Appendix 8 Scale and Significance assessment

This assessment uses a range of 'low', 'moderate' and 'high' in assessing *significance*. *Scale* is measured using the following range: 'localised', 'more than localised but not district wide', or 'district wide'.

Issue	Provisions which address the issue	Scale and Significance Reasoning This is a significant matter for the district for the following reasons:
Land use, subdivision and development on land that is prone to natural hazards can increase risks to people, property, infrastructure and the environment and reduces the resilience of the community to natural hazards.	**Objective 15.2.1** - Resilience to natural hazard risk **Objective 15.2.2** - Awareness of natural hazard risks **Includes Policies 15.2.1.1 – 15.2.2.2, Rules 15.4 – 15.11, Assessment matters** in **15.12, Information requirements** in **15.13** and **Variation 2, Definitions** in **15.14** and mapped hazard areas shown on the **planning maps**. **Information requirements** in **15.13.** Also includes processes outside the District Plan such as LIMs, Hazard	Part 2, Section 6 RMA specifies the management of significant risk from natural hazards as a matter of national importance which local authorities must recognise and provide for through planning instruments such as the District Plan. The relevant higher order documents including the WRPS[1] and the NZCPS[2] provide the overarching policy direction for the management of natural hazard risk through the District Plan. The WRPS includes implementation methods which the council is required to give effect to through planning provisions in the District Plan. (This factor is considered to be highly significant with a scale which is more than local, but will not affect the entire district.) The adverse effects of natural hazards are felt by both individual landholders and the wider community through flow on economic and social effects. The Waikato-Tainui Environmental Plan signals that the risk of adverse effects on human, cultural, spiritual, or environmental wellbeing should be prioritised over risks to individual properties when assessing natural hazard risks and/or the need for hazard protection structures[3]. The Maniapoto Environmental Plan specifies that land use activities should be located to avoid significant risk of damage from natural hazards and avoid the need for expensive natural hazard defence or mitigation infrastructure[4]. The damage caused by natural hazards has the potential to adversely affect people's social, economic and cultural wellbeing, health and safety, and can adversely affect the natural environment. Council has a duty to avoid, remedy or mitigate such adverse effects. Giving effect to higher order policy documents and having consideration of Iwi

[1] See Relevant sections of the Waikato Regional Policy Statement in Appendix 2 Key Strategic Documents and Directions
[2] See Relevant sections of the New Zealand Coastal Policy Statement in Appendix 2 Key Strategic Documents and Directions
[3] See Waikato-Tainui Environmental Plan Objective 17.3.2
[4] See Maniapoto Environmental Plan Objective 20.3.1 in Appendix 2 Key Strategic Documents and Directions

Issue	Provisions which address the issue	Scale and Significance Reasoning This is a significant matter for the district for the following reasons:
	Register, stormwater management plans and CDEM community response plans.	Environmental Plans helps Council to achieve. (This factor is considered of high significance, and a district-wide scale.) Most of the land in the district at risk of natural hazards is located in rural areas. There is less risks to people, property and infrastructure in low populated and less developed rural areas. Most of the hazard areas are not high risk areas i.e. flood plain management area and coastal sensitivity areas, where risk can generally be mitigated through the design and location of development. (This factor is considered to be of moderate significance, and at a scale which is more than localised, but not district-wide.) The damage caused by natural hazards can result in a temporary or permanent change in the character and amenity of local communities. (The changes are often localised in scale and the significance of this factor is considered to be moderate, as the effects may be temporary.) District Plan regulations to manage risks from natural hazards impose additional costs on individuals and communities to carry out development by way of additional compliance and construction costs and may negatively impact development patterns, development opportunities and potentially land values. Conversely, the natural hazard provisions also provide for community safety, protection of economic activity and protection of buildings during hazard events, which results in cost savings over the longer term. In some cases, the Proposed Plan has reduced the number of properties affected by some hazards, i.e. through more up to date and accurate flood hazard modelling. It also provides better guidance for information requirements for other hazards, i.e. liquefaction assessments, and in some cases it allows for more permitted activities than the Operative District Plan provisions. The main difference between the economic costs of the Operative Plan and the Proposed Plan as a result of more up to date information and more accurate spatial hazard extents is through the reduction in false positives, i.e. where a landowner must satisfy the requirements of the natural hazard provisions, only to discover that the land

