

Coastal inundation

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Background



NZTA

In NZ, extreme storm sea levels are unlikely to be more than 1 m above the predicted tide

This event was 0.6 m above a very high spring tide

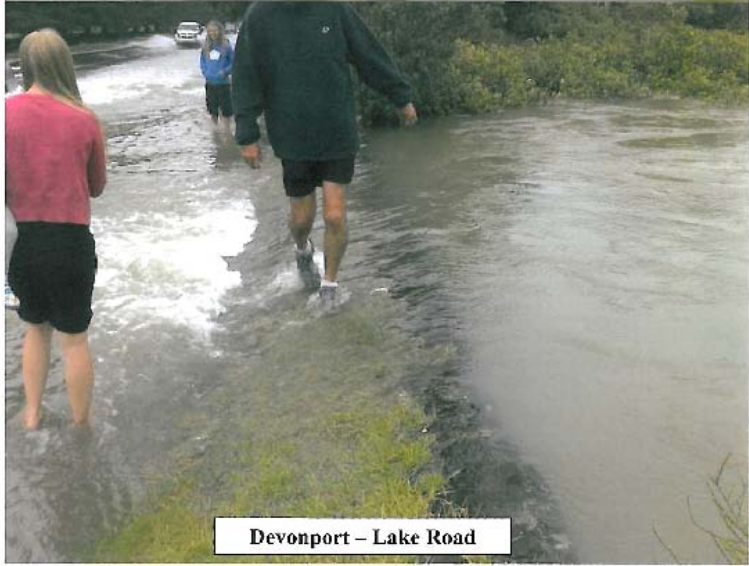
Storm-tide event: 23 Jan 2011

Highest on record (2.35 m AVD-46)

Previous record: 1936 (14 cm less)



