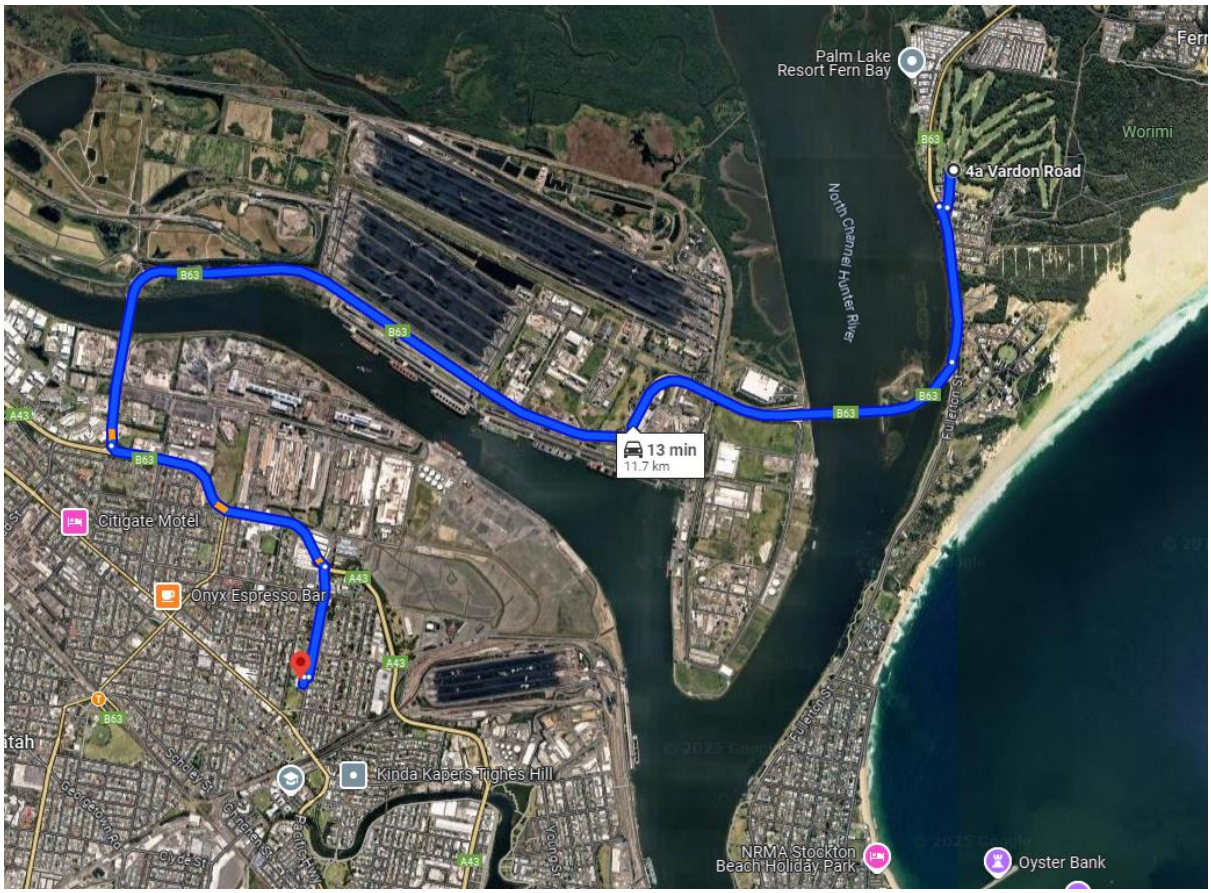


Figure 5 - Evacuation Route

7 Emergency Contact

For transport issues, review the Live Traffic Dashboard online or via the mobile app.

For emergency assistance during flood events, please call the **SES** on **132 500.**

If you are in a life-threatening situation please call Police, Fire or Ambulance on 000.

8 Flood Response Preparation

It is the responsibility of the Chief Flood Warden and First Aid Officer to prepare the village for a flood event. This is achieved through the following items. A summary is presented in Table 4.

8.1 Floodsafe Emergency Kit

Potential items for a flood emergency kit are outlined at; https://www.ses.nsw.gov.au/floodsafe/prepare-your-home/emergency-kit/. Items outlined on the SES website and some additional items are presented below:

- Drinking water, medicines and non-perishable food items.
- A copy of the Flood Emergency Response Plan.
- Chemical register.
- Air horn and hand-held loudspeaker.
- Portable radio with spare batteries.
- Torches with spare batteries.
- Two-way radio with spare batteries.
- A first aid kit.

When leaving or evacuating add the following items:

- Sign in book for staff, visitors and residents.

The Flood Safe kit should be kept in the **Community Centre** in a roll trolley suitable for easy deployment in the event of an evacuation / refuge. The contents of the kit and management during a flood event will be the responsibility of **First Aid Officer**.

8.2 Site Signage

Flood warning and response signage must be displayed within the **Community Centre**. Example signage is provided in the **Flood Response Summary** section of this report.

It is the responsibility of the **Chief Flood Warden** to ensure signage is up to date and displayed as recommended above.

