



Westwood Capital Pty
Ltd
61-65 Kingsway
NSW 2208
Kingsgrove

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20 November 2023

Attention: Mr Con Filis

Re: 36-42, 42A and 44 Short Street, Mudgee – Flood Impact Assessment

1. INTRODUCTION

WMAwater has been engaged by Westwood Capital Pty Ltd to provide an assessment of the impacts of flooding to support a planning proposal to increase the height of building to facilitate for a proposed development at 36-42, 42A and 44 Short Street, Mudgee NSW (Lot 1 DP702951, Lot 21 DP816236 and Lot 22 DP816236), herein referred to as the site. The site is located on Short Street, approximately 1.2 km north north-west of the Mudgee town centre, and currently comprises of a single commercial dwelling and two single residential dwellings. The location of the site is presented in Figure 1.

The proposed development comprises of two residential buildings. One building will be two-stories containing 4 units and the second building will be three-stories containing 24 units. Both residential buildings will have an underground carpark.

The Mid-Western Regional Council flood planning area is currently defined by the Local Environmental Plan 2012 map 5270_COM_CL1_006G_010_20120621. The site sits within the Cudgegong River catchment and is within the flood planning area defined by this map. The flow behaviour at the site and surrounding area is defined by the Mudgee Flood Study (Flood Study, WMAwater, 2021).

An assessment of potential flood impacts from the proposed development on the surrounding lots has been undertaken. The assessment considers the impact occurring as the result of changes to the site and considers the development in the context of relevant planning controls.

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2. EXISTING FLOOD ENVIRONMENT

The site is subject to inundation, as defined by the Mudgee Flood Study (WMAwater, 2021). The hydrologic and hydraulic models established as part of the Flood Study have been reviewed for the purposes of a local assessment to assess the impacts of the proposed development.

The site and surrounding area sit within the Cudgegong River catchment. A formed channel is located to the east of the site, which conveys flows in a north west direction, discharging into the Cudgegong River. The channel receives overland flow from the upstream reaches of the local catchment through a culvert under Short Street, located to the south east of the site. Downstream of the site, overtopping of the Cudgegong River results in overland flow occurring in the surrounding low lying landscape.

Under conditions presented in the Flood Study (WMAwater, 2021), a maximum flood depth of 1.4 m occurs in the 1% AEP event in the north east corner of the site, within the drainage channel, with depths in other areas of the site typically less than 0.3 m. The drainage channel receives flows from the upstream areas of the local catchment through a culvert under Short Street. Inundation occurs along Short Street, at an average flood depth of 0.05 m (in the 1% AEP event) in the vicinity of the site and flows towards the east into the formed channel. The commercial and residential dwellings on the site are not impacted by flooding under existing conditions in the 1% AEP event.

The shallow depths along the site boundary means that the hydraulic hazard, predominantly defined by the Flood Study (WMAwater, 2021) (utilising the method described in Managing the floodplain: a guide to best practice in flood risk management in Australia (AIDR)), for the 1% AEP event (Figure 6) is H1 – generally safe for people, vehicles and buildings. A small pocket of H2 – unsafe for small vehicles occurs on the north western boundary. In the north eastern corner of the site, where flows are conveyed through the formed channel, the hydraulic hazard is H5 – unsafe for all people and all vehicles, with buildings requiring special engineering design and construction. These categorisations indicate that the flood behaviour, with exception to the flood behaviour within the formed channel, is generally safe for vehicles, people and buildings and is not likely to impose risk to life or property damage in the 1% AEP event.

Hazard defined by the NSW Government Floodplain Development Manual (FDM) is no longer considered best practice as it provides a less granular and less descriptive definition of hydraulic hazard. The Mid-Western Regional Council utilises the FDM hazard categories within their planning policies due to the hazard mapping available when the policy was developed. FDM hazard mapping is not available for the site. AIDR provides guidance for grouping hazard categories H1 to H6, into different scales of risk H1, H2 – H4, H5 and H6. This allows AIDR hazard categories to be aligned with planning controls using the FDM hazard categories.

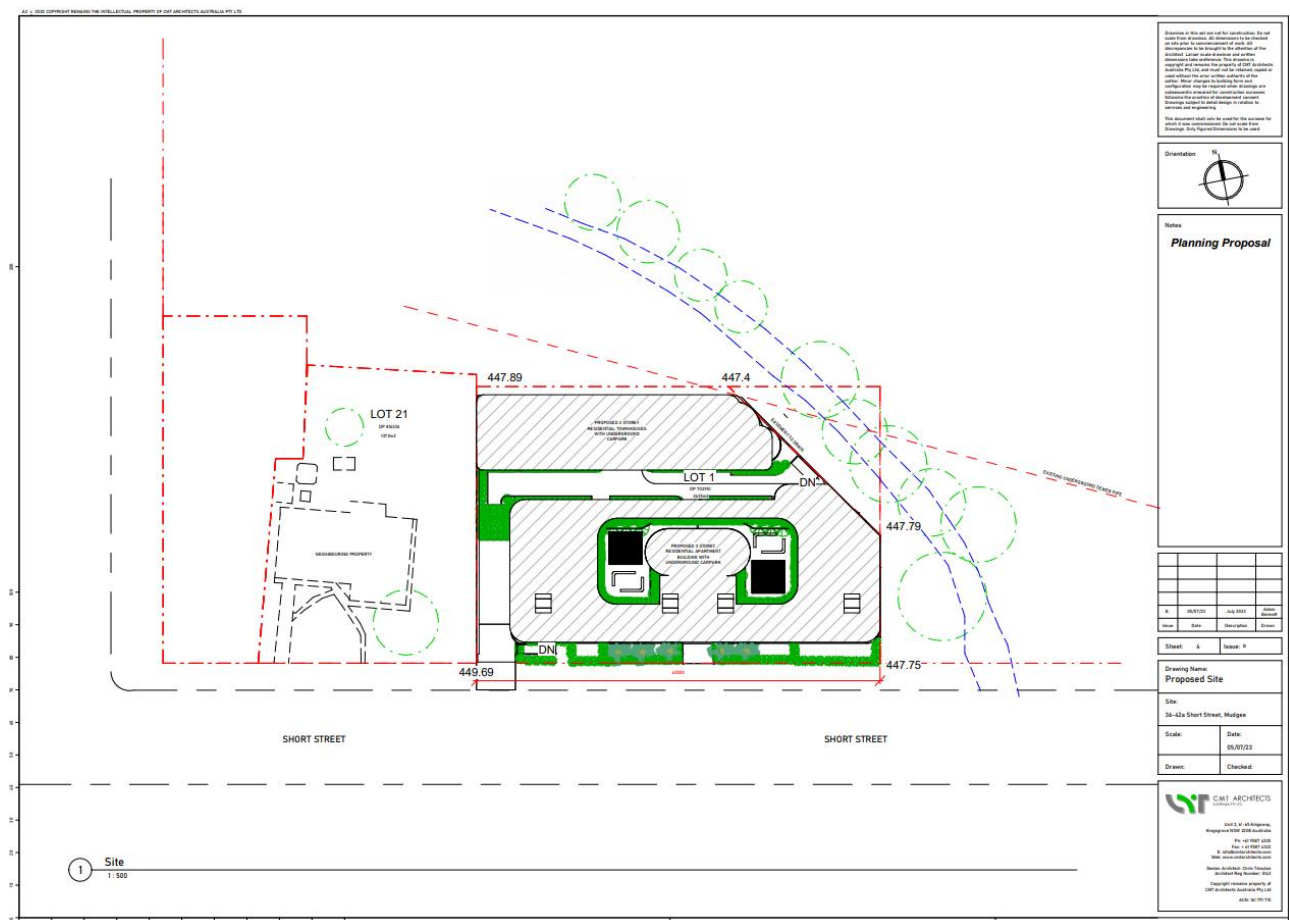
3. FLOOD IMPACT ASSESSMENT

3.1. Methodology

The proposed development will alter the site from its current condition, with the removal of the existing building on Lot 1 DP702951 for the construction of two separate buildings (one will be comprised of 4 units and the other of 24 units). Modelling has been carried out to establish the potential flood impacts that may occur for the proposed development.