P Heyes

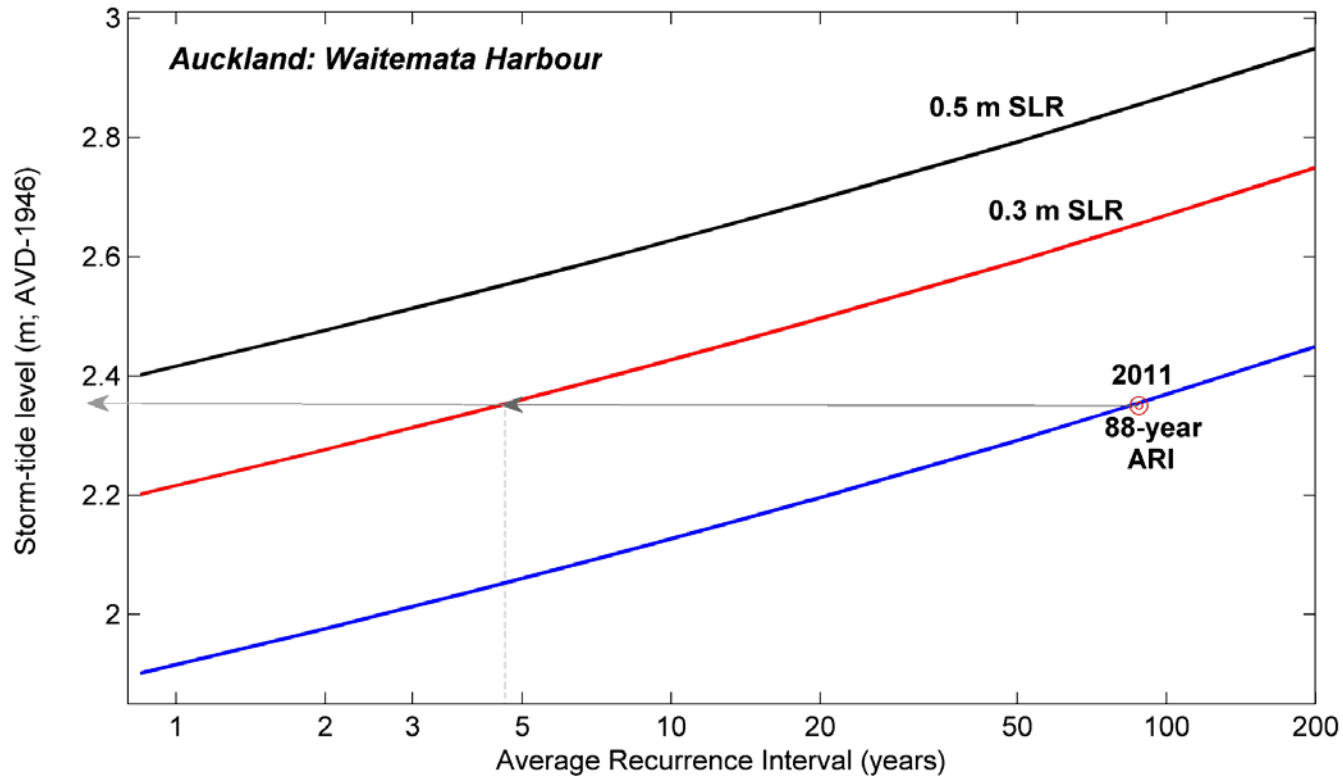


Devonport – Lake Road



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Changing state: Storm-tide hazards



More frequent coastal inundation events
& drainage/stormwater issues

National direction

The New Zealand Coastal Policy Statement 2010 requires the assessment of coastal hazard risk over at least 100 years. (Policies 24 & 25)

- Need to be looking out to 2115
- “Avoid increasing the risk... from coastal hazards” (Policy 25)

Advice from NIWA and senior IPCC experts recommends planning for:

- 1 in 100 year event + 1m SLR in brownfield areas
- 1 in 100 year event + 2m SLR in greenfield areas (given permanency of such developments, as sea level will continue rising for a few centuries)

Draft UP approach

Current UP approach takes a precautionary approach:

- Policy approach of reducing the risk to people, property and infrastructure from natural hazards while minimising any adverse effects on the environment
- Land which may be subject to natural hazards includes any land which is at an elevation less than 2m above MHWS if the activity is located more than 20m from MHWS
- P activity to develop on land if a report by a suitably qualified engineer determines that the land is not subject to inundation over a 100 year time frame
- Discourage residential intensification within areas of coastal inundation (policy)

Feedback received

Few coastal inundation specific pieces of feedback received

- Several stakeholders knew that coastal inundation mapping was being done and requested for the information to be included in the UP

General natural hazard requests:

- Change P activity status to RD for development on land subject to natural hazards
- Requests for Council to take sea level rise into consideration as a likely effect of climate change

New data

Coastal inundation and sea level rise in Auckland

Low lying coastal land of Auckland affected by storm-tide inundation and projected sea-level rise (SLR) over 100 years has been identified on a consistent basis for the first time.

Maps identify land affected by:

- current 100-year storm-tide inundation (STI)

