NORTHROP

Flood Emergency Response Plan

for

42 Fullerton Cove Road, Fullerton Cove

for

Monteath and Powys Pty Ltd

Level 1, 215 Pacific Highway
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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.

Response Philosophy

This plan has been prepared to prioritise eliminating all future occupants of the centre from the flood risk, through avoidance, early evacuation ahead of heavy local rain, or mandated cancellation of services when a major Hunter River flood, or extreme local rainfall is predicted.

On-site refuge is not proposed as part of this development. Temporarily waiting out heavy rainfall in the building is directed to minimise the likelihood of people driving through hazardous flood water.

Finished Floor Level and Access Constraints

The building has a finished floor level of **2.90m AHD, which is above all floods except those greater than the Major Hunter River flood.**

Furthermore, vehicular access along Fullerton Cove to Nelson Bay Road **remains flood free in events up to the 5% AEP.**

Flood Behaviour

The site is subject to flooding from both the Hunter River and local catchment. Details are included below.

Hunter River Flood Event	Max Water Level (m AHD)	Max Velocity (m/s)
1% AEP	1.70	0.1
1% AEP Climate Change 2100	2.40	0.1
PMF	5.30	1.0

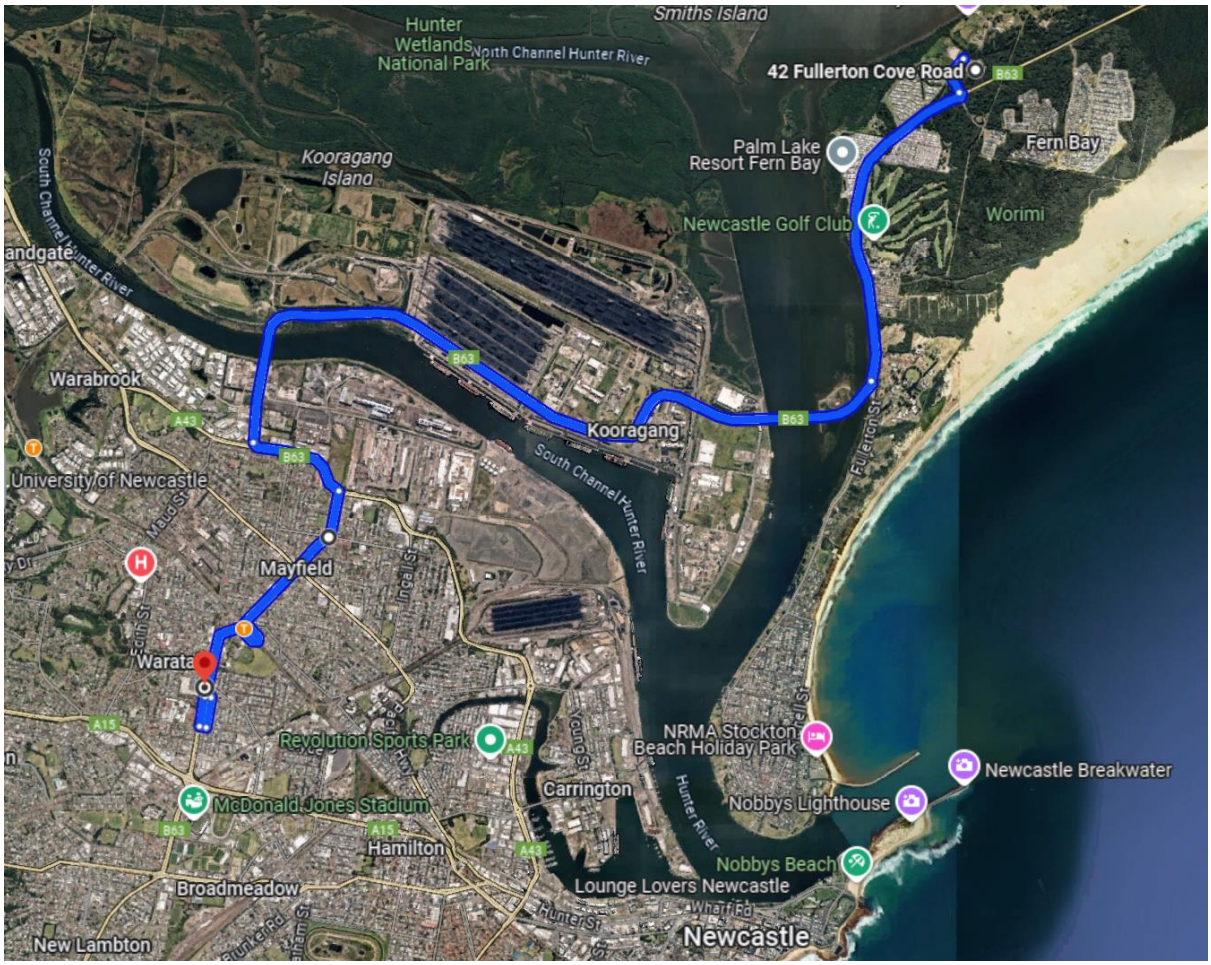
Local Catchment Flood Event	Max Water Level (m AHD)	Max Water Depth (m)	Max Velocity (m/s)	Max Hazard (AR&R 2019)
10% AEP	1.85	0.95	0.12	H3
5% AEP	2.04	1.13	0.11	H3
1% AEP	2.12	1.21	0.14	H3
1% AEP Climate Change 2100	2.17	1.26	0.16	H3
PMF	2.84	1.93	0.39	H4

Key Personnel

A summary of the key personnel is included below.

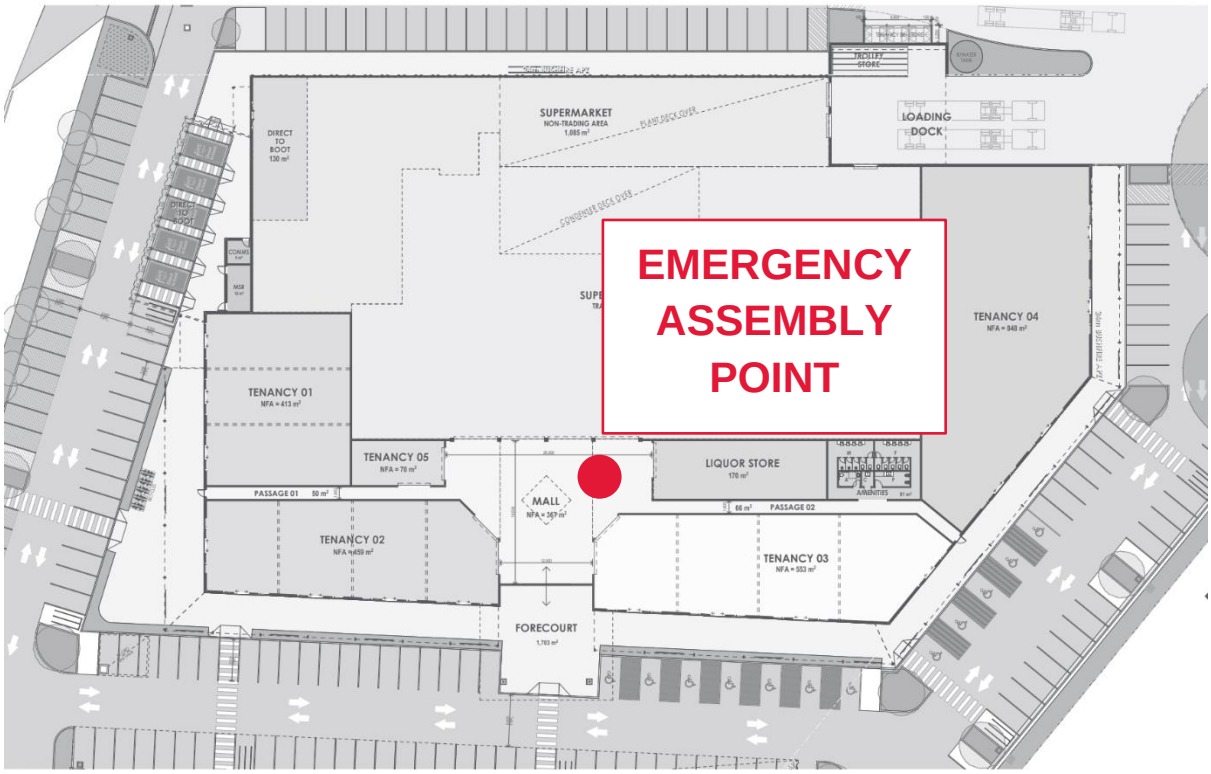
Person Organisation	Name	Number
Chief Flood Warden		
Supermarket Flood Warden		
Liquor Store Flood Warden		
Tenancy 01 Flood Warden		
Tenancy 02 Flood Warden		
Tenancy 03 Flood Warden		
Tenancy 04 Flood Warden		
Tenancy 05 Flood Warden		
First Aid Officer		
State Emergency Services (SES)	-	132 500
Police / Fire / Ambulance	-	000

Evacuation Route



Emergency Assembly Point

The emergency assembly point is presented below.



Flood Response Actions

Flood preparation, response, and recovery actions are presented below.

WHEN	TRIGGER	RESPONSE	BY WHO
Prior to Flooding	Upon occupation and check every six months.	Assemble **Emergency Kit** and conduct routine checks. Install signage.	Flood Wardens / 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	Inductions for new staff 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	1) **Monitor** the weather situation. **2) Do not walk or drive through floodwater.** 3) **Reconsider** whether trips are necessary or **leave site prior to rain commencing.**	All
Wait Out Heavy Rain 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 on PA system. 2) **Move** to **Emergency Assembly Point.** 3) **Wait out heavy rain** within the building.	All
Cancellation of Service and Evacuate	**Either** of the following. • Hunter River Flooding Predicted Above Major Levels • Daily rainfall estimates greater than 250mm	1) **Make announcement** of weather situation on PA system. 2) **Move** to **Emergency Assembly Point.** 3) **Cancel operations and evacuate** to higher ground.	Chief Flood Warden Flood Wardens
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 Monteath and Powys to prepare a Flood Emergency Response Plan (FERP) for the proposed development at 42 Fullerton Cove Road, Fullerton Cove, 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).
- Flooding & Stormwater Management Plan for 42 Fullerton Cove Road, Fullerton Cove (Northrop, December 2024).
- The Port Stephens Local Flood Emergency Sub Plan (SES, December 2022).

1.1. Site Description

The proposed development is located within the Port Stephens Council (PSC) Government Area and covers approximately 6.86ha. The site is illustrated in Figure 1 overleaf and is bounded by a rural residential property to the north-east, Fullerton Cove Road to the west and Nelson Bay Road to the south. The site is currently used for residential purposes, facilitating a house and sheds located predominantly in the northern corner.

Following rezoning of the site, the proposed retail development, hereafter referred to as 'the site', has an associated B1 Neighbourhood Centre boundary area of approximately 2.47 ha, external to this within the lot area exists E2 Environmental Conservation area. Soils in the area have been observed to vary between loamy sands at higher elevations, to clays in the lower areas to the south-east.

The site is low lying and generally flat for the southern and western portions, with elevations in the order of 1-2m AHD. A ridgeline runs along the north-western bound with the existing buildings on a pad at approximately 3m AHD and maximum.

Majority of the site currently drains to the south-west through a 450mm diameter RCP under Fullerton Cove Road. Runoff then passes through the TFNSW road reserve and into Lot 1 DP270695 "The Cove Village". A drainage easement through the village directs water through three 900mm diameter pipes under the Cove Drive towards Fullerton Cove.

Additionally, an existing watercourse has been identified to the north of the site on Lot 19 DP606361 (78 Fullerton Cove Road), which appears to convey flows under Fullerton Cove Road via a headwall prior to discharging to Fullerton Cove.

1.2. Proposed Development

The proposed development generally includes a new single storey shopping complex, carparking, loading dock and landscaping. Earthworks are proposed to raise the building platform to the flood planning level and ensure adequate fall across the site.

Compensatory cut is proposed to limit flood impacts of the development with an approximate area of 2,130m² and an invert level approximately of 1.25 m AHD.

The proposed civil design surface, building footprint (FFL 2.90m AHD), retaining wall extents and carparking are presented in Figure 2 overleaf.