Issue	Provisions which address the issue	Scale and Significance Reasoning This is a significant matter for the district for the following reasons:
		is not at risk[5]. (This factor is of high significance and a district wide scale.) The Proposed Plan has introduced Coastal Sensitivity Areas to address land that may be at risk over the next 100 years as sea level rises and increases the inland extent of coastal hazards. Identifying areas that potentially will be affected by coastal erosion and coastal inundation is a requirement of the NZCPS and WRPS and the adaptive management approach taken to regulate land use, subdivision and development in these areas is guided by MfE's Coastal Hazards and Climate Change: Guidance for Local Government (2017). If the risks of natural hazards are not identified and planned for, this is likely to limit options for, and increase costs to future generations who will be left try to manage development in increasingly hazardous areas. This is particularly the case if the current generation continues to construct infrastructure and other development on land that is currently at high risk of being affect by natural hazards or construct development that is not adaptable to futures hazards as a result of sea level rise. (This factor is considered of high significance, with a scale which is more than local, but will not affect the entire district.) *Overall, this issue is considered to be of district wide scale and highly significant, because of its potential to adversely affect not just individuals and their property, but the wider community, the natural environment and future generations.*
Risks to people, property, infrastructure and the natural environment from flooding and ponding of flood waters	**Objective 15.2.1** - Resilience to natural hazard risk **Objective 15.2.2** - Awareness of natural hazard risks **Includes Policies 15.2.1.1 – 15.2.1.6,**	The Lower Waikato has a flood plain of approximately 25,300 hectares, which can be subject to long term flooding or ponding after high rainfall events, and can take weeks to drain. Over 14,000 hectares of the floodplain is protected from flooding by stopbanks (this area is called the Defended Area). Flooding and/or stormwater ponding are the most predominant and significant hazards within the district. Combined, flooding and ponding areas cover approximately 11,000 hectares of land within the district, however potential 'unmapped' ponding areas increase the scale of the hazard beyond the mapped area. (This factor is considered of high significance,

[5] Market Economics. Draft Economic Assessment on Natural Hazards and Climate change. 2020 Prepared for Waikato District Council.

Issue	Provisions which address the issue	Scale and Significance Reasoning This is a significant matter for the district for the following reasons:
	15.2.19 – 15.2.1.15 and 15.2.2.1 – 15.2.2.2. **Rules 15.4 – 15.6** **Assessment matters Variation 2,** mapped hazard areas shown on the **planning maps** and **information requirements in 15.13**. Also includes processes outside the District Plan such as LIMs, Hazard Register, stormwater management plans and CDEM community response plans.	with a scale which is more than local, but will not affect the entire district.) Flooding and ponding is likely to have adverse effects on people (including on their health and safety), property and the environment. The destruction, damage and debris left after major flood events are likely to have an adverse but temporary effect on the character and amenity of individual communities, depending on the severity of the event, as well as the vulnerability of the community and its ability to respond and recover. (This factor is likely to be of a localised scale and medium significance.) Under the Operative District Plan, a total of 893 hectares of land has been identified as being affected by a flood or ponding hazard. While a greater area of land is susceptible to flooding during a significant flood event, these areas were not mapped in the Operative District Plan (statement supported by aerial photographs of the significant flood event in 2004 and subsequent 1% AEP flood modelling carried out by WRC). Although not all land susceptible to flooding area mapped, the rules apply to any land that is subject to more than minor flood hazards. (The change is not considered to be of high significance, with a scale that is more than localised, but not district-wide.) The proposed new provisions and hazard mapping in the Proposed Plan differentiate between high risk flood areas and the rest of the floodplain (2D modelling only). Certain types of development are more strictly regulated in high risk flood areas as it is considered that risk to most development cannot be mitigated in these areas and is therefore not appropriate. This will impact on the ability to develop some land. However, the area of land affected is relatively small (557 hectares) and similar restrictions exist under the operative provisions (currently habitable parts of buildings in the flood risk area is a non-complying activity). (The change is not considered to be significant and of a more localised scale.) If the risks of flooding are not identified and planned for, this is likely to limit options for future generations to remedy effects. This is particularly the case if the current generation continues to build and construct infrastructure on land at high risk of flooding, which is likely to be exacerbated by climate change. The Maniapoto Environmental Plan recognises that existing structures protect Maniapoto communities, but Maniapoto seek a shift towards restricting land use and activities in areas prone to