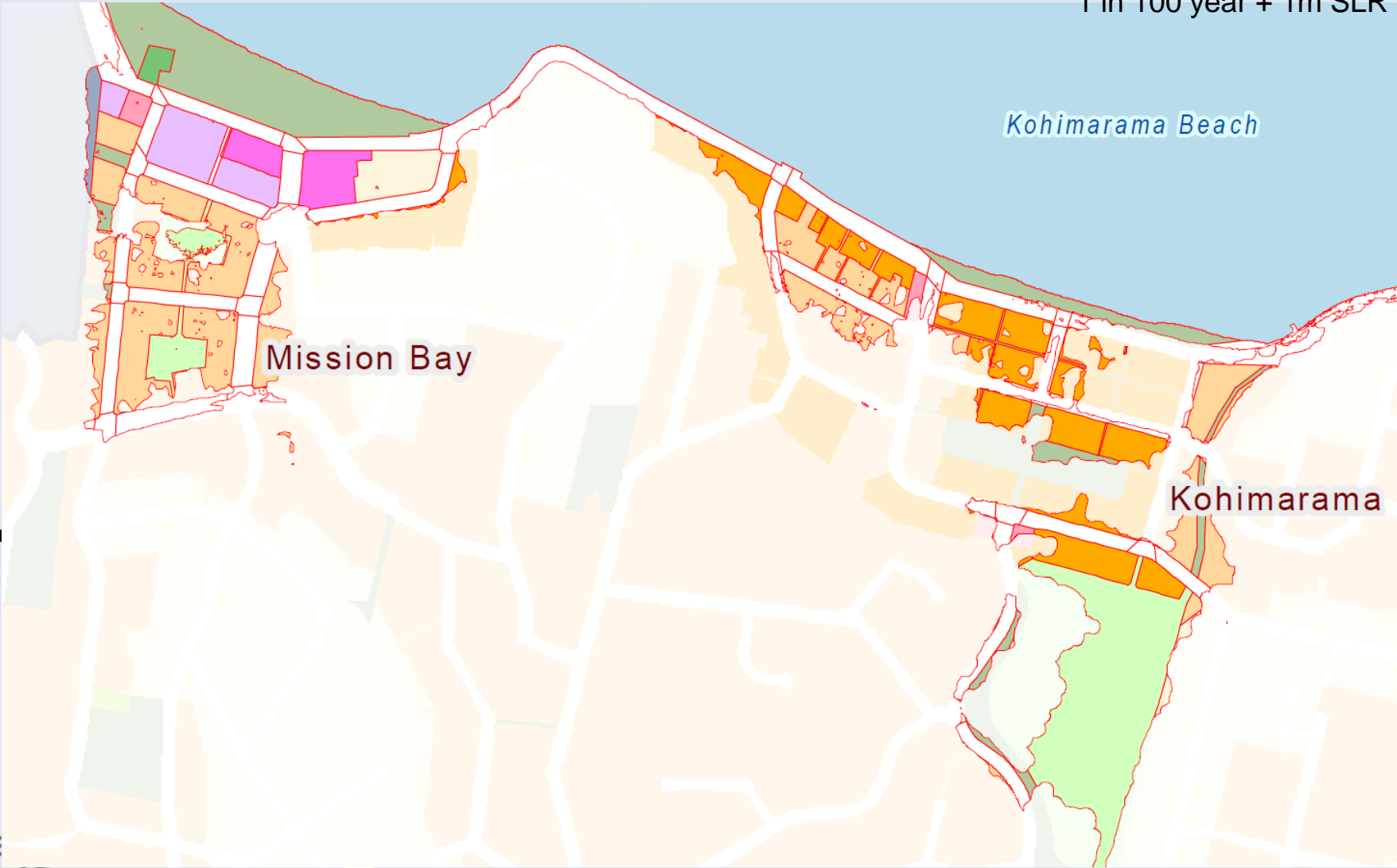
- STI plus 1m SLR

- STI plus 2M SLR

Mapping analysis

	1 in 100 yr event plus 1m			1 in 100 yr event plus 2m		
	Area (m2)	% Zone	%Auckland	Area (m2)	% Zone	% Auckland
Future Urban	306134	2.41%	0.007%	377065.8	2.97%	0.008%
Heavy Industry	326231	1.99%	0.007%	1016504.0	6.19%	0.023%
Local Centre	23231	1.23%	0.001%	71614.7	3.81%	0.002%
THAB	185639	0.86%	0.004%	695463.5	3.21%	0.016%
Metropolitan Centre	3374	0.09%	0.000%	6970.5	0.19%	0.000%
Mixed Rural	659377	0.83%	0.015%	1696116.6	2.12%	0.038%
Mixed Use	229870	2.63%	0.005%	471803.8	5.40%	0.011%
Light Industry	584402	1.40%	0.013%	990272.2	2.38%	0.022%
Mixed Housing	616137	0.39%	0.014%	1547039.3	0.99%	0.035%
Single House	2601916	2.02%	0.059%	4386894.7	3.41%	0.099%
Rural and Coastal Settlement	622313	3.61%	0.014%	906424.9	5.26%	0.020%
Town Centre	60211	1.45%	0.001%	214311.3	5.18%	0.005%
Large Lot	148139	0.43%	0.003%	230176.7	0.67%	0.005%
City Centre	2736980	53.93%	0.062%	3714815.2	73.20%	0.084%
Neighbourhood Centre	64458	5.15%	0.001%	86845.7	6.94%	0.002%
Rural Coastal	94107382	12.68%	2.118%	103333044.6	13.92%	2.326%
General Business	7000	0.34%	0.000%	13782.2	0.66%	0.000%