8.3 Flood Emergency Response Drills

Evacuation drills are designed to increase flood awareness within the centre. These drills are to be undertaken at least once a year to familiarise residents and staff with flood emergency processes. Drills may be undertaken in conjunction with other hazards drills.

It is also an opportunity to outline expected flood levels and dangers of entering flood water. The following link can be used as a resource for evacuating staff and visitors that are mobility impaired: https://www.ses.nsw.gov.au/floodsafe/what-floodsafe-means-for-you/mobility-impaired/.

For new residents and staff it is expected they will be made familiar with the site flooding conditions and made familiar with the emergency procedures and response during the initial site induction.

8.4 Monitoring of Weather Situation

It is the responsibility of all Flood Wardens to monitor the weather situation and be aware if a warning has been issued. This will be achieved through flood wardens receiving push notifications from the

Hazards Near Me and BoM apps and monitoring local radio stations and the Bureau of Meteorology website.

8.5 Induction Training

Induction training is required for all new residents prior to moving in. Induction training should include a site walkover that identifies the expected flood behaviour.

The emergency procedures, points of assembly and refuge, are also to be relayed during this induction training as summarised in this plan.

8.6 Summary

Table 4 - Flood preparation summary

WHEN	TRIGGER	RESPONSE	BY WHO
Prior to Flooding	Upon occupation and check every six months.	Assemble **Emergency Kit** and conduct routine checks. Install signage.	Chief Flood Warden / First Aid Officer
	Yearly	Coordinate Evacuation Drills.	All Flood Wardens
	Upon occupation and continuous.	Sign up to **Hazard Near Me / Hazard Watch** apps and portals.	All Flood Wardens
	Daily	Monitor weather and hazard situation.	All Flood Wardens
	New residents and staff	Inductions for new residents and staff to include flood risk.	All Flood Wardens

9 Flood Response Actions

Flood response actions are outlined below, and a summary presented in Table 5.

We note that should SES or Emergency Services attend site; they assume operational control and all directions provided by these organizations should be followed and take precedent over the advice contained herein.

9.1 When Extreme Rainfall Is Likely – Heighten Awareness

When either a **Severe Weather Warning**, or **Severe Thunderstorm Warning**, or **daily rainfall with a 50 percent probability of 100mm or more** – all wardens, residents, staff, visitors, and potential visitors should commence the following actions.

- Monitor the weather situation.
- Have heightened awareness.
- Consider cancelling non-essential trips.
- Use caution when travelling and do not walk or drive through flood water.

9.2 When Extreme Rainfall is Occurring – Seek Temporary Refuge

When either a **Severe Weather Warning**, or **Severe Thunderstorm Warning**, and **daily rainfall with a 50 percent probability of 100mm or more,** and **rainfall has commenced** – the following actions should be undertaken.

9.2.1 Chief Flood Warden

- Make announcement of the developing weather situation and advise all residents, staff and visitors to remain calm and to seek refuge in their dwellings or the community centre until the weather situation subsides.

9.2.2 All Residents, Staff, and Visitors On-site

- Seek refuge in dwellings or the community centre.

9.3 When Extreme Hunter River Flooding is Predicted – Evacuate

When either **Major Flooding is predicted in the Hunter River at the Singleton Gauge**, or **daily rainfall with a 50 percent probability of 250mm or more** – the following actions should be undertaken.

9.3.1 Chief Flood Warden

- Make announcement of the developing weather situation and advise all residents, staff and visitors on-site to remain calm and evacuate from the site to higher ground.

9.3.2 All Residents, Staff, and Visitors On-site

- Evacuate the site for higher ground. Use caution when travelling and do not walk or drive through flood water.
- Use route suggested in Evacuation Route section of this report

9.3.3 Potential Visitors Located Offsite

- Cancel trips to subject site, assess safety of current location, and activate any private emergency plans.

9.4 When Evacuation Route is Cut by Hunter River Flooding – Seek Refuge as a Option of Last Resort

When predictions for the Hexham Bridge Gauge are above Minor flood classification or above 2m AHD within the next six hours it is too late to evacuate, and refuge should be sought on-site. Refuge is appropriate within the upper level of the community centre, within units above the predicted flood level, or on flood free land on the south of the site.

9.5 Summary

Table 5 – Flood response summary

WHEN	TRIGGER	RESPONSE	BY WHO
When Extreme Rainfall is Likely	**Either** of the following. • Severe weather warning • Daily rainfall estimates greater than 100mm	**Monitor the weather** situation. Use caution travelling and do not walk or drive through floodwater.	Chief Flood Warden
Seek Temporary Refuge On-site	**All** of the following. • Severe weather warning • Daily rainfall estimates greater than 100mm • Heavy rainfall commenced	1) **Make announcement** of weather situation. 2) **Seek temporary refuge** within dwellings or community centre.	Chief Flood Warden
Evacuate	**Either** of the following. • Hunter River Flooding Predicted Above Major Levels at Singleton Gauge • Daily rainfall estimates greater than 250mm	1) **Make announcement** of weather situation. 2) **Move** to **Emergency Assembly Point**. 3) **Evacuate** to higher ground.	All
Shelter as Last Resort	• Hexham gauge predicted above 2m AHD within the next 6 hours.	**1) Seek refuge** within the first floor of the community centre or units with floor level above the predicted flood level.	Chief Flood Warden

10 Flood Recovery

Flood recovery has been outlined below and a summary is presented below in Table 6.