Issue	Provisions which address the issue	Scale and Significance Reasoning This is a significant matter for the district for the following reasons:
		natural hazards, or which would create a demand for hard protective infrastructure. (This factor is considered of high significance, but localised scale.) The effects of flooding have been considered explicitly by the WRPS, which includes implementation methods that the Council must put in place to manage risks from flooding[6]. *Overall, this issue is considered to be at a scale which is more than localised, but not a district-wide issue. It is considered of high significance, because of the potential risks to people's health, safety and property, essential infrastructure and the environment. It also has an impact on future generations.*
Risks of inundation and coastal erosion on people, property, infrastructure and the coastal environment	**Objective 15.2.1** - Resilience to natural hazard risk **Objective 15.2.2** - Awareness of natural hazard risks **Includes Policies 15.2.1.1 – 15.2.1.9, 15.2.1.11, 15.2.16 – 15.2.1.17 and 15.2.2.1 – 15.2.2.2.** **Rules 15.7 – 15.10.** **Assessment matters** **Variation 2,** mapped hazard areas shown on the **planning maps** and **information requirements in 15.13**. Also includes processes outside the District Plan	The west coast is exposed to prevailing weather from the Tasman Sea, which includes large swellings and storms. Coastal hazards within the district include flooding, sea level rise and erosion around harbours and shorelines. The risk of coastal inundation and erosion is a particular issue for coastal communities, including Raglan and Port Waikato. (This is considered to be a factor of local scale but high significance to those communities.) The risks of coastal erosion and inundation particularly affect those with property and land at the coast. Under the Operative District Plan, a total of 18,110 hectares of land fall within a coastal overlay, including 15,667 ha within a 'Coastal Area' and 2,453 ha within a 'Coastal Setback'. The coastal overlays cover just 1% (22ha) of residentially zoned land in the district and 0.2% (2ha) of the land zoned for business uses. Ninety nine percent of the land affected by coastal overlays is in the rural zone. Focus Resource Management Group have undertaken a study (2020) to define areas potentially vulnerable to coastal erosion and coastal flooding in the Waikato district (western coastline). In total, over 4,340 hectares of land is located within an area identified as being at risk or sensitive to coastal flooding or erosion. This is around 1.5% of the land in the district. The amount of land identified as being at risk of coastal hazards is 79% less than in the Operative Plan. The largest reduction in coverage is in the rural areas.

[6] See Waikato Regional Policy Statement, in particular Policy 13.1 and 13.2 in Appendix 2 Key Strategic Documents and Directions.

Issue	Provisions which address the issue	Scale and Significance Reasoning This is a significant matter for the district for the following reasons:
	such as LIMs, Hazard Register, stormwater management plans and CDEM community response plans.	This means that the coastal hazards provisions in the Proposed Plan will impact substantially less land than under the Operative Plan. However, the amount of residential zoned land at risk has increased by 28 hectares compared to the Operative Plan, which means more households may be impacted by the provisions relating to coastal hazards. (This factor is considered of local scale and moderate significance.) The provisions in the Proposed Plan are likely to be more stringent in those areas identified as being at high risk of coastal hazards, on the basis of this up to date information. It is likely that a number of properties will have additional restrictions placed on them as a result of the Proposed Plan, which will impact on their ability to develop their land in the future. However, the economic costs associated with this are felt at a local scale, rather than district wide. (This is considered to be a factor of local scale and significance.) Coastal hazards can adversely affect people's health and safety. Coastal communities at Port Waikato and Raglan have said they are concerned about their self-sufficiency and resilience to hazard events. They want to understand whether the council will continue to protect services and infrastructure. Consultation with iwi has indicated that their coastal communities acknowledge that they may have to be adaptable and potentially relocate inland if necessary, but are concerned about the cost of doing so. (This factor is considered to be of local scale and significance now, but the significance is likely to increase over time.) The effects of coastal hazards have been considered explicitly by the NZCPS and WRPS[7], which includes implementation methods which the council must put in place to manage risks from coastal hazards. *Overall, this issue is considered to be localised in scale but of high significance.*
Risks to people, property, infrastructure and the natural environment from fire	**Objective 15.2.1** - Resilience to natural hazard risk **Objective 15.2.2** -	Fires have the potential to adversely affect people's health and safety, destroy infrastructure and buildings and damage the natural environment. They can temporarily change the character and amenity of local communities, but it can take many years for the natural environment to recover from major events. (This is a factor