The following steps were undertaken:

1. The existing conditions presented in the Mudgee Flood Study (WMAwater, 2021) were reviewed to ensure that at a local scale, the model was representative. This reviewed model establishes the baseline scenario against which the impacts of the development can be determined.
2. The proposed development (shown in Diagram 1) was represented into the reviewed baseline model.
3. The proposed development model was run for the 1% and 5% AEP events. The results of the pre-development (reviewed baseline) and post-development case (Figures 2-13) were compared to determine the changes in flood level (flood impacts); and
4. Impact maps were produced (Figures 14-16), indicating changes in flood level for the 1% and 5% AEP events due to the proposed development.



3.2. Results

The resulting peak flood depths due to the proposed development for the 1% and 5% AEP events are shown on Figure 3 and Figure 9, the peak flood velocities for the 1% and 5% AEP events are shown on Figure 5 and Figure 11 and the flood hazards for the 1% and 5% AEP events are shown on Figure 7 and Figure 13. The peak flood level impacts for the 1% and 5% AEP events are shown on Figure 14 and Figure 16.

Majority of the site is not impacted by flooding for either the existing or proposed 1% and 5% AEP events. In both scenarios, inundation occurs in the north east corner of the site, as a result of flows through the drainage channel (maximum depth approximately 1.4 m), on the north western site boundary (maximum depth approximately 0.4 m) and along the southern boundary on Short Street (maximum depth approximately 0.3 m), discharging into the drainage channel.

The proposed scenario for the 1% AEP event shows that the development results in a removal of floodwater on the east of the site, with no change in flood behaviour occurring on the surrounding land or neighbouring properties. There is no impact from the proposed development on the flood behaviour in the 5% AEP event.

4. FLOOD RELATED DEVELOPMENT CONTROLS

Appropriate planning restrictions ensure that development is compatible with flood risk and can significantly reduce flood damages. Planning instruments can be used as tools to guide new development away from high flood risk locations and ensure that new development does not adversely affect flood behaviour. Mid-Western Regional Council apply flood planning controls through the Mid-Western Regional Local Environmental Plan 2012 (LEP 2012).

The site is located on flood prone land, as defined in the LEP (2012), and is therefore subject to the directions outlined in Focus Area 4: Resilience and Hazards of the NSW Department of Planning and Environment's Local Planning Directions (DPE, 2023). Focus Area 4: Resilience and Hazards of the Local Planning Directions aims to:

- ensure that development of flood prone land is consistent with the NSW Government's Flood Prone Land Policy and the principles of the Floodplain Development Manual 2005, and
- ensure that the provisions of an LEP that apply to flood prone land are commensurate with flood behaviour and includes consideration of the potential flood impacts both on and off the subject land.

Table 1 outlines how the proposed development meets the Local Planning Directions (DPE, 2023).

Table 1 Local Planning Directions

Local Planning Directions	
Focus Area 4: Resilience and Hazards Direction 4.1	Response
(1) A planning proposal must include provisions that give effect to and are consistent with: (a) the NSW Flood Prone Land Policy, (b) the principles of the Floodplain Development Manual 2005,	An assessment of the impacts of the development on flood behaviour has been undertaken in accordance with provisions and principles outlined in the NSW Flood Prone Land Policy, the Floodplain Development Manual 2005 and in the Considering flooding in land use planning guideline 2021.

<p>(c) the Considering flooding in land use planning guideline 2021, and</p> <p>(d) any adopted flood study and/or floodplain risk management plan prepared in accordance with the principles of the Floodplain Development Manual 2005 and adopted by the relevant council.</p>	<p>The Mudgee Flood Study (WMAwater, 2021) was considered in the preparation of this assessment.</p>
<p>(2) A planning proposal must not rezone land within the flood planning area from Recreation, Rural, Special Purpose or Conservation Zones to a Residential, Employment, Mixed Use, W4 Working Waterfront or Special Purpose Zones.</p>	<p>Not applicable. The land use zone of the site is currently R1: General Residential. The proposed Planning Proposal does not change the land use zoning.</p>
<p>(3) A planning proposal must not contain provisions that apply to the flood planning area which:</p> <p>(a) permit development in floodway areas,</p> <p>(b) permit development that will result in significant flood impacts to other properties,</p> <p>(c) permit development for the purposes of residential accommodation in high hazard areas,</p> <p>(d) permit a significant increase in the development and/or dwelling density of that land,</p> <p>(e) permit development for the purpose of centre-based childcare facilities, hostels, boarding houses, group homes, hospitals, residential care facilities, respite day care centres and seniors housing in areas where the occupants of the development cannot effectively evacuate,</p> <p>(f) permit development to be carried out without development consent except for the purposes of exempt development or agriculture. Dams, drainage canals, levees, still require development consent,</p> <p>(g) are likely to result in a significantly increased requirement for government spending on emergency management services, flood mitigation and emergency response measures, which can include but are not limited to the provision of road infrastructure, flood mitigation infrastructure and utilities, or</p> <p>(h) permit hazardous industries or hazardous storage establishments where hazardous materials cannot be effectively contained during the occurrence of a flood event.</p>	<p>The flood function classification for the site is defined in the Mudgee Flood Study (WMAwater, 2021). The majority of the site is not flood affected and therefore defined. The north east corner of the site, in the location of the formed channel is classified as “floodway”. The proposed development will not be located in this area.</p> <p>An assessment of the impacts of the development on flood behaviour has been undertaken and the results are presented in Section 3. The assessment showed that the development results in either no change or positive changes to flood behaviour including the removal of inundation in the eastern area of the site, with no change in the impact on the flood behaviour on neighbouring properties.</p> <p>Under both current and proposed conditions, the proposed development on the site will not be inundated in the 1% AEP or the 5% AEP events and therefore no flood hazard exists at the building. Under the current and proposed conditions, the formed channel in the northeast corner of the site will be inundated, with a resulting flood hazard of up to H5: unsafe for all people and all vehicles, with buildings requiring special engineering design and construction. However, the proposed development will not be located in this area.</p> <p>The proposed development will have a similar footprint to the existing building and will therefore not cause a significant increase in the development density of the land.</p> <p>A number of surrounding roads have shallow inundation. Low hydraulic hazard (H1 – relatively benign flow conditions. No vulnerability constraints) will allow for sufficient evacuation during a flood event, if required. Possible evacuation routes may be to the west along Short Street and to the south along Court</p>

	<p>Street, where the hydraulic hazard is predominantly H1.</p> <p>This Flood Impact Assessment will accompany the development application to the Mid-Western Regional Council for the proposed development.</p> <p>The development is considered to be compatible with the flood function on the land. Under proposed conditions, the development will not have significant inundation in the 1% AEP or 5% AEP events and is therefore unlikely to require government spending.</p> <p>The proposed development will be for residential purposes.</p>
<p>(4) A planning proposal must not contain provisions that apply to areas between the flood planning area and probable maximum flood to which Special Flood Considerations apply which:</p> <ul style="list-style-type: none"> (a) permit development in floodway areas, (b) permit development that will result in significant flood impacts to other properties, (c) permit a significant increase in the dwelling density of that land, (d) permit the development of centre-based childcare facilities, hostels, boarding houses, group homes, hospitals, residential care facilities, respite day care centres and seniors housing in areas where the occupants of the development cannot effectively evacuate, (e) are likely to affect the safe occupation of and efficient evacuation of the lot, or (f) are likely to result in a significantly increased requirement for government spending on emergency management services, and flood mitigation and emergency response measures, which can include but not limited to road infrastructure, flood mitigation infrastructure and utilities. 	<p>Not applicable. Special Flood Considerations do not apply to the proposed development.</p>
<p>(5) For the purposes of preparing a planning proposal, the flood planning area must be consistent with the principles of the Floodplain Development Manual 2005 or as otherwise determined by a Floodplain Risk Management Study or Plan adopted by the relevant council.</p>	<p>The flood planning area of the site is defined by the Mudgee Flood Study (WMAwater, 2021).</p>

5. SUMMARY

WMAwater has undertaken a Flood Impact Assessment for the Planning Proposal and proposed development at 36-42, 42A and 44 Short Street, Mudgee. The proposed development comprises of two buildings, with one building will be two-stories containing 4 units and the second building will be three-stories containing 24 units. Both buildings will have an underground carpark.

The site and surrounding area sit within the Cudgegong River catchment. Inundation within the site and surrounding area drains into the formed channel to the east of the site, which discharges into Cudgegong River, approximately 450 m north west of the site. The existing conditions as presented in the Mudgee Flood Study (WMAwater, 2021), was reviewed and deemed appropriate for the purpose of this assessment.

