

15 January 2025

Goodland Development Ltd
PO Box 302247
North Harbour
Auckland 0751

Attn: Mr Hari De Alwis

RE: PC120 FLOOD HAZARD ASSESSMENT – 2127 KAIPARA COAST HIGHWAY, KAKANUI

Dear Sir,

As requested we have completed a flood hazard assessment against the PC120 objectives and policies. Attached is drawing 1366 – SK01 PC120 FLOOD HAZAR AREAS PLAN which shows the flood hazard classifications overlayed on to the subdivision scheme plan. There are no building sites within any of the flood hazard areas however there are two areas of the private access road that cross the very high flood hazard area.

OBJECTIVES AND POLICIES

The following objectives are relevant:

OBJECTIVES

(3A) The risk from natural hazards to people, property, infrastructure and the environment resulting from existing use and development across the region is reduced over time to a tolerable or acceptable level.

(3B) New subdivision, use and development avoids significant risk and only occurs when the risk from natural hazards to people, property, infrastructure and the environment is assessed as being tolerable or acceptable.

(3C) Subdivision, use and development is managed in a way that avoids creating or exacerbating natural hazard risks on other properties, infrastructure and the environment.

The following policies are relevant:

POLICIES

Risk classifications

(1A) Identify risk from natural hazards associated with subdivision, use and development by differentiating risk into the following three classifications: significant, potentially tolerable and acceptable

E36 Natural hazards and flooding

Risk settings and management methodology

(1B) Manage risk from coastal erosion, coastal inundation and flooding associated with subdivision, use and development by:

(a) identifying land that may be exposed to these hazards and requiring a site-specific assessment to determine the extent and nature of the hazard(s) on site; and

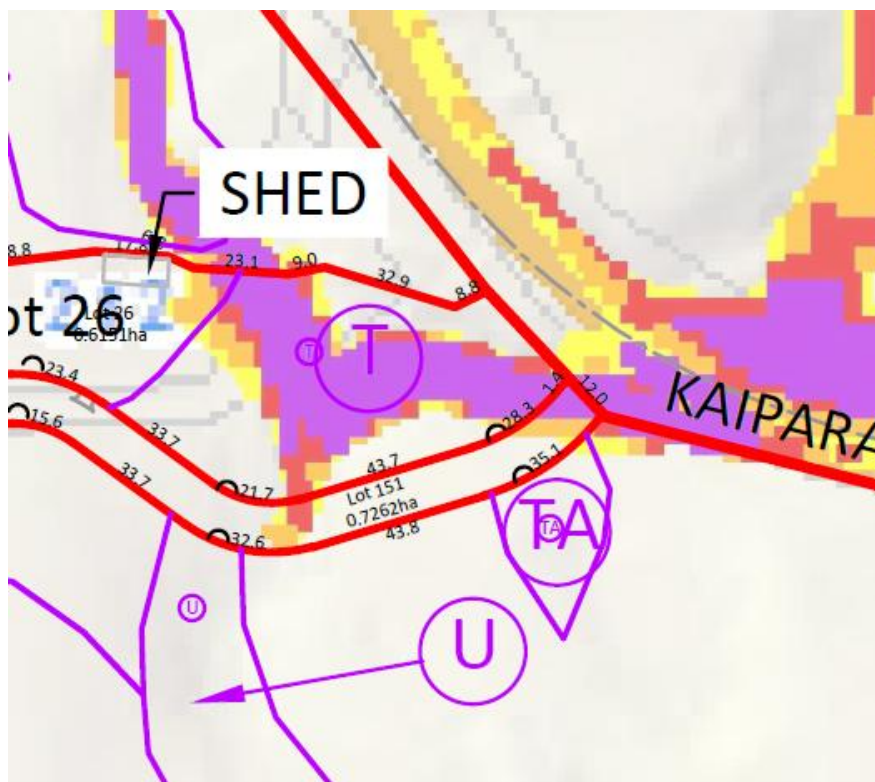
(b) using the hazard, the location of the activity, and the sensitivity of the activity to natural hazards to determine the default level of risk, as per Tables E36.3.1B.1 and E36.3.1B.2; and

(c) requiring a risk assessment to determine the level of risk and applying management approaches proportionate to that level of risk.