10.1 Undertake Damage Assessment

Once a Final Flood Warning or SES “All Clear” has been received:

- Check structures for damage.
- Check all infrastructure and services for damage.
- Clean surfaces

All investigations should be undertaken for suitably qualified personnel wearing PPE.

10.2 Access Recovery Services

The NSW Government provides a number of resources for recovering after a flood event. This includes the following.

- Clean up advice.
- Advice for staying healthy.
- Accessing financial assistance and grants.
- Mental health services.

These are outlined at https://www.nsw.gov.au/emergency/floods/recover.

10.3 Return to Normal Operation

Once the structure and infrastructure has been checked, and all surfaces cleaned, the village can return to normal operation.

10.4 Summary

Table 6 - Flood recovery summary

WHEN	TRIGGER	RESPONSE	BY WHO
Once Risk has Passed / After a Flood	All Clear received from SES	Check all services and structural stability of buildings.	Qualified persons
	As required	Access state government flood recovery services.	Chief Flood Warden Village Owner
	Check of structure and services complete	Return to normal operation.	Chief Flood Warden

11 Revision of this Flood Evacuation Plan

This plan has been prepared as a preliminary plan for the purposes of the approval. **It should be updated to reflect detailed plans at Construction Certificate stage**.

This plan should be revised if a **new flood information for the site is available**, or there is an **updated regional flood warning system**.

Notwithstanding the above, this plan shall be **revised every three years** or when there is a **major operational change or an evacuation event.**

Revisions should be undertaken by a suitably qualified flood emergency response consultant.

Limitation Statement

Northrop Consulting Engineers Pty Ltd (Northrop) has been retained to prepare this report based on specific instructions, scope of work and purpose pursuant to a contract with its client. It has been prepared in accordance with the usual care and thoroughness of the consulting profession for the use by Principle Living. The report is based on generally accepted practices and standards applicable to the scope of work at the time it was prepared. No other warranty, express or implied, is made as to the professional advice included in this report.

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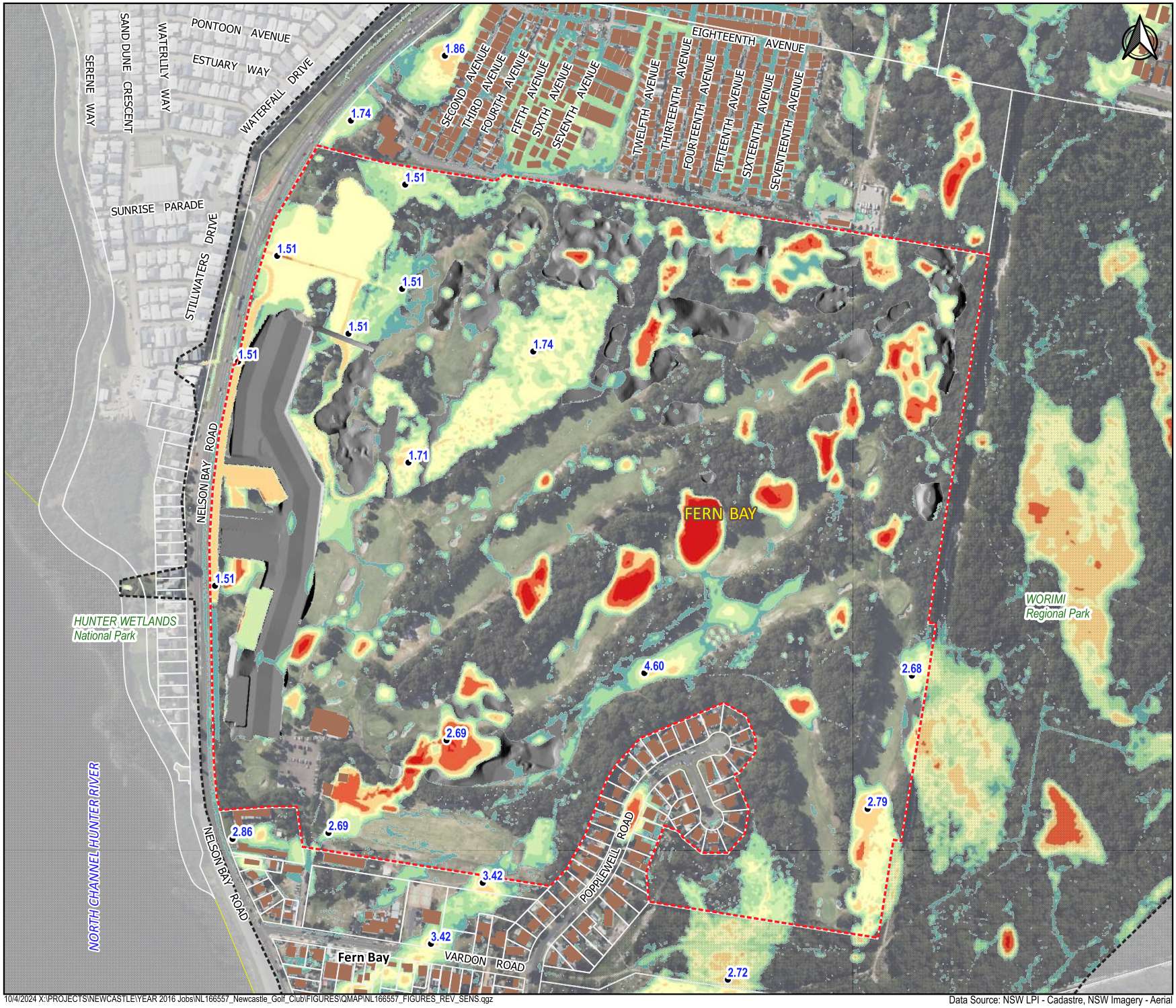
Document Register