Legend

- Subject Site
- Cadastre

0 400 800 Metres

1:25,000

Figure 1

Locality

42 Fullerton Cove Road
Fullerton Cove

NORTHROP

Data Source: NSW LPI - Cadastre, Virtual Earth - Aerial

Legend

- Subject Site
- Cadastre
- Proposed Building
- Carpark Marking
- Retaining Wall

Proposed Landform(mAHD)

- <= 1.7
- 1.7 - 2.0
- 2.0 - 2.3
- 2.3 - 2.6
- 2.6 - 3.0
- 3.0 - 3.3
- > 3.3

0 30 60 Metres

1:2,000

Figure 2

Proposed Development

42 Fullerton Cove Road
Fullerton Cove

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9/12/2024 X:\PROJECTS\NEWCASTLE\YEAR 2016 Jobs\NL161067_FullertonCove\FIGURES2\NL161067_REV5_Figures.qgz

Data Source: NSW LPI - Cadastre, Virtual Earth - Aerial

2 Methodology

This plan was developed based on the flood information available in the Flooding & Stormwater Management Plan for 42 Fullerton Cove Road, Fullerton Cove (Northrop, December 2024).

The expected flood behaviour for the subject site is based on the above flood information and is summarised in the **Flood Behaviour** section of this plan.

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 the **Flood and Evacuation Warnings** section of this plan.

Consideration has been given to the personnel most likely to be on site and responsible for the flood emergency response. This is outlined in **the Flood Response Personnel** section of this plan.

Analysis of the site, nearby topography and likely flood behaviour has informed the assembly points and on-site refuge points nominated in **the Emergency Assembly Point** section of this plan.

Contact numbers for relevant emergency response agencies are noted in the **Emergency Contact** section of this plan.

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 Riverine Catchment (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 and Velocity

Hunter River flood levels have been obtained from the Flood Certificate provided by Port Stephens Council (Certificate Number 83-2020-592-1 dated 30 September 2020). These are summarised below in Table 1.

Table 1 - Subject Site Developed Case Flood Behaviour

Flood Event	Max Water Level (m AHD)	Max Velocity (m/s)
1% AEP	1.70	0.1
1% AEP Climate Change 2100	2.40	0.1
PMF	5.30	1.0

3.3 Local Catchment Flood Depth, Elevation, Velocity, 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 3. Developed flood figures are presented in Appendix A.

Table 2 - Subject Site Developed Case Flood Behaviour

Flood Event	Max Water Level (m AHD)	Max Water Depth (m)	Max Velocity (m/s)	Max Hazard (AR&R 2019)
10% AEP	1.85	0.95	0.12	H3
5% AEP	2.04	1.13	0.11	H3
1% AEP	2.12	1.21	0.14	H3
1% AEP Climate Change 2100	2.17	1.26	0.16	H3
PMF	2.84	1.93	0.39	H4

3.4 Relationship with Finished Floor Level

The development has a 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 and up to the PMF**.

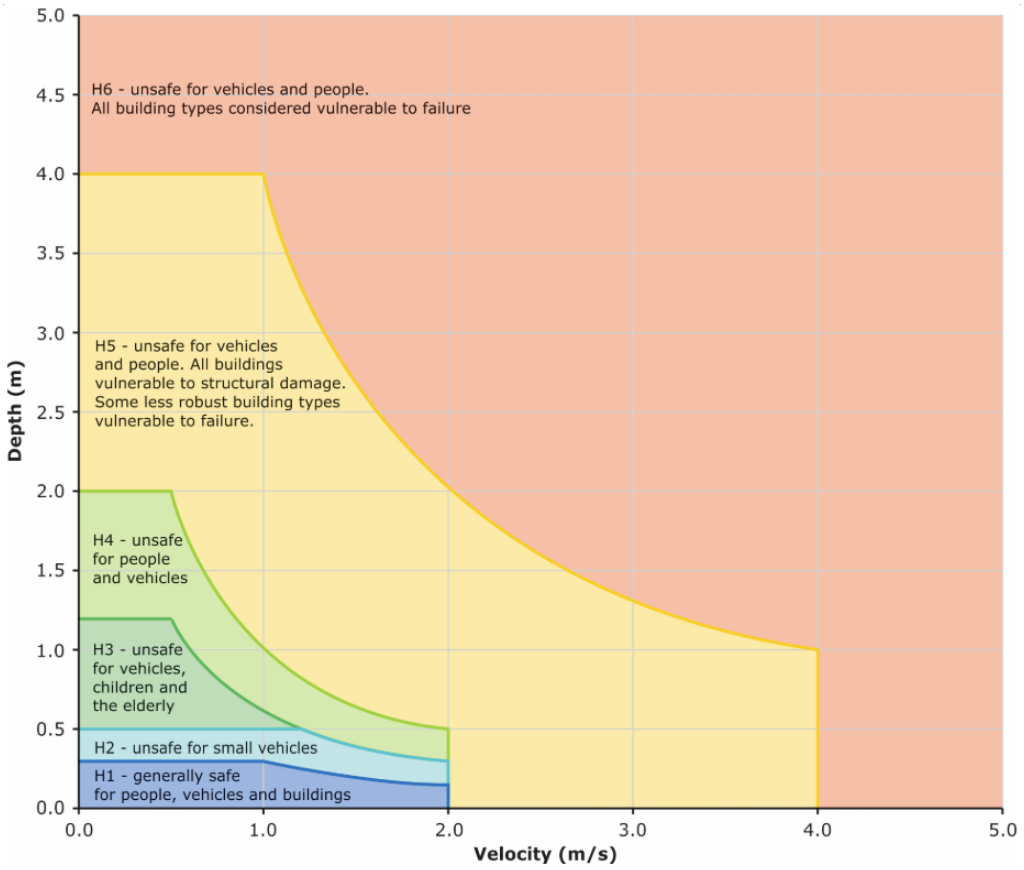

Figure 3 - Australian Rainfall and Runoff (2019) Hazard Categories

3.5 Flood Warning Time

The flood behaviour from the local catchment is likely to rise **within three 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 is categorised as having a good warning time greater than **12 hours** due to the network of gauges within the catchment. This figure is quoted in the *Williamtown and Salt Ash Floodplain Risk Management Study and Plan* (BMT WBM, 2017). The Bureau of Meteorology quotes a target warning time of **18 hours** for predictions above major flood levels (such as those expected to inundate the floor level of the development) in their Service Level Specification.

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 of time.

Fullerton Cove Road between the development and Nelson Bay Road commences overtopping in the 5% AEP and is inundated for **less than 12 hours** in the critical duration 1% AEP local catchment event. This road remains H1 hazard category and trafficable in this event should emergency services require access.

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 4.

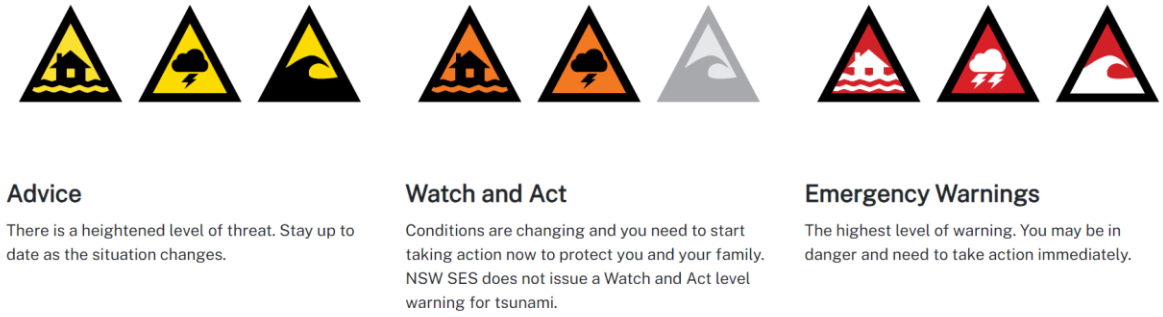

Figure 4 – SES Warning icons

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. This may include cancellation of operations.

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 facility has an on-site PA 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.

4.3.2 Port Stephens Disaster Dashboard

The Port Stephens Disaster Dashboard filters the SES warnings along with several other hazards. It is available here https://disaster.portstephens.nsw.gov.au/dashboard/flood.

4.3.3 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/.

4.3.4 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 5 below are the facilities nominated emergency personnel, their location and responsibilities in managing flood response.

Table 5 - Flood Response Personnel

	Location	Responsibilities
Chief Flood Warden (Centre Manager)	Off-site	• Receive notifications BoM / Hazards Near Me apps. • Disseminate warnings to Flood Wardens. • Ensure centre signage up to date.
First Aid Officer	On-Site	• Prepare and maintain Flood Emergency Kits. • Coordinate assistance for staff with mobility difficulties
Flood Wardens	On-Site	• Responsible for response management of each tenancy. • Receive notifications BoM / Hazards Near Me apps. • Coordinate flood evacuation drills and site inductions. • Monitor weather at 4pm daily for upcoming extreme rainfall events. • Liaison with SES or Emergency Services personnel if they attend site.

It is anticipated the Centre Manager will be nominated the role of Chief Flood Warden. At least one Flood Warden is assigned in each tenancy of the centre who will be responsible for coordinating an emergency response on-site.

6 Emergency Assembly Point and Evacuation Routes

6.1 Emergency Assembly Point

The nominated Emergency Assembly Point is the Mall Area as noted in Figure 5 below. As outlined above, this area has a finished floor level of 2.90m AHD which is above all local flood events and the 1% AEP 2100 plus freeboard. This area is suitable for refuge in all but the very rare to extreme Hunter River flood events.

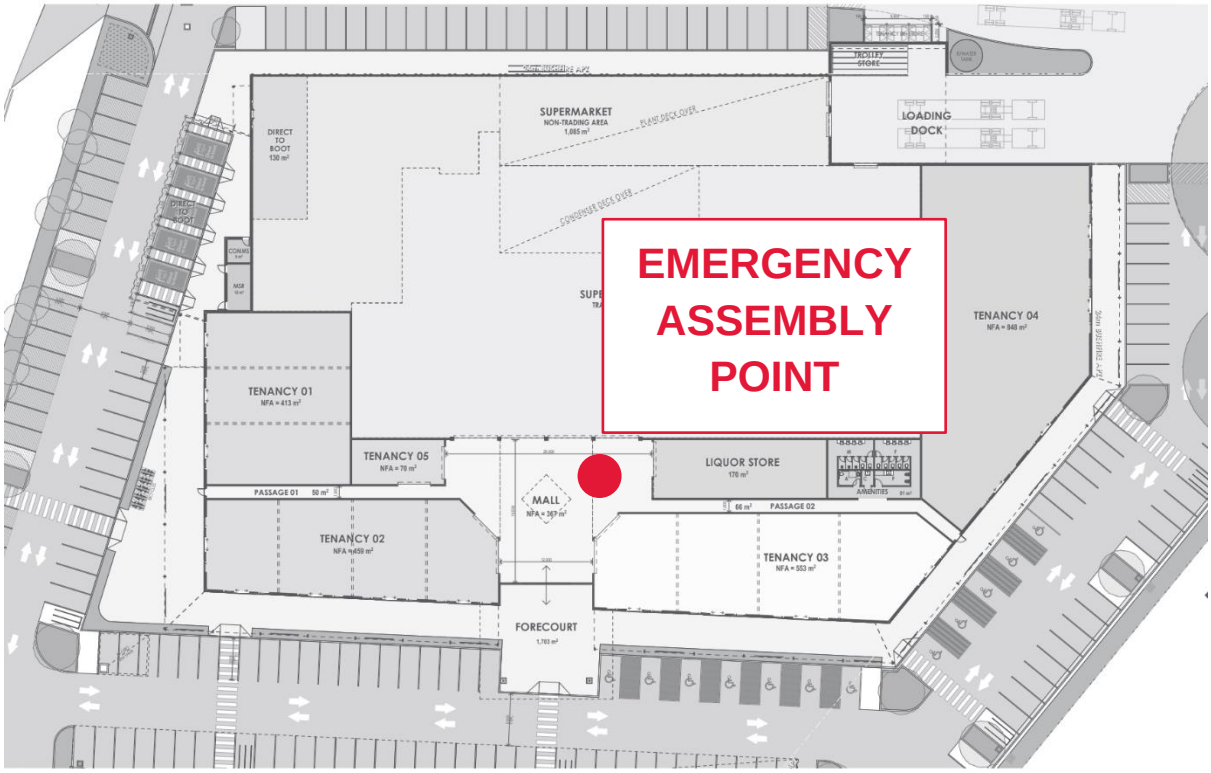

Figure 5 – Emergency Assembly Point

6.3 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 6. As this evacuation is likely to 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.

