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OPPORTUNITIES AND CONSTRAINTS

7 Key Opportunities and Constraints

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7.1 Natural Hazards

The data referred to in this section including the diagrams at Figures 7.1.1 to 7.1.6 have been informed by published information prepared by GWRC's Flood Protection Group, Parliamentary Commissioner for the Environment, GNS Science, and HCC. These sources indicate a range of natural hazards and associated risks exist across the Petone study area and include:

- Flood
- Tsunami
- Seismic event
- Liquefaction
- Climate Change - Sea level rise, storm event

At the time of writing this report, updates to various hazard data were being prepared including a Regional Hazard Strategy (GWRC) addressing a range of issues including ground water and flood (previous 2001 flood modelling data is being revised). HCC have recently commissioned GNS Science to provide a comprehensive review of hazard information in order to inform HCC District Plan policy.

Flood

Three water courses affect the flood hazard for the Petone Spatial plan area and as identified in Figures 7.1.1 and 7.1.2. These include:

- Hutt River
- Koro Koro Stream
- Waiwhetu Stream

The 2001 Hutt River Flood Management Plan is a 40yr programme to reduce the effects of flooding from the Hutt River. Discussions with GWRC highlighted the following:

- Current stop banks above Ava are designed to a 2800 cumec design standard / 1 in 440yr return event.
- The Estuary Bridge-to-Ava (east bank) area is designed for 2100 cumecs / 1 in 100 yr return event and the West bank for a 1 in 100 yr return event.
- Port Road is only designed for 1,600 cumecs, less than a 1 in 100yr rtn event.
- The lower estuary has a 1 in 100 yr return standard.
- Waiwhetu Stream - previous work undertaken to widen/deepen the stream to improve capacity. However, protection is only up to a 40yr event.
- Koro Koro Stream – main issue includes the water path under built up areas and roading.

Tsunami

The report by GNS Science identifies Tsunami hazards based on 2013 studies. Figure 7.1.3 describes the tsunami evacuation zones produced by Leonard et. al. 2008 for Wellington Region Emergency Management Office 2013 and reproduced by GNS Science. The red zones represent the highest risk and is “the first place people should evacuate from in any sort of tsunami warning”. The orange zone is an area to evacuate in “most if not all warnings”. Near source tsunamis can be evacuated to vertical structures but as yet there are “no certified tsunami evacuation buildings located in Petone West”.

