

12 December 2025  
Job No: 1098025.0000

Far North District Council  
Private Bag 752  
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Attention: James Witham

Dear James

### **Waipapa Proposed Industrial Zones - Flood hazard information**

Far North District Council (FNDC) engaged Tonkin & Taylor Ltd (T+T) to provide comment on updated flood mapping from Northland Regional Council (NRC) for the area of interest shown in Figure 1.

The area of interest is located in Waipapa on the true left of the Kerikeri Stream and to the west of State Highway 10.

The land use in the Operative District Plan (2009) for the area of interest comprises “Rural Production”, “Industrial” and some small areas of “Recreational” and “Commercial” zoned land. Under the proposed Far North District Plan, within the area of interest there are significant increases in land zoned for Heavy Industrial and Light Industrial.

Figure 1 shows the Operative and Proposed District Plan zoning alongside each other. The land proposed to be rezoned Heavy Industrial towards the south has largely been developed, and the zoning captures existing development. The Light industrial land to the north has been partially developed, and is largely vacant closer to the stream.

To support FNDC’s rezoning decision, FNDC sought advice from DHI Water and Environment Ltd in 2022 to assess ‘flood risk’, using the existing Northland Regional Council (NRC) modelling at that time, the direction set out in the Northland Regional Policy Statement (RPS) and accepted ‘best practice’ for assessing flood hazard risk.

NRC have submitted in opposition to this area being rezoned, and gave evidence at the 15D Hearing.

NRC provided updated draft flood model outputs to T+T which were developed during 2025 including new Lidar information recorded after the 2022 DHI assessment<sup>1</sup>. The flood modelling was carried out by Water Technology and has undergone peer review although the results have not been finalised or published. In discussion with NRC, they indicated that the model results in the area of interest are likely a good representation of the floodplain characteristics. T+T has not reviewed the model results.

This report is split into two sections:

- 1 Floodplain characteristics – based on NRC’s draft flood modelling.
- 2 Flooding considerations relating to NRC Regional Policy Statement (RPS).

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<sup>1</sup> Date of Lidar information unknown.

This report provides information to FNDC and does not make recommendations regarding the appropriateness of rezoning the land from a flood hazard perspective.