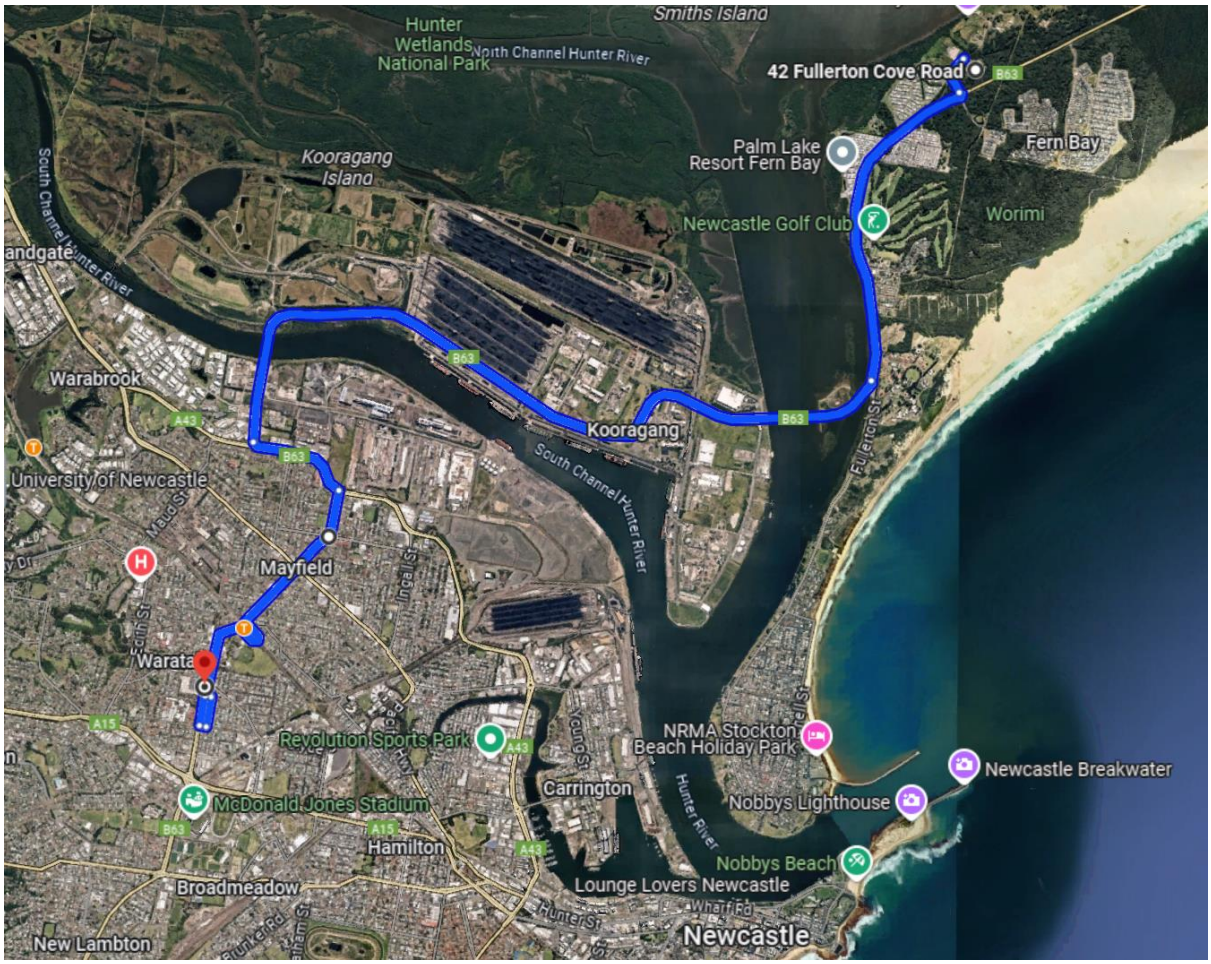

Figure 6 – Evacuation Route

7 Emergency Contact

For onsite asset issues, contact the **Centre Manager**.

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

Flood preparedness is achieved through the following items. A summary is presented in Table 3.

8.1 Floodsafe Emergency Kit

Each tenancy should have a **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 and visitors.

The Flood Safe kit should be kept in each tenancy 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 **Mall**. 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 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 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 staff which is to occur on the first day of employment. 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 to staff during this induction training as summarised in this plan.

8.6 Summary

Table 3 - 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.	Flood Wardens / 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	Inductions for new staff to include flood risk.	All Flood Wardens

9 Flood Response Actions

Flood response actions are outlined below, and a summary presented in Table 4.

9.1 SES or Emergency Services Attending Site

We note that should SES or Emergency Services attend site; they assume operational control and all directions provided by these organizations should be followed.

9.2 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, staff, visitors, and potential visitors should commence the following actions.

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

The purpose of these directions is to minimise the likelihood of people travelling through high intensity short intensity local rainfall bursts.

9.3 When Extreme Rainfall is Occurring – Wait Out Heavy Rain

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.

9.3.1 Flood Wardens

- Make announcement over the PA system of the developing weather situation and advise all staff and visitors to remain calm and that the building is suitable to wait out heavy rainfall events.

9.3.2 All Wardens, Staff, and Visitors On-site

- Move to the Emergency Assembly Point noted in and wait out heavy rain. We note inundation of Fullerton Cove Road is likely to occur in events in the order of the 5% AEP or rarer. Typically, these inundation events only last a couple of hours with the critical 48-hour event inundating the road for less than 12 hours.

The purpose of these directions is to minimise the likelihood of people travelling through high intensity short intensity local rainfall bursts.

9.4 When Extreme Hunter River Flooding is Predicted – Cancel Services, Close and Evacuate

When either **Major Flooding is predicted in the Hunter River**, or **daily rainfall with a 50 percent probability of 250mm or more** – the following actions should be undertaken. We note the Major Flood level is 3.5m AHD at the Raymond Terrace gauge or 3.8m AHD at the Hexham Bridge gauge. This will be outlined in BoM and SES flood warnings.

9.4.1 Flood Wardens

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

9.4.2 All Wardens, 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.

9.4.3 Potential Visitors Located Offsite

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

9.5 Summary

Table 4 – Flood response summary

WHEN	TRIGGER	RESPONSE	BY WHO
When Extreme Rainfall is Likely	**Either** of the following. • Severe weather/thunderstorm warning • Daily rainfall estimates greater than 100mm	1) **Monitor** the weather situation. 2) **Do not walk or drive through floodwater.** 3) **Reconsider** whether trips are necessary or **leave site prior to rain commencing.**	All
Wait Out Heavy Rain 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 on PA system. 2) **Move** to **Emergency Assembly Point.** 3) **Wait out heavy rain** within the building.	All
Cancellation of Service and Evacuate	**Either** of the following. • Hunter River Flooding Predicted Above Major Levels • Daily rainfall estimates greater than 250mm	1) **Make announcement** of weather situation on PA system. 2) **Move** to **Emergency Assembly Point.** 3) **Cancel operations and evacuate** to higher ground.	Chief Flood Warden Flood Wardens

10 Flood Recovery

Flood recovery has been outlined below and a summary is presented below in Table 5.

10.1 Undertake Damage Assessment

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

- Check structure 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 been checked, and all surfaces cleaned, the centre can return to normal operation.

10.4 Summary

Table 5 - 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 Facility 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