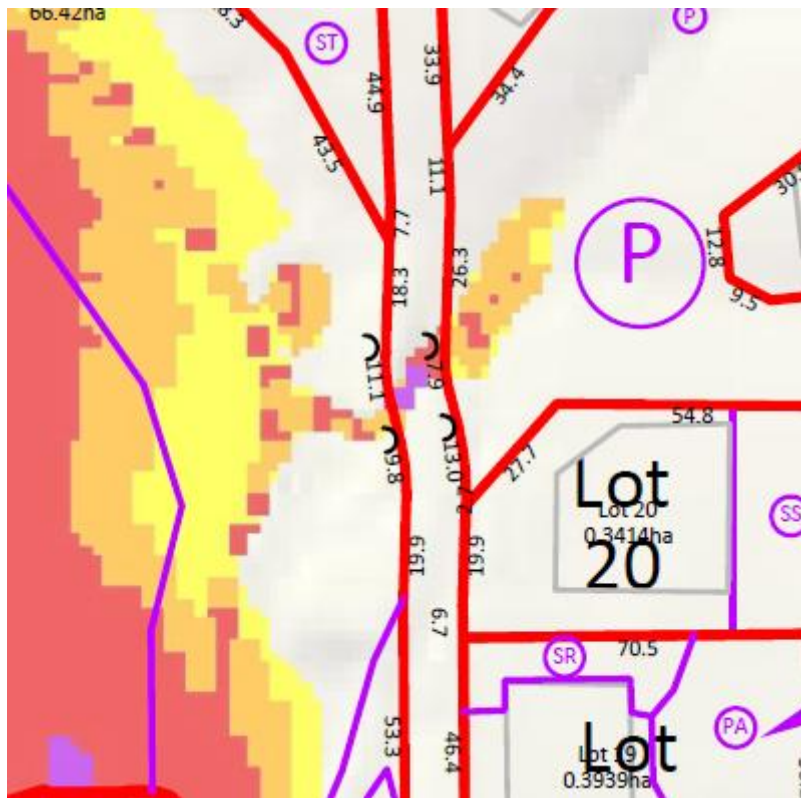
<i>Table E36.3.1B.2 Subdivision, use and development outside of existing urbanised areas</i>	Activities sensitive to natural hazards	Activities potentially sensitive to natural hazards	Activities less sensitive to natural hazards
Very high flood hazard area, high flood hazard area, coastal erosion hazard area 1 and coastal inundation hazard area 1	<i>Significant</i>	<i>Significant</i>	<i>Acceptable</i>
Medium flood hazard area, coastal erosion hazard area 2 and coastal inundation hazard area 2	<i>Significant</i>	<i>Significant</i>	<i>Acceptable</i>
Low flood hazard, coastal erosion hazard area 3 and coastal inundation hazard area 3	<i>Significant</i>	<i>Significant</i>	<i>Acceptable</i>

There are two areas of the private access road that cross the very high flood hazard area. These are shown in the diagram below:

The entrance private road from Kaipara Coast Highway. Note that the hazard extends across the existing highway:



And the private access road that crosses a minor gully feature near lot 20:



The access road activity is deemed to be less sensitive to natural hazards as the gully crossings are designed to cater for the 1% AEP flood event flows. The hazard is therefore in the acceptable category according to Table E36.3.1B.2.

Further policies are as follows:

(4A) Require all of the following matters to be considered when assessing consequences of natural hazards as part of a risk assessment:

- (a) accelerating or exacerbating the natural hazard and/or its potential impacts;*
- (b) creating natural hazard risks that previously were not present at the location;*
- (c) the type of activity being undertaken and its sensitivity to natural hazard events;*
- (d) creating or increasing the natural hazard risk(s) to people and communities, including long-term impacts from more frequent hazard events;*
- (e) creating or increasing the natural hazard risk(s) to other properties, infrastructure and the environment; and*
- (f) cultural impacts, including consequences for Māori land, Treaty Settlement Land, marae, urupā, mana whenua cultural heritage and values.*

(4B) Require all of the following matters to be considered as part of a risk assessment of existing and future mitigation measures and residual risk:

- (a) Whether any building, structure or activity located on land subject to natural hazards can be relocated within the site or removed;*

(b) whether the use, design and construction of buildings and structures can mitigate risks associated with natural hazards;

(c) the extent to which methods for long term maintenance of areas affected by natural hazards, such as easements, are provided;

(d) the ability for site layout and management to limit exposure of people and property to natural hazards, including safe egress during a natural hazard event;

(e) the effect of structures to mitigate hazards on landscape values and public access;

(f) the robustness of the mitigation measures, their enforceability and the ability to carry out repairs and maintenance;