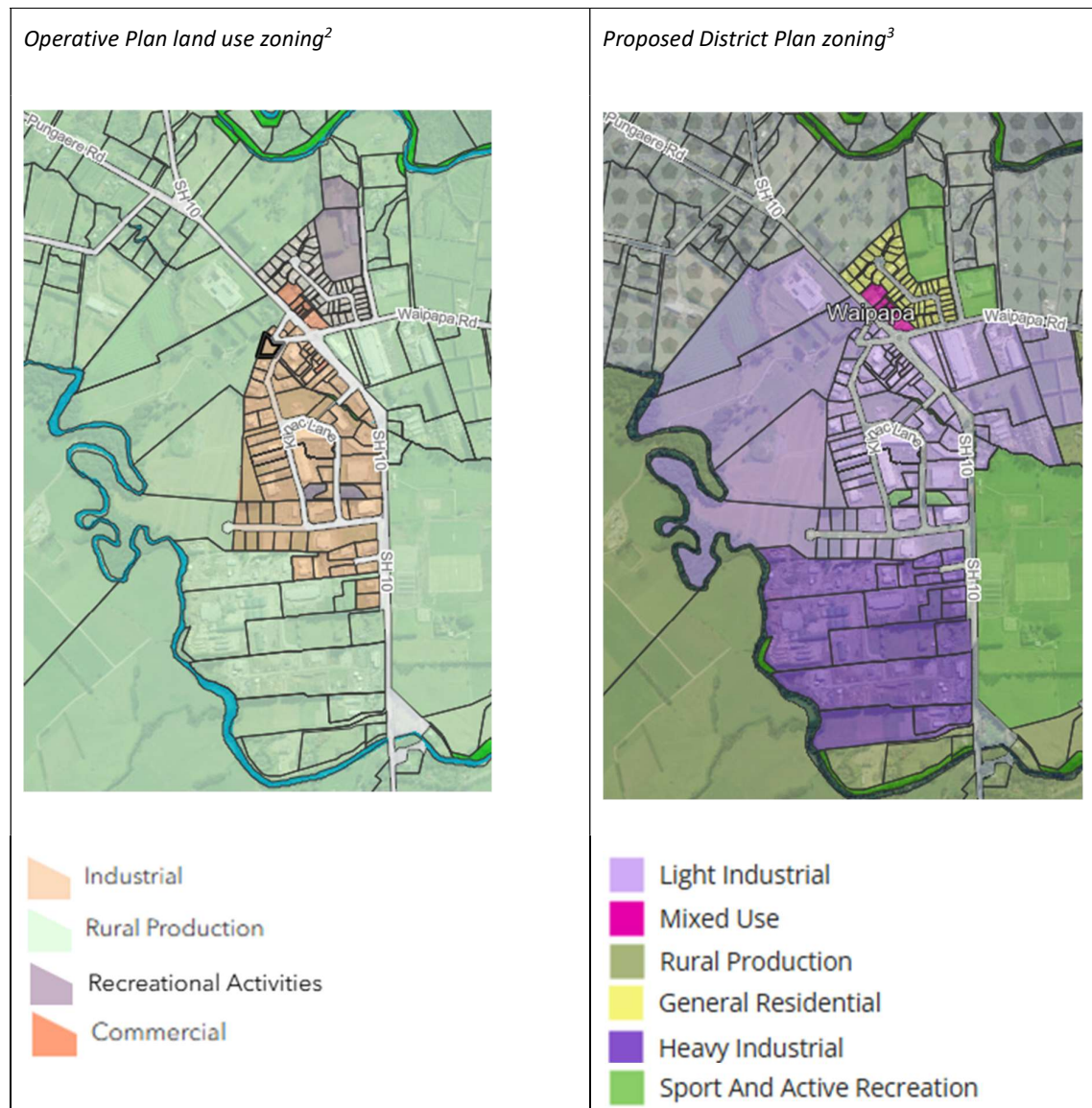


Figure 1: Area of interest and land use zoning.

<sup>2</sup> <https://experience.arcgis.com/experience/c517cfe4f1624df3a461eec0add78497>

<sup>3</sup> [https://farnorth.isoplan.co.nz/eplan/property/1364764/0/78?\\_t=property](https://farnorth.isoplan.co.nz/eplan/property/1364764/0/78?_t=property)

# 1 Floodplain characteristics

The floodplain characteristics have been determined from the draft NRC flood model results. The characteristics are presented in two subsections:

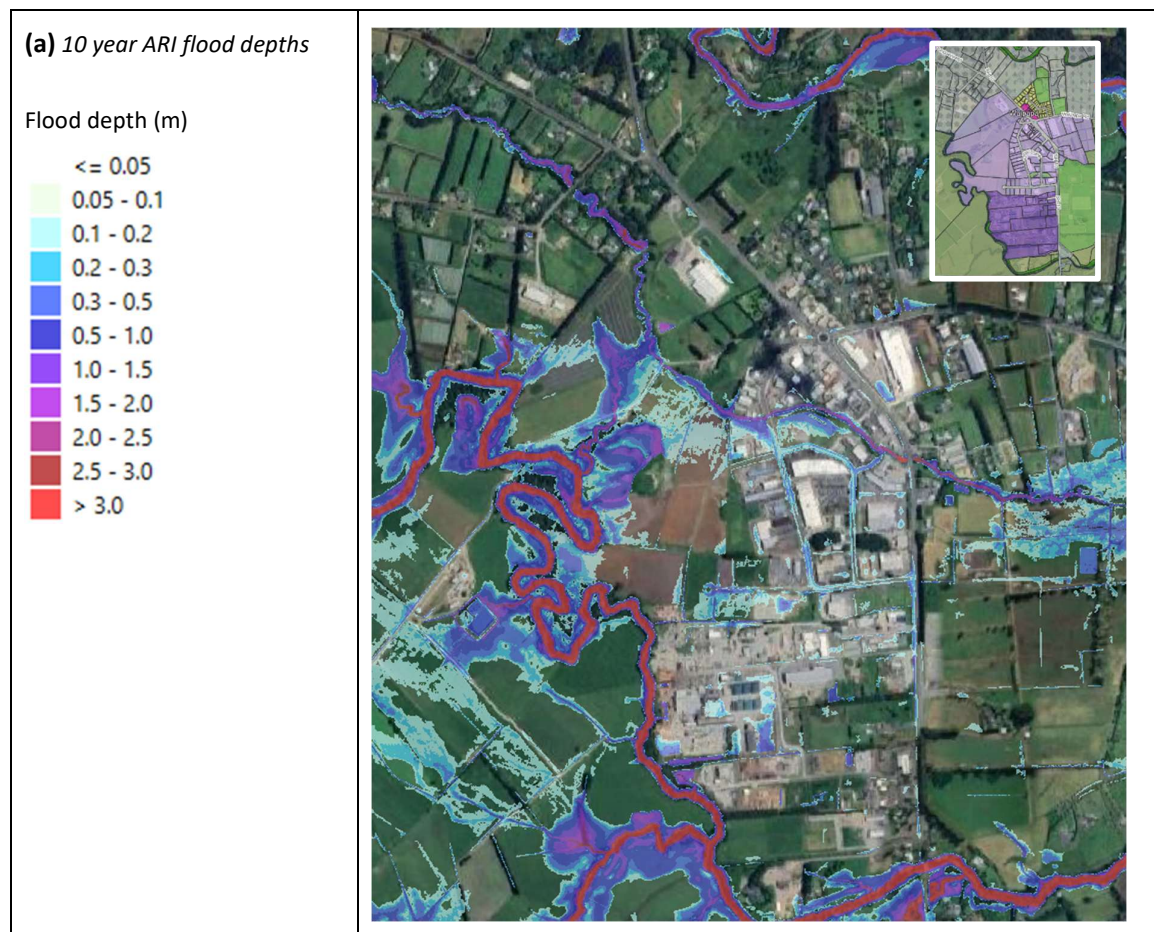
- Floodplain extents and flood depth.
- Flood hazard.