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Document Register

Rev	Status	Prepared	Approved	Date
A	For Approval	GB	LG	9 December 2024

Appendix A – Developed Flood Figures

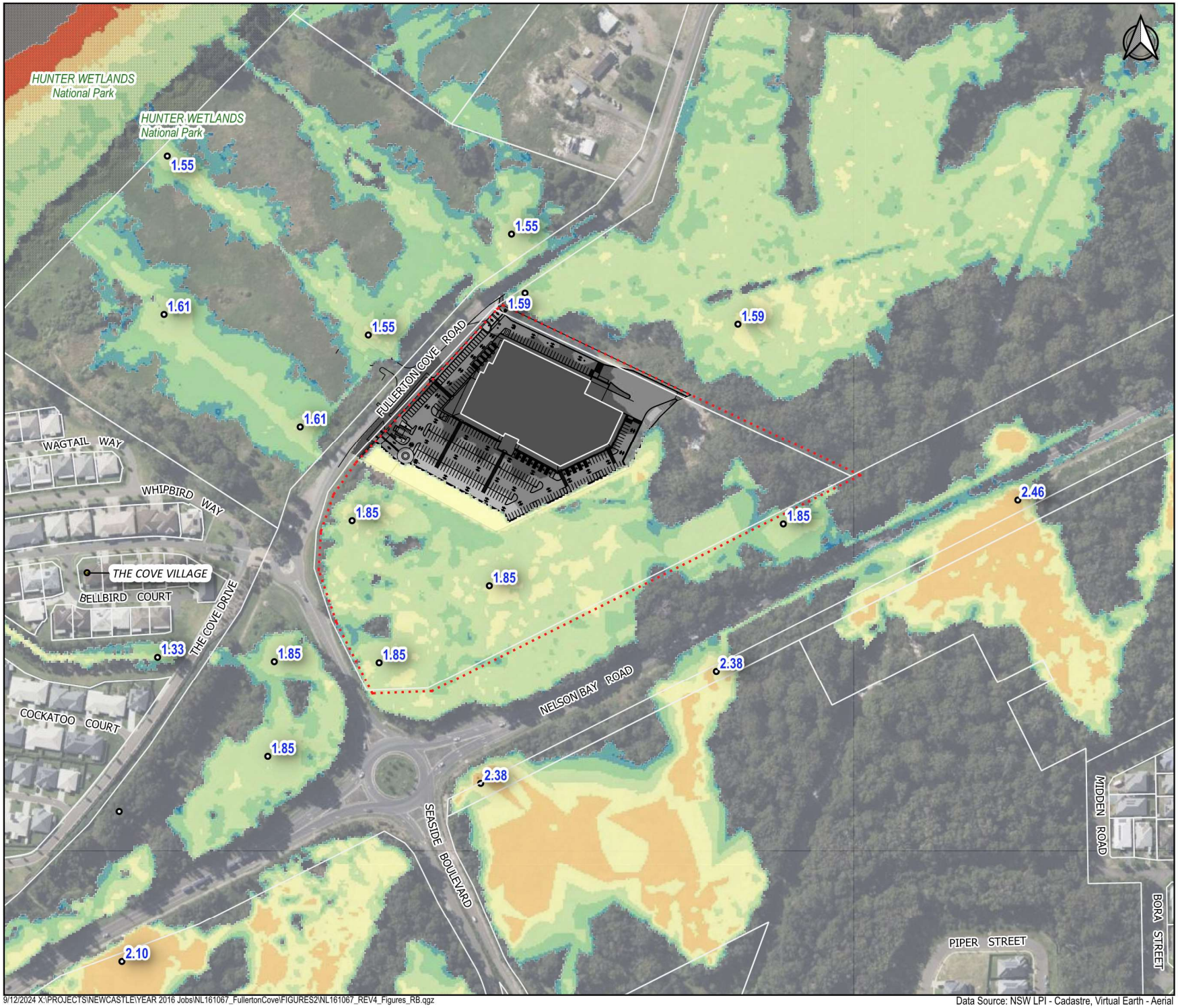


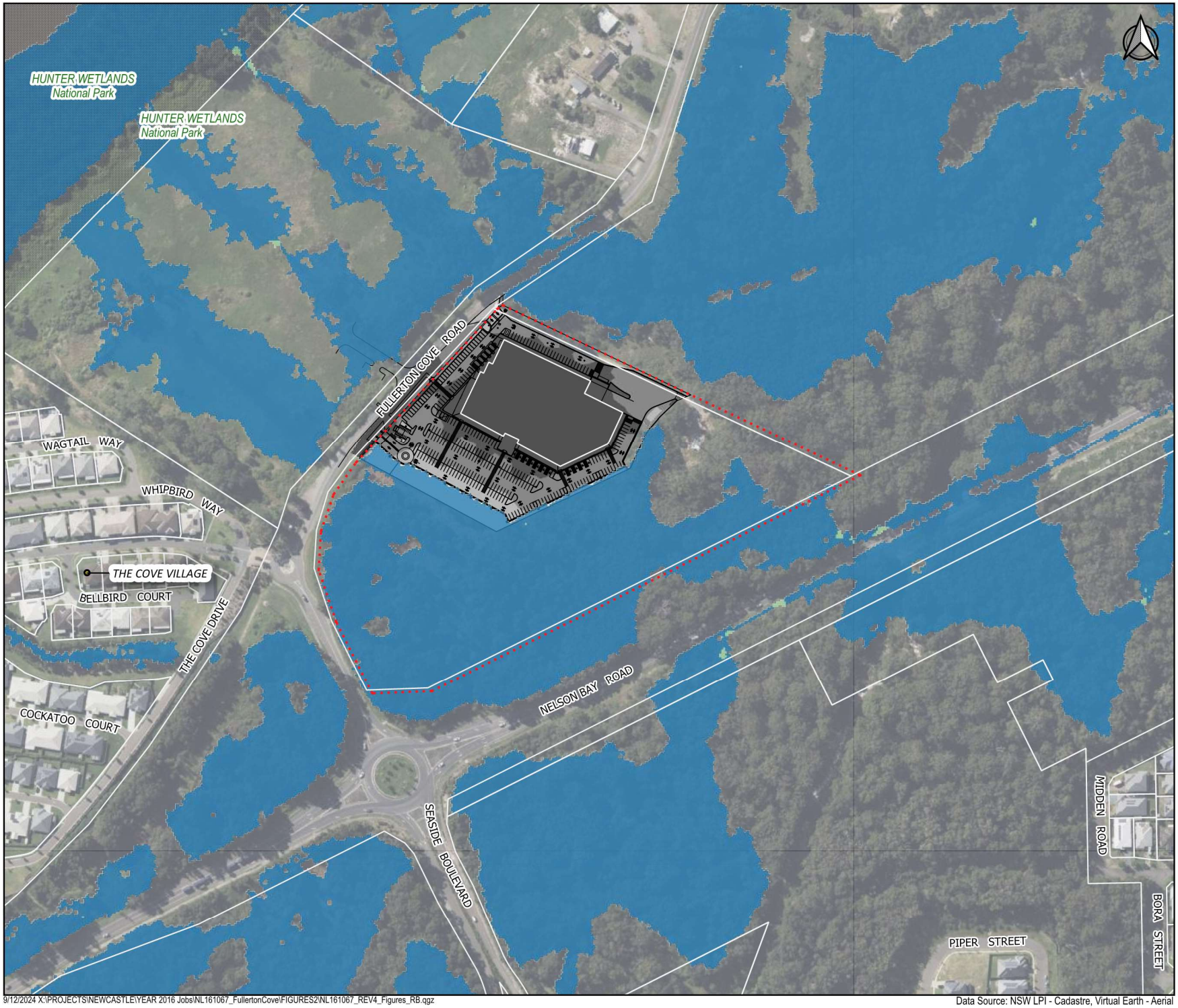
Figure C1

10% AEP Flood Depth and Elevation Developed Case

42 Fullerton Cove Road
Fullerton Cove

NORTHROP

Data Source: NSW LPI - Cadastre, Virtual Earth - Aerial



Legend

- Subject Site
- TUFLOW Model Extent
- Cadastre
- Proposed Building
- Carpark Marking

Proposed Landform(mAHD)

- <= 1.8
- 1.8 - 2.2
- 2.2 - 2.7
- 2.7 - 3.2
- > 3.2

Velocity(m/s)

- < 0.25
- 0.25 - 0.50
- 0.50 - 1.00
- 1.00 - 2.00
- 2.00 - 3.00
- > 3.00

0 70 140 Metres

1:4,000

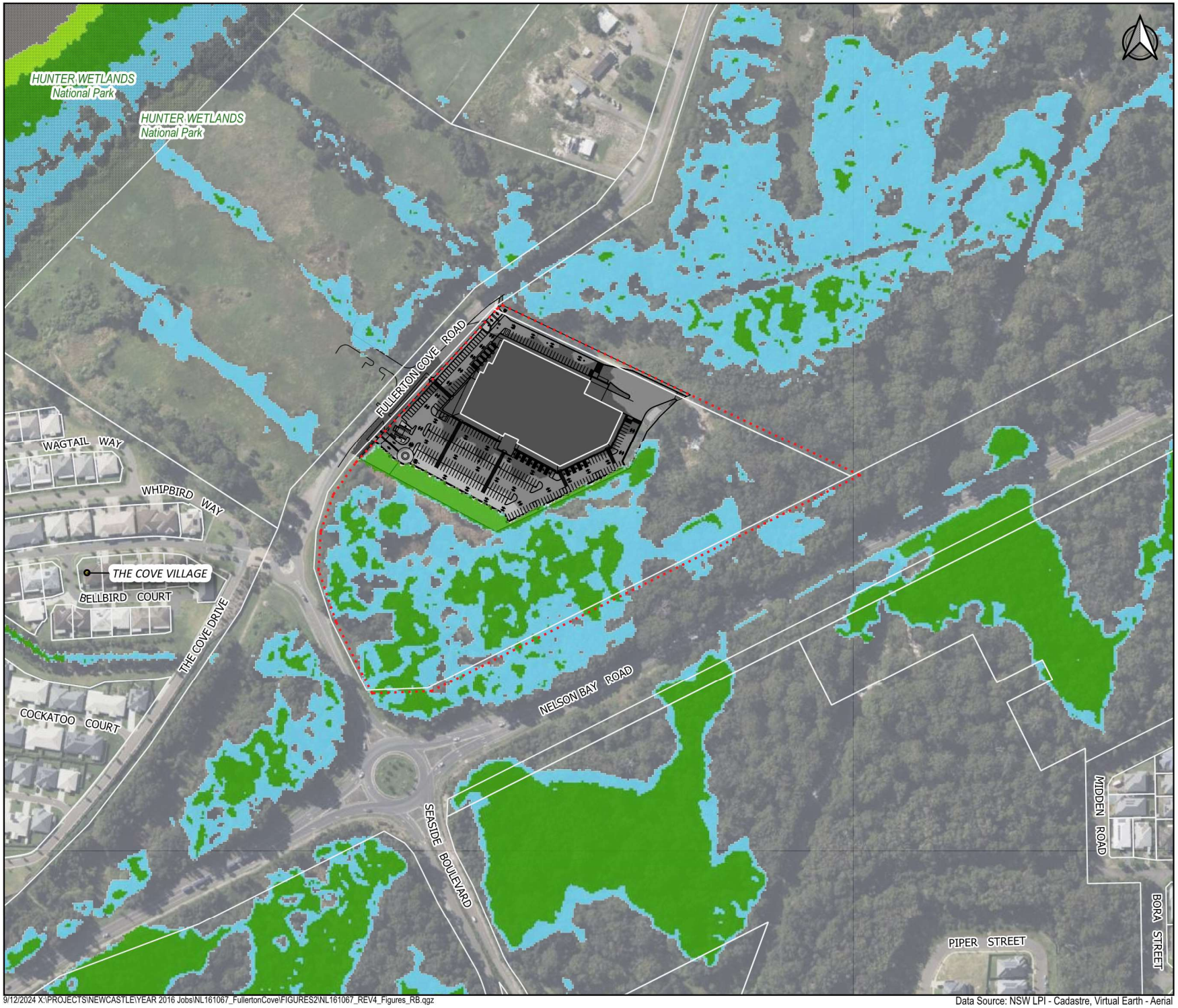
Figure C1-1

10% AEP Flood Velocity Developed Case

42 Fullerton Cove Road
Fullerton Cove

NORTHROP

Data Source: NSW LPI - Cadastre, Virtual Earth - Aerial



Legend

- Subject Site
- TUFLOW Model Extent
- Cadastre
- Proposed Building
- Carpark Marking

Proposed Landform(mAHD)