Rev	Status	Prepared	Approved	Date
A	For Approval	AT	GB	13 March 2025
B	For Approval	GB	GB	25 March 2025

Appendix A

Local Catchment Developed Flood Figures



Legend

- TUFLOW Model Extent
- Buildings
- Proposed Landform
- Water Elevation(mAHD)

Depth(m)

- < 0.01
- 0.01 - 0.10
- 0.10 - 0.30
- 0.30 - 0.50
- 0.50 - 0.70
- 0.70 - 1.00
- 1.00 - 1.50
- 1.50 >

0 100 200 Metres

1:6,500

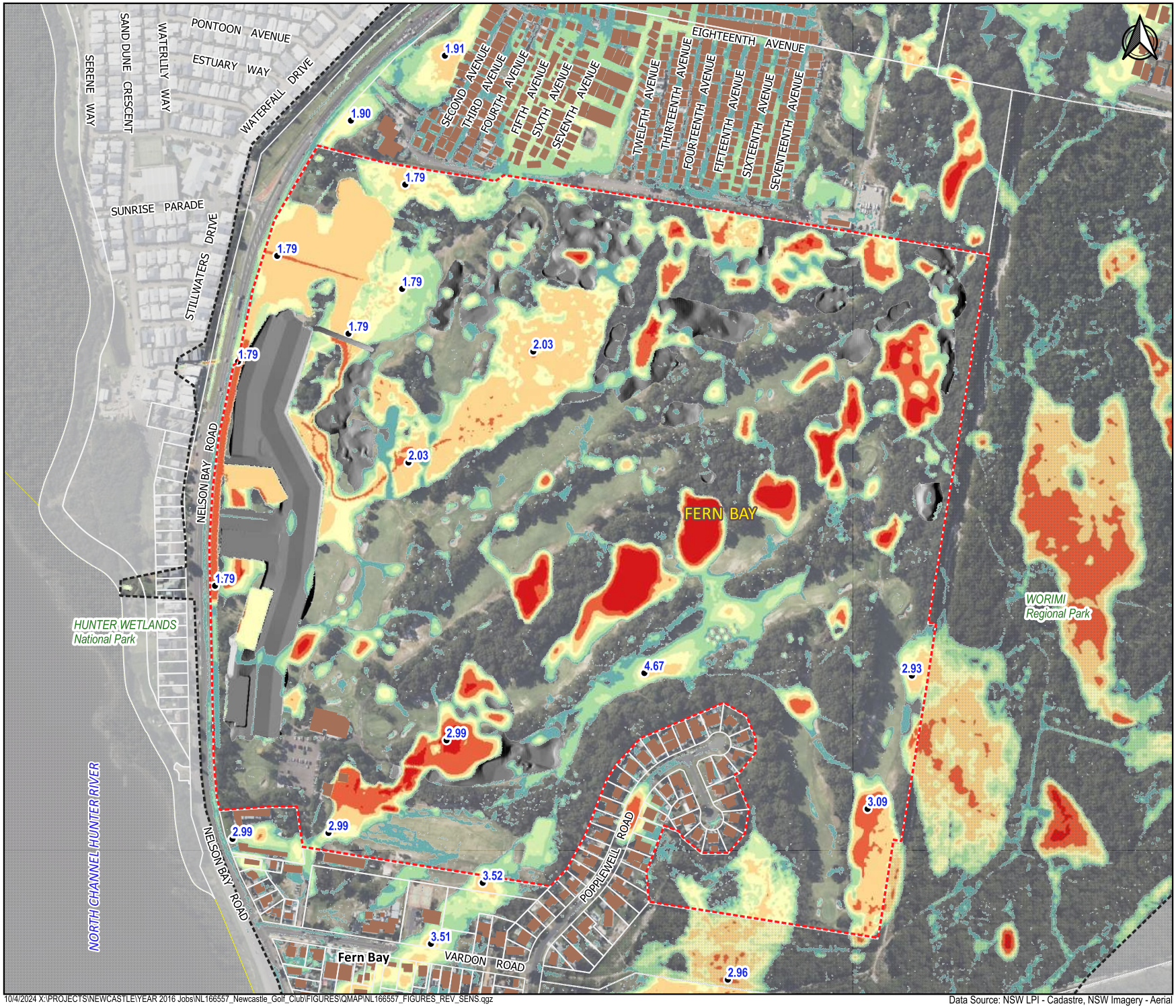
Figure C3

5% AEP Depth and Elevation
Local Catchment Flooding