## 1.1 Floodplain extents and flood depth

Figure 2 (a-e) shows the floodplain and flood depths from the draft NRC flood model for the following modelled design events:

- Figure 2 (a) – 10 year ARI design storm.
- Figure 2 (b) – 50 year ARI design storm.
- Figure 2 (c) – 100 year ARI design storm.
- Figure 2 (d) – 100 year ARI design storm with allowance for climate change.
- Figure 2 (e) – an “overdesign” event based on flood rainfall depths associated with double the 100 year ARI event.

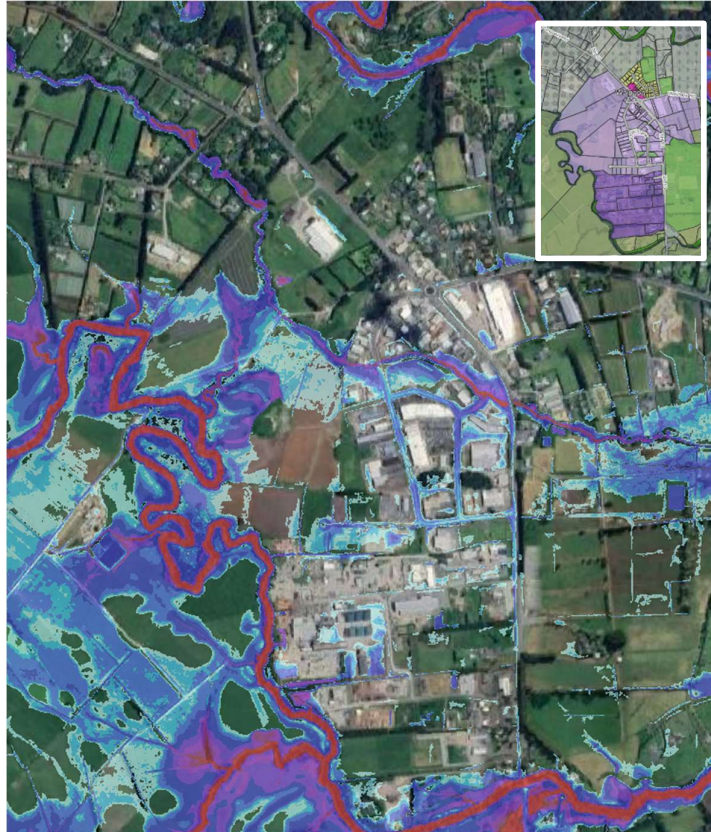
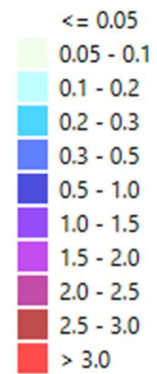
Figure 2: Floodplain and flood depth for variety of design storm scenarios.