- <= 1.8
- 1.8 - 2.2
- 2.2 - 2.7
- 2.7 - 3.2
- > 3.2

Hazard Category

- H1
- H2
- H3
- H4
- H5
- H6

0 70 140 Metres

1:4,000

Figure C1-2

10% AEP Flood Hazard Developed Case

42 Fullerton Cove Road
Fullerton Cove

NORTHROP

Data Source: NSW LPI - Cadastre, Virtual Earth - Aerial

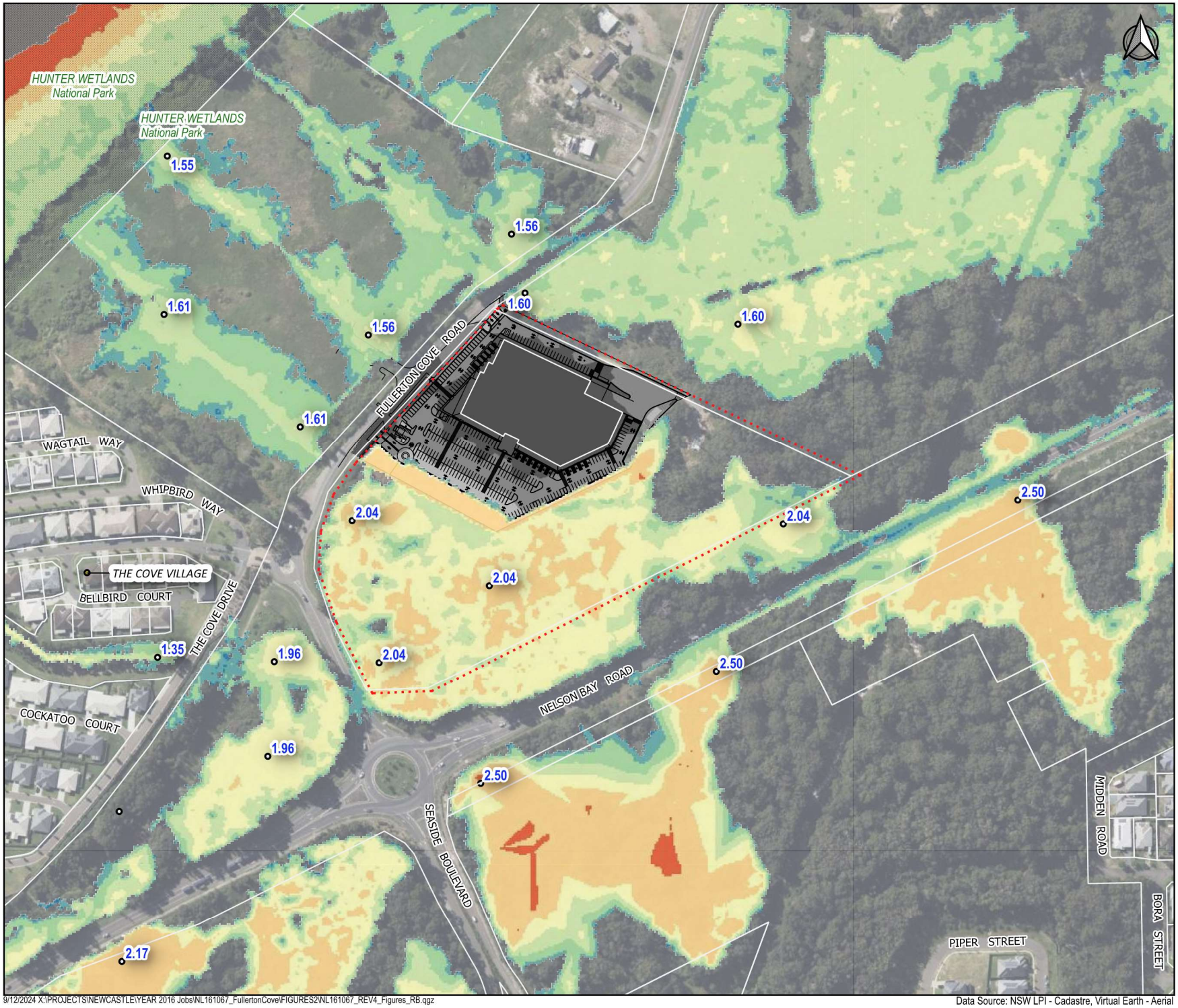


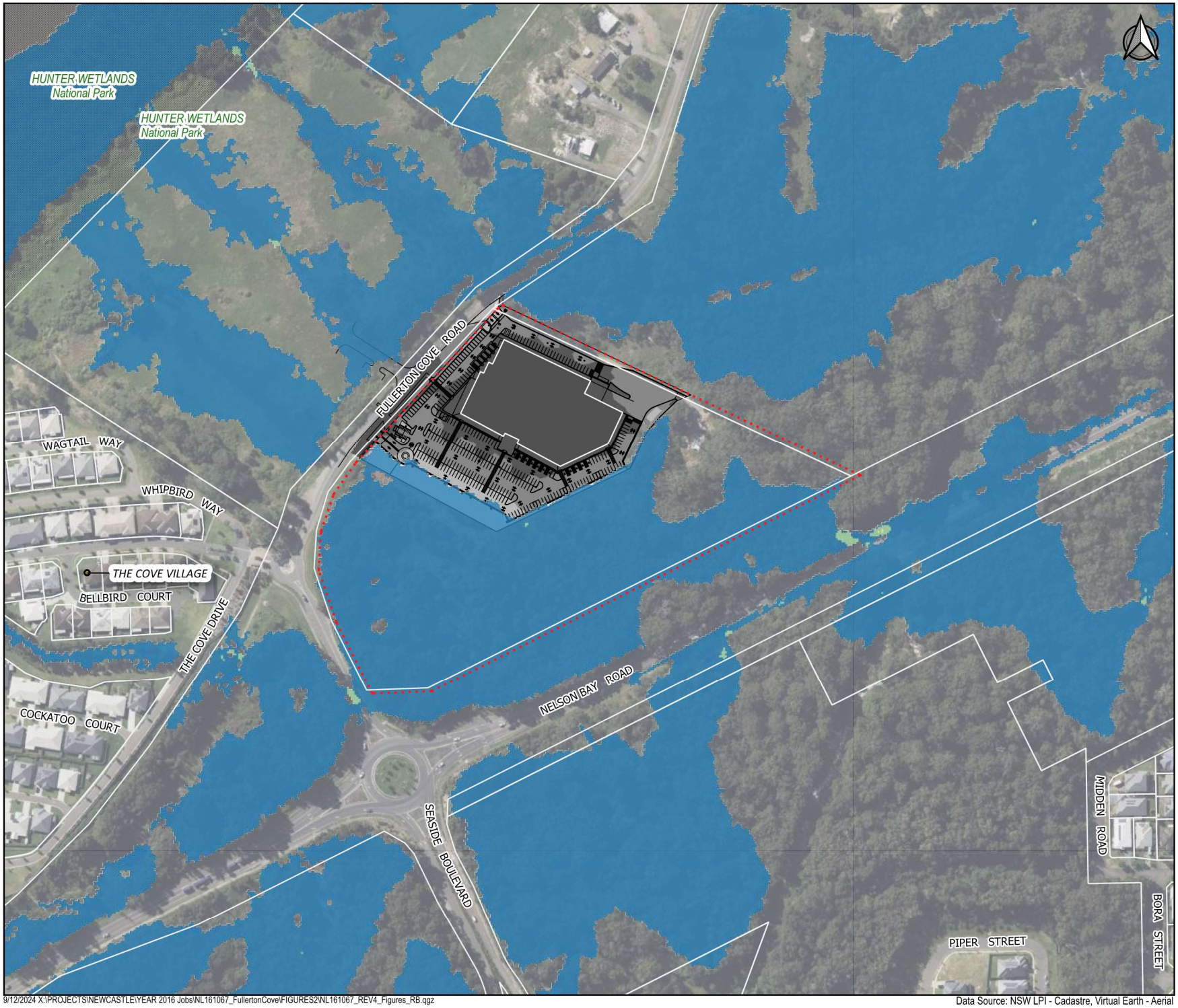
Figure C2

5% AEP Flood Depth and Elevation Developed Case

42 Fullerton Cove Road
Fullerton Cove

NORTHROP

Data Source: NSW LPI - Cadastre, Virtual Earth - Aerial



Legend

- Subject Site
- TUFLOW Model Extent
- Cadastre
- Proposed Building
- Carpark Marking

Proposed Landform(mAHD)

- <= 1.8
- 1.8 - 2.2
- 2.2 - 2.7
- 2.7 - 3.2
- > 3.2

Velocity(m/s)

- < 0.25
- 0.25 - 0.50
- 0.50 - 1.00
- 1.00 - 2.00
- 2.00 - 3.00
- > 3.00

0 70 140 Metres

1:4,000

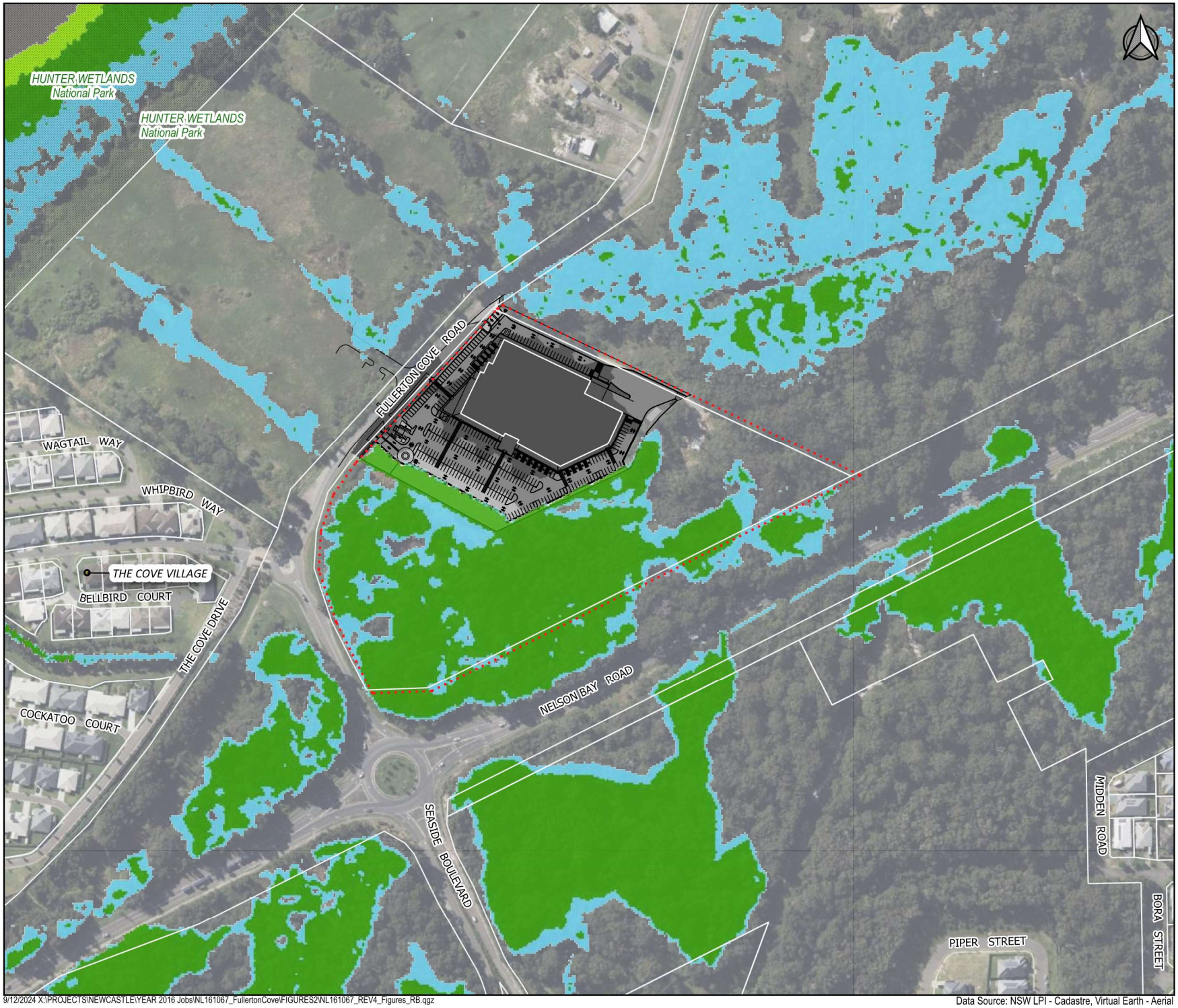
Figure C2-1

5% AEP Flood Velocity Developed Case

42 Fullerton Cove Road
Fullerton Cove

NORTHROP

Data Source: NSW LPI - Cadastre, Virtual Earth - Aerial



Legend

- Subject Site
- TUFLOW Model Extent
- Cadastre
- Proposed Building
- Carpark Marking

Proposed Landform(mAHD)

- <= 1.8
- 1.8 - 2.2
- 2.2 - 2.7
- 2.7 - 3.2
- > 3.2

Hazard Category

- H1
- H2
- H3
- H4
- H5
- H6

0 70 140 Metres

1:4,000

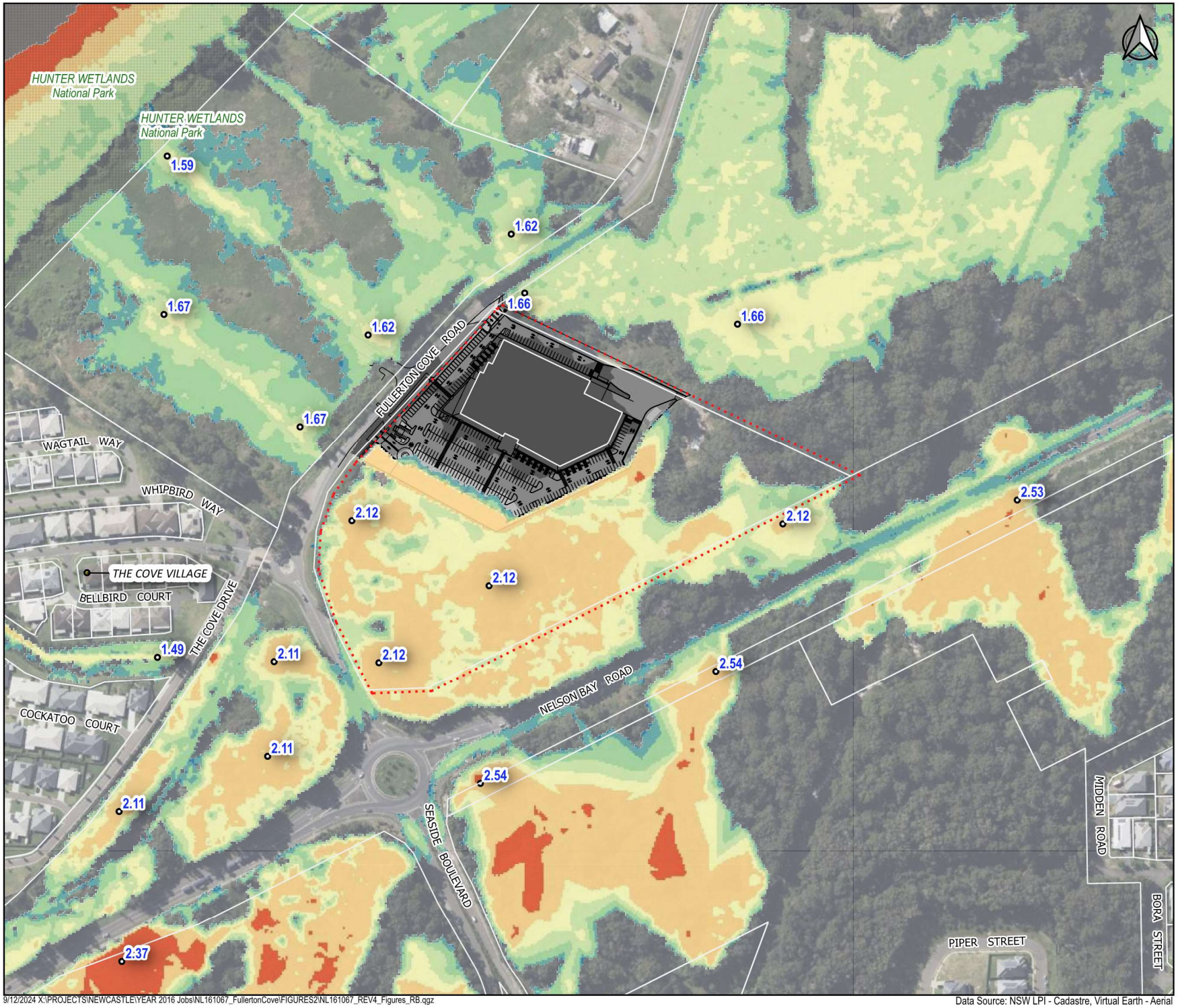
Figure C2-2

5% AEP Flood Hazard Developed Case

42 Fullerton Cove Road
Fullerton Cove

NORTHROP

Data Source: NSW LPI - Cadastre, Virtual Earth - Aerial



Legend

- Subject Site
- TUFLOW Model Extent
- Cadastre
- Water Level (mAHD)
- Proposed Building
- Carpark Marking