Developed Conditions

Newcastle Golf Club
Fern Bay

NORTHROP

Data Source: NSW LPI - Cadastre, NSW Imagery - Aerial



Legend

- TUFLOW Model Extent
- Buildings
- Proposed Landform
- Water Elevation(mAHD)

Depth(m)

- < 0.01
- 0.01 - 0.10
- 0.10 - 0.30
- 0.30 - 0.50
- 0.50 - 0.70
- 0.70 - 1.00
- 1.00 - 1.50
- 1.50 >

0 100 200 Metres

1:6,500

Figure C1

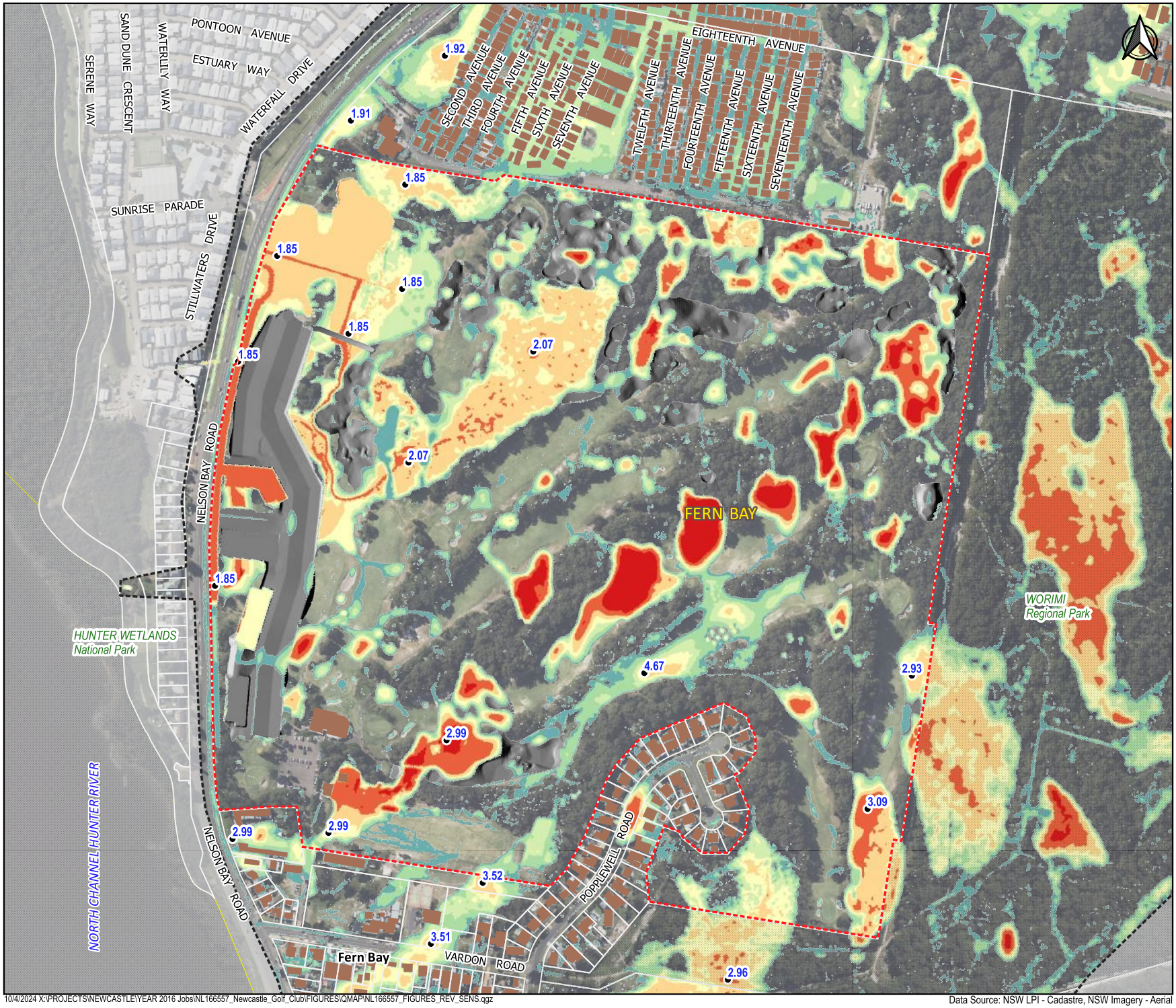
1% AEP Depth and Elevation
Local Catchment Flooding
Developed Conditions

