Regional plans review – topic summary

Natural hazards

How can we improve the management of natural hazards in our regional plans? This is summary of our initial ideas.

What are natural hazards?

Natural processes become known as natural hazards when they adversely affect sites that people value (structures and/or land). Under the Resource Management Act 1991 (RMA), the term 'natural hazard' is defined as:

> *Any atmospheric or earth or water related occurrence (including earthquake, tsunami, erosion, volcanic and geothermal activity, landslip, subsidence, sedimentation, wind, drought, fire or flooding) the action of which adversely affects or may adversely affect human life, property, or other aspects of the environment'.*

This review looks at the way the regional plans avoid or mitigate natural hazards, with a specific focus on flooding and coastal hazards. This includes the control of the use of land (including development on floodplains and flood protection measures such as spillways and stopbanks). It also covers managing natural hazard risk in the coastal marine area (for example, coastal protection structures) and the role natural features play in mitigating hazard risk (such as wetlands, floodplains and dunes).

This topic does not include a review of:

- The council's emergency management responsibilities under the Civil Defence Emergency Management Act;
- The regional council's river management work under the Land Drainage Act or the Soil Conservation and River Control Act; and
- How district councils manage natural hazard risk under the RMA or the Building Act 2004.

Overview of the regional plans review

This is one of 10 summary reports for the review of Northland's regional plans.

Northland has three regional plans:

- Regional Air Quality
- Regional Coastal Plan
- Regional Water and Soil Plan

We are required to review the regional plans every 10 years. We have reviewed all three regional plans at the same time.

The review is the first step to prepare a new regional plan. The review looks at:

- What we know about our resources and their use;
- Lessons learnt from administering the regional plans
- Current legal and policy drivers; and
- Feedback from key stakeholders and tangata whenua

The review concludes with options or recommendations for the new regional plan.

We've split the review up into 10 topics:

- Water quality
- Water quantity
- Marine ecosystems and biodiversity
- Coastal water space
- Air quality
- Significant natural heritage values
- Māori participation in resource management
- Natural hazards
- Infrastructure and mineral extraction
- Hazardous substances

For more information go to - nrc.govt.nz/newregionalplan

What needs to change in the regional plans?

A lot has changed since we prepared the current regional plans in the early/mid 1990s. Some key points are:

- Our knowledge of natural hazard risk and how climate change might exacerbate natural hazard risk has increased.
- Amendments have occurred to the RMA (such as a requirement for councils to have 'particular regard' to the effects of climate change – s7(i)) and there are new national policy statements.
- Our knowledge of which areas of Northland are most susceptible to natural hazards has increased (such as through new flood hazard and coastal hazard modelling and mapping).
- Nationally, there is increasing recognition that councils need to adopt a planning horizon of a term no less than 100 years with regards to design standards for flood protection measures as well as managing natural hazard risk generally.

With this in mind, the following section provides a summary of the key problems identified to date with regards to managing natural hazards through regional plans in Northland and suggests some possible changes.

1 The regional plans do not give effect to higher level policy documents

Regional plans are required to 'give effect' to relevant provisions in the New Zealand Coastal Policy Statement 2010 (coastal policy statement) and the Proposed Regional Policy Statement for Northland. The coastal policy statement has introduced increased requirements for councils to manage coastal hazard risk. This includes a requirement to identify areas of the coastal environment potentially affected by coastal hazards (including tsunami) over a 100 year period and to avoid increasing the risk of harm from coastal hazards within these areas[1].

Other national level guidance specifically relevant to managing natural hazards includes the Ministry for the Environment's *Coastal hazards and climate change: A guidance manual for local government in New Zealand*. Although produced in 2008, it sets out the most recent guidance on 'factoring in' an allowance for sea-level rise into the planning and decision-making process in resource consent applications. The Intergovernmental Panel on Climate Change (IPCC) has just released its Fifth Assessment Report on climate change and consequently, it is likely that the Ministry for the Environment will amend national guidance on sea-level rise later this year or early next year.