1 in 100 year + 1m SLR



Mission Bay

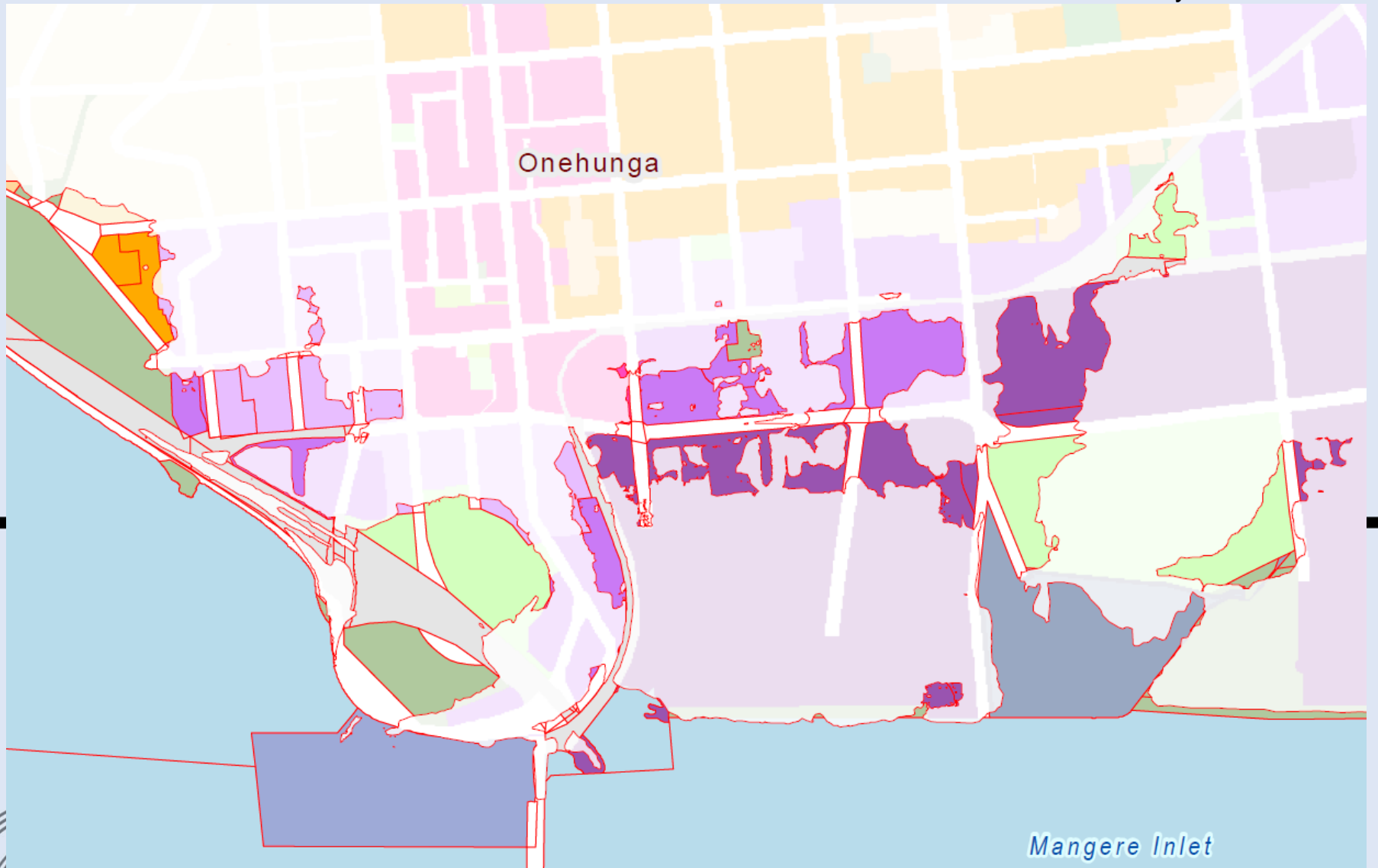
Kohimarama Beach