Newcastle Golf Club
Fern Bay

NORTHROP

10/4/2024 X:\PROJECTS\NEWCASTLE\YEAR 2016 Jobs\NL166557_Newcastle_Golf_Club\FIGURES\QMAP\NL166557_FIGURES_REV_SENS.qgz

Data Source: NSW LPI - Cadastre, NSW Imagery - Aerial



Legend

- TUFLOW Model Extent
- Buildings
- Proposed Landform
- Water Elevation(mAHD)

Depth(m)

- < 0.01
- 0.01 - 0.10
- 0.10 - 0.30
- 0.30 - 0.50
- 0.50 - 0.70
- 0.70 - 1.00
- 1.00 - 1.50
- 1.50 >

0 100 200 Metres

1:6,500

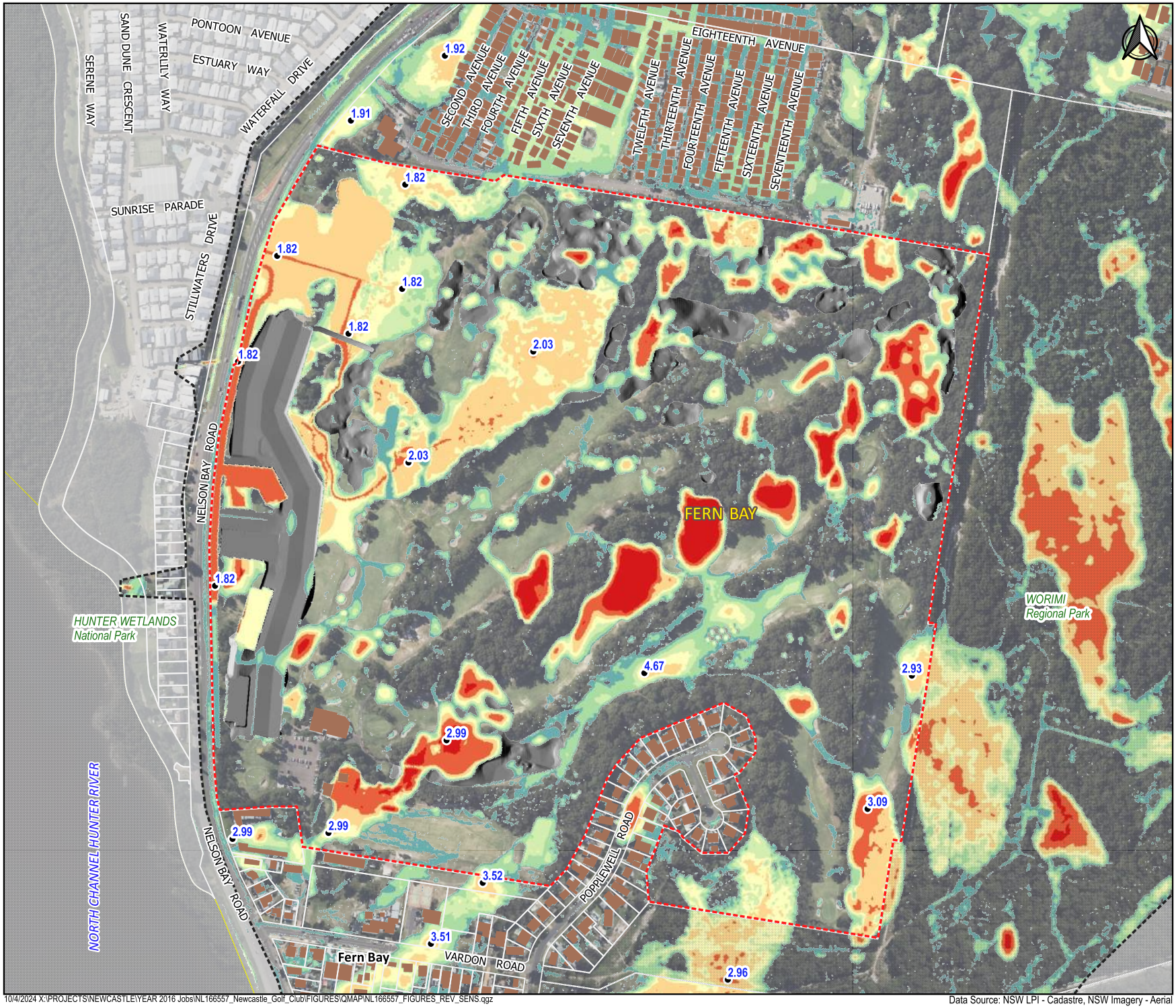
Figure C1-S1

1% AEP Depth and Elevation
Local Catchment Flooding
50% Blockage Sensitivity
Developed Conditions

Newcastle Golf Club
Fern Bay

NORTHROP

Data Source: NSW LPI - Cadastre, NSW Imagery - Aerial



Legend

- TUFLOW Model Extent
- Buildings
- Proposed Landform
- Water Elevation(mAHD)

Depth(m)