The proposed scenario for the 1% AEP event showed that the development results in a reduction in flood water, and no change for the 5% AEP event. In addition, there is no change in flood behaviour on the surrounding land or neighbouring properties for both the 1% and 5% AEP events, as a result of the proposed development.

The proposed development is located within the flood planning area, as defined in the Mid-Western Regional Council LEP (2012). The assessment has determined that the proposed development appropriately meets the directions outlined in Focus Area 4: Resilience and Hazards, as required by the Ministerial Local Planning Directions.

Yours Sincerely,

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

Daniel Wood

WMAwater



FIGURE 1
SITE LOCALITY



FIGURE 2
PEAK FLOOD DEPTH
1% AEP EVENT
BASELINE SCENARIO

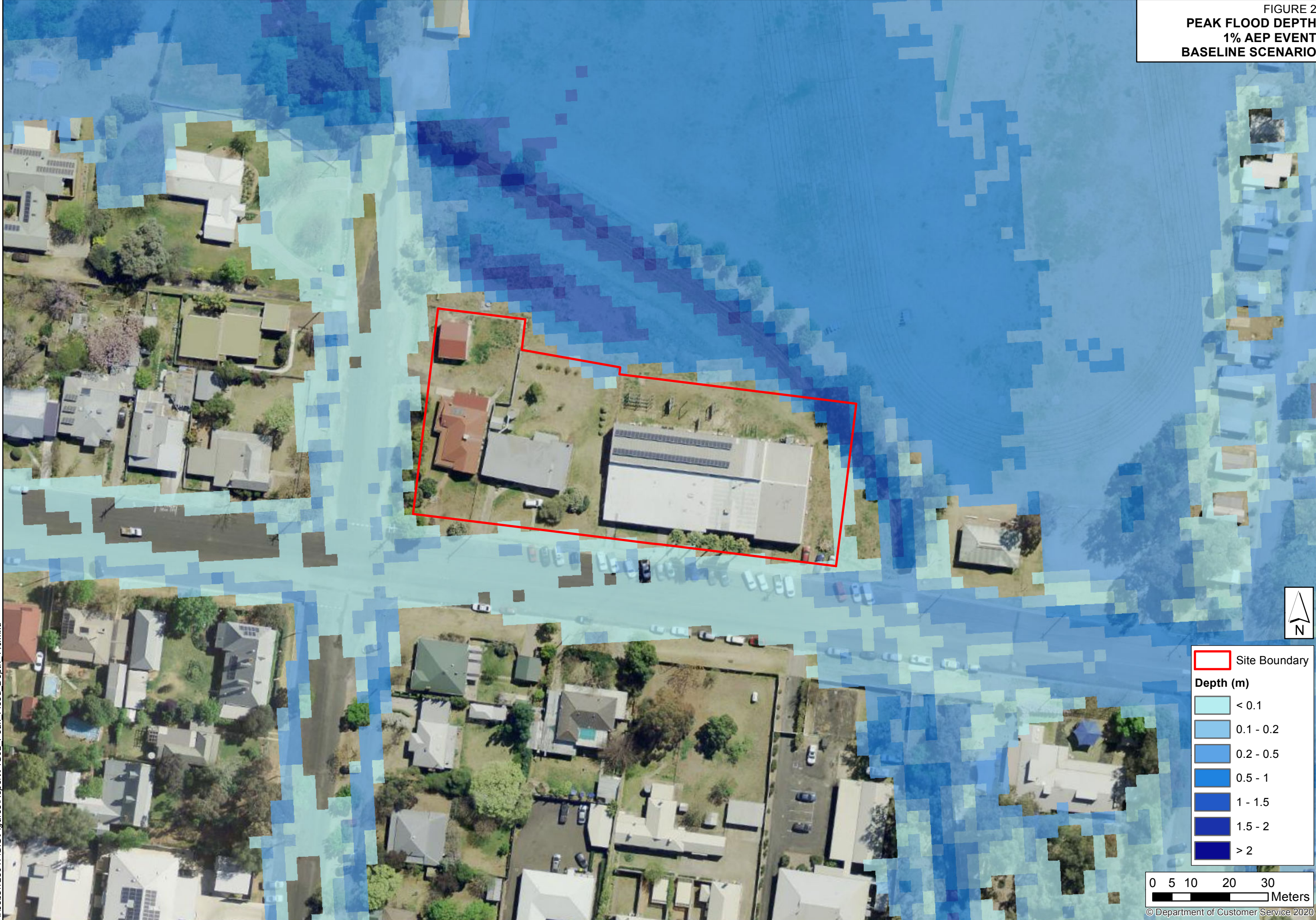
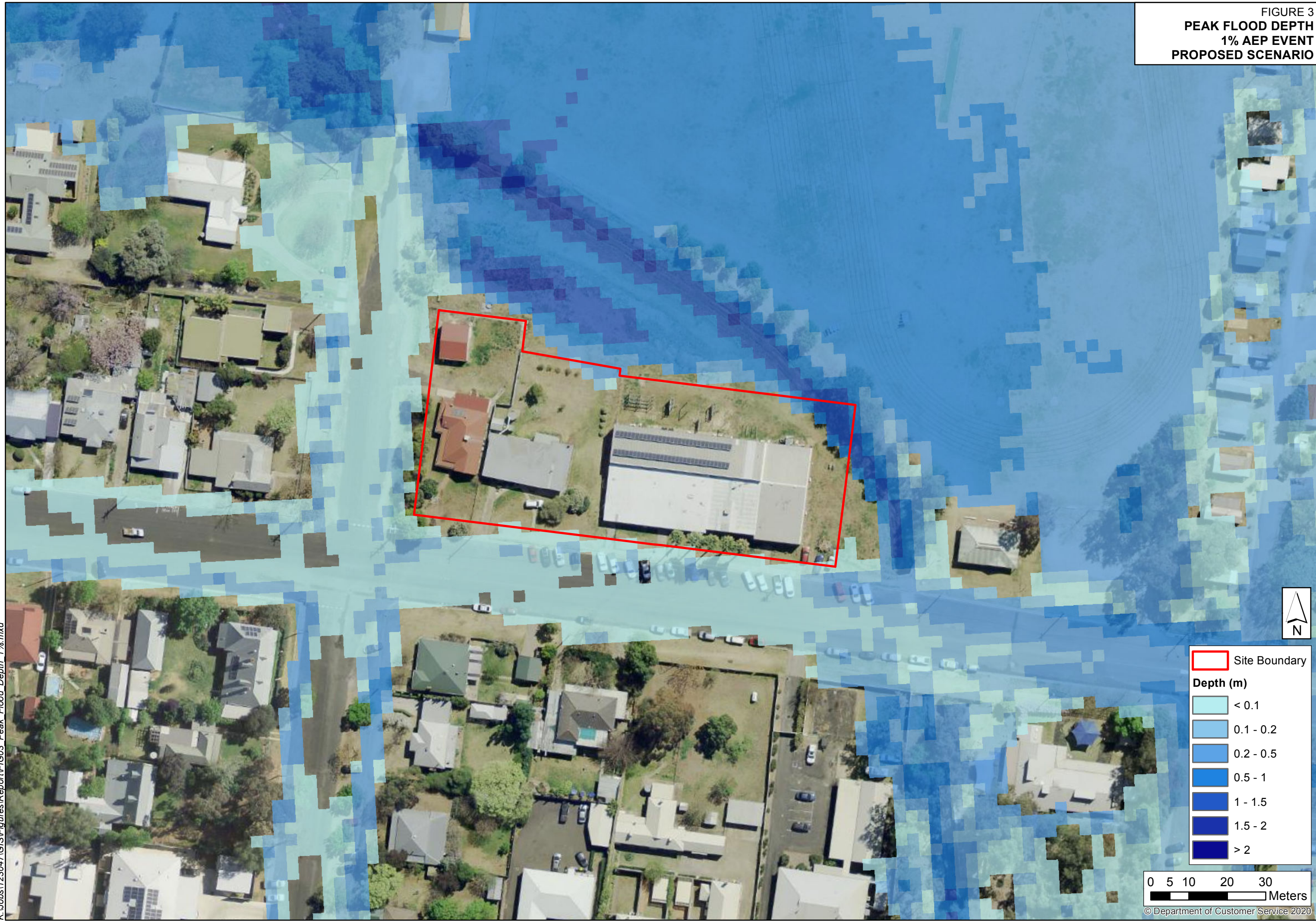