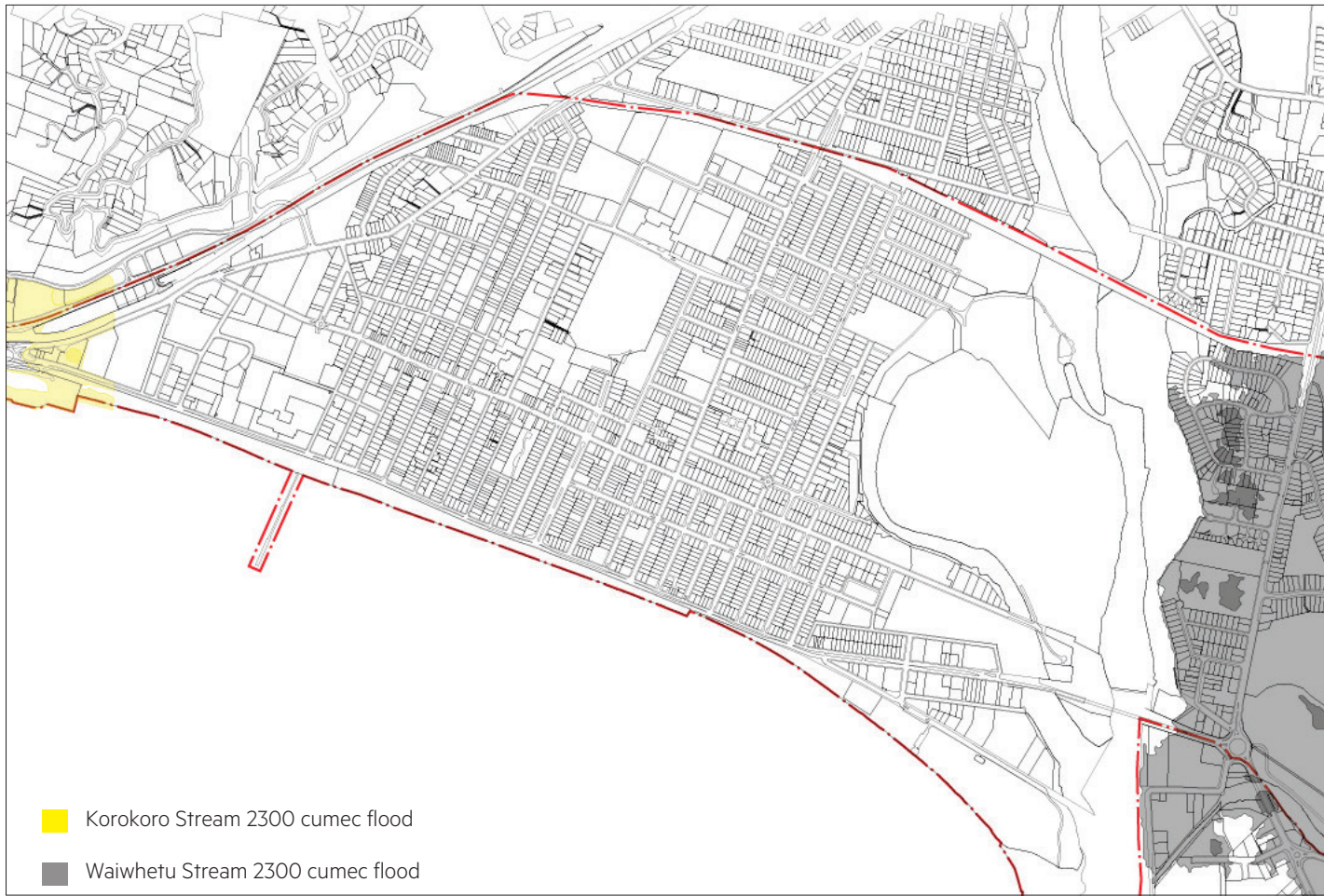


Figure 7.1.1: Waiwhetu and Korokoro Stream flood hazard

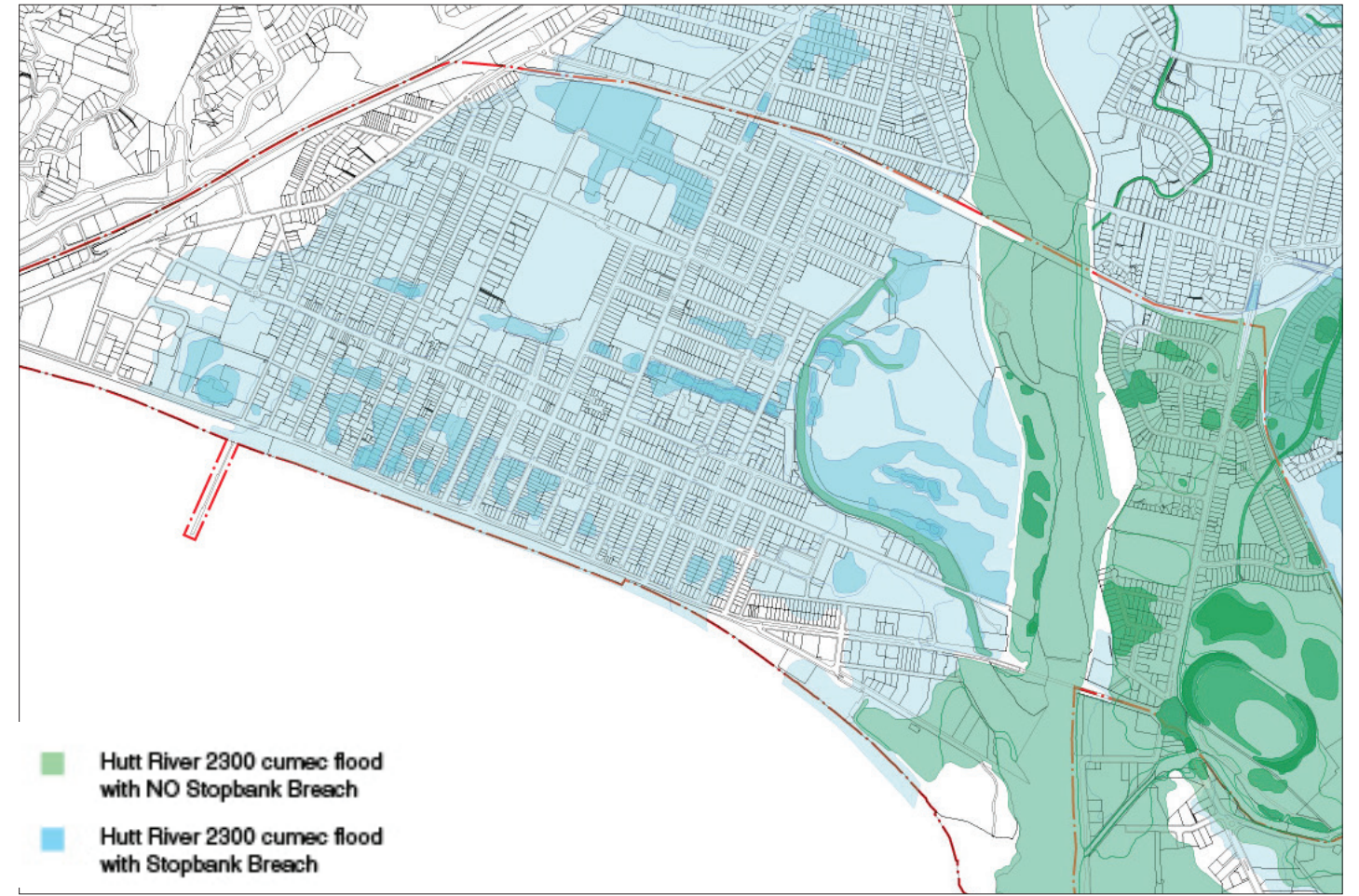


Figure 7.1.2: Hutt River flood hazard

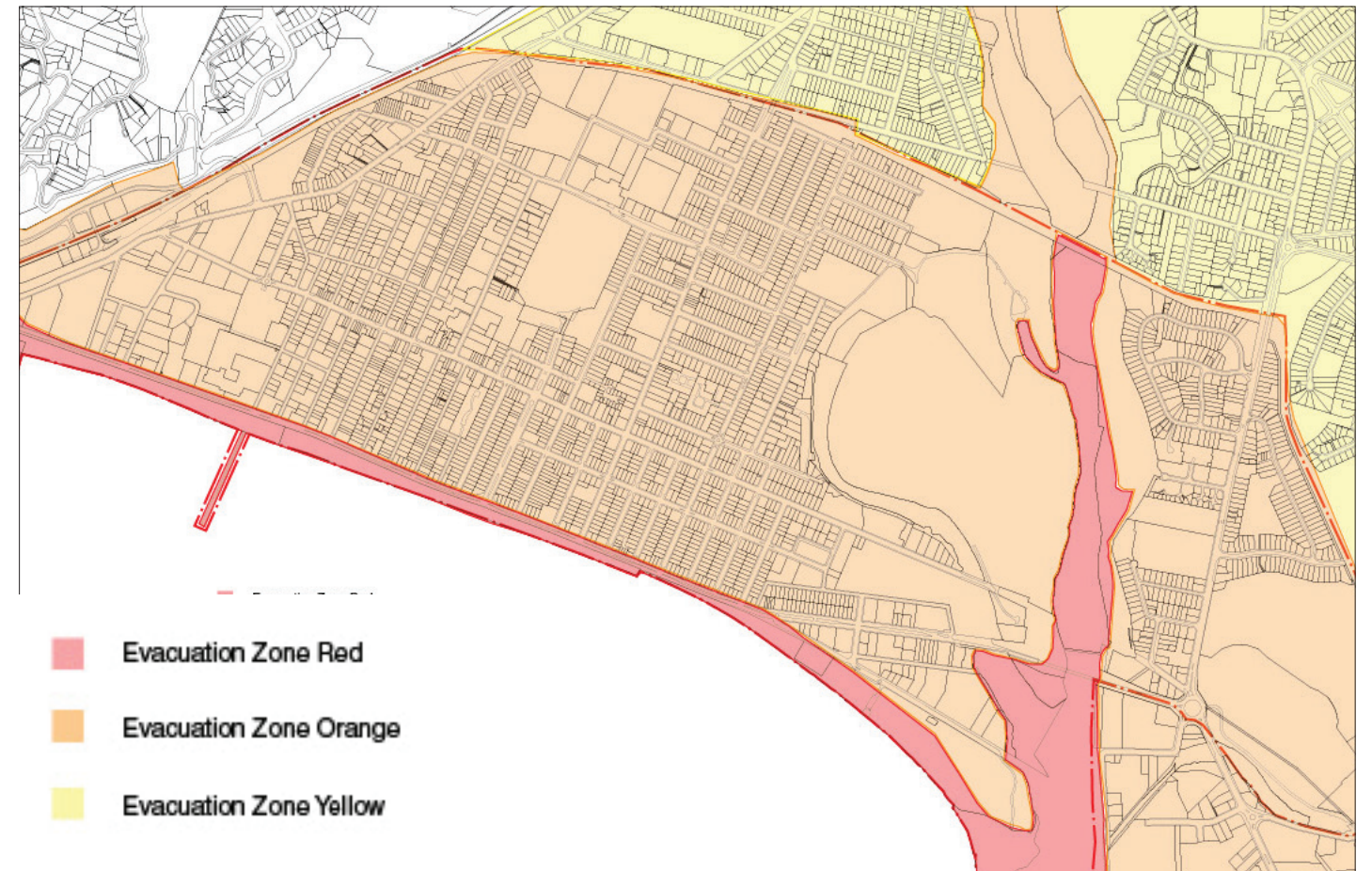


Figure 7.1.3: Tsunami Evacuation Zones

Seismic Event

As identified in the GNS report the Wellington region includes the fault line between the Pacific and Australian plates and in particular the subduction interface between those plates (see Figure 7.1.4). It is stated that the likelihood of a Wellington Fault earthquake (7.5 magnitude) occurring within the next 100yrs is approximately 10-15% (Rhoades, 2011). In a Wellington Fault event the Hutt City could experience subsidence of up to 1.2m at Petone West. The District Plan designates a Wellington Faultline Special Study Area running through the western part of the study area that describes a 150m wide band (75m either side of the inferred position of the faultline). In this area all new buildings require a Resource Consent as a Discretionary Activity (Restricted) and must be more than 20m from the faultline. There are no Rules limiting activities within this zone.

Liquefaction

Ground classifications for the Hutt Valley influence ground shaking which has implications for liquefaction potential. GNS identify the liquefaction potential based on a study by Beetham et. al., 2012 as shown in Figure 7.1.5. Technical Category (TC) areas have been assigned to describe how land is expected to perform in future earthquakes along with corresponding foundation systems that would be required. No areas of 'very high' exist across the Petone study area but a 'high' classification is identified.