- < 0.01
- 0.01 - 0.10
- 0.10 - 0.30
- 0.30 - 0.50
- 0.50 - 0.70
- 0.70 - 1.00
- 1.00 - 1.50
- 1.50 >

0 100 200 Metres

1:6,500

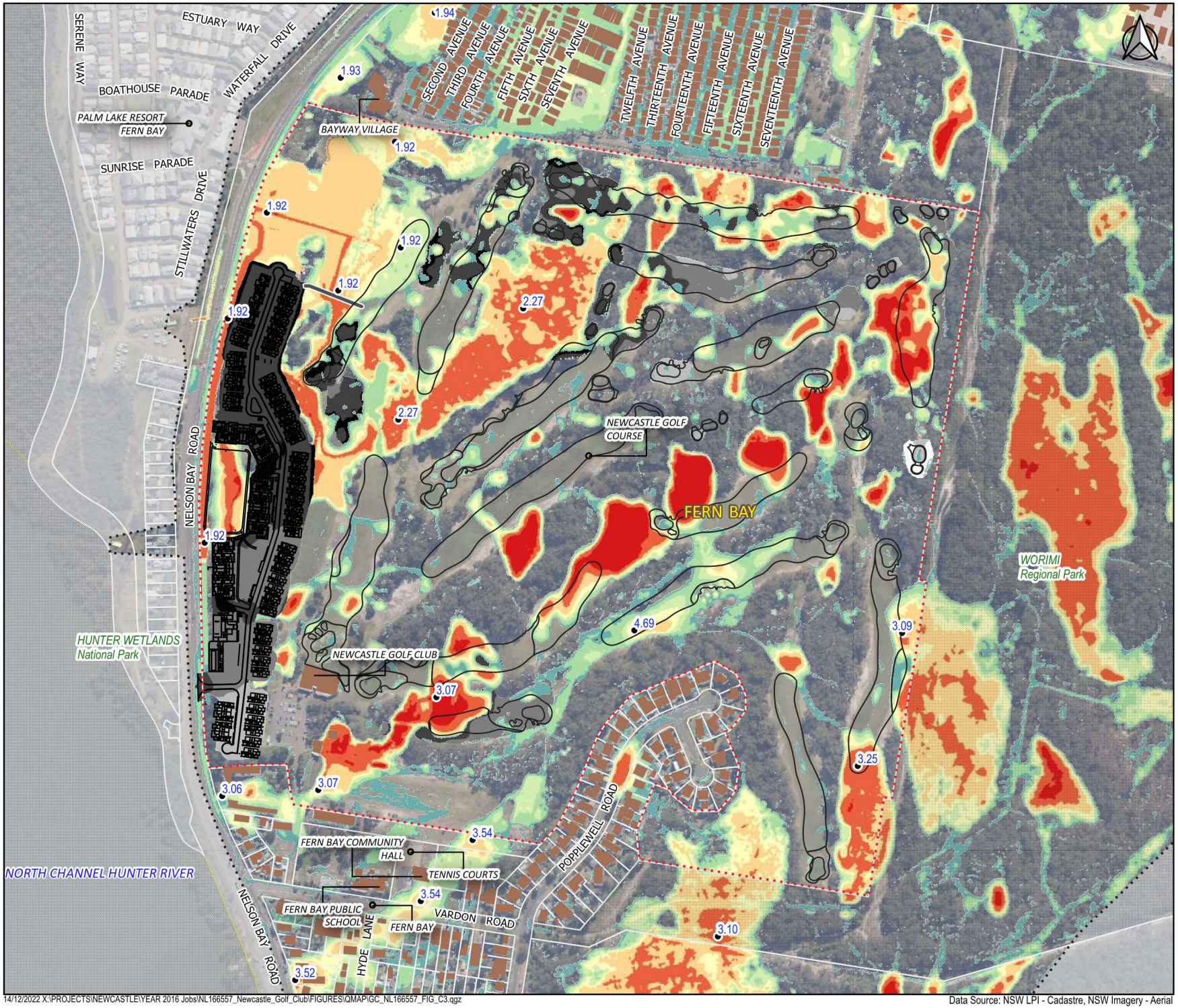
Figure C1-S2

1% AEP Depth and Elevation Local Catchment Flooding + 5% AEP Hunter Rv/Tide Tailwater Level Sensitivity Developed Conditions

Newcastle Golf Club
Fern Bay

NORTHROP

Data Source: NSW LPI - Cadastre, NSW Imagery - Aerial



Legend

- Subject Site
- TUFLOW Model Extent
- Golf Field Boundaries
- Buildings
- Proposed Dwellings
- Proposed Bund
- Water Elevation(mAHD)

Proposed Landform (mAHD)

- <= 2.5
- 2.5 - 4.0
- 4.0 - 7.0
- 7.0 - 11.0
- > 11.0

Depth(m)

- < 0.01
- 0.01 - 0.10
- 0.10 - 0.30
- 0.30 - 0.50
- 0.50 - 0.70
- 0.70 - 1.00
- 1.00 - 1.50
- 1.50 >