FIGURE 3
PEAK FLOOD DEPTH
1% AEP EVENT
PROPOSED SCENARIO



Site Boundary

Depth (m)

< 0.1
0.1 - 0.2
0.2 - 0.5
0.5 - 1
1 - 1.5
1.5 - 2
> 2

0 5 10 20 30 Meters

FIGURE 4
PEAK FLOOD VELOCITY
1% AEP EVENT
BASELINE SCENARIO

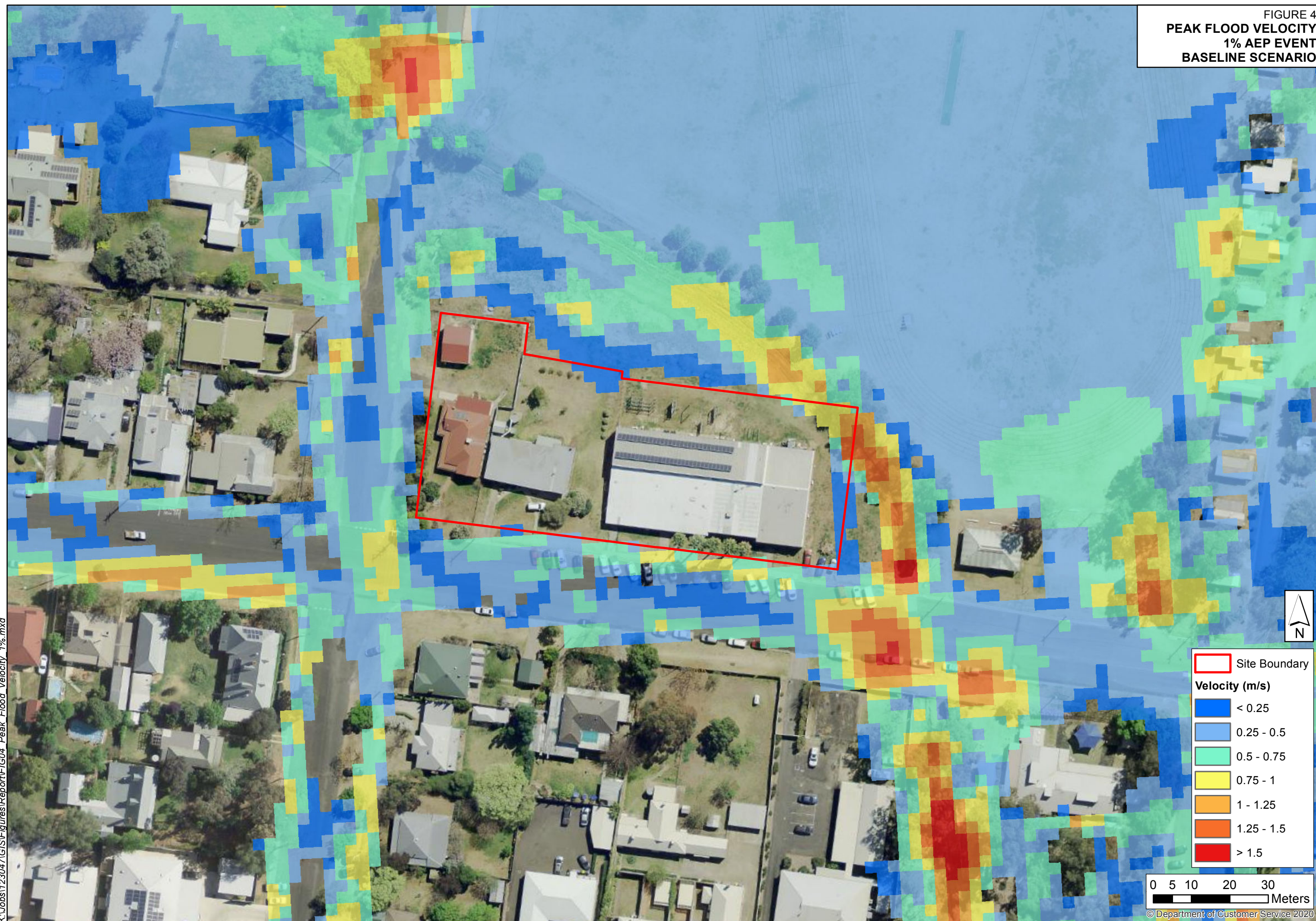


FIGURE 5
PEAK FLOOD VELOCITY
1% AEP EVENT
PROPOSED SCENARIO

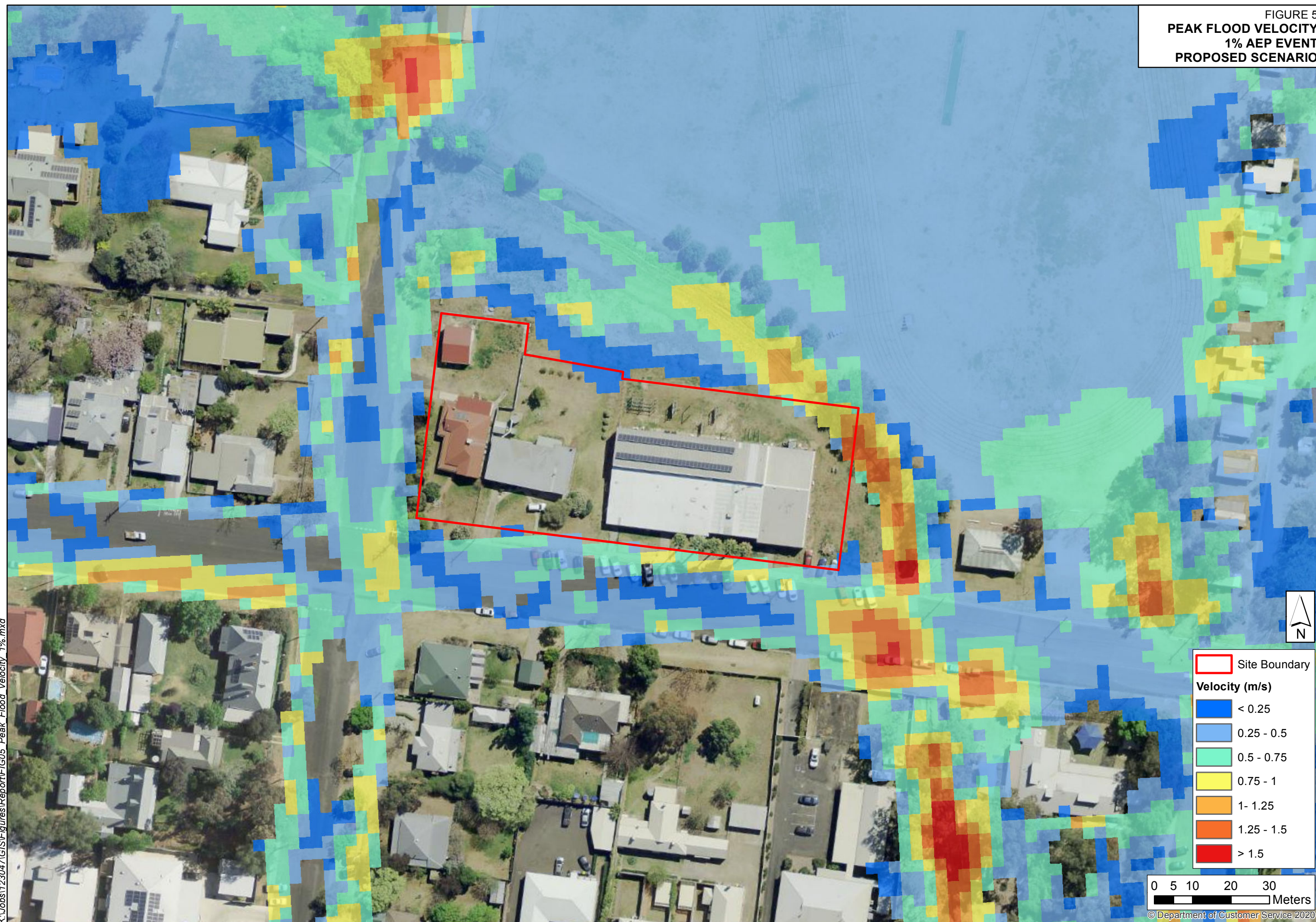
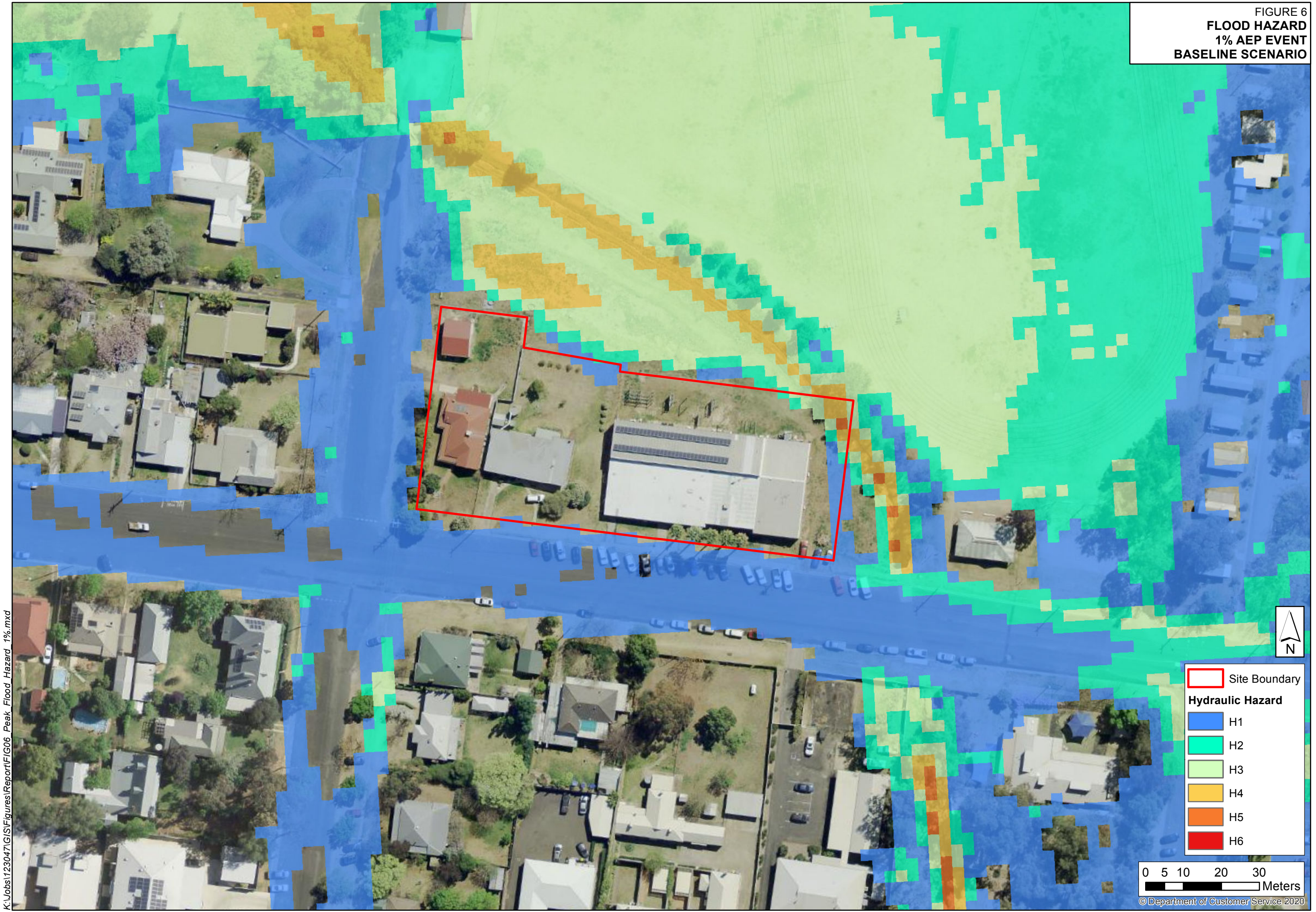
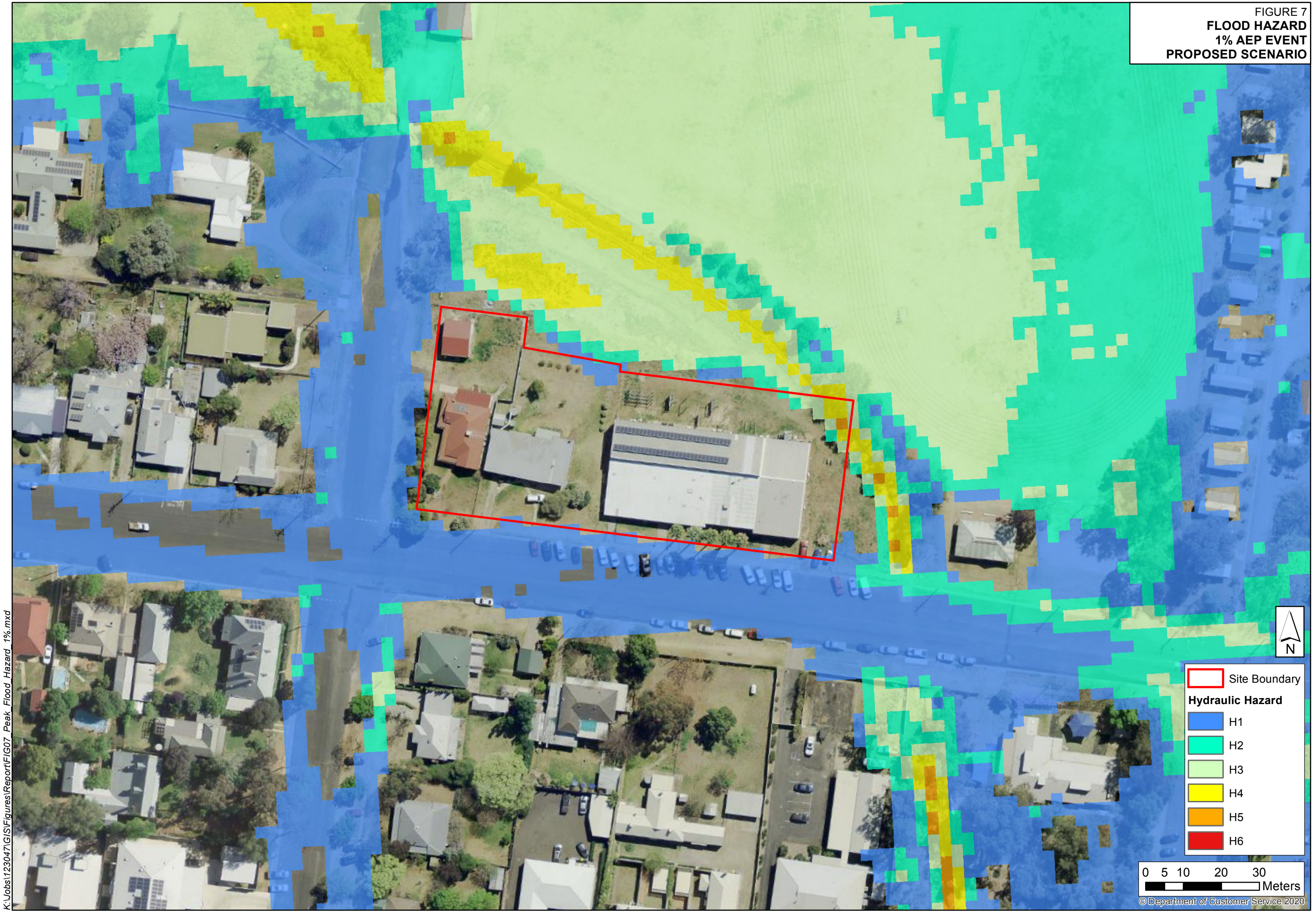