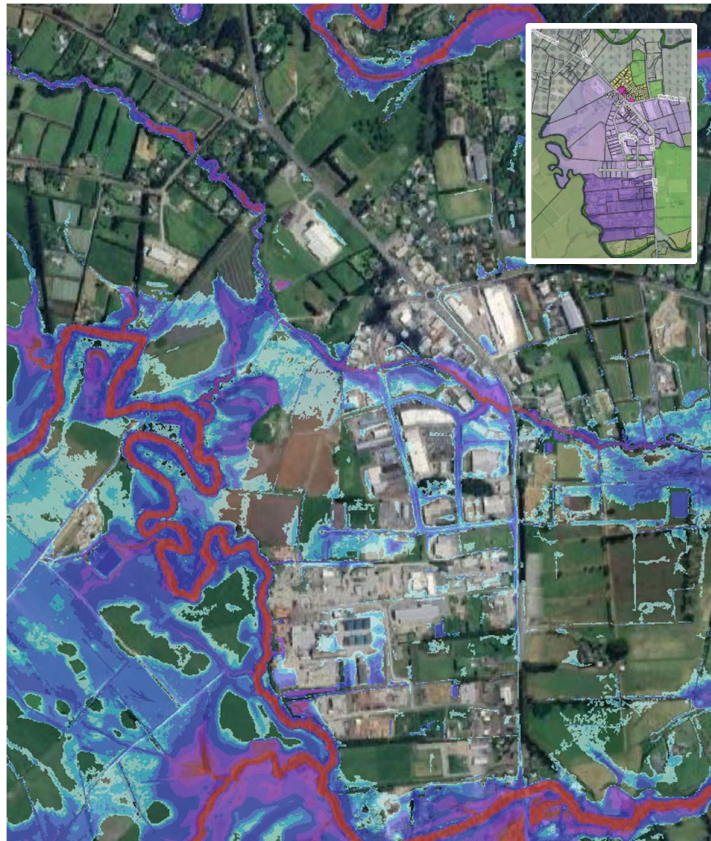
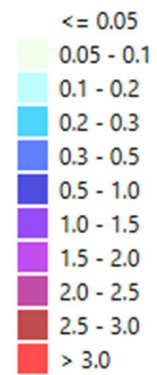


**(b) 50 year ARI flood depths**

Flood depth (m)

**(c) 100 year ARI flood depths**

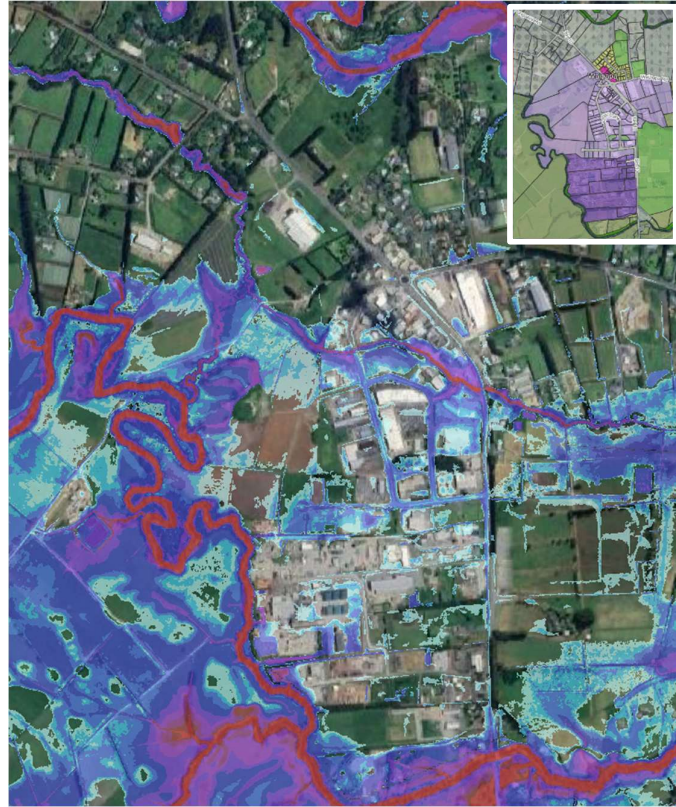
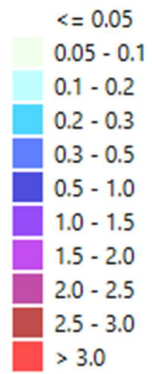
Flood depth (m)