Proposed Landform(mAHD)

- <= 1.8
- 1.8 - 2.2
- 2.2 - 2.7
- 2.7 - 3.2
- > 3.2

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 70 140 Metres

1:4,000

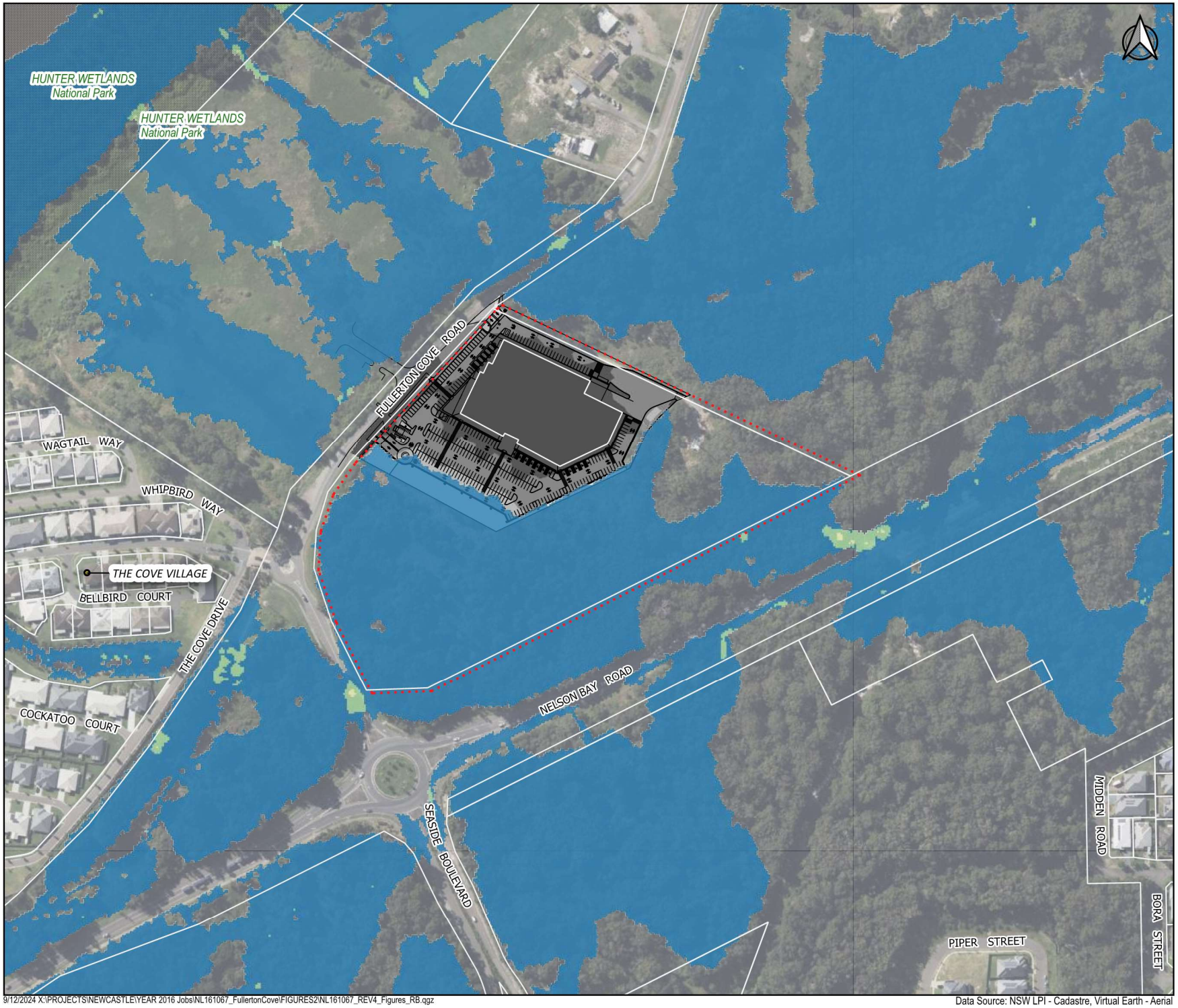
Figure C3

1% AEP Flood Depth and Elevation Developed Case

42 Fullerton Cove Road
Fullerton Cove

NORTHROP

Data Source: NSW LPI - Cadastre, Virtual Earth - Aerial



Legend

- Subject Site
- TUFLOW Model Extent
- Cadastre
- Proposed Building
- Carpark Marking

Proposed Landform(mAHD)

- <= 1.8
- 1.8 - 2.2
- 2.2 - 2.7
- 2.7 - 3.2
- > 3.2

Velocity(m/s)

- < 0.25
- 0.25 - 0.50
- 0.50 - 1.00
- 1.00 - 2.00
- 2.00 - 3.00
- > 3.00

0 70 140 Metres

1:4,000

Figure C3-1

1% AEP Flood Velocity Developed Case

42 Fullerton Cove Road
Fullerton Cove

NORTHROP

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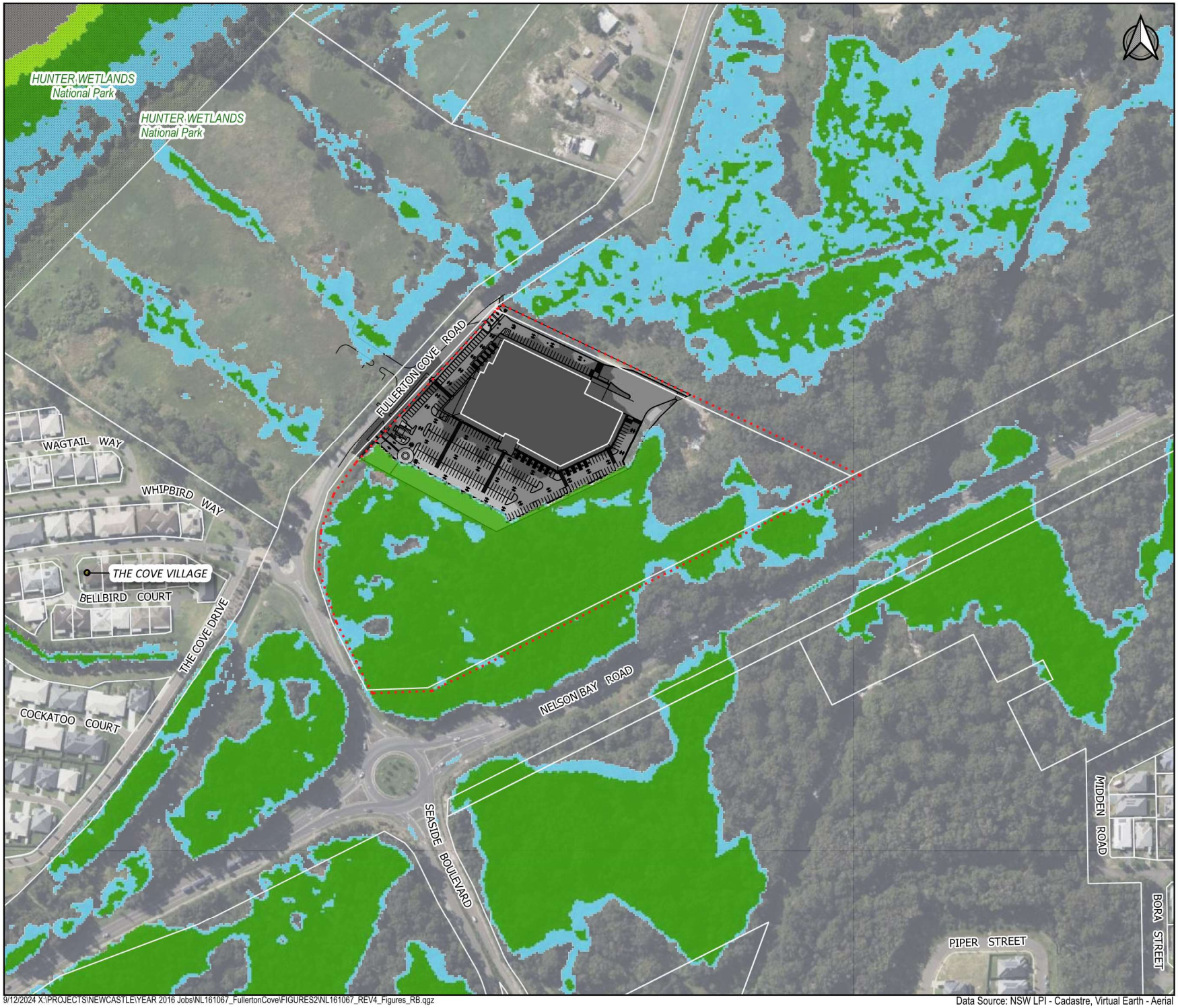
Data Source: NSW LPI - Cadastre, Virtual Earth - Aerial



Legend

- Subject Site
- TUFLOW Model Extent
- Cadastre
- Proposed Building
- Carpark Marking

Proposed Landform(mAHD)