[7] See Waikato Regional Policy Statement, in particular Policies 13.1, 13.2 and 13.3 (relevant to tsunami) in Appendix 2 Key Strategic Documents and Directions

Issue	Provisions which address the issue	Scale and Significance Reasoning This is a significant matter for the district for the following reasons:
	Awareness of natural hazard risks **Includes Policy 15.2.1.18 and 15.2.2.1 – 15.2.2.2.** **Assessment matters** **Variation 2.** Also includes processes outside the District Plan such as Hazard Register.	of local scale but high significance.) The risks from fire in New Zealand is expected to worsen as a result of climate change, which is predicted to result in less rainfall, higher temperatures and stronger winds. More homes (and people) are likely to be at risk as a result of expanding urban development and increasing lifestyle block development. An increase in exotic plantation forests will also add to the risk. While the Waikato region is less affected than some regions, the risk is still expected to increase. A failure to consider the implications of fire risk and rural residential development is likely to limit the options for future generations to remedy the effects of future fires. (This is a factor of medium importance but district wide scale.) There are no provisions in the Operative Plan which specifically address the risk of fire, and no areas which are identified at particular risk. No specific studies have been undertaken on fire risk to inform development of the Proposed Plan. It is unlikely that the Proposed Plan will identify specific hazard areas to regulate risks from fire and thus the economic costs associated with implementation of the Plan provisions are expected to be low. (This factor is of low significance and localised scale.) *Overall, this issue is considered to be of local scale and moderate significance at present. The significance of this issue is expected to increase over time with climate change.*
Risks to people, property, infrastructure and the natural environment from landslides, slips and subsidence, including mine subsidence.	**Objective 15.2.1** - Resilience to natural hazard risk **Objective 15.2.2** - Awareness of natural hazard risks **Includes Policy 15.2.1.19 – 15.2.1.20 and 15.2.2.1 – 15.2.2.2.** **Assessment matters**	**Landslides and slips** Only 1.6% of the district is categorised as having areas of land steeper than 35 degrees (landslides are more likely to occur on areas of land steeper than 45 degrees). Erosion severity is categorised as being extreme or very severe in only 0.2% of the district land area. There are small hot spots of erosion severity, which occur in isolated areas along the west coast. (For this reason, this factor is considered to be of local scale and low significance.) The effects of landslides and slips have been considered in the WRPS[8]. Objective 5.1.2 in the WRPS seeks a net reduction in accelerated erosion across the region in recognition of the adverse effects as a result of flooding or land instability, on the

[8] See in particular policy 14.1 and associated implementation methods.