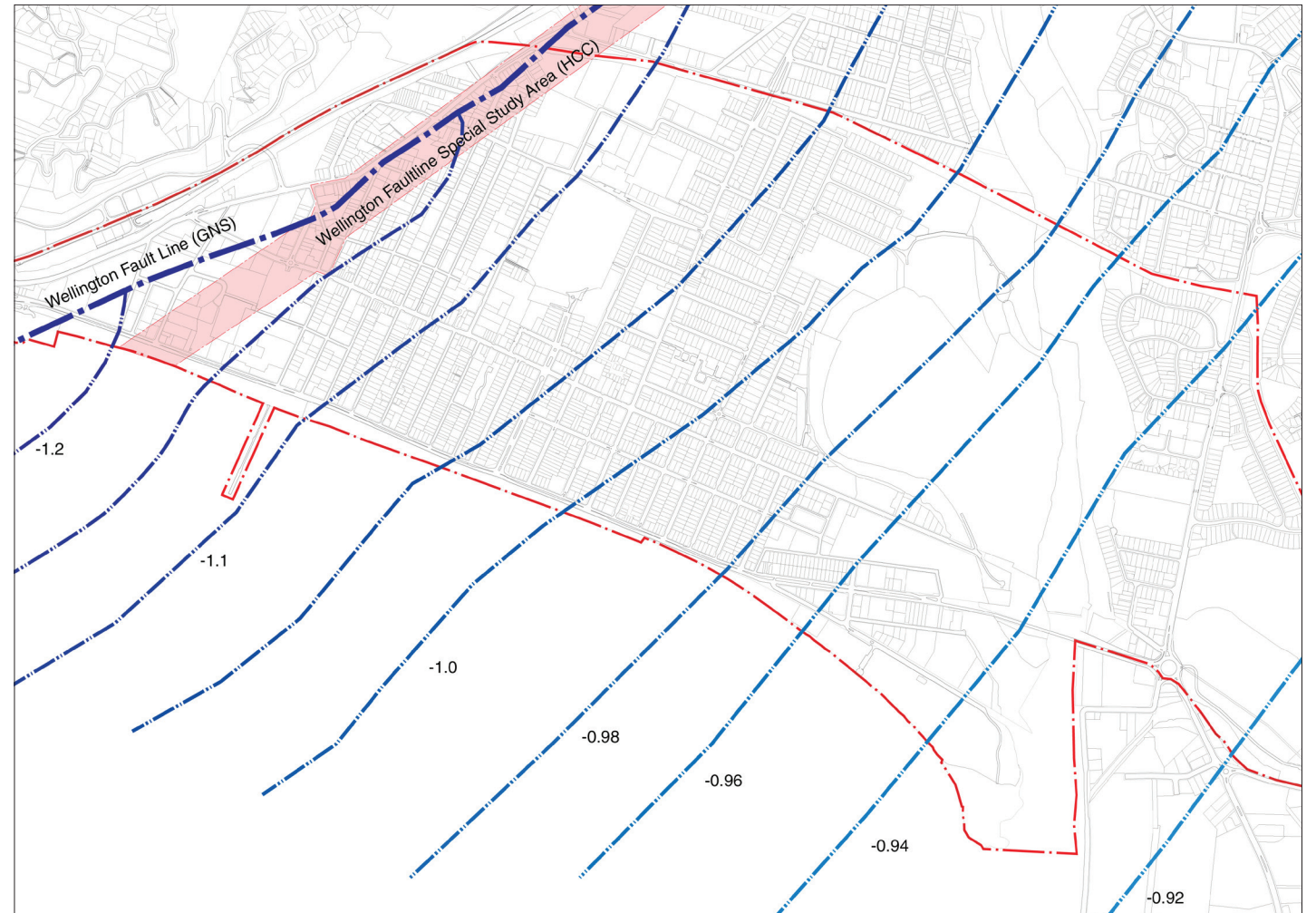


Figure 7.1.4: Seismic Subduction Zones

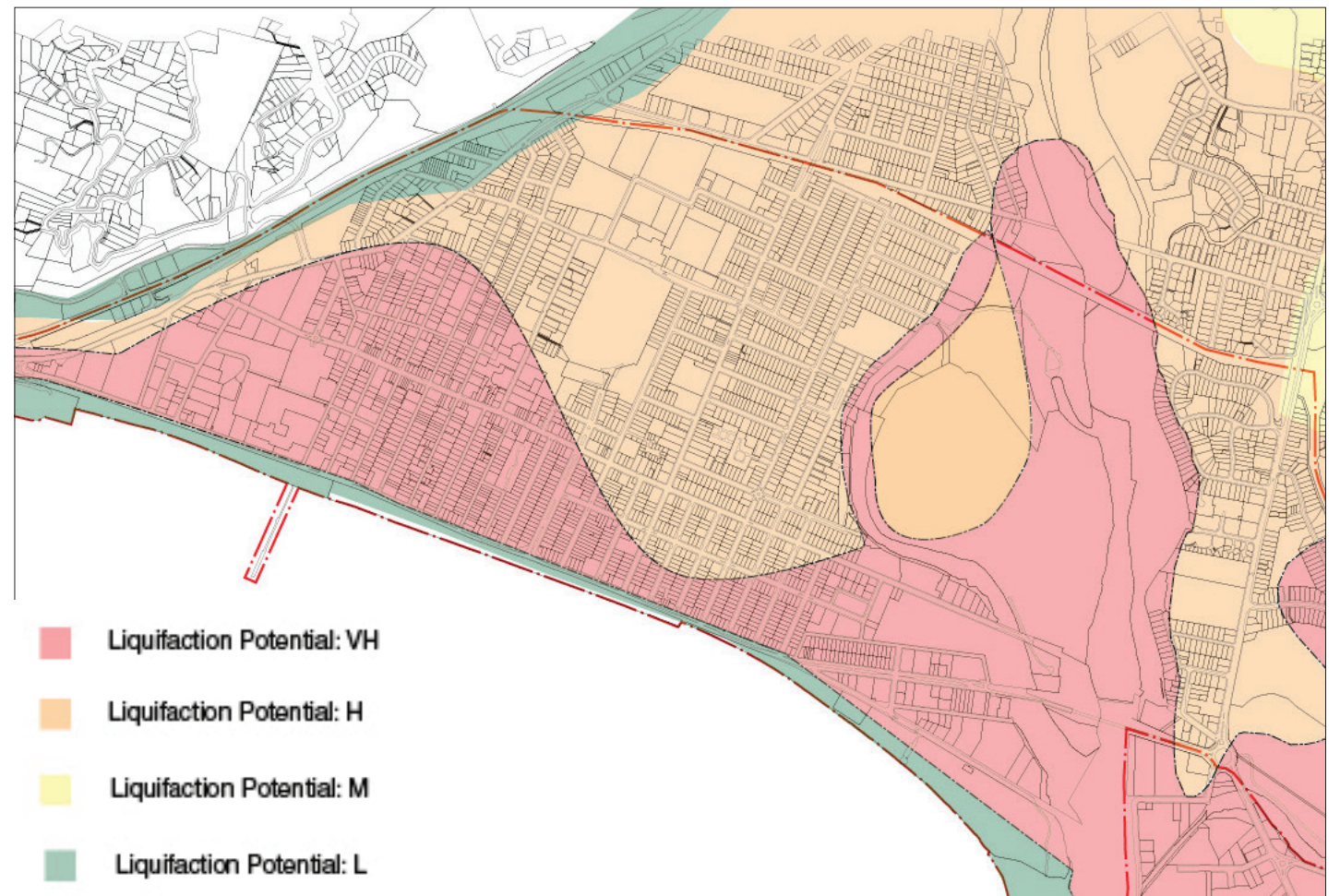


Figure 7.1.5: Liquefaction Potential

Climate Change

Sea level rise is “one of the main outcomes of climate change on Petone” (GNS Science). Sea level rise in Wellington is estimated at 2.03mm/yr., higher than other parts of the country (1.7mm/yr.). GNS state that all low lying areas are vulnerable to coastal / storm-tide flooding with implications for salt water intrusion into the Petone aquafer. Sea level rise amplifies this risk especially at locations around the mouth of the Hutt River, Petone West and other low-lying parts of Petone

Hazard Mapping Overlay

The diagram at Figure 7.1.6 overlays the various identified hazards and their rating scales to produce a composite picture for Petone. This notionally establishes three zones of combined risk (High, Medium and Low). Interestingly the area around North Park, Petone Rec, Cuba Street and east to William Street including that part of Jackson Street falls within a ‘Low’ risk zone and could be more appropriate for higher density, mixed use activities including residential intensification. It should be noted that this diagram is purely notional and also only reflects the ‘no stop bank breach’ flood condition.