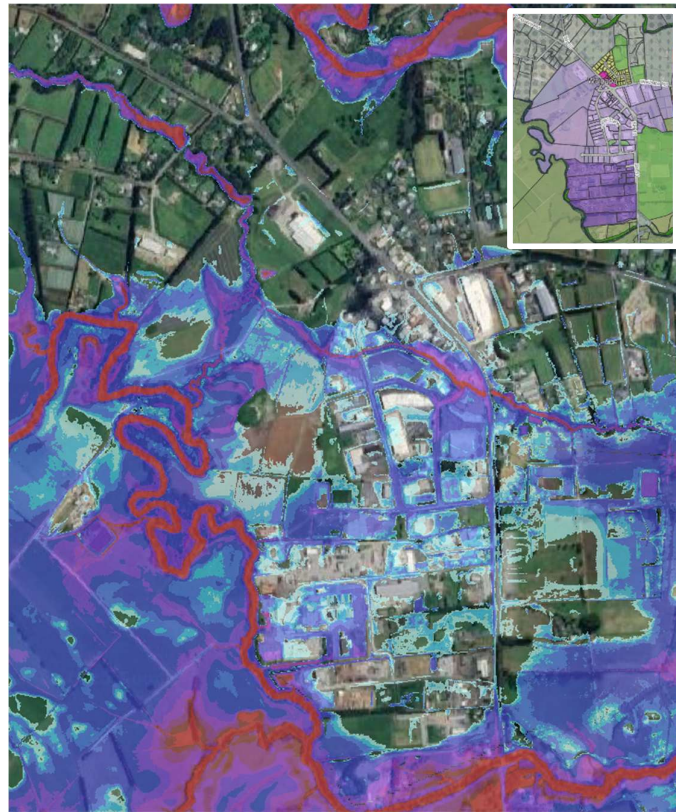
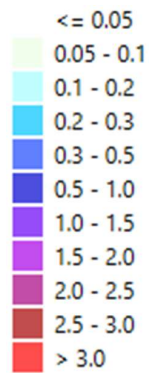
**(d)** 100 year ARI with allowance for climate change

Flood depth (m)



**(e)** Over-design event (2 x 100 year ARI event)

Flood depth (m)



## 1.2 Flood hazard

Flood hazard has been classified based on the Australia Rainfall & Runoff (ARR) guidelines (Geoscience Australia, 2019)<sup>4</sup> which is based on depth and velocity information, as presented in Figure 3 and described below:

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

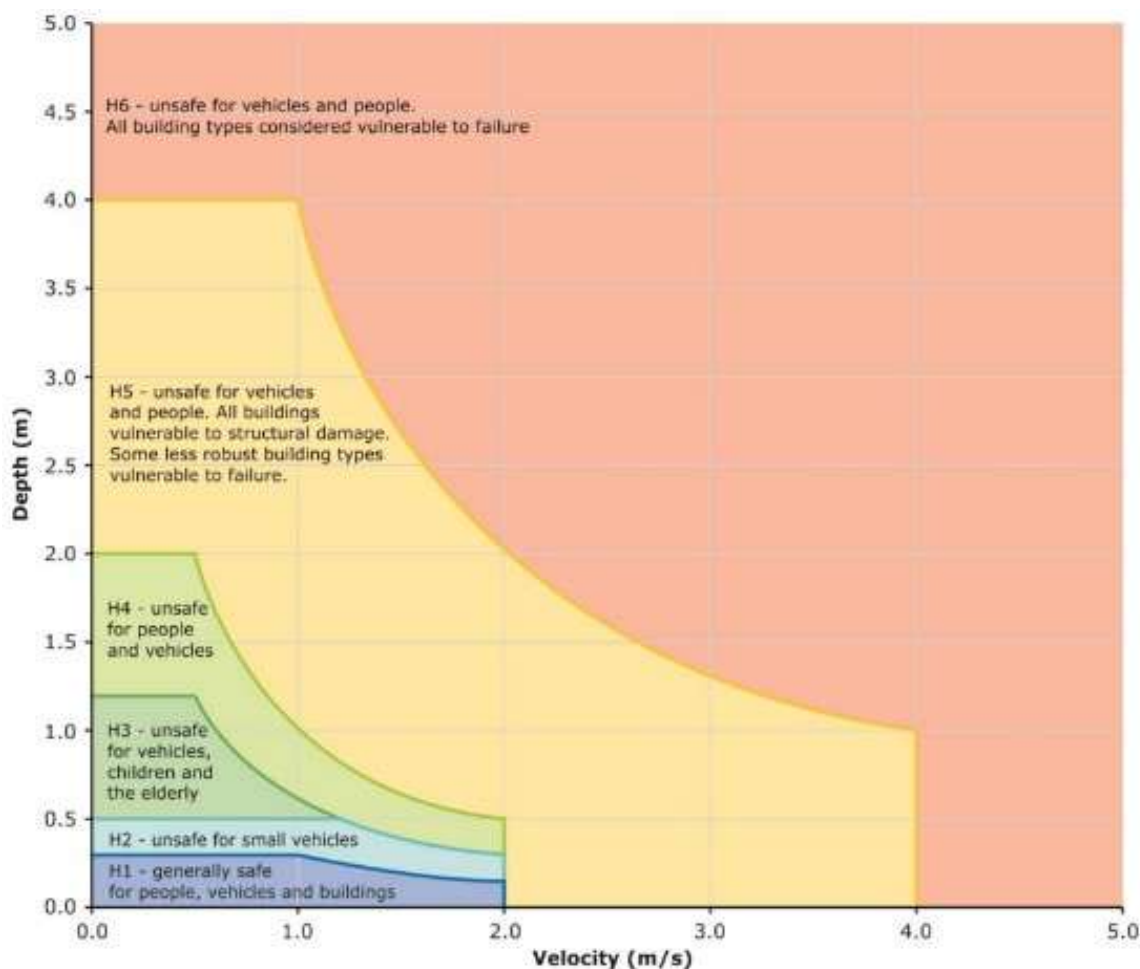
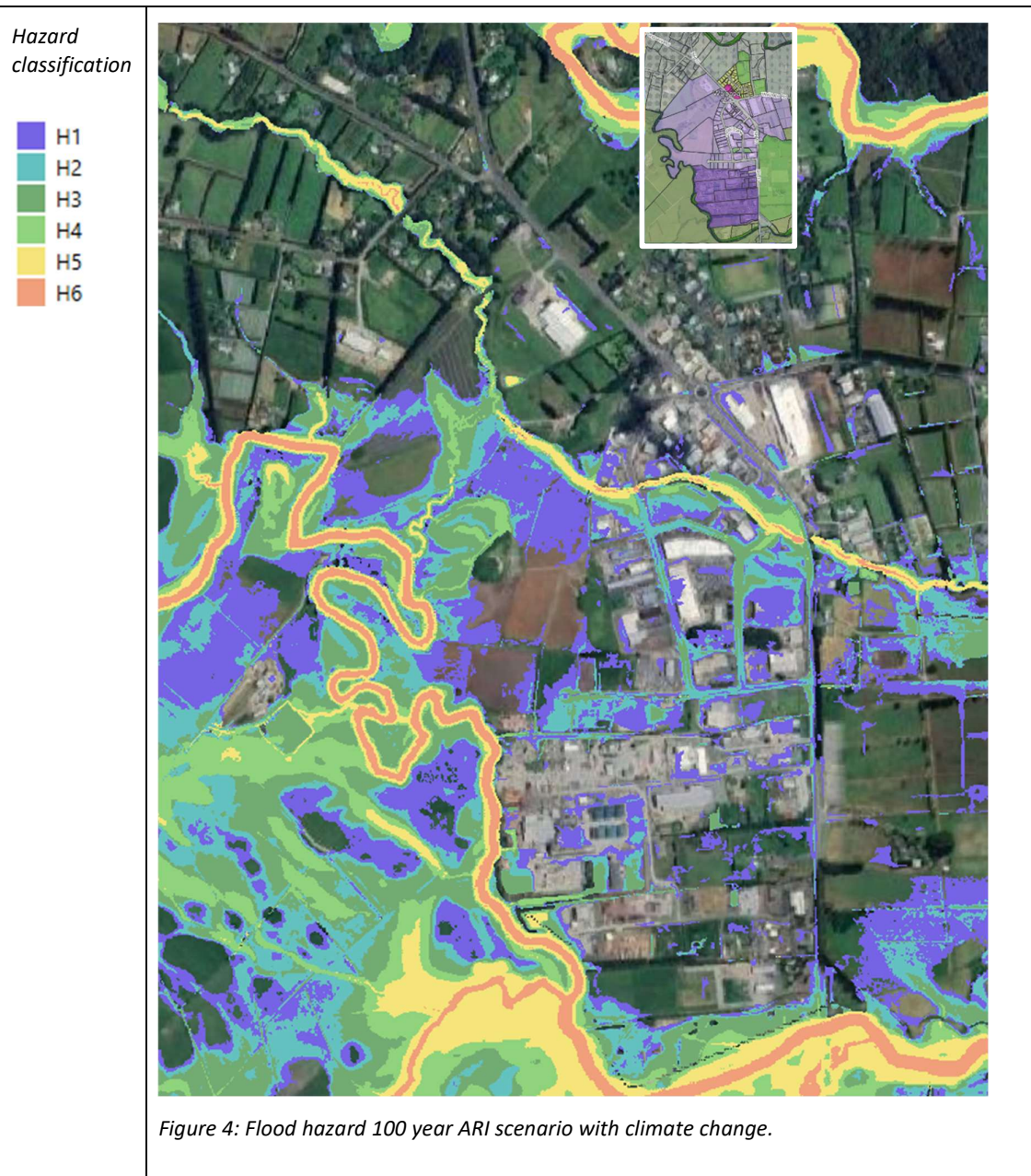