Issue	Provisions which address the issue	Scale and Significance Reasoning This is a significant matter for the district for the following reasons:
	Variation 2. Also includes processes outside the District Plan such as stormwater management plans, CDEM community response plans and the Hazard Register.	relationship of taangata whenua as kaitiaki with their identified taonga, and damage to property and infrastructure. The Maniapoto Environmental Management Plan identifies in Policy 20.3.1.1 that erosion-prone lands should be retired and appropriately revegetated, including riparian areas and steep slopes to avoid accelerated erosion. (Given the limited land potentially affected, this is considered a local scale and low significance issue, relative to other natural hazards.) There are no hazard areas specifically identified in the Operative Plan for landslide risk and no new information has been collected on these risks to inform the Proposed Plan. It is difficult to model landslides to predict their behaviour and it is also difficult and often expensive to prevent or minimise landslides. It is therefore unlikely that the Proposed Plan will identify specific hazard areas to regulate risks from landslides or slips. As a result, there will be limited economic costs for land developers and this factor is considered of low significance and local scale only. *Overall, the risks to people, property and the environment from landslides and slips is considered to be an issue of low significance and local scale.* **Subsidence** Subsidence is the sinking of the ground's surface. The early signs of subsidence are not always visible before a major slump occurs. This is a safety risk for people and subsidence could result in damage to property and infrastructure. Subsidence is unlikely to result in significant changes to the character and amenity of local communities. (These factors are considered of low significance and local scale.) The risk of subsidence is limited in scale to a relatively small area of land at Huntly (less than 0.05% of the land in the district). The risk of subsidence is not specifically addressed in the WRPS. The Huntly East Mine is an underground mine located under the north-eastern part of Huntly, which was closed in 2015. This could result in a subsidence hazard in the future (including for future occupants), and an area of subsidence hazard is identified in the Operative Plan of approximately 125 hectares of land. This includes 50ha of land zoned residential and 64 ha of land zoned rural.

Issue	Provisions which address the issue	Scale and Significance Reasoning This is a significant matter for the district for the following reasons:
		A study (2019) has assessed the risks of subsidence and coal seam gas leakage[9]. The risks of subsidence can be mitigated through building design. This provides an opportunity for the Proposed Plan to be more enabling in the way that it regulates development in this area. The assessment provides more detailed mapping of the hazard area. There have been minor changes to the hazard risk area, with a small increase in both residential (3 ha) zoned and rural zoned land impacted (3 ha) (total of 137 ha). However, as the Proposed can be more enabling (as the risk has reduced), the economic impacts are expected to be minor. (This factor is considered of low significance and local scale.) *Overall, the risks to people, property and the environment from subsidence is considered to be an issue of low significance and local scale.*
Risks to people, property, infrastructure and the natural environment from earthquakes and liquefaction of soils	**Objective 15.2.1** - Resilience to natural hazard risk **Objective 15.2.2** - Awareness of natural hazard risks **Includes Policy 15.2.1.22 – 15.2.1.23 and 15.2.2.1 – 15.2.2.2.** **Assessment matters Variation 2** and **information requirements** in **15.13**. Also includes processes outside the District Plan such as LIMs, Hazard	An assessment of earthquake risk and subsoil conditions has been undertaken at a regional level (1996) but has not been updated recently. There is no expert research on seismic risks in the Waikato district. The 1996 regional study (by IGNS) found a significant potential earthquake hazard in the Waikato region, where active faults overlap with geological areas susceptible to ground shaking. Recent Holocene soils are the most susceptible to ground shaking, and soils of this type occur in the district, although they are limited in extent. Liquefaction is not expected unless an earthquake of magnitude 5 or bigger occurs. Earthquakes of this size do not occur regularly in the region and have been even less frequent in the district. Recent research from University of Waikato suggests that large earthquakes in the region are very rare and may occur just once every five thousand years[10]. There are no active faults in the Waikato district, although there are number of 'possibly active' or 'inactive' faults. (This issue is therefore considered to be of low significance, but of a district-wide scale, as a large earthquake would be expected to cause widespread damage if it did occur.) The adverse effects associated with earthquakes have been considered in the WRPS[11].

[9] RDCL (2019) Risk Assessment for Urban Development Areas – Huntly East Mine
[10] University of Waikato (2019) Project to investigate earthquake frequency and activity on Hamilton's faults.
[11] See in particular Policy 13.3 and associated implementation methods.