- <= 1.8
- 1.8 - 2.2
- 2.2 - 2.7
- 2.7 - 3.2
- > 3.2

Hazard Category

- H1
- H2
- H3
- H4
- H5
- H6

0 70 140 Metres

1:4,000

Figure C3-2

1% AEP Flood Hazard Developed Case

42 Fullerton Cove Road
Fullerton Cove

NORTHROP

Data Source: NSW LPI - Cadastre, Virtual Earth - Aerial

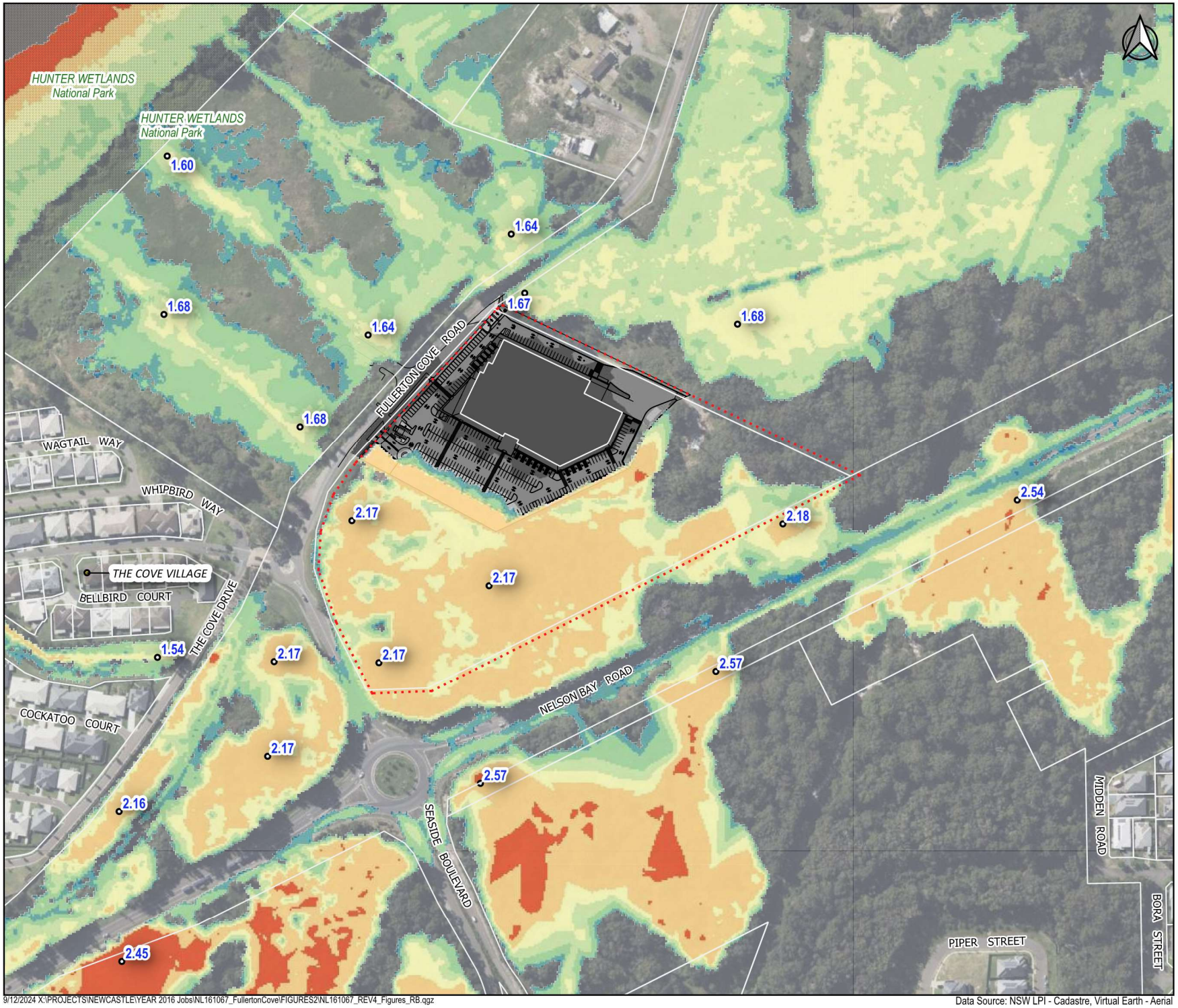


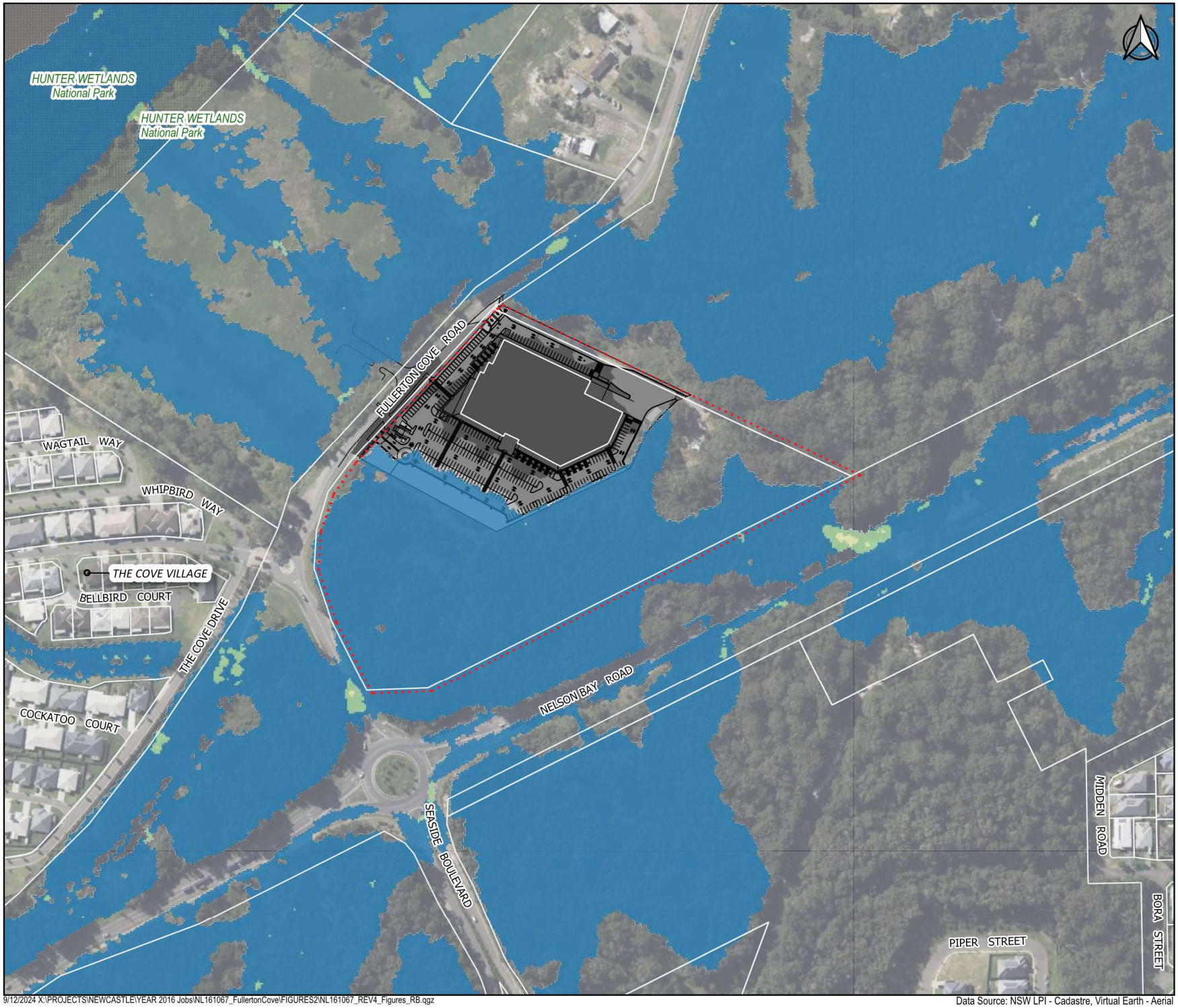
Figure C4

1% AEP Flood Depth and Elevation Developed Case Climate Change 2100 Scenario

42 Fullerton Cove Road
Fullerton Cove

NORTHROP

Data Source: NSW LPI - Cadastre, Virtual Earth - Aerial



Legend

- Subject Site
- TUFLOW Model Extent
- Cadastre
- Proposed Building
- Carpark Marking

Proposed Landform(mAHD)

- <= 1.8
- 1.8 - 2.2
- 2.2 - 2.7
- 2.7 - 3.2
- > 3.2

Velocity(m/s)

- < 0.25
- 0.25 - 0.50
- 0.50 - 1.00
- 1.00 - 2.00
- 2.00 - 3.00
- > 3.00

0 70 140 Metres

1:4,000

Figure C4-1

1% AEP Flood Velocity
Developed Case
Climate Change 2100

42 Fullerton Cove Road
Fullerton Cove

NORTHROP

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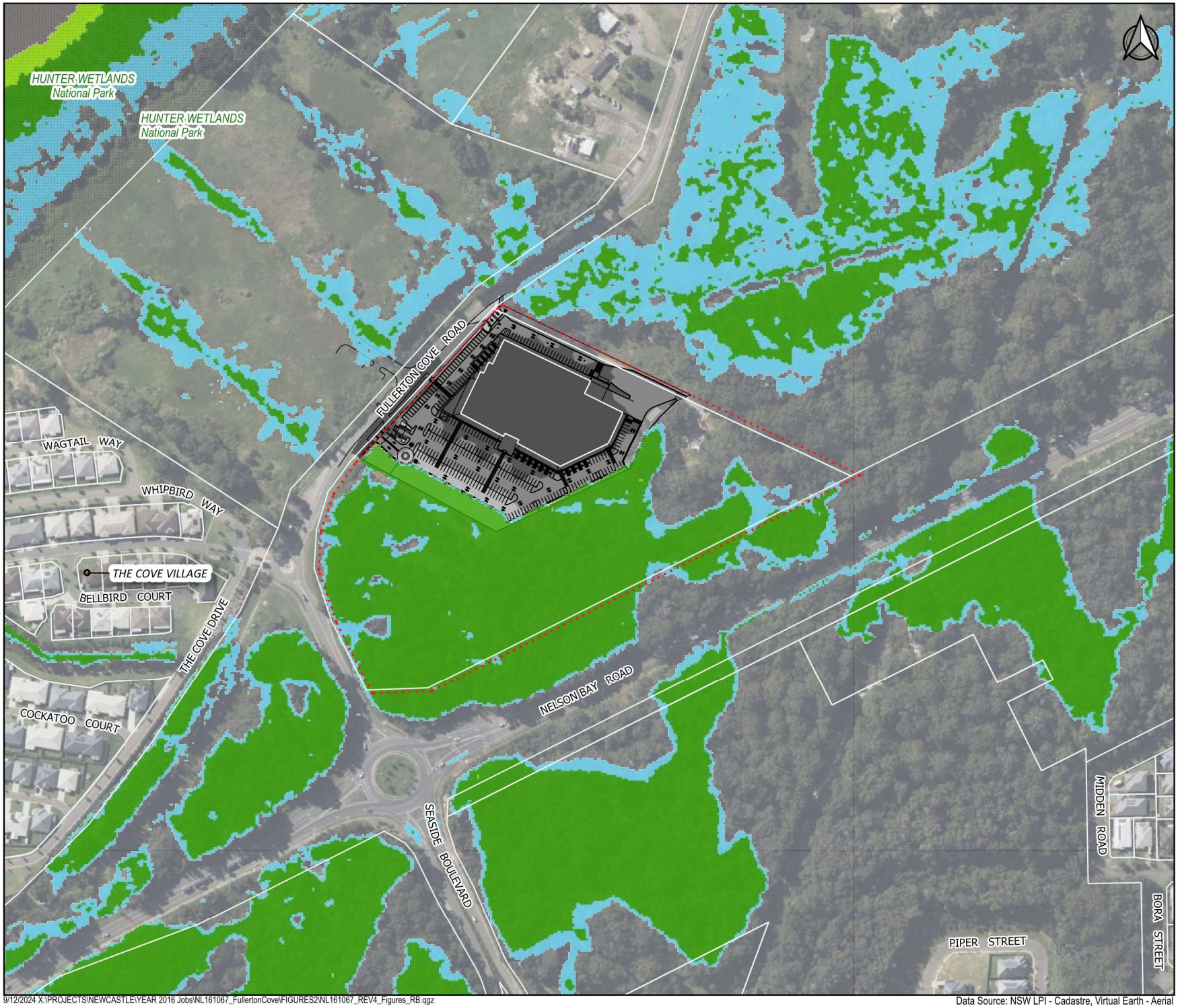


Legend

- Subject Site
- TUFLOW Model Extent
- Cadastre
- Proposed Building
- Carpark Marking

Proposed Landform(mAHD)