Figure 3: Flood hazard classification (Geoscience Australia, 2019)

The flood hazard for the modelled 100 year ARI scenario with allowance for climate change (NRC, 2025 draft) is presented in Figure 4.

<sup>4</sup> Based on the work of Smith et al. (2014)





## 2 Flooding considerations relating to NRC Regional Policy Statement

The NRC Regional Policy Statement (RPS) identifies the issue that:

*“Natural hazards, particularly flooding and coastal erosion and inundation, have the potential to create significant risk to human life, property, community and economic wellbeing in Northland. This risk is projected to increase as a result of a changing climate” (Section 2.7).*

In the RPS explanation regarding the issue, it is identified that *“Natural hazard risk can be increased by allowing further built development in hazard prone areas and undertaking activities that increase the severity of an event” (p29).*

Rezoning land in the floodplain from “rural production” for industrial land uses has the potential to increase risk. Therefore, flood information provided in this report has been considered in relation to selected relevant objectives and policies from the RPS from a flood hazard perspective<sup>5</sup>. A high-level summary of issues relating to objectives and policies are provided in Table 2.1 and Table 2.2 respectively.

**Table 2.1: NRC’s Regional Policy Statement: Objectives**

RPS Objective 3.13 (Natural Hazard Risk)		Relevant flood information in this report
The risks and impacts of natural hazard events (including the influence of climate change) on people, communities, property, natural systems, infrastructure and our regional economy are minimised by:		
(a)	Increasing our understanding of natural hazards, including the potential influence of climate change on natural hazard events.	Increased understanding presented in this report based on draft NRC flood modelling (2025). The five figures presented in Figure 1.2 identify the likely hazards, including the influence of climate change on the 100 year ARI design flood.
(c)	Avoiding inappropriate new development in 10 and 100 year flood hazard areas and coastal hazard areas.	Rezoning of land is proposed in the 10 and 100 year flood hazard areas (refer Figure 1.2).