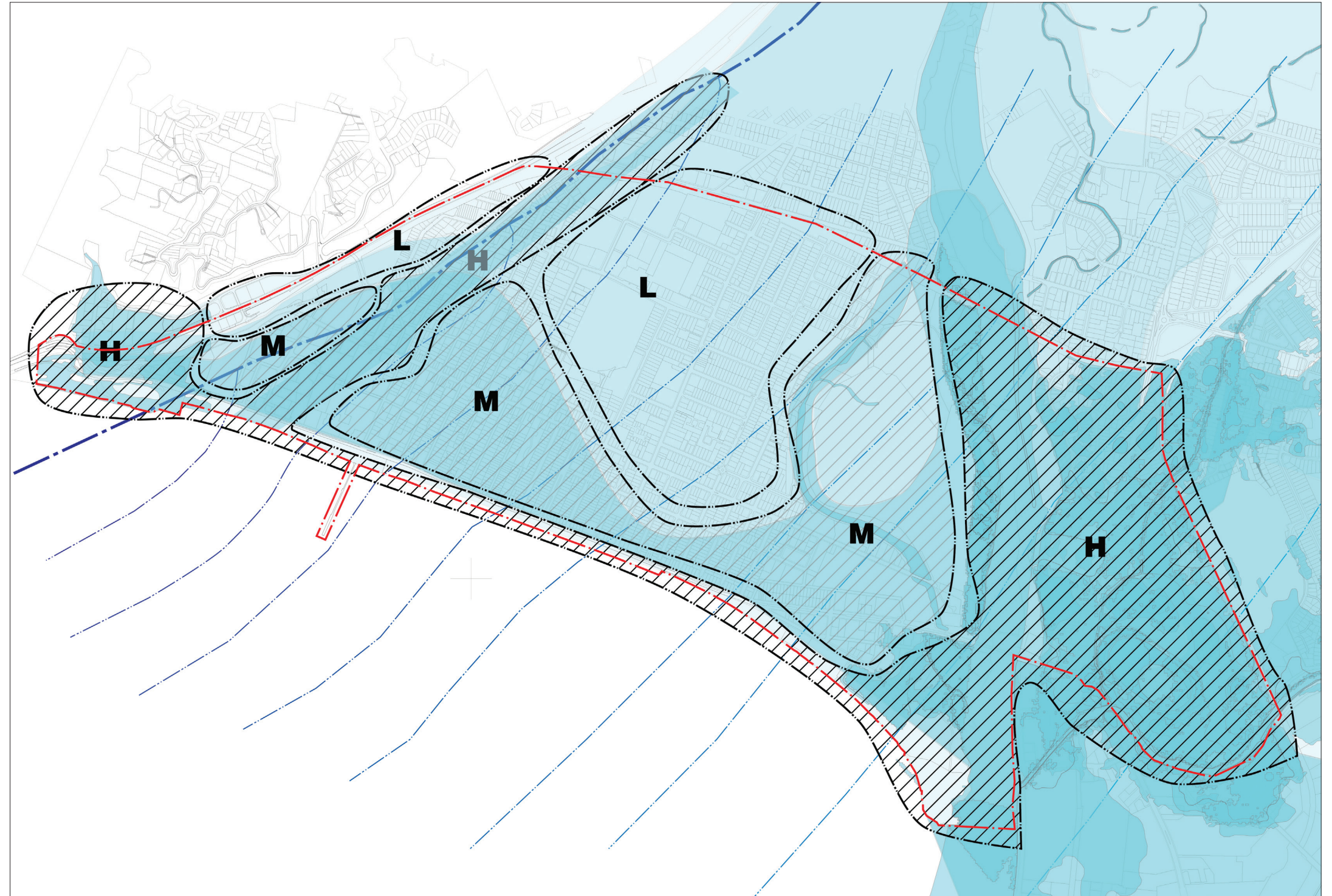


Figure 7.1.6: Hazard Mapping Overlay

7.2 Character sensitivity and Change

The previous character area evaluations (Section 3.2), townscape analysis (Section 2.2) and historical mapping (Section 2.1) have provided a comprehensive picture of the character and identity of Petone and have drawn out those aspects that give the area its own special identity. Drawing on this analytical material, a Townscape Sensitivity drawing has been produced at Figure 7.2.1. This seeks to identify, in general terms, the disposition of the areas of different townscape quality around Petone. Rather than do this in terms of High, Medium and Lower quality, it does so in terms of the value of each area in relation to change. Three categories have been used: Critical, Constant and Tradable, the definitions of which are as follows:

Critical: Those urban areas that are irreplaceable, particularly in terms of their quality and character, and which should therefore remain unchanged or virtually unchanged. (Typically those areas that contain features or qualities which hold historic significance and local distinctiveness, and which play an important role in defining distinctive local identity and in creating a high quality urban environment).