(g) the potential consequences of events that exceed the design parameters of mitigation measures;

(h) the potential effects resulting from failure of structural and nature-based mitigation measures over a 100-year timeframe;

(i) the impacts of the mitigation on other people, properties, infrastructure and the environment;

(j) whether natural hazard risks can be reduced for Māori Land, Treaty Settlement Land, marae, urupā, mana whenua cultural heritage and values;

(k) the use of conditions of consent, including the duration of consent, to monitor changes in risk and to limit the exposure of people and property to natural hazards; and

(l) the extent to which it is practicable to mitigate residual risk where infrastructure has a functional or operational need to locate in a natural hazard area

Flooding—general

(21) Ensure all development, including fencing, storage of materials and goods, and earthworks, in flood hazard areas in the 1 percent annual exceedance probability (AEP) floodplain does not create or exacerbate flood risk on other sites increase adverse effects from flood hazards or increased flood depths and velocities, to other properties upstream or downstream of the site.

(22) Require the storage and containment of hazardous substances in flood hazard areas so that the integrity of the storage method will not be compromised in a flood event.

(23) Provide for flood mitigation measures which reduce flood-related effects and provide for the reconstruction of culverts and bridges where those measures do not create or exacerbate flood risk on other sites flooding upstream.

(24) Enable the planting and retention of vegetation cover to enhance amenity values, green linkages and ecological values in floodplains as long as it does not whilst ensuring that create or exacerbate flooding upstream or downstream or otherwise increase flood hazards flood risk on other sites are not created or exacerbated.

(25) Require measures such as use of water resistant materials and flood-proof utility connections to increase resilience to flood damage when considering mitigation of flood hazards for buildings located in flood hazard areas.

(26) Manage accessways, including private roads and public roads to be vested, and parking areas in flood hazard areas so that safe egress is provided where possible, and flood hazard risks are not increased reduced to as low as reasonably practicable.

(27) Maintain the function of overland flow paths to convey stormwater runoff safely from a site to the receiving environment by ensuring that any modifications do not result in a reduction in the capacity of the overland flow path and do not cause nuisance or damage to property or the environment.

(30A) Enable subdivision, use and development that gives rise to acceptable flood hazard risk in accordance with Tables E36.3.1B.1 and E36.3.1B.2 where these activities do not involve buildings or structures that exacerbate the flood hazard beyond the site.

ACTIVITY STATUS

Table E36.4.1A - Activity Table has the following status for the proposed activity.

(A88) Construction of private roads, roads intended to be vested, and accessways in flood hazard areas. In Very High flood hazard areas – RD

(A98) All other structures and buildings (including retaining walls) in the 1 percent annual exceedance probability (AEP) floodplain and flood prone areas. In very high flood hazard areas – RD

(A120) Diverting the entry or exit point, piping or reducing the capacity of any part of an overland flowpath – In very high flood hazard areas – RD

The activity of the private access roads that incorporate retaining structures is therefore Restricted Discretionary.

ASSESSMENT

The assessment criteria for a restricted discretionary activity is contained in section E36.8.

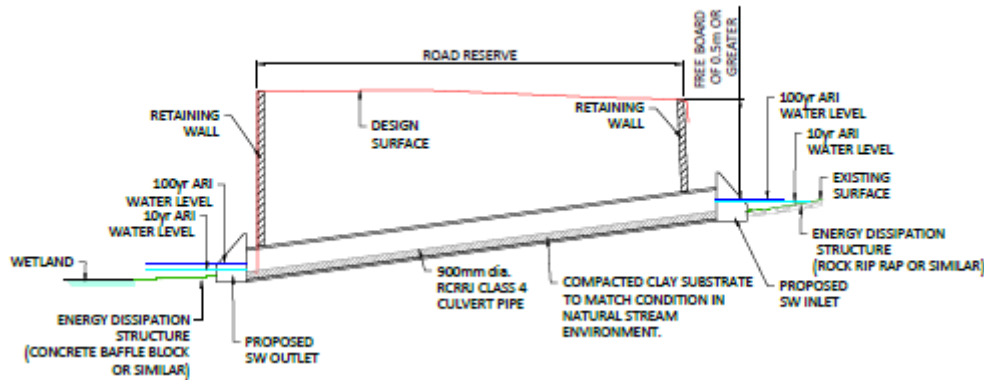
Section E36.8.1. details the matters of discretion that Council has when assessing the consent application. These are as follows with our assessment against each item.

