

## Appendix 3.28.6 Summary of mapping information

### Spatial information sources for natural hazards known by CLAW

Information source	Summary and intended use/how we may be able to use it	Coverage
Williams, A. 1996 Slope instability hazards in the Auckland Region: a preliminary assessment. Prepared by BECA for Auckland Regional Council. Auckland Regional Council Technical Report 1996/71.	Maps of low, moderate and high slope instability. Maps prepared at a broad scale of 1:250 000, can only be used to give a very general indication of areas of instability – not at a local or site specific scale required for use in the UP.	Region-wide
Heron, D.W., Lukovic, B., Dellow, G.D. 2012 Modelled landslide susceptibility for South Auckland Greenfield areas – Glenbrook, Karaka, Kingseat, Paerata and Pukekohe. Prepared by GNS for Auckland Council.	<p>Local scale maps (1: 25 000) created for the RUB project – southern Greenfield locations. The model gives levels of susceptibility to landsliding based on slope and geology. Maps are not site-specific, but give a general indication on land prone to landsliding at a local scale.</p> <p>Gives an indication of surficial landsliding, but not deep seated landsliding – has some limitations in this respect.</p> <p><u>Intended use:</u> To help guide the location of the RUB and where there may be constraints on development in Greenfield areas.</p>	South Auckland Greenfield areas for investigation and areas in between (Glenbrook, Karaka, Kingseat, Paerata and Pukekohe)
Reinen-Hamill, R., Hegan, B., Shand, T. 2006 Regional Assessment of Areas Susceptible to Coastal Erosion. Prepared by Tonkin and Taylor Ltd for Auckland Regional Council. Auckland Regional Council Technical Report 2009/009.	<p>Regional overview of areas susceptible to coastal erosion (soft and hard). Does not give accuracy to site-specific scale.</p> <p><u>Intended use:</u> A tool to assist in understanding the scale and extent of potential hazards to enable development of appropriate management responses. Not at a site specific scale required for use in the UP.</p>	Region-wide Not mapped, map reference grid points only
Dickson, M., Perry, G. 2012 Coastal landslide hazard index. Prepared by University of Auckland	Maps highlight coastal cliffs which are most susceptible to landslides (high, medium, low) based on characteristics of past landsliding.	Within the ARC MUL boundary

for Auckland Council.	<p>Not property specific – assessments undertaken every 100m along the cliff line – some properties may sit between two sites, susceptibility interpolated between the sites.</p> <p>Final results have not yet been published into a technical report – some final amendments are still being made.</p> <p>The current display of information on maps may not be appropriate for planning purposes, however some analysis of the information could be undertaken to provide setbacks in high risk areas. Note – this would require a significant amount of time and potential financial resources.</p>	(Whangaparaoa Peninsula to Papakura)
Auckland Engineering Lifelines Project: stage one report July 1997: Part 1: Hazard information; Part 2: Network utility information (1997). Auckland Regional Technical Publication 116.	The liquefaction maps show areas made up of soil and rock mass types that are the most susceptible to liquefaction in an earthquake event. The information is mapped at a broad scale of this map (1:500 000) and therefore is not intended for site-specific use. Rather the purpose is to give a general indication of the areas which are potentially susceptible to liquefaction. Not at a local or site specific scale required for use in the UP.	Region-wide
Ramsey, D., Stephens, S., Altenberger, A. & Oldman, J. (2008) The influence of climate change on extreme sea levels around Auckland City. NIWA Client Report HAM2008-093 prepared for Auckland City Council.	Sea level inundation areas, mapped for different sea level rise scenarios. Appears to be of scale appropriate for individual property identification, however map detail not available. Likely contained on legacy council database.	Auckland City
Ramsey, D., Altenberger, A., Bell, R., Oldman, J.& Stephens, S., (2008) Review of rainfall intensity curves and sea levels in Manukau City. NIWA Client Report HAM2007-168 prepared for Manukau City Council.	Sea level inundation areas, mapped for different sea level rise scenarios. Appears to be of scale appropriate for individual property identification, however map detail not available. Likely contained on legacy council database. Not fully compatible with NIWA study for ACC, referenced above.	Manukau City