Constant: Those areas that contain elements or features that are important for their individual value and/or for their contribution to the wider whole, but where some changes may be acceptable if the overall character is maintained. (Typically those areas that contain features or qualities that are of lesser historic significance, but that nonetheless play a valuable role in defining local identity and in creating a good quality urban environment).

Tradable: Those areas that, in their current form, could potentially be sacrificed in return for other benefits. (Typically those areas of more commonplace character and with limited local identity and historic association).

In broad terms, it has been found that areas of earlier development tend to be the areas of higher townscape quality (Critical or Constant). This is because they tend to contain more interesting and consistent buildings and spatial patterns, a strong sense of identity, quality architectural detailing and cohesiveness. They are often of individual design and have a greater sense of history. It has also been found that townscape quality has, in general, diminished in more recent development and that some of the least valuable and distinctive urban environments were created in the latter part of the 20th century with some poor very recent examples.

The study has found that Critical areas in Petone are generally limited to Jackson Street, Riddlers Crescent, Patrick Street, Bay Street and North, Graham and Bracken Streets as well as Petone Rec.

Reference to the Townscape Sensitivity drawing shows that Constant areas are widespread and generally cover the majority of the older traditional housing stock between The Esplanade and Jackson Street and the area east of Cuba Street north to Ava Station.

The extent of Tradable areas is similarly well defined, covering a broad swathe of intermediate land including Area 2, The Esplanade, North Park and environs at Bouverie Street, the area around Waione Street and parts of Moera. This generally equates with extensive areas of mid to late 20th century development.

The drawing at Figure 7.2.2 overlays the District Plan designated MDRA areas which shows a clear conflict between the areas proposed for intensification and the areas of Critical or Constant Townscape Sensitivity. This matter is addressed further at Section 7.5 and Section 8.