The Proposed Regional Policy Statement sets out a framework for managing natural hazard risk in Northland, with a key focus on avoiding inappropriate new development in 10 year and 100 year flood hazard areas and coastal hazard areas. It also sets out a new approach to managing natural hazard risk in 'high risk' hazard areas (10 year flood hazard areas and high risk coastal hazard areas – mapped coastal hazard 1 areas). It states that when buildings are materially damaged or destroyed, the regional council (through the relevant regional plan) will require land use consent for the repair or reconstruction of the building. This is a method to avoid any potential issues associated with 'existing use rights' because these do not apply to regional plans – only district plans (see section 9 of the RMA).

The current regional plans do not give effect to these new higher level policy and government guidance documents and therefore need to be amended.

[1] Policies 24-25

1.1 Possible changes to the regional plans

From a natural hazard management perspective, key changes flowing down from central government level (coastal policy statement) and the Proposed Regional Policy Statement are likely to mean that the new regional plan(s) will include:

- New design guidelines and standards/controls for potentially affected structures to allow for sea-level rise.
- New rules to control activities that will divert the natural flow of floodwaters across floodplains (such as filling of land or siting of structures).
- New regional rules to require land use consent for the repair or reconstruction of certain buildings if they are materially damaged or destroyed. This could mean that applications to rebuild damaged structures might be subject to new conditions to mitigate risk (such as greater setbacks, raised floor heights) or in extreme cases be declined.
- Requirements to recognise and protect, restore or enhance natural systems and features that contribute to reducing the impacts of natural hazard events.
- Requirements to avoid impediments to accessing established structural mitigation assets (such as flood gates or sea walls).
- Guidance on determining when hard protection structures can be considered an appropriate option for mitigating natural hazard risk.
- A strong policy preference for use of soft protection and/or enhancement of natural defences over hard protection structures.
- Policy/criteria to ensure that where hard protection structures are proposed, alternatives have been considered and hard protection is the best practical option.

These potential changes are discussed further in the following two sections.

2 Management of flood hazard risk

The Regional Water and Soil Plan[2] has no section devoted to the management of natural hazards (or more specifically flood hazard risk). The broad range of natural hazard issues and risks is therefore not presented in a coherent and integrated manner. Provisions which relate to flood hazard management are scattered across a number of sections, which also deal with other aspects of resource management. For example, in many cases (especially for activities such as earthworks) the driving issue behind the formulation of policy appears to be soil conservation and erosion control.

We now have detailed flood hazard maps (illustrating areas susceptible to inundation in 10 year and 100 year return period floods) for 24 priority river catchments in Northland[3]. We therefore have clear and robust information regarding flood hazard risk (for selected catchments) and this sets the platform for a more sophisticated approach to managing this risk.

2.1 Earthworks

The current Regional Water and Soil Plan rules for earthworks and vegetation clearance do not take into account the potential effect (including cumulative effect) of earthworks on increasing flood risk. This is a real risk as earthworks can, either in combination or isolation:

- Alter/divert flood paths and overland flows (thereby relocating adverse effects elsewhere);
- Impede drainage;
- Reduce floodplain capacity.

[2] Declared operative on 28 August 2004
[3] Refer to the Priority Rivers Flood Risk Reduction Project for more information – www.nrc.govt.nz/priorityrivers

There is currently a lack of clear direction (both policy guidance and rules) over when 'permitted' earthworks on floodplains can increase/exacerbate flood hazard risk. This is partly because the environmental standards for land disturbance activities in the Regional Water and Soil Plan[4] (section 32) do not refer to the activity 'increasing flood hazard risk' or there being no 'adverse flooding effects on any property owned or occupied by another person' – this is considered a gap that needs to be addressed.

Additionally, although the riparian management zone has relatively restrictive rules for earthworks (volume of earth disturbed can be up to 50m^2 and there are no adverse flooding effects on any property owned or occupied by another person), this 'zone' only extends for a maximum of 20 metres from the bank full edge of a river. Outside the riparian management zone, the 'permitted' threshold for earthworks is 5,000m^3 in any 12 month period[5] – this is a substantial amount to 'permit' on floodplains.

There was widespread support and agreement with the concept of reducing the 'permitted' volume of earthworks on floodplains at the natural hazards key stakeholder workshop[6]. An interesting point to note is that under s68(2A) of the RMA, regional councils have a specific ability to create rules for the protection of other property (as defined in section 7 of the Building Act 2004) from the effects of surface water, which require persons undertaking building work to achieve performance criteria additional to, or more restrictive than, those specified in the building code. This enables regional councils to restrict activities on floodplains for the purpose of avoiding or mitigating natural hazards.