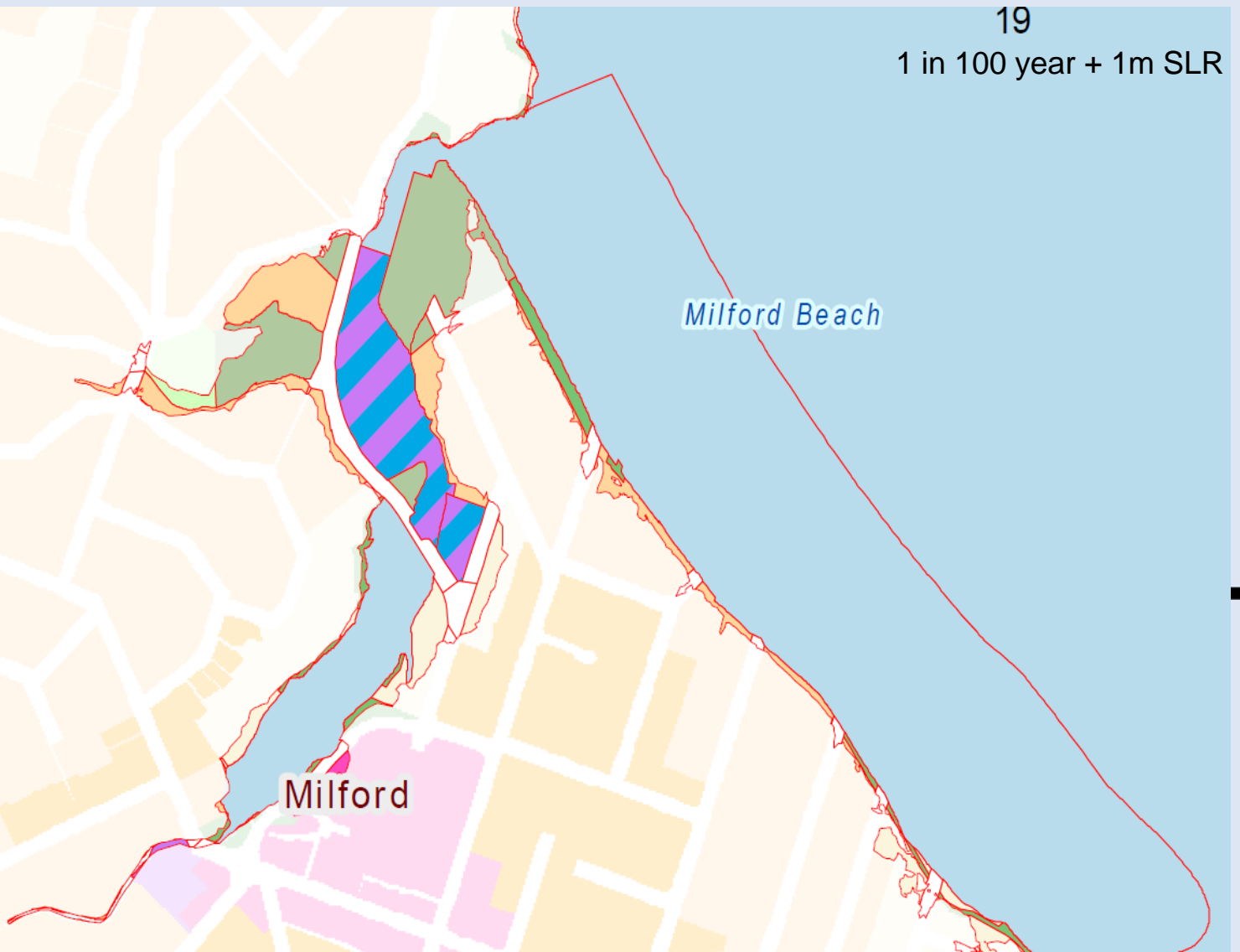
Kohimarama



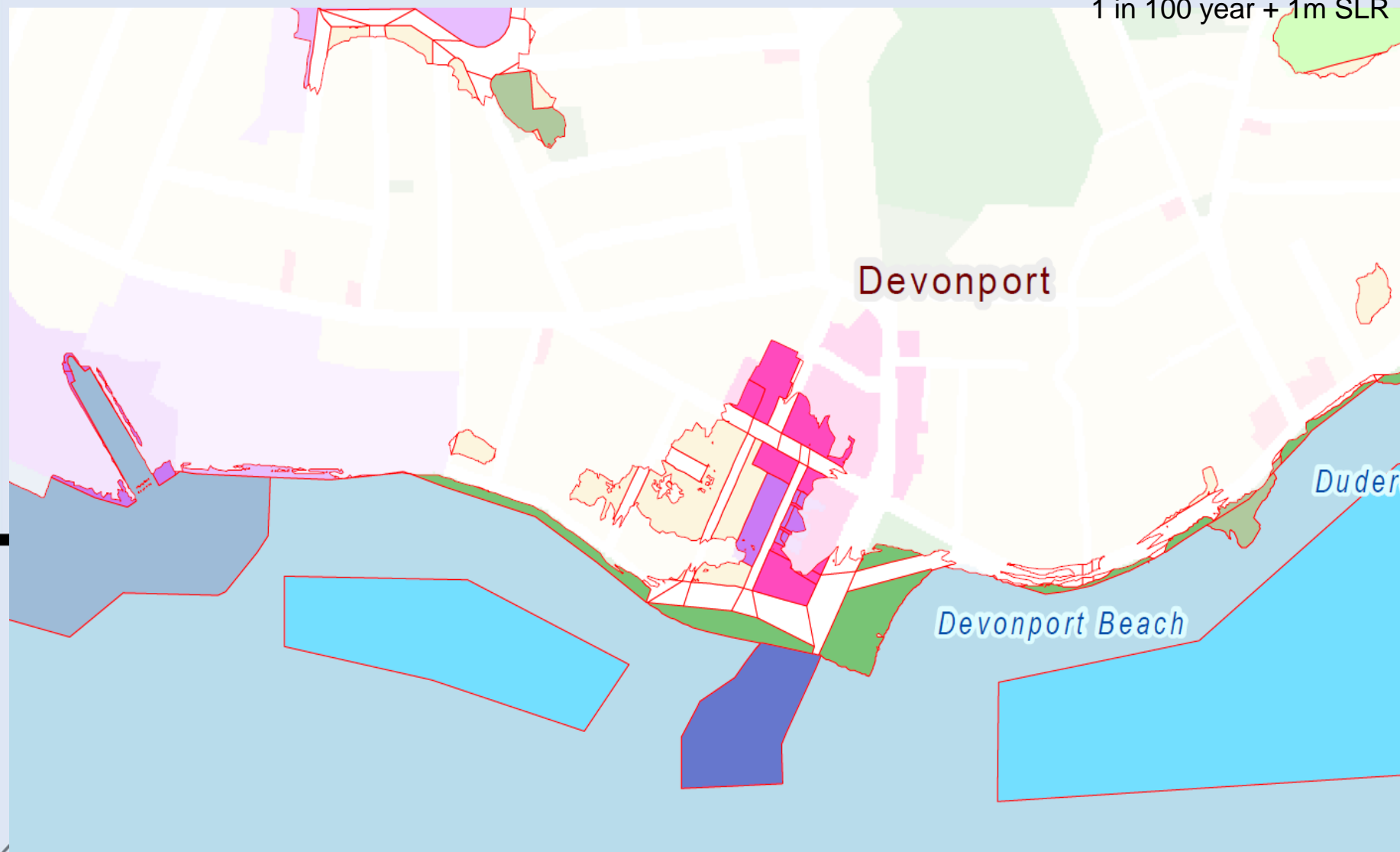
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1 in 100 year + 1m SLR