FIGURE 6
FLOOD HAZARD
1% AEP EVENT
BASELINE SCENARIO



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FIGURE 7
FLOOD HAZARD
1% AEP EVENT
PROPOSED SCENARIO



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FIGURE 8
PEAK FLOOD DEPTH
5% AEP EVENT
BASELINE SCENARIO

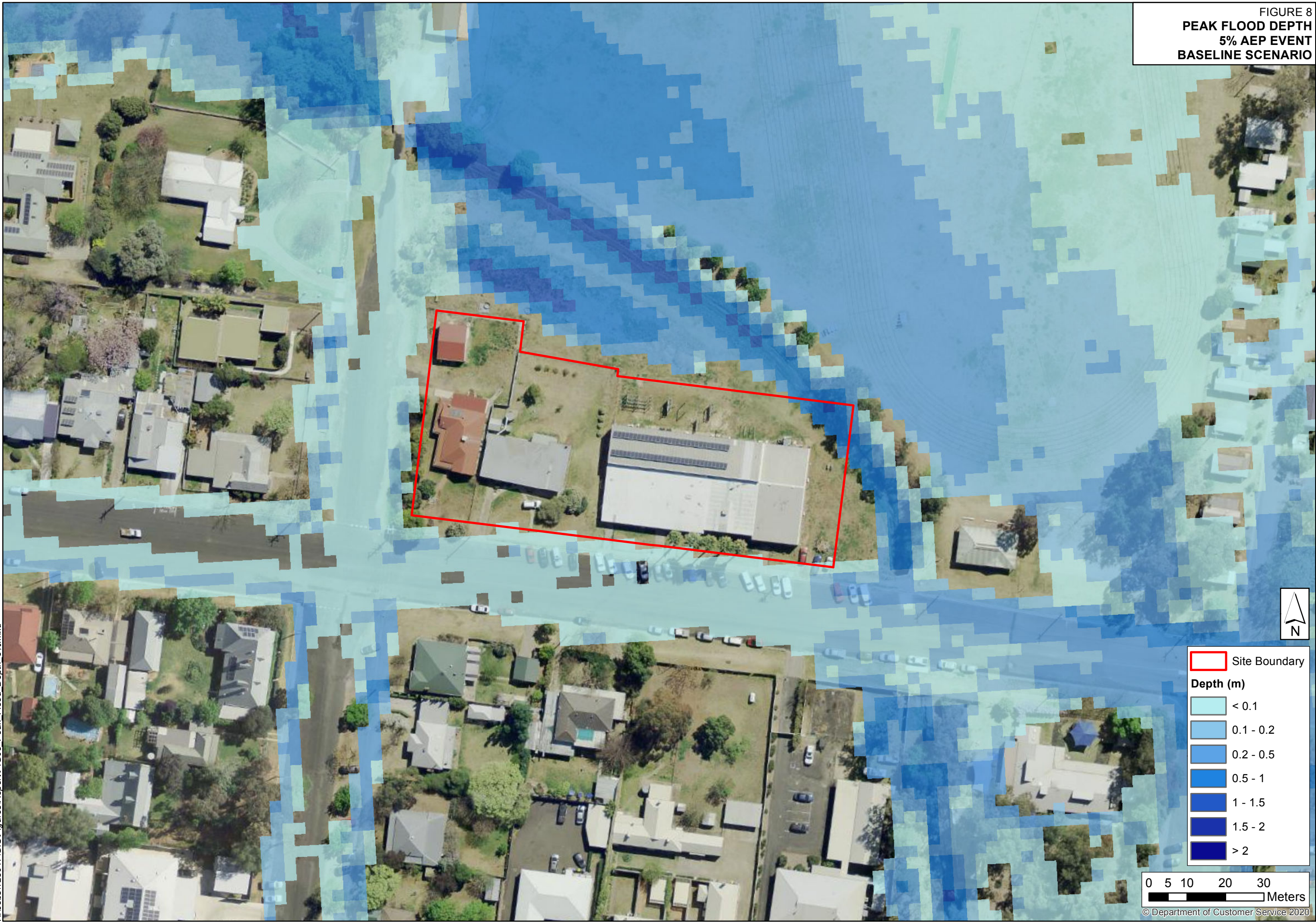


FIGURE 9