2.1 Vegetation removal

The current Regional Water and Soil Plan does not contain policy guidance or rules for vegetation clearance (from river beds) as a permitted activity where it has the potential to avoid or mitigate the adverse effects of flooding. There is a permitted rule in section 27 (rules for drainage and river control activities) relating to the maintenance of the free flow of water in rivers but this only relates back to ensuring that any vegetation clearance is limited to maintaining the free flow of water, including the removal of blockages. This is potentially a problem because it does not allow landowners to proactively remove vegetation that could increase flood hazard risk.

2.1 Gravel extraction

Extracting gravel from rivers can be a good way of managing flood risk and can be undertaken with minimal adverse effects if done right. Currently it is 'permitted' to extract up to 100 cubic metres of material (such as gravel) within any 12 month period from rivers as long as it is for private use[7]. Extraction over and above this rate is treated as a 'discretionary' activity. The 100 cubic metres per year limit is conservative and was due to the lack of information on the yields of Northland's rivers at the time the plan was prepared. The regional council now has a much better understanding of which rivers in Northland have capacity for larger volumes of gravel/shingle to be safely extracted.

2.1 Stormwater

Stormwater run-off has the potential to cause flooding and inundation. This is more of a concern in urban areas compared with rural areas because urban areas contain greater amounts of 'hard' impermeable surfaces (such as roads and footpaths) and therefore there is less opportunity for land to 'soak up' stormwater. Currently the 'permitted' stormwater rule

[4] The section 32 environmetal standards are referred to in the rules set out in sections 33 and 34.
[5] The permitted volume is 1,000m^3 where the activity is undertaken on erosion prone land.
[6] This workshop occured on 21 October 2014. The workshop notes can be accessed on the council's website: http://www.nrc.govt.nz/Download/?file=/upload/18187/Natural%20hazards%20workshop%20notes%20(A699144).pdf
[7] Section 31 of the RWSP (Rules for other uses of River and Lake Beds).

in the Regional Water and Soil Plan requires stormwater systems to cater for 1 in 5 year flows (primary) and provide stabilised overland flow path for 1 in 50 year storm flows (secondary). This is inconsistent with New Zealand Standard 2204:2010 (Land Development and Subdivision Engineering), which recommends that primary stormwater systems in residential and commercial/industrial areas shall be designed to cater for stormwater flows resulting from 1 in 10 year return period storm events and secondary systems shall cater for 1 in 100 year events.

The diversion of stormwater caused by obstructions in overland flow paths is a significant concern for the regional council as well as the district councils. Our permitted rule currently does not require overland flow paths to be kept clear of obstructions (such as fences or buildings). Blocking overland flow paths has the potential to increase flood hazard risk for neighbouring properties because flood water can be diverted onto these properties. However, unless property owners know where overland flow paths are, it is difficult to require them to be kept clear of obstructions – they are not currently mapped by the regional council. In the Whangarei district, stormwater diversion is currently being managed in new subdivisions and developments through a requirement for easements in favour of Whangarei District Council for the purpose of stormwater management.

2.1 Possible changes to the regional plans

Possible changes include:

- New rules to manage materially damaged or destroyed buildings in 10 year flood hazard areas and 'high risk' coastal hazard areas (existing coastal hazard 1 mapped areas). This could include policy and rule guidance on 'managed retreat[8]' (which could include raising floor levels of buildings, relocation within property boundaries or relocation to another site altogether). As mentioned on page 2 above, this is one way to circumvent potential problems associated with 'existing use rights' in hazard prone areas. Theoretically, so long as any rule(s) are included in the new regional plan, the processing of any resource consent application could be transferred back to the relevant district council under s33 of the RMA.

- New environmental standards for land disturbance activities (earthworks and vegetation clearance) that require the activity to either avoid any increase in flood hazard risk or demonstrate that the activity will not result in any adverse flooding effects on any property owned or occupied by another person.