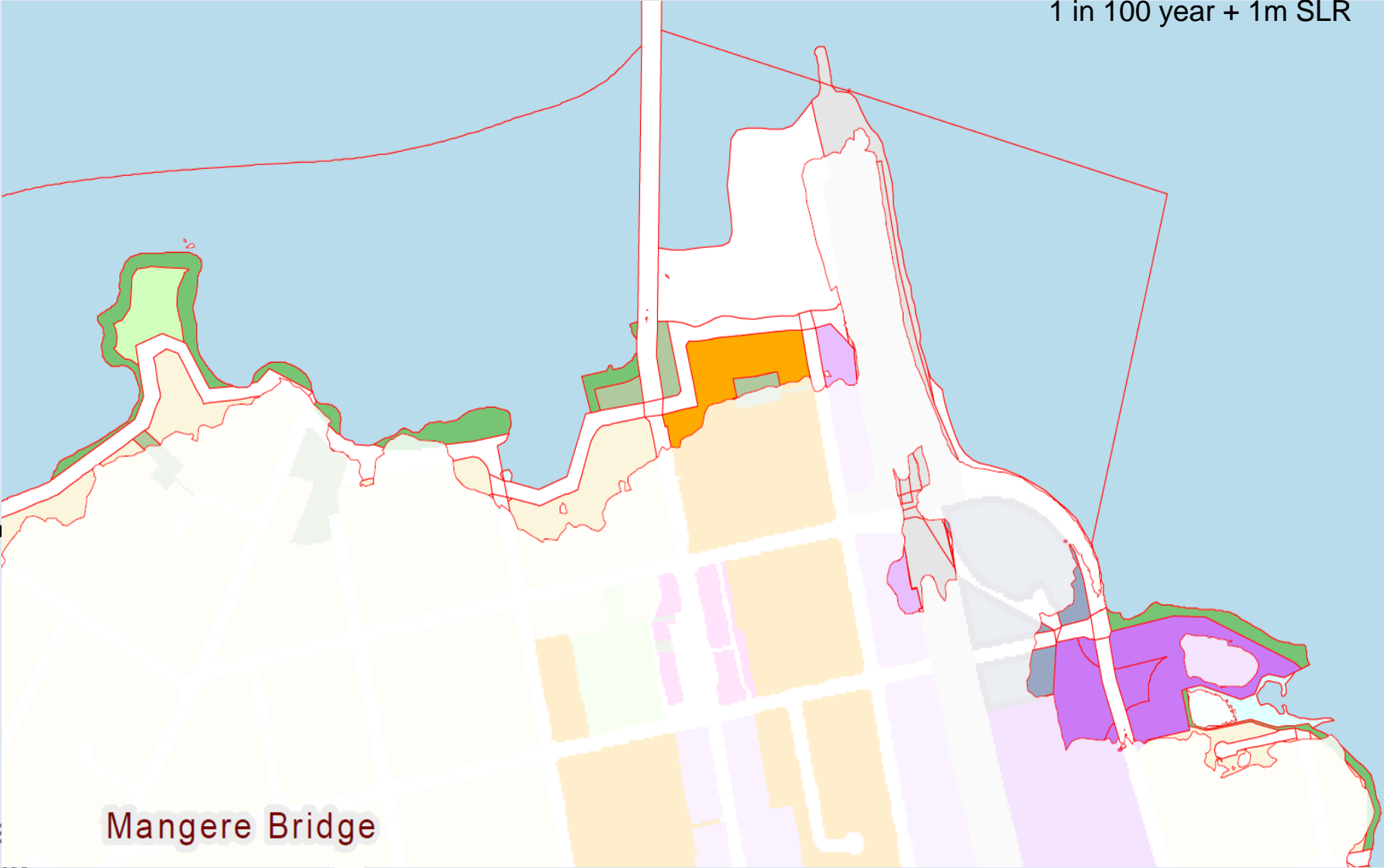




1 in 100 year + 1m SLR



1 in 100 year + 1m SLR

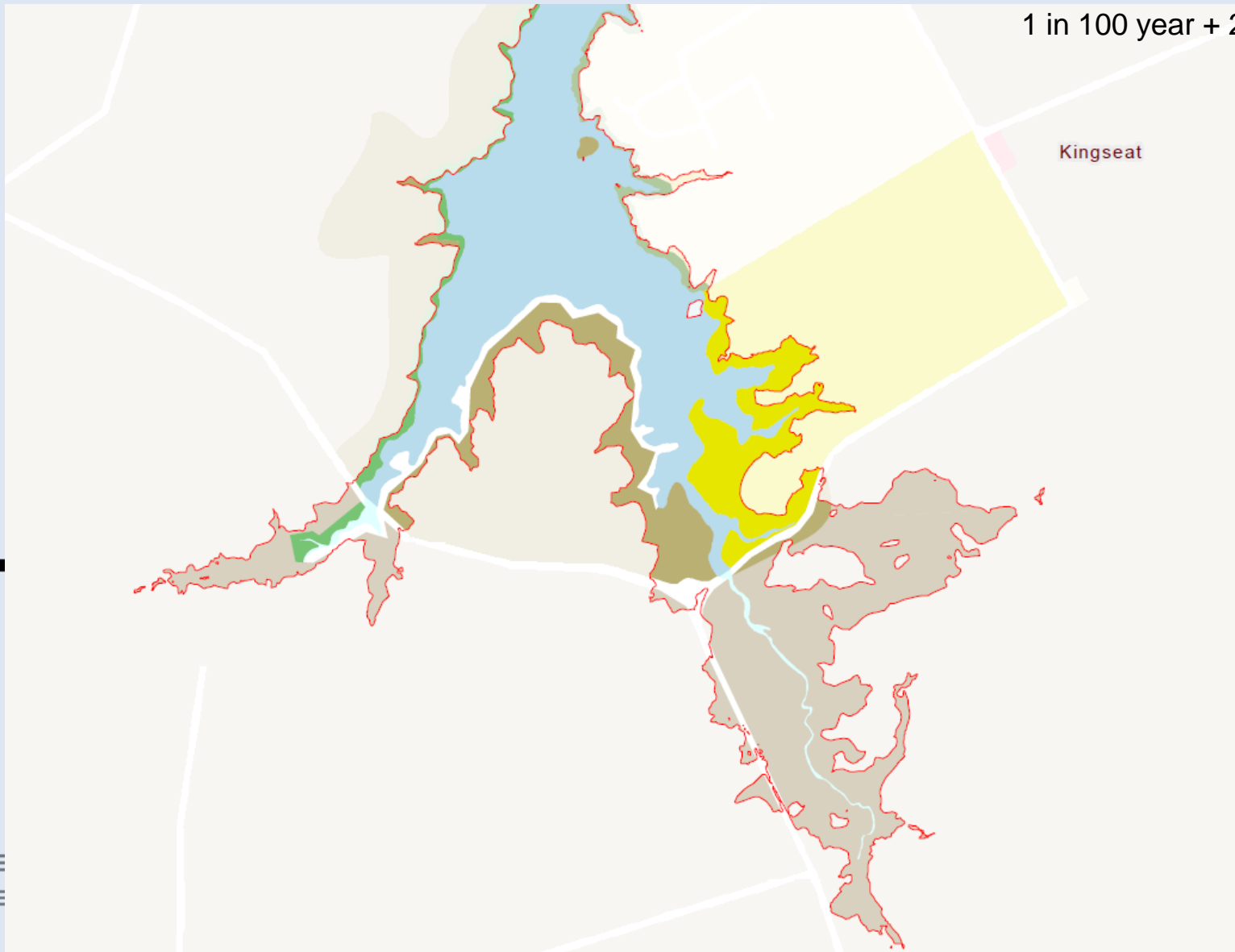


Mangere Bridge



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1 in 100 year + 2m SLR



Kingseat

Suggested approach

Not increase the risk from coastal inundation events and SLR

Existing urban areas

- Minimum finished floor levels (FFL) 500mm above depth of flow for new dwellings and habitable rooms (additions) in 1 in 100 year storm event + 1m SLR areas as a permitted activity standard
- If height restrictions are infringed due to raising FFL, activity status will be RD

Pros	Cons
Minimises the risk to people, property and infrastructure from coastal inundation (Objective 2.6.6.1)	Increased building costs for affected landowners
Minimises Auckland Council liability	
If coastal inundation maps are included in the UP, information is not required on LIMs	
Development potential from legacy council plans is sustained	
NZCPS requirements met	

Suggested approach

Not increase the risk from coastal inundation events and SLR

Greenfield areas

- Avoid development in areas identified as being subject to coastal inundation in a 1 in 100 year event + 2m SLR

Pros	Cons
Minimises the risk to people, property and infrastructure from coastal inundation (Objective 2.6.6.1)	Minor loss of greenfield development capacity – e.g. 2.97% of FUZ
Minimises Auckland Council liability	Increased building costs for affected landowners
If coastal inundation maps are included in the UP, information is not required to be put on LIMs	Possible reduction in speculative land value
NZCPS requirements met	