Issue	Provisions which address the issue	Scale and Significance Reasoning This is a significant matter for the district for the following reasons:
	Register, and CDEM community response plans.	A large earthquake is expected to have an adverse effect on people's health and safety. It would also be expected to have an adverse effect on character and amenity of local communities. However, as such events are very rare in the district, this is considered to be a factor of low significance but district wide scale. The Operative Plan does not currently regulate for liquefaction risk, although geotechnical reports are required when applying for subdivision consents. Although no new studies have been undertaken, it is expected that the Proposed Plan will be more stringent in relation to managing the risks of liquefaction. This is likely to have significant economic costs for individual landowners. However, it is also likely to have a positive effect in terms of ensuring that future generations are not saddled with buildings and infrastructure which are prone to earthquake damage. This is a factor of district wide scale (given that it is expected to be a blanket requirement) but low significance (it doesn't prohibit development, but it does add a compliance cost). *Overall, the risks to people, property, infrastructure and the natural environment is considered to be of district wide scale but only moderate significance, because the likelihood of a large earthquake in the district is very rare.*
The effects of climate change (including climate variability) can exacerbate weather related natural hazards and increase mean sea level. This may have adverse impacts on people (including their health and safety), land use, development, infrastructure and the natural environment	**Objective 15.2.3** - Climate change Includes **Policies 15.2.3.1 – 15.2.3.5** and includes **2D flood hazard modelling** and the **coastal hazard assessment** and **coastal hazard maps.** **Rules 15.4, 15.5, 15.7** and **15.8** and **assessment matters** in **Variation 2.**	Although climate change and subsequent sea level rise is not a hazard in its own right, it impacts on the frequency and intensity of a range of natural hazards, and thus has potential to affect people's social, economic and cultural wellbeing, health and safety. It also has an impact on character and amenity of local neighbourhoods. (This factor is considered to be of district wide scale and high significance.) Climate change is a matter which must be given particular regard to under section 7(i) of the RMA. It is a matter of regional and district wide significance, although the effects of climate change will be felt differently in different areas. Coastal areas and those areas already at risk of flooding are likely to be more adversely affected. These effects have been considered by higher order documents, including the NZCPS and WRPS[12]. (These factors are considered to be of high significance and a district wide scale, given the importance placed on addressing climate change in these higher order documents.)

[12] See in particular Objective 3.6 and associated policies, including 13.1 and 13.2 and their implementation methods.

Issue	Provisions which address the issue	Scale and Significance Reasoning This is a significant matter for the district for the following reasons:
		Failing to prepare for the effects of climate change is likely to limit options for future generations to remedy effects, especially if this results in more property and infrastructure being located in high risk areas. (This factor is considered of high significance and at a district wide scale.) There are no provisions in the Operative Plan that directly regulate for climate change or sea level rise, although the building setback rules and setting of the 1% AEP flood level and storm event are likely to have been influenced by expected climate change and sea level rise. New assessments undertaken to inform the Proposed Plan on the risks of coastal hazards[13] and flooding[14] have incorporated climate change scenarios into the modelling. The new hazard risk areas incorporate predicted climate change effects, such as sea level rise. While this will mean that some properties will have additional restrictions placed on them as a result of the Proposed Plan, overall, fewer properties are likely to be affected, as a result of the more up to date information. This is because fewer areas have been identified as being at risk. The economic costs will be significant but less than what is anticipated under the Operative Plan. (This factor is considered of low significance, at a scale which is more than localised, but not district-wide.) Iwi environmental management plans identify climate change as a significant issue and that the causes and effects of climate change need to be understood and prepared for[15]. Iwi have told us that they are concerned about the ability of their people with limited resources to adapt to the impacts of climate change, including where relocation is likely to be necessary. (This is considered to be a factor of local scale but high significance.) *Overall, this issue is considered to be of district wide scale and highly significant, because of its potential to adversely affect not just individuals and their property, but the wider community, infrastructure, the natural environment and future generations.*

[13] FOCUS (2020) Waikato District Coastal Hazard Assessment
[14] DHI (2019) WRC Lower Waikato 2D Modelling - Huntly, Ohinewai and Horotiu Model Build
[15] Waikato-Tainui - Objective 17.3.3 and Policy 17.3.3.1 Maniapoto – Objective 13.3.1 and Policy 13.3.1.1