- <= 1.8
- 1.8 - 2.2
- 2.2 - 2.7
- 2.7 - 3.2
- > 3.2

Hazard Category

- H1
- H2
- H3
- H4
- H5
- H6

0 70 140 Metres

1:4,000

Figure C4-2

1% AEP Flood Hazard Developed Case Climate Change 2100 Scenario

42 Fullerton Cove Road
Fullerton Cove

NORTHROP

Data Source: NSW LPI - Cadastre, Virtual Earth - Aerial

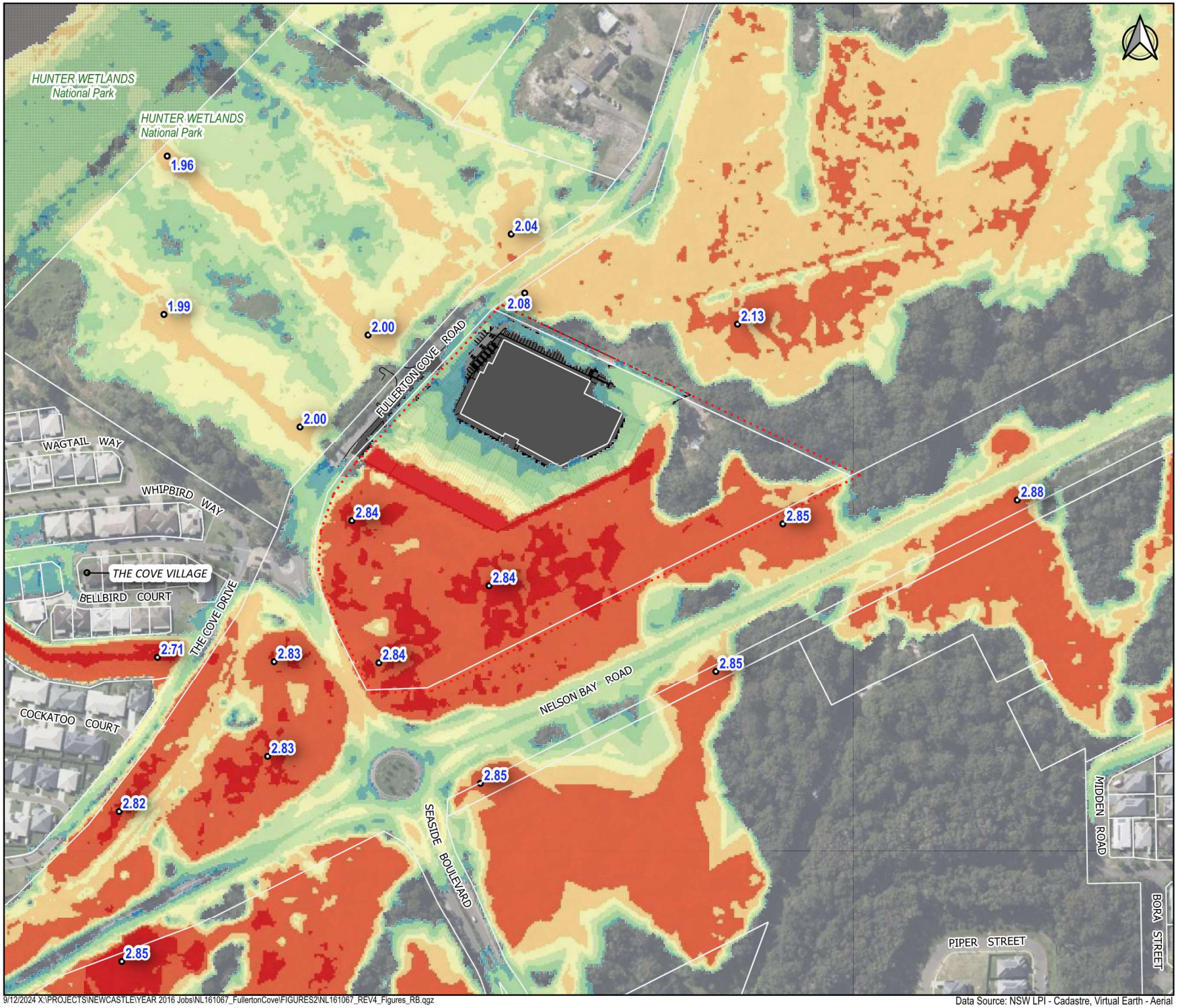


Figure C5

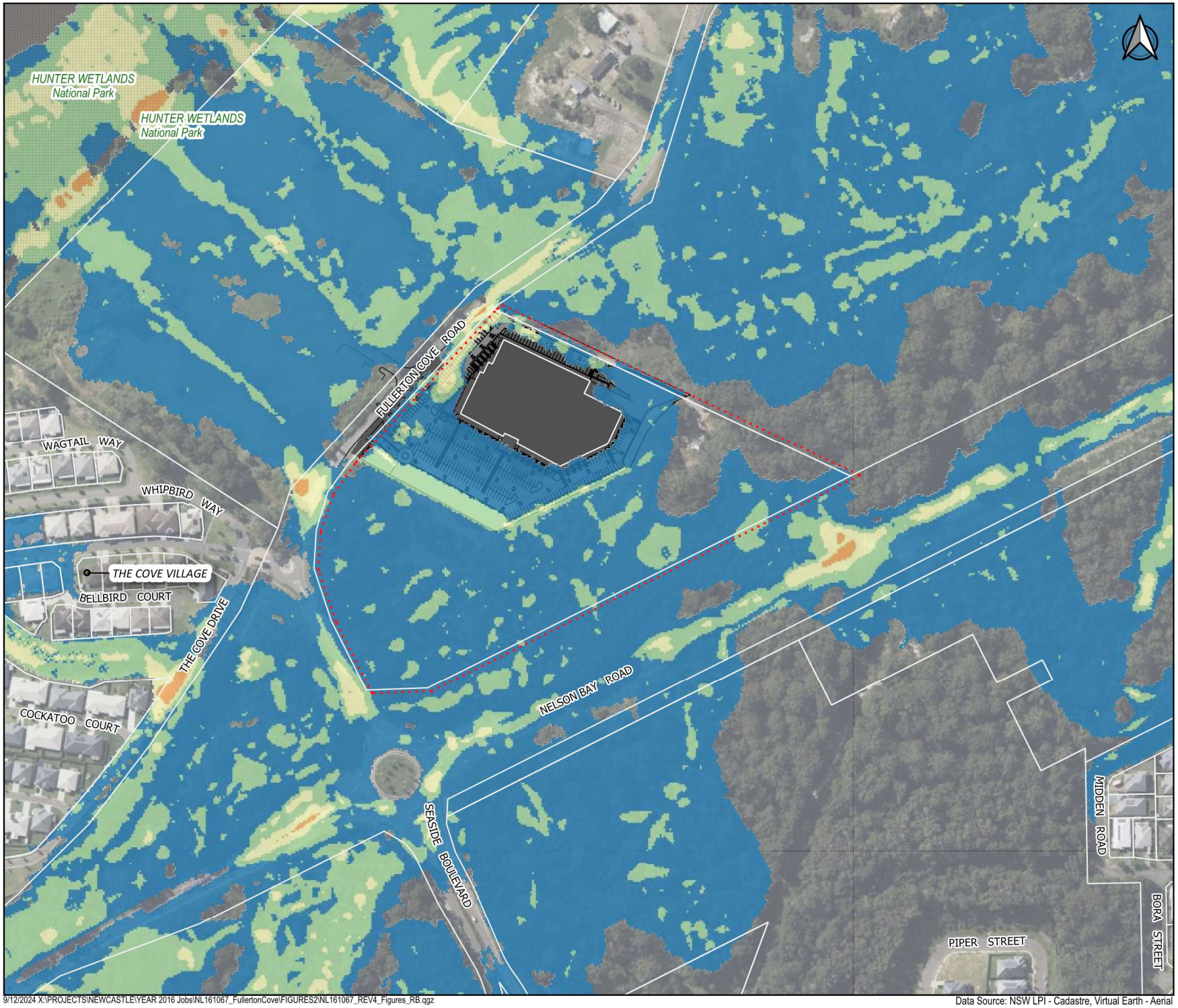
PMF Flood Depth and Elevation Developed Case

42 Fullerton Cove Road
Fullerton Cove

NORTHROP

9/12/2024 X:\PROJECTS\NEWCASTLE\YEAR 2016 Jobs\NL161067_FullertonCove\FIGURES2\NL161067_REV4_Figures_RB.qgz

Data Source: NSW LPI - Cadastre, Virtual Earth - Aerial



Legend

- Subject Site
- TUFLOW Model Extent
- Cadastre
- Proposed Building
- Carpark Marking

Proposed Landform(mAHD)

- <= 1.8
- 1.8 - 2.2
- 2.2 - 2.7
- 2.7 - 3.2
- > 3.2

Velocity(m/s)

- < 0.25
- 0.25 - 0.50
- 0.50 - 1.00
- 1.00 - 2.00
- 2.00 - 3.00
- > 3.00

0 70 140 Metres

1:4,000

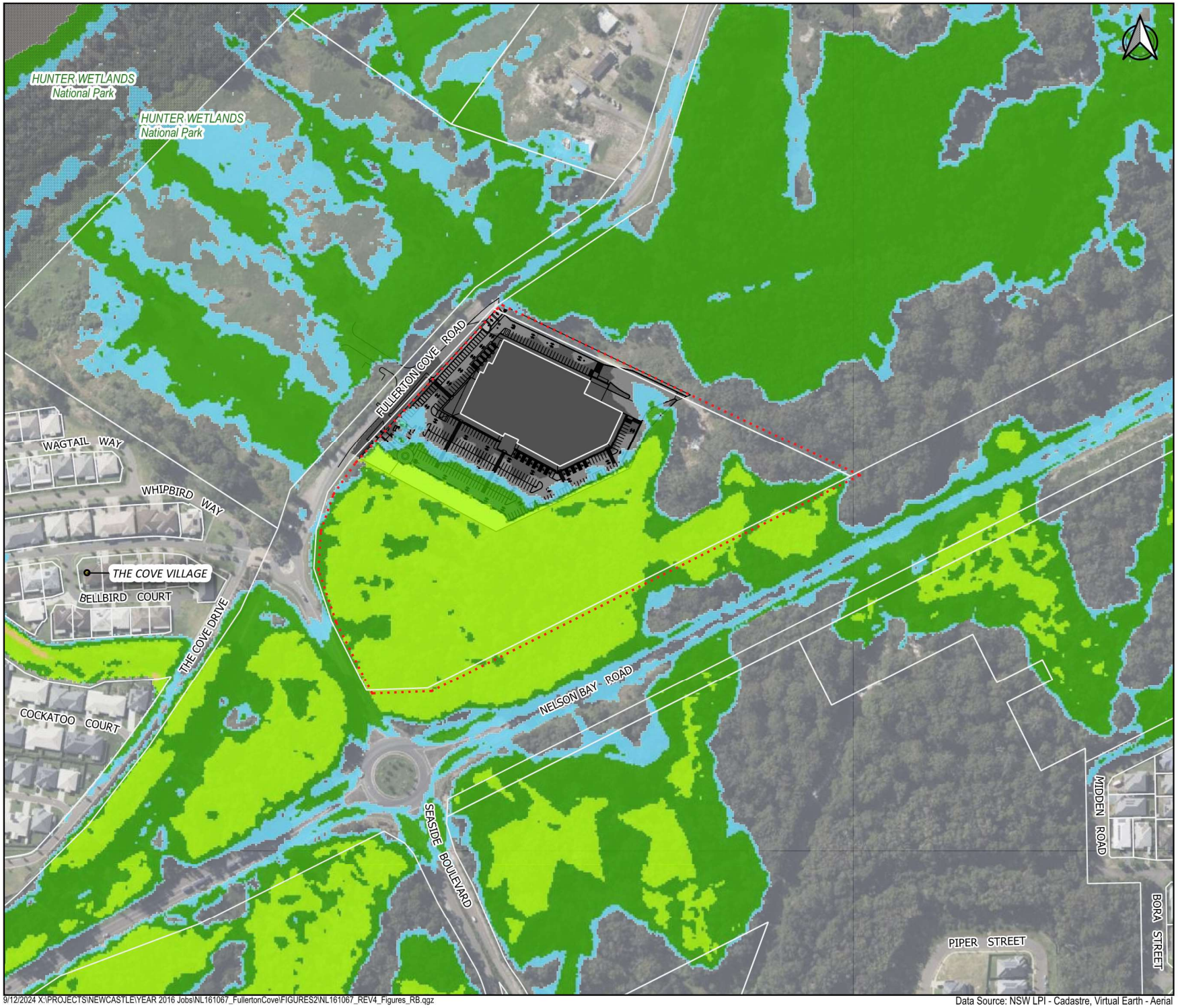
Figure C5-1

PMF Flood Velocity Developed Case

42 Fullerton Cove Road
Fullerton Cove

NORTHROP

Data Source: NSW LPI - Cadastre, Virtual Earth - Aerial



Legend

- Subject Site
- TUFLOW Model Extent
- Cadastre
- Proposed Building
- Carpark Marking

Proposed Landform(mAHD)

- <= 1.8
- 1.8 - 2.2
- 2.2 - 2.7
- 2.7 - 3.2
- > 3.2

Hazard Category

- H1
- H2
- H3
- H4
- H5
- H6

0 70 140 Metres

1:4,000

Figure C5-2

PMF Flood Hazard
Developed Case

42 Fullerton Cove Road
Fullerton Cove

NORTHROP

Data Source: NSW LPI - Cadastre, Virtual Earth - Aerial