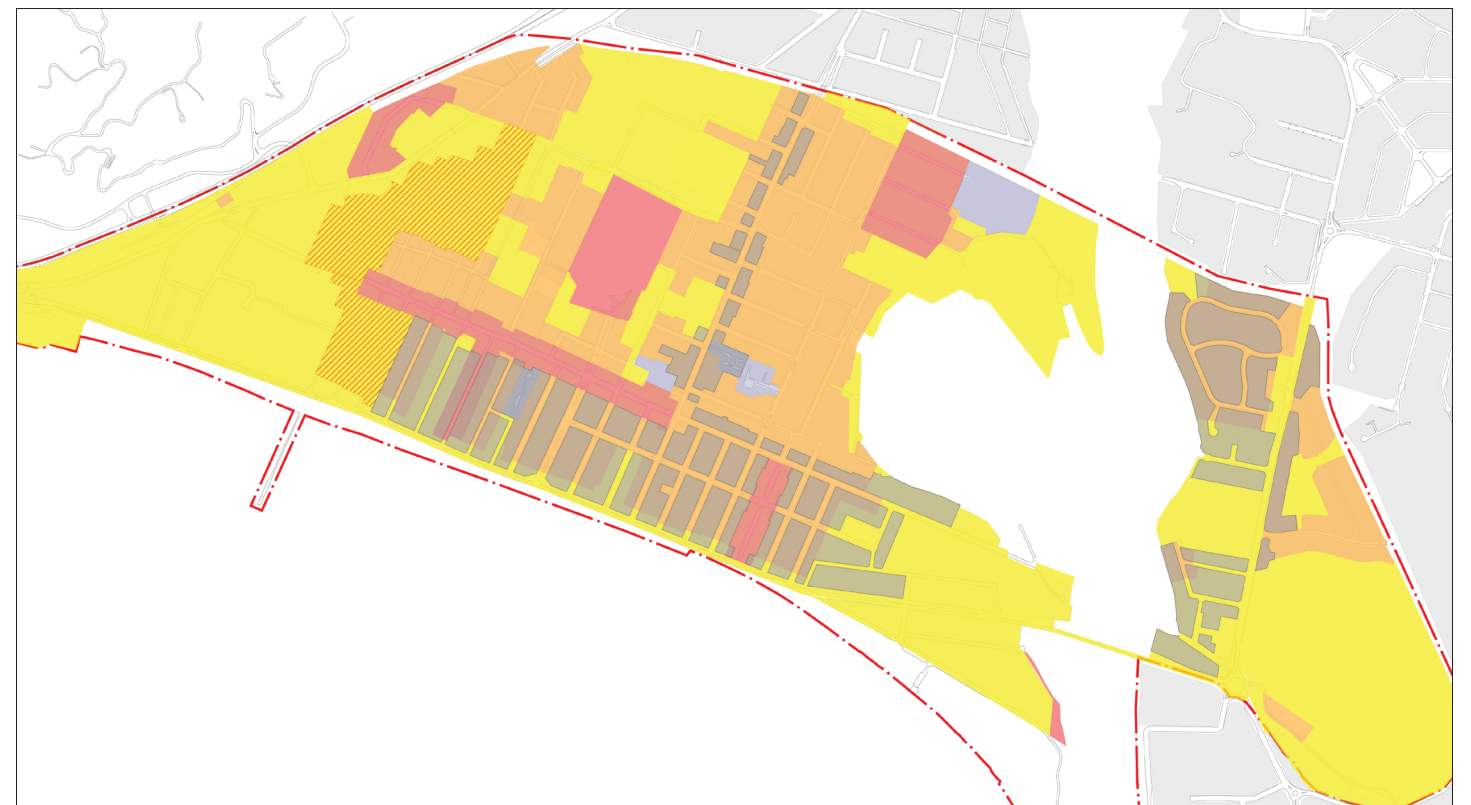


Figure 7.2.2: Townscape sensitivity with MDRA overlay

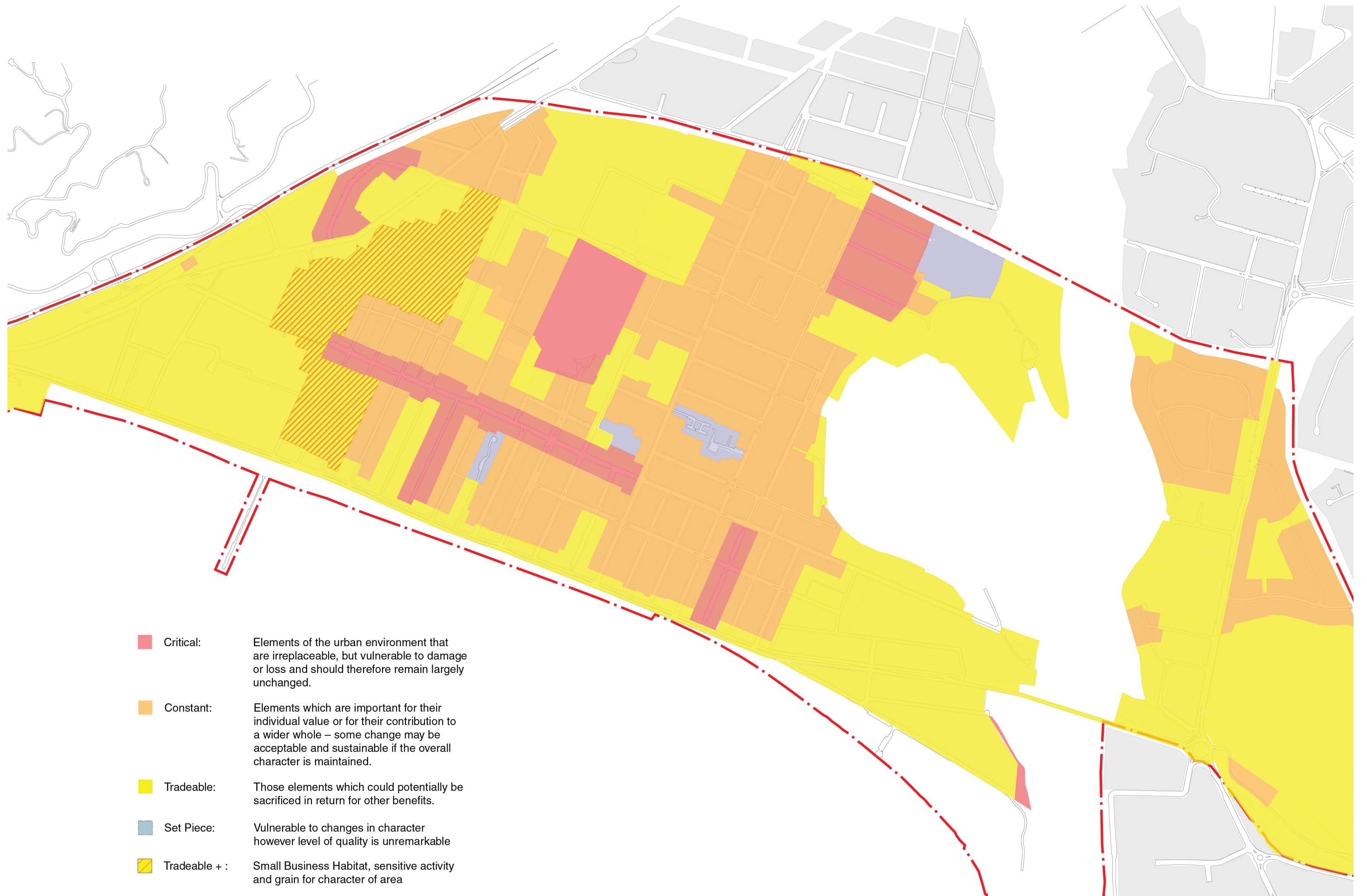


Figure 7.2.1: Townscape Sensitivity analysis

7.3 Strategic Opportunities

The diagram at Figure 7.31 presents the Strategic Opportunities recommended in Part 1 of this study. These have emerged through consultation with local stakeholders and the various analyses described throughout this report.