- New policy guidance and rules around limiting the cumulative effects of earthworks in floodplains, including limiting the diversion of flood flow across floodplains and recognising the on-going diversion activity (to avoid the need for consent renewals). This will likely mean a reduction in the current 5000 cubic metre threshold for earthworks in floodplains.

- New controls on the clearance of vegetation in or on the bed of a river for managing flooding and stream-bank erosion. A 'permitted' activity rule to enable the clearance of certain vegetation (such as willows or plants listed in the Regional Pest Management Strategy) and fallen or dead vegetation is considered sensible in order to maintain the free flow of water in water bodies, including the removal of any blockages that would exacerbate flooding.

- Gravel extraction from riverbeds for natural hazard mitigation purposes could be enabled when it can be demonstrated that the rate of gravel extraction does not

[8] 'Managed retreat' is defined as any strategic decision to withdraw, relocate or abandon private or public assets that are at risk of being impacted by natural hazards.

exceed the rate of recharge or to mitigate the effects of aggradation if the activity is undertaken in a way that does not induce erosion. The creation of a new 'permitted' rule regarding gravel extraction being undertaken by the regional council or on behalf of the regional council (such as by approved contractors or by landowners in consultation with the regional council) is considered a pragmatic response to the current threshold of 100 cubic metres.

- Amending the 'permitted' stormwater rule so that overland flow paths are required to be kept clear of obstructions and buildings. Additionally, requiring that primary stormwater collection systems are designed to cater for stormwater flows resulting from no less than a 1 in 10 year return period storm event and secondary systems shall cater for 1 in 100 year events. Any potential changes to stormwater management will be developed in collaboration with district councils because they also manage stormwater diversion and there is a need to avoid unnecessary duplication of consenting requirements and/or potentially conflicting policies and rules.

3 Coastal hazards are not well managed

Natural coastal processes (such as erosion and inundation) become coastal hazards when they adversely affect things people value (such as buildings, property, and infrastructure) and threaten lives. Even though coastal hazards tend to cause most damage on land, the Regional Water and Soil Plan does not actively manage coastal hazard risk. For example, it does not regulate the placement of hard coastal protection structures such as seawalls. Typically, control over hard coastal protection structures above mean high water springs[9] is left to district councils.

The Regional Water and Soil Plan currently regulates land above the mean high water springs through a 'coastal riparian management zone'[10]. Specific provisions relating to land adjacent to the coastal marine area were not initially included in the Regional Water and Soil Plan as coastal development did not exist at its current rate during the early-mid 1990s. The existing coastal riparian management zone was created as a 'quick' solution to regulate land disturbance activities (primarily earthworks and vegetation clearance) at the land-sea interface until specific provisions were developed (none have yet been developed).

Consequently, this 'zone' has limited regard to the spatial and temporal variability of coastal landforms and processes in Northland and in many locations, the landward extent of this zone is insufficient to manage coastal hazard risk. Under the Regional Water and Soil Plan, a coastal riparian management zone exists in locations where:

- A foredune exists (such as Matapouri and Tauranga Bay) - this riparian management zone occurs between mean high water springs and the toe of the foredune on the landward facing slope. This applies to vegetated or unvegetated sand dunes).
- At the top of a bank sloping landward from the coastal marine area boundary – this riparian management zone occurs between mean high water springs and the distance (up to 20m) from the top of the first landward bank dependant on the dominant slope as used for the riparian management zone. This definition captures rocky coastlines, estuarine coasts and sand beaches with a modified foredune. In locations where there is no dominant slope (land adjacent to the coastal marine area is flat) there is no coastal riparian management zone.

[9] Mean High Water Springs – the administrative line that differentiates the coast marine area from terrestrial land.
[10] Sections 32 and 34.

This means that earthworks and vegetation clearance are currently permitted within the reach of wave run-up, as effects on coastal processes are not controlled through the section 32 environmental standards in the regional water and soil plan (they primarily exist to manage soil conservation and water quality). The key point to note is that coastlines are dynamic environments that require a specific management approach to ensure the safety of people and property from physical processes (coastal hazards). The coastal riparian management zone was not created to manage coastal hazard risk and therefore the existing rules are inappropriate with respect to physical processes that control coastal landform morphology.