PEAK FLOOD DEPTH
5% AEP EVENT
PROPOSED SCENARIO

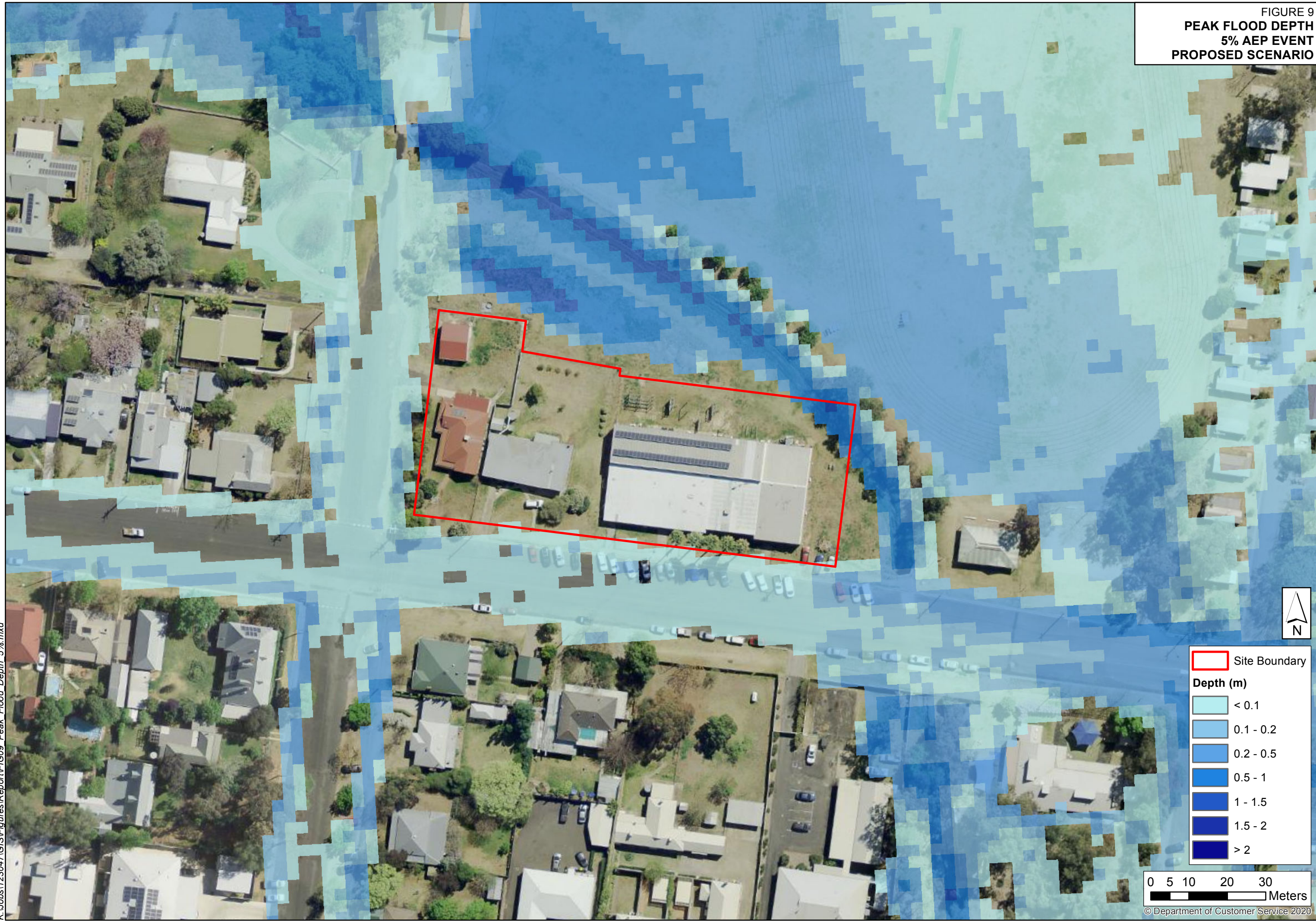


FIGURE 10
PEAK FLOOD VELOCITY
5% AEP EVENT
BASELINE SCENARIO

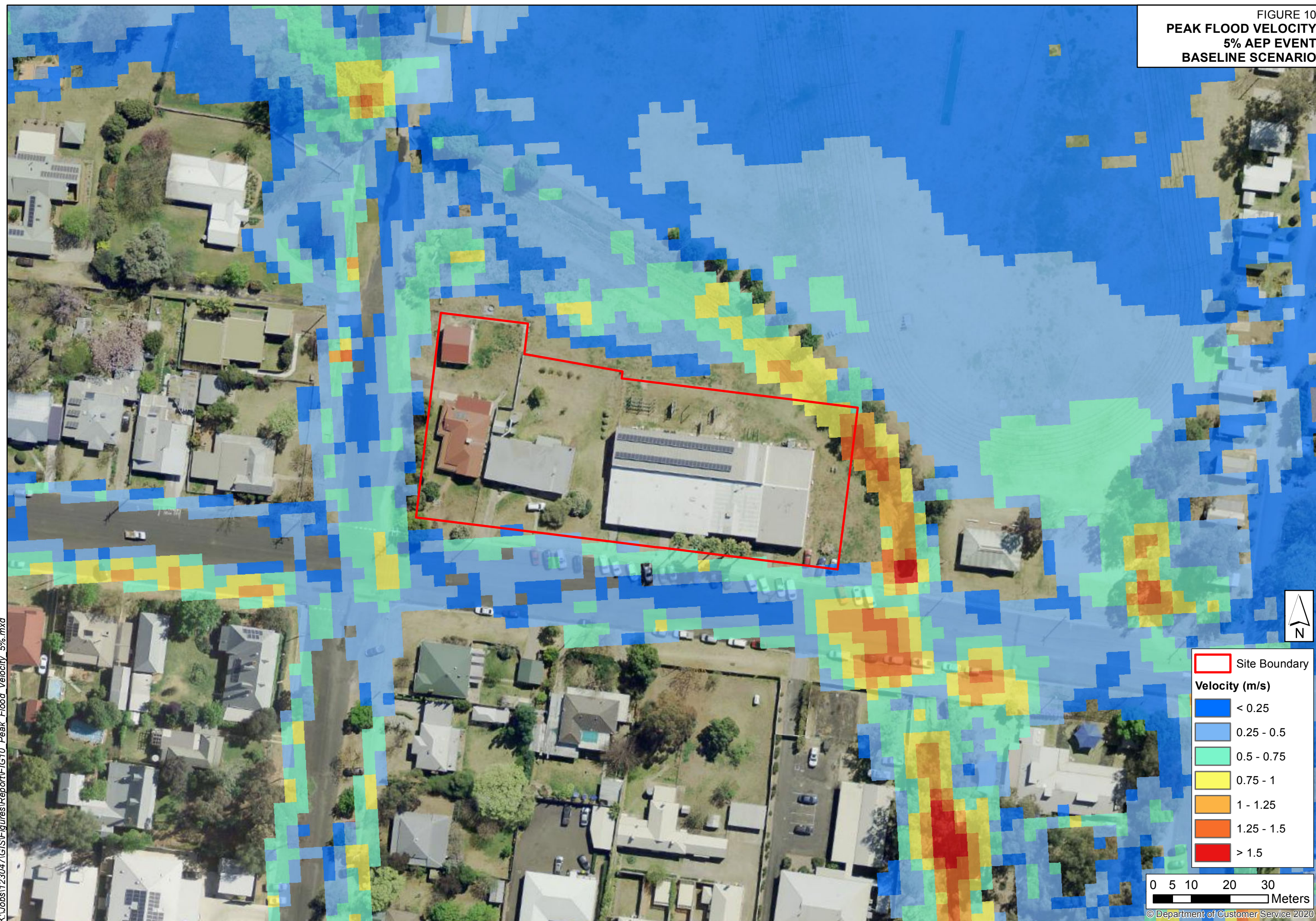


FIGURE 11
PEAK FLOOD VELOCITY
5% AEP EVENT
PROPOSED SCENARIO

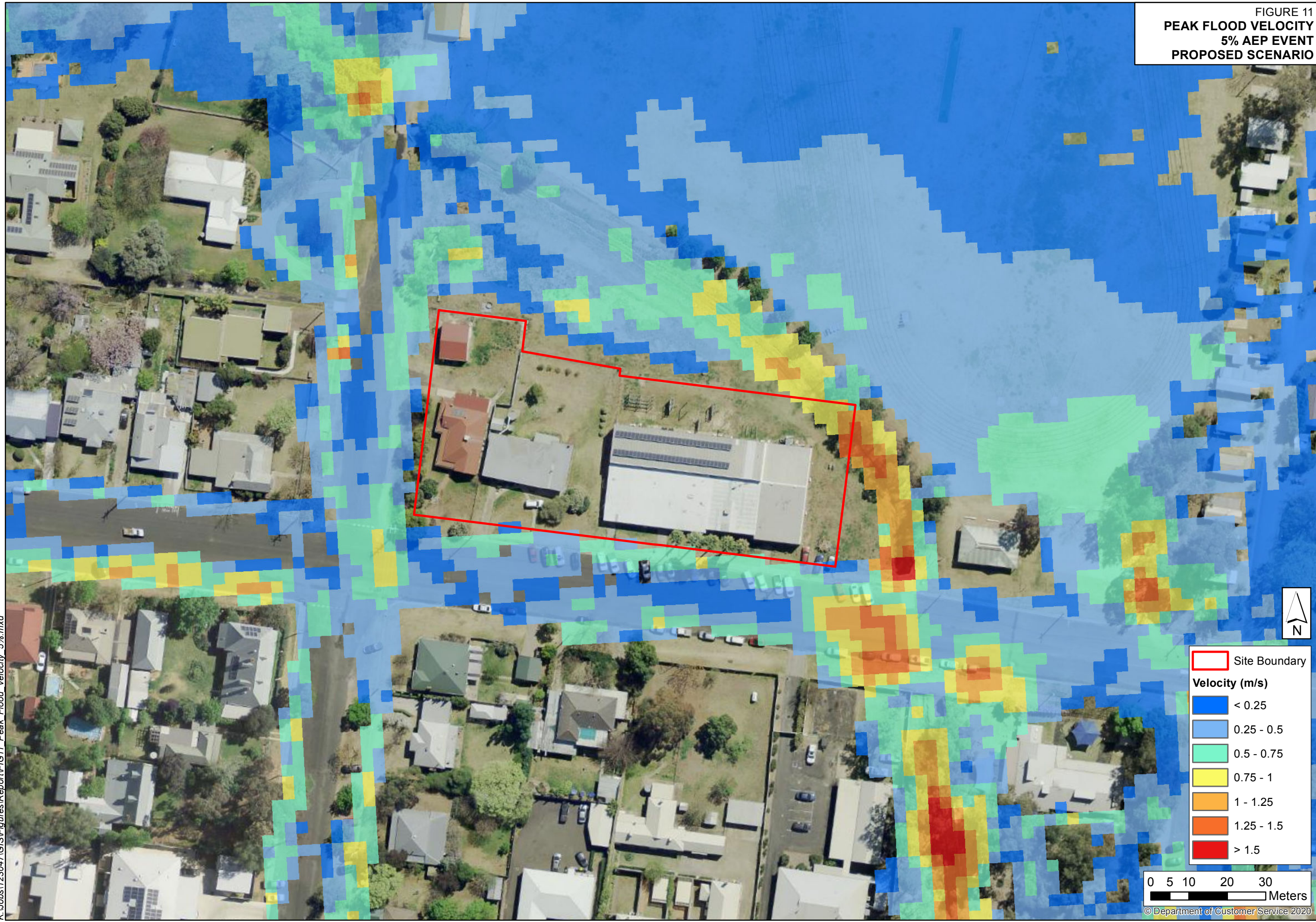
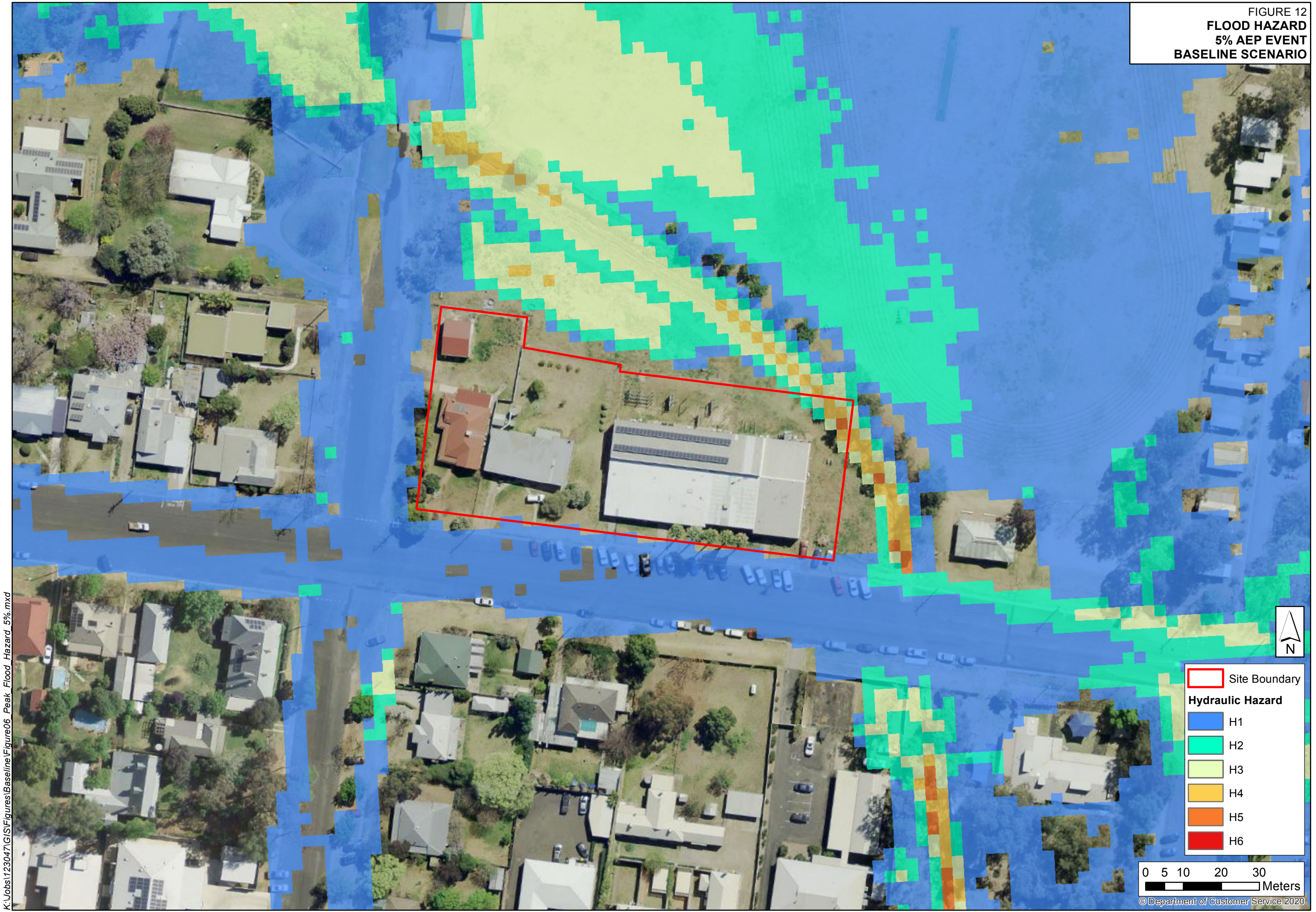