**Table 2.2: NRC’s Regional Policy Statement: Policy**

RPS Policy 7.1 (Development in natural hazard-prone areas)		Relevant flood information in this report
Policy 7.1.1 General risk management approach Subdivision, use and development of land will be managed to minimise the risks from natural hazards by:		
(a)	Seeking to use the best available information, including formal risk management techniques in areas potentially affected by natural hazards.	Best available flood hazard information has been provided by NRC to support this report.
(d)	Ensuring that natural hazard risk to vehicular access routes and building platforms for proposed new lots is considered when assessing subdivision proposals.	It is unknown where vehicular access routes would be located however the flood hazard information presented in Figure 1.4 identifies large areas of land which does not flood, or floods to an H1 category which is “generally safe for people, vehicles and buildings” in the 100 year ARI scenario with allowance for climate change.

<sup>5</sup> This assessment has been carried out and reviewed by technical hazard experts and is not intended as planning advice.



<b>RPS Policy 7.1 (Development in natural hazard-prone areas)</b>		<b>Relevant flood information in this report</b>
		There are flood hazard areas in the floodplain categorised as H2, H3 and H4. H2 areas are unsafe for small vehicles and H3 and H4 are unsafe for all vehicles. With regards earthworks and building platforms, refer comments made under Policy 7.1.2 (b) and (e).
(e)	Exercising a degree of caution that reflects the level of uncertainty as to the likelihood or consequences of a natural hazard event.	Relevant policy statement, although no further comment made.
<b>Policy 7.1.2 New subdivision and land use within 10 year and 100 year flood hazard areas</b> New subdivision, built development (including wastewater treatment and disposal systems), and land use change may be appropriate within 10 year and 100 year flood hazard areas provided all of the following are met:		
(a)	Hazardous substances will not be inundated during a 100 year flood event.	There are areas of Light Industrial and Heavy Industrial proposed land that will likely be inundated during a 100 year flood event.
(b)	Earthworks (other than earthworks associated with flood control works) do not divert flood flow onto neighbouring properties, and within 10 year flood hazard areas do not deplete flood plain storage capacity.	Relevant policy statement, although no further comment made.
(c)	A minimum freeboard above a 100 year flood event of at least 500mm is provided for residential buildings.	Have included the policy to highlight that it relates to residential buildings only. Within the area of interest, proposed zoning is light and heavy industrial and therefore this policy is unlikely to apply.
(d)	Commercial and industrial buildings are constructed so as to not be subject to material damage in a 100 year flood event.	Relevant policy statement for design phase, although no further comment made for zoning decision.
(e)	New subdivision plans are able to identify that building platforms will not be subject to inundation and/or material damage (including erosion) in a 100 year flood event.	Subdivision plans to be developed in subsequent design phases, although they will likely indicate that mitigation works are required to prevent inundation and/or material damage in a 100 year flood event for some areas. The mitigation works would likely require some earthworks to elevate building platform above the flood level (refer Policy 7.1.2 (b)). There are large areas of land which will not require mitigation to prevent inundation and / or material damage in a 100 year flood event.
(f)	Within 10 year flood hazard areas, land use or built development is of a type that will not be subject to material damage in a 100 year flood event.	Relevant policy statement, although no further comment made.
(g)	Flood hazard risk to vehicular access routes for proposed new lots is assessed.	Refer Policy 7.1.1 (d)

RPS Policy 7 .1 (Development in natural hazard-prone areas)	Relevant flood information in this report
Policy 7.1.7 Method – Statutory plans and strategies	
(6) Before any new areas are zoned or identified in a district plan in ways that enable intensification of use, district councils shall ensure that the risks of natural hazards are assessed.	<p>This flood hazard report identifies a high likelihood that some of the land zoned for light industrial use will be exposed to flooding in a 10 year ARI design storm event. The most exposed land is located in the north-western area of the proposed new zoning.</p> <p>This flood hazard report also identifies flood exposure in less frequent flood events in the heavy industrial land use area and the wider light industrial area.</p> <p>There are also large areas of proposed light industrial and heavy industrial land which are not predicted to flood.</p> <p>There are likely additional opportunities through the rezoning to help ensure that natural hazard risk is minimised before enabling intensification. This could include a reduction in industrial zoned land for the more hazardous areas (e.g. H2, H3, H4 and H5).</p>

### 3 Applicability

This report has been prepared for the exclusive use of our client Far North District Council, with respect to the particular brief given to us and it may not be relied upon in other contexts or for any other purpose, or by any person other than our client, without our prior written agreement.

Tonkin & Taylor Ltd

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Reviewed by Dr Eddie Beetham

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## **Bibliography**

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