0 100 200 Metres

1:6,500

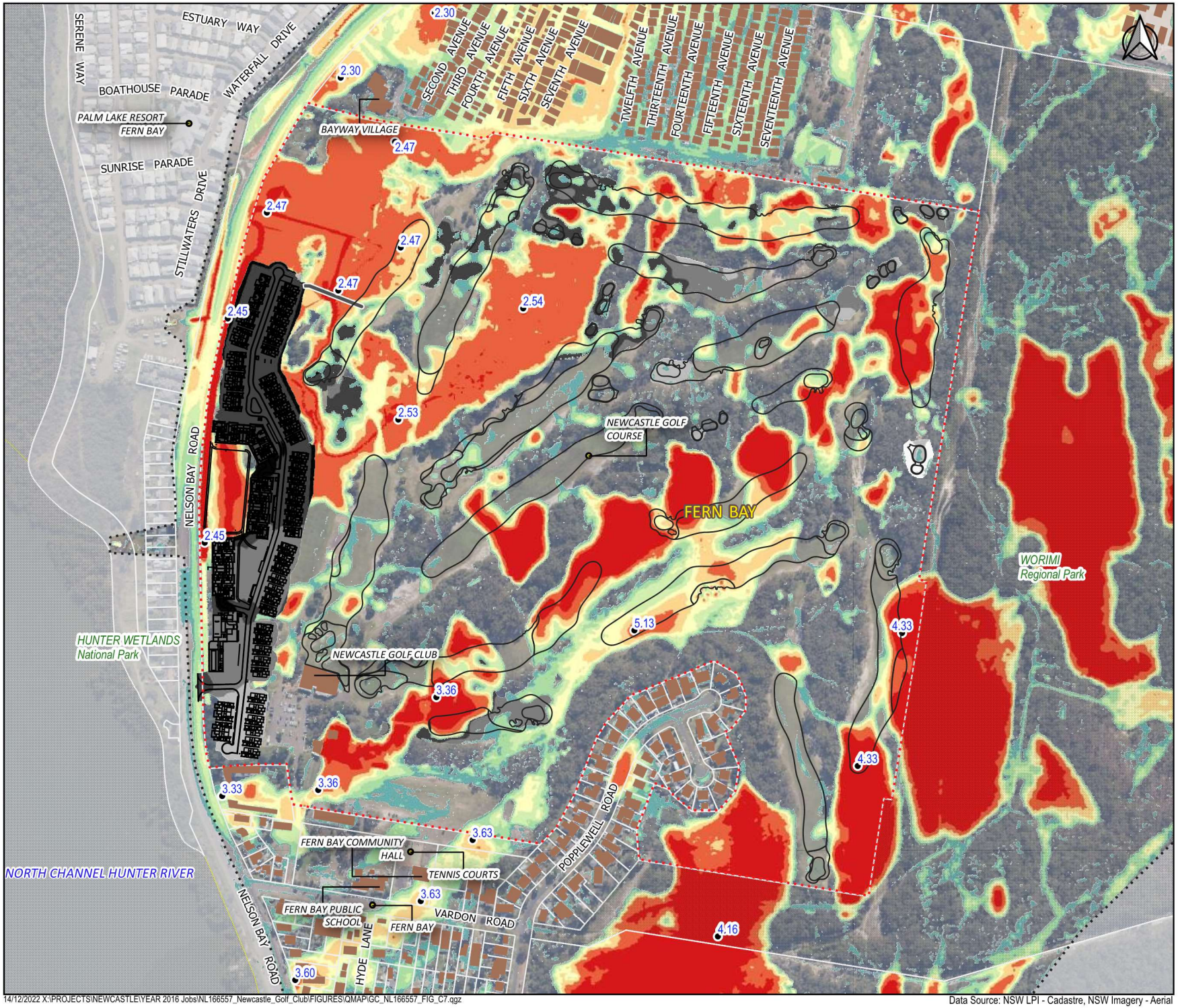
Figure C3

1% AEP 2100 Depth and Elevation
Local Catchment Flooding
Developed Conditions

Newcastle Golf Club
Fern Bay

NORTHROP

Data Source: NSW LPI - Cadastre, NSW Imagery - Aerial



Legend

- Subject Site
- TUFLOW Model Extent
- Golf Field Boundaries
- Buildings
- Proposed Dwellings
- Proposed Bund
- Water Elevation(mAHD)

Proposed Landform (mAHD)

- <= 2.5
- 2.5 - 4.0
- 4.0 - 7.0
- 7.0 - 11.0
- > 11.0

Depth(m)

- < 0.01
- 0.01 - 0.10
- 0.10 - 0.30
- 0.30 - 0.50
- 0.50 - 0.70
- 0.70 - 1.00
- 1.00 - 1.50
- 1.50 >

0 100 200 Metres

1:6,500

Figure C7

PMF Depth and Elevation
Local Catchment Flooding
Developed Conditions

Newcastle Golf Club
Fern Bay

NORTHROP

Data Source: NSW LPI - Cadastre, NSW Imagery - Aerial