FIGURE 12
FLOOD HAZARD
5% AEP EVENT
BASELINE SCENARIO



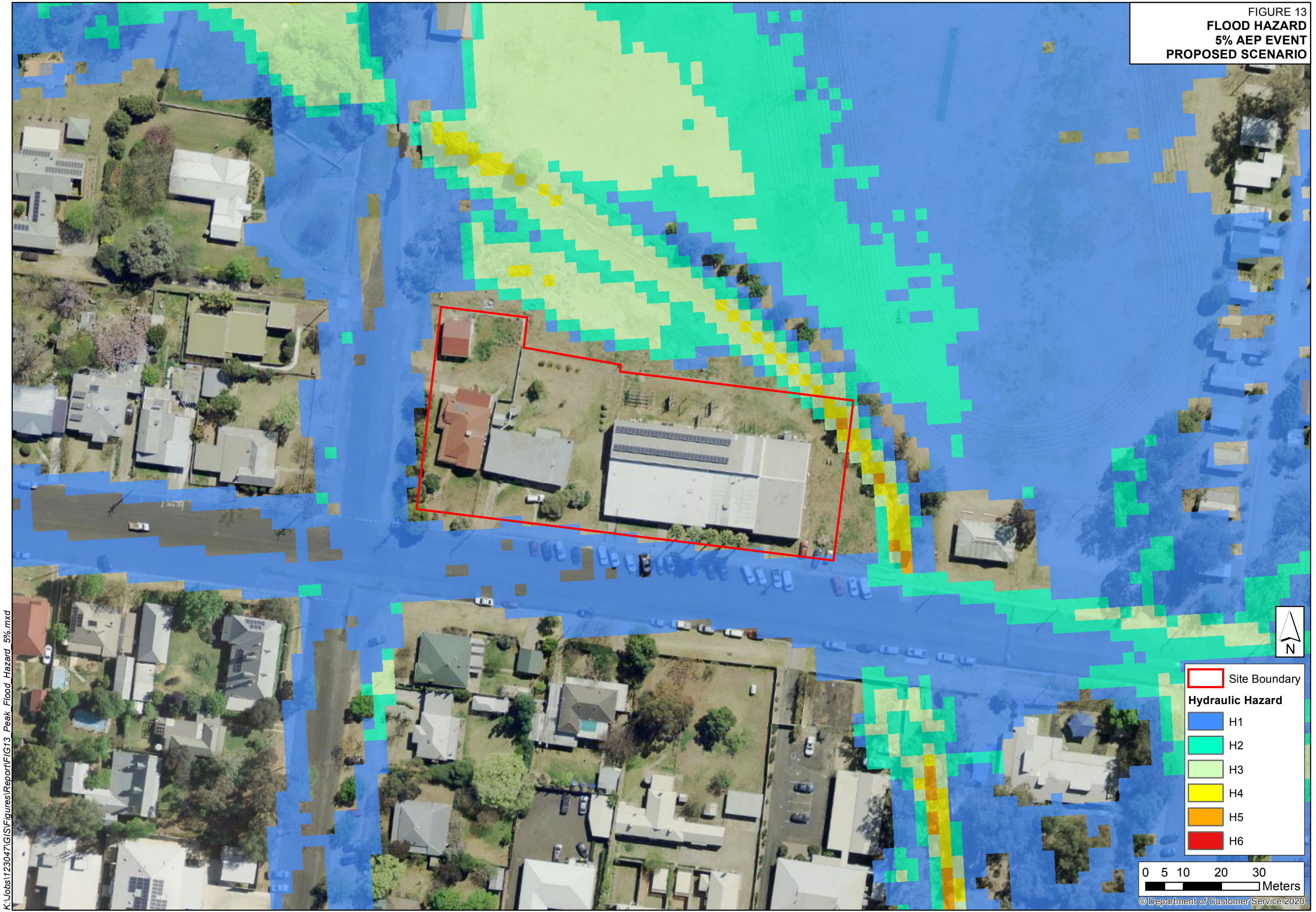
Site Boundary

Hydraulic Hazard

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

0 5 10 20 30
Meters

FIGURE 13
FLOOD HAZARD
5% AEP EVENT
PROPOSED SCENARIO



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FIGURE 14
PEAK FLOOD LEVEL
1% AEP EVENT
IMPACT

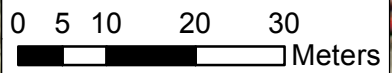
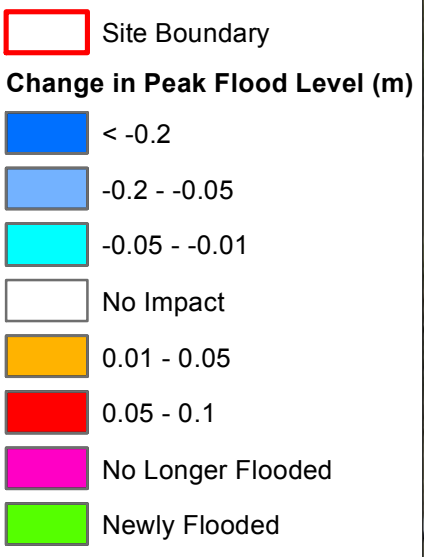


FIGURE 15
PEAK FLOOD VELOCITY
1% AEP EVENT
IMPACT



FIGURE 16
PEAK FLOOD LEVEL
5% AEP EVENT
IMPACT



Site Boundary

Increase in Peak Flood Level (m)

No Impact