Tonkin & Taylor Ltd. (2004). North Shore City sea inundation study. Consulting report to North Shore City Council 21595	Sea level inundation areas, mapped for two sea level rise scenarios.  Used at a scale appropriate for individual property identification by legacy council. Originally on council district planning maps but now likely contained on legacy council database.	North Shore City
Tonkin & Taylor Ltd. (2005). Assessment of potential sea levels due to storms and climate change along Rodney's East Coast. Consulting report to Rodney District Council 22239.	Sea level inundation areas, mapped for two sea level rise scenarios.  Used at a scale appropriate for individual property identification by legacy council. Now likely contained on legacy council database.	Part of Rodney District, east coast.
Stephens, S., Reeve, G. & Goodhue, N. (2011): Coastal storm-tide levels in the Auckland Region. NIWA Client Report HAM2011-102 prepared for Auckland Council.	Sea level inundation level data, for storm tide events. No sea level rise component associated with global warming. Can be mapped at individual property scale once base levels are established. Study is currently being expanded as part of the new coastal plan and some work being done for emergency studies for civil defence purposes.  This region wide approach will eventually overtake the legacy council mapping referenced above.	Extensive but incomplete regional coverage. Level data only, no mapping.
?	Floodplain mapping at district level contained in district plan maps or within data bases outside plans. Differing assessment techniques and return periods.  Used at individual property scale.  Current approach used at district level.	Region wide
? for Rodney DC.	Tidal inundation levels for parts of southern Kaipara Harbour. Scale unknown, possibly at individual property scale at Helensville.	Part of Kaipara Harbour
	Specific reports for vulnerable areas held in legacy council records, available at individual property scale for constrained areas.  Differing purposes and techniques used.  Examples:  DHI flooding study for Orewa (RDC), beach erosion studies for Takapuna (NSCC), Viaduct Harbour coastal inundation study for ACC.	Limited areas of region studied and often mapped.

	Tonkin & Taylor studies for Waiheke Island coastal erosion and cliff stability.	
Regional Source Tsunami Inundation Modelling  NIWA and GNS for ARC	<p>Mapping was undertaken at a regional scale.</p> <p>This mapping could be used to identify high-risk areas for further detailed modelling, months worth of work. More detailed modelling for this sort of scenario <b>SHOULD</b> be undertaken but \$\$ and time will be an issue.</p> <p>Tsunami from this source provide very little time to ensure evacuation. It will be next to impossible to evacuate those that need special assistance. Particular risk to elderly people (retirement villages), young children (daycare &amp; schools), medical facilities (hospitals etc). There is a significant risk for these groups.</p> <ul style="list-style-type: none"> <li>- Other high risk uses within these areas include emergency facilities (police, fire, etc) that you would need for emergency response.</li> <li>- Evacuation (including vertical evacuation – moving to higher levels of well constructed medium to high rise buildings) can be used for others to ensure safety so they are at much lower risk.</li> </ul> <p><u>Intended use</u>  This model is for a 2500 yr ARI event, the same as use for earthquake engineering. The MAIN goal for events of this return period is protecting risk to life and therefore these vulnerable groups should be targeted with any policy e.g. emergency management planning.</p>	Regional scale
Distant Source Tsunami Inundation Modelling  NIWA and GNS for ARC	<p>This is a worst case scenario from South America (very unlikely event).</p> <p><u>Intended use</u>  This mapping was done for evacuation planning purposes <b>ONLY</b> and should NOT be used for land use planning</p> <ul style="list-style-type: none"> <li>- There will be 12hrs warning for this sort of event so evacuation should be possible.</li> </ul>	Regional scale.