Activities in flood hazard areas

(4) for fences, earth bunds and walls in the flood hazard areas that do not comply with Standard E36.6.1.5:

(a) the design of the fence or wall;

The retaining walls have been designed so that they are outside of the post development flood hazard area. The diagram below shows the location of the wall behind the culvert.



(a) any obstruction of flows, including changes to location and capacity of overland flow paths;

The 1% AEP flows are contained within the proposed culverts at the two gully crossing locations. There is no obstruction to the flow of water or change to capacities.

(b) the effects on flood depth and velocity from the blocking or channelling of water; and

The culvert calculations and details are contained in the infrastructure report. The design includes for appropriate erosion and scour controls through the use of rip rap materials, baffle blocks and appropriately sized culverts.

(c) the effects of the flood hazard within and beyond the site.

Because the culverts are designed for the 1% AEP storm event without any headwater effects then there are no effects on the flood hazard within and beyond the site.

(4A) for the construction of private roads, roads intended to be vested and accessways in very high, high and medium flood hazard areas:

(a) the location and design of the road or accessway;

The proposal includes for culverts under the private roads that cater for the 1% AEP storm event and therefore there will be no effect on the private crossings or their structural integrity.

(b) actions necessary to protect people in flood events; and

All building platforms and private roads are above the 1% AEP storm event.

(c) the design of containment structures.

There are no containment structures.

(9) for external additions and alterations to existing buildings (as existing at 03/11/25) that increase the gross floor area by no more than 10m² in very high, high and medium flood hazard areas for the 1 per cent annual exceedance probability (AEP) floodplain and flood prone areas; for external additions and alterations to existing buildings (as existing at 03/11/25) that increase the gross floor area by more than 10m² in the 1 per cent annual exceedance probability (AEP) floodplain and flood prone areas; for new structures and buildings with a gross floor area up to 10m² within very high, high and medium flood hazard areas for the 1 per cent annual exceedance probability (AEP) floodplain and flood prone areas; for all other external

additions and alterations to buildings in the 1 per cent annual exceedance probability (AEP) flood plain and flood prone areas; and for all other structures and buildings (including retaining walls) in the 1 per cent annual exceedance probability (AEP) floodplain and flood prone areas:

(a) the effects of the location of the structures and building platforms;

The building platforms are outside of the flood hazard areas. The culverts have been designed to cater for the 1%AEP storm event with the retaining structures behind the culverts. There is therefore no effect of the flood hazards on any structures.

(b) the effects of flood hazards on the structural integrity of a building or structure;

The retaining structures have been positioned outside of the post development 1%AEP event extents.

(c) the effects of storage of outdoor goods and materials;

Not applicable.

(d) the effects of the location and design of roads, accessways and parking areas;

The locations of the accessways have been carefully located to minimise crossings of high risk flood hazard areas and where crossing have had to occur they have been carefully designed to ensure that the conveyance of the 1% AEP flood event occurs without effects.

(e) the extent of any associated earthworks;

The extent of earthworks is detailed on the earthworks drawings in the resource consent application. Earthworks have been minimised to the formation of the access roads with the only earthworks within high hazard flood areas kept to just the formation of the culvert crossings.

(f) the effects of potential changes in flood depth, velocity and frequency on adjoining sites, including upstream and downstream from buildings and structures;

There are no changes to the flood depth, velocity and frequency on adjoining sites. The culverts have been designed so that headwater and tailwater depths remain the same as pre development conditions.

(g) the extent to which methods for long term maintenance of areas affected by flooding, such as easements, are provided;

Not applicable as the flooding areas remain on the rural land.

(h) the effects of the use of spaces under buildings; and

Not applicable as no building platforms are within flood hazard areas.

(i) the effects on the operational or functional needs of network utilities, marine and port activities and electricity generation activities.

Not applicable.

(12) for diverting the entry or exit point, piping or reducing the capacity in any part of an overland flow path:

(a) the potential impacts on the overland flow path including:

- (i) the obstruction of flows; and*
- (ii) any change to location and capacity; and*
- (iii) any changes in depth and velocity of flow; and*
- (iv) any change to overland flow on other properties.*

The entry and exit points of the culverts in the flood hazard areas remain within the gully. There are therefore no diversions of overland flows.

(b) the provision of alternative overland flow paths;

Not applicable

(c) the extent of any associated earthworks; and

Not applicable

(d) the extent to which methods for long term maintenance of areas affected by flooding, such as easements, are provided.