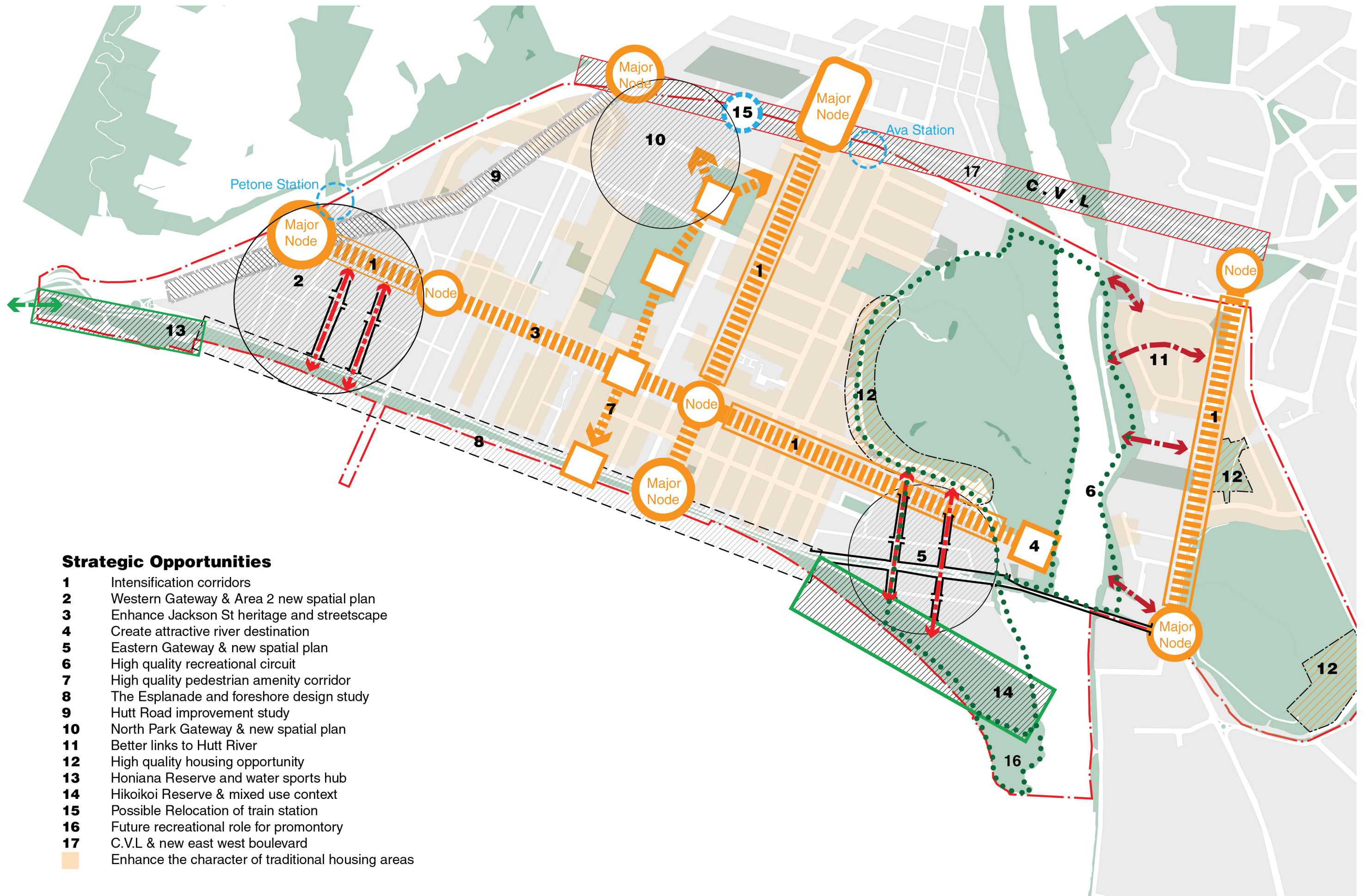
These opportunities are supported by proposals for the preservation and enhancement of character areas as identified in the Townscape Sensitivity drawing at Section 7.2 (above). Character areas are also addressed in the Residential Intensification proposals and Emerging Principles at Sections 7.5 and 8.0.

A clear and simple spatial structure is proposed. This includes three high quality, mixed use Gateways that celebrate arrival into Petone and identify commercial hubs. The Gateways are reinforced by a pair of cross-axes formed by Jackson Street and Cuba Street. Intensified and enhanced, the two axes help to articulate the street grid and provide a legible 'backbone' to Petone's central area. An enhanced Randwick Road serves a similar function in Moera.

Another component of spatial structure is the Amenity Corridor. This follows Buick Street and connects The Esplanade with Petone Rec. It continues into North Park with improved physical and visual connections across Udy Street. Compared with Cuba Street, the Amenity Corridor provides a more informal north-south pathway. It has a strong pedestrian orientation and diversifies the offer Petone makes to residents and visitors.

The Strategic Opportunities recognize the importance of high-quality open space and improved recreational access. A circuit of upgraded walking/cycling trails connects the Hutt River corridor with the Hikoikoi Reserve. This circuit is an integral part of the Eastern Gateway.

Throughout Petone the intrinsic value of the older, cohesive housing stock has been identified. This residential fabric is important because it contributes to the unique qualities that underpin Petone's identity. The opportunity exists to protect and enhance these areas of traditional housing and streetscape.



Strategic Opportunities

- 1** Intensification corridors
- 2** Western Gateway & Area 2 new spatial plan
- 3** Enhance Jackson St heritage and streetscape
- 4** Create attractive river destination
- 5** Eastern Gateway & new spatial plan
- 6** High quality recreational circuit
- 7** High quality pedestrian amenity corridor
- 8** The Esplanade and foreshore design study
- 9** Hutt Road improvement study
- 10** North Park Gateway & new spatial plan
- 11** Better links to Hutt River
- 12** High quality housing opportunity
- 13** Honiana Reserve and water sports hub
- 14** Hikoikoi Reserve & mixed use context
- 15** Possible Relocation of train station
- 16** Future recreational role for promontory
- 17** C.V.L & new east west boulevard
- Enhance the character of traditional housing areas

Figure 7.31: Strategic Opportunities