With regards to 'hard' protection structures in the coastal marine area, although the Regional Coastal Plan regulates the placement and on-going occupation of space for structures (including seawalls, groynes and other 'hard' protection structures), there are no specific policies or rules for determining the appropriateness of hard protection structures (i.e. the plan does not differentiate between 'hazard' protection structures and other structures such as jetties). The New Zealand Coastal Policy Statement now requires councils to discourage hard protection structures and promote alternatives to them, while the Proposed Regional Policy Statement sets out policy to determine when hard protection structures can be considered an appropriate option to manage coastal hazards. The new coastal plan needs to implement these documents.

3.1 Possible changes to the regional plans

The creation of either a regional coastal environment plan or single regional plan would be an efficient and effective tool to improve the integrated management of coastal hazard risk across the artificial jurisdictional boundary of mean high water springs. This plan should achieve better management of cumulative effects of activities/processes that occur on land but have the potential to increase coastal hazard risk (such as land disturbance activities on sand dunes) as well as control hard protection structures above and below the line of mean high water springs. This plan would avoid the need for debate around where the line of mean high water springs begins, which is an important determinant in consent applications for hard protection structures and determining if they are an appropriate response to manage coastal hazard risk.

Another option is to create a 'coastal margins' zone in the new plan (whatever form it takes), which could either encompass the zone of active coastal processes landward of mean high water springs (the extent of this 'zone' would probably vary depending on the type of coastline e.g. sandy, rocky or estuarine) or be the landward extent of the 'coastal environment' as mapped through the Proposed Regional Policy Statement or merely a 'one size fits all' setback distance from mean high water springs (such as 20 metres).

Specific policies and rules could therefore be created to give effect to the coastal hazard provisions in the coastal policy statement and Proposed Regional Policy Statement and to help ensure the natural functions of coastal landforms/natural features that contribute towards mitigating the impacts of coastal hazard events are retained.

These provisions could include:

- Policies/rules to discourage the modification or destruction of natural defences (such as dunes) that protect coastal land uses from coastal hazards. This will likely mean limiting earthworks and vegetation clearance on active dune systems.

- Policies/rules to enable the protection/restoration of natural features (such as dunes or coastal vegetation) that provide protection from coastal hazard events. This could mean rules permitting (subject to compliance with standards and terms) earthworks or vegetation clearance if undertaken for the purposes of coast care works or

environmental enhancement (such as dune reshaping) by recognised coast care groups or community groups.
- Policies/rules relating to the appropriateness of new hard protection structures on land. This will likely be more restrictive rules if the land has been identified as outstanding natural character/landscape area or a significant biodiversity area.
- Rules permitting the removal/demolition or maintenance/repair of existing hard protection structures (subject to compliance with standards and terms).

Linked to the above, there is also a need to include new criteria in the section 32 environmental standards for land disturbance activities in the Regional Water and Soil Plan with regards to coastal margin/coastal hazard management. This could include things like ensuring that activities:

- Shall not impede wave run-up or tidal processes; and/or
- Do not induce or have the potential to induce erosion of any land within the coastal margin, exacerbate the potential for coastal flooding or cause any land instability; and/or
- Shall not occur in a manner where it has the potential to destabilise a foredune system.

There was widespread support for the regional council taking a greater leadership role in managing coastal hazard risk at the natural hazards key stakeholder workshop in October. There was also a lot of support for moving towards a single regional planning document, especially from a natural hazards management perspective because the impacts of hazard events cross jurisdictional boundaries.

If implemented, these new provisions will likely lead to public benefits but conversely could lead to greater costs for landowners. The full costs and benefits of any new provisions will naturally need to be properly tested through a robust evaluation report,[11] which will need to assess the efficiency and effectiveness of the provisions and determine whether overall they are the best option.

To give effect to the New Zealand Coastal Policy Statement, the next regional plan (regardless of whatever form it may take) will need to contain policies and rules to discourage hard protection structures and set out criteria/thresholds as to when they can be considered an appropriate option (within the coastal marine area) to manage coastal hazard risk (such as to protect existing infrastructure of regional or national importance). It will also need to contain policies/rules to protect, restore or enhance natural defences (such as coastal vegetation) that protect coastal land uses from coastal hazards.

[11] Section 32 of the Resource Management Act 1991