The flood areas will remain on the rural land. Refer to the resource consent landscape plans.

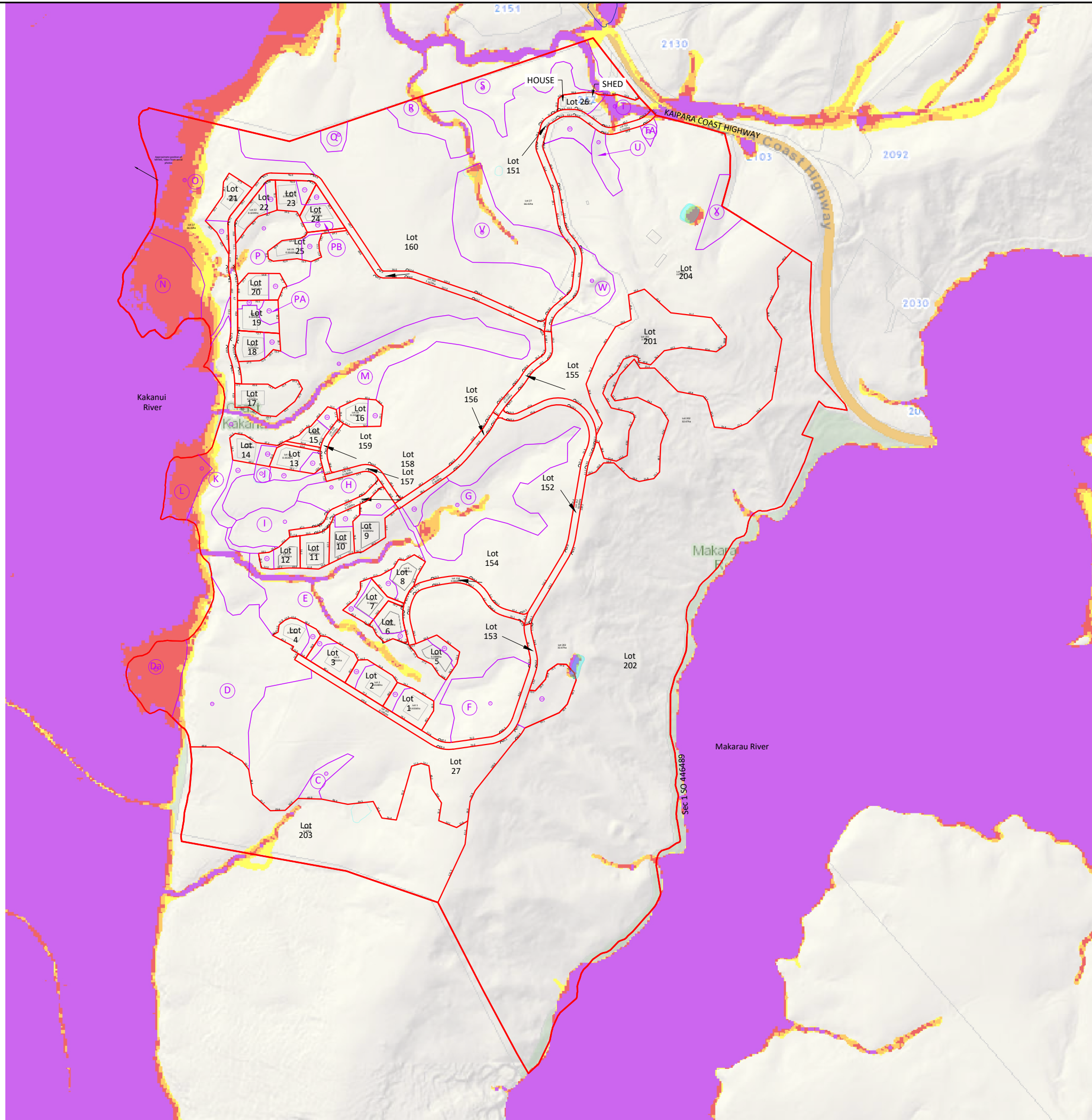
Yours sincerely

CRANG CIVIL



Vaughan Crang
DIRECTOR

APPENDIX A – SK01 – PC120 FLOOD HAZARD AREAS PLAN



LEGEND

- VERY HIGH HAZARD
- HIGH HAZARD
- MEDIUM HAZARD
- LOW HAZARD

FOR INFORMATION			
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