Scoping Report

Reducing flood risk in a changing climate:
A flood risk reduction strategy for Anzac Parade

Scoping Report

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Martín Garcia Cartagena and Bruce C. Glavovic

Massey University

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1. Introduction

This scoping report presents an overview of the project titled '*Reducing flood risk in a changing climate: A flood risk reduction strategy for Anzac Parade, and a regional framework*'. The aim of this project is to contribute to flood risk reduction and community resilience in Anzac Parade, Whanganui. This report will present the following elements: the context of the project, project aim and objectives, key concepts that frame this project, overview of the institutional setting, an overview of social vulnerability characteristics of Anzac Parade, progress on stakeholder mapping, a brief outline of initial reflections and conclusions, and envisaged scope of work.

2. Context

Although the Whanganui District is exposed to many natural hazards, floods have caused significant losses in recent times. The February 2004, and June 2015 floods were extraordinary rainfall events that broke through some of the region's protective stop-banks causing major public and private infrastructural damage, displaced residents, and a plethora of psycho-social impacts (Bowen, 2015; Glavovic, 2014; Horizons, 2004; Smith et al., 2011). Fuller et al. (2019) developed a 2000-year record of paleo-floods in the Whanganui River catchment and found that extreme flood events that exceed recent flood levels have occurred in the past. Global oceanic and atmospheric phenomena such as the El Niño Southern Oscillation (ENSO) and global warming are significant drivers of extreme rainfall events, and flood risk is increasing in the face of climate change (Blöschl et al., 2017; Hirabayashi et al., 2013; Knox, 2000; Kundzewicz et al., 2014; Ministry for the Environment, 2008). Climate change projections developed by the National Institute of Water and Atmospheric Research (NIWA) for the Manawatu-Whanganui region indicate a significant increase in the intensity of rainfall events; an overall increase in rainfall during the winter season, an increase in sediment loads, and an increase in the frequency of large extreme flood events (NIWA, 2019). The Whanganui township is exposed to extreme flood events due to its location at the river mouth and on banks of the Whanganui River, with some parts of the town especially at-risk given low levels of protection (Figure 1).

Figure 1. Horizons 0.5 % Annual Exceedance Probability (AEP)[1] (or 1 in 200 year flood event) flood modelling for the township of Whanganui (retrieved from: https://horizonsrc.maps.arcgis.com/apps/webappviewer/index.html?id=8460e5b208e446688bb7fe4916d0559e).

The inevitability of extreme flood events that exceed the design standards of existing protective works underscores the urgent need for innovative risk reduction measures. Flood risk reduction actions are already incorporated into Regional Planning instruments, such as the Horizons Long-term Plan 2018-2028, and special attention has been given to the high-risk locality of Anzac Parade. Anzac Parade is located on the Whanganui East-Riverside, on the eastern banks of the Whanganui River. Figure 2 shows the exposure of this neighbourhood to flood risk, with a number of residences built in the floodplain. Anzac Parade was significantly flooded in the June 2015 flood event, causing resident displacement and damage to infrastructure and about 100 homes (Figure 3).

[1] AEP refers to the yearly probability of a flood to occur expressed in percentage. A 0.5% AEP means that there is a 0.5% chance that this type of flood will occur in any given year. Or, in other words, this is a 1 in 200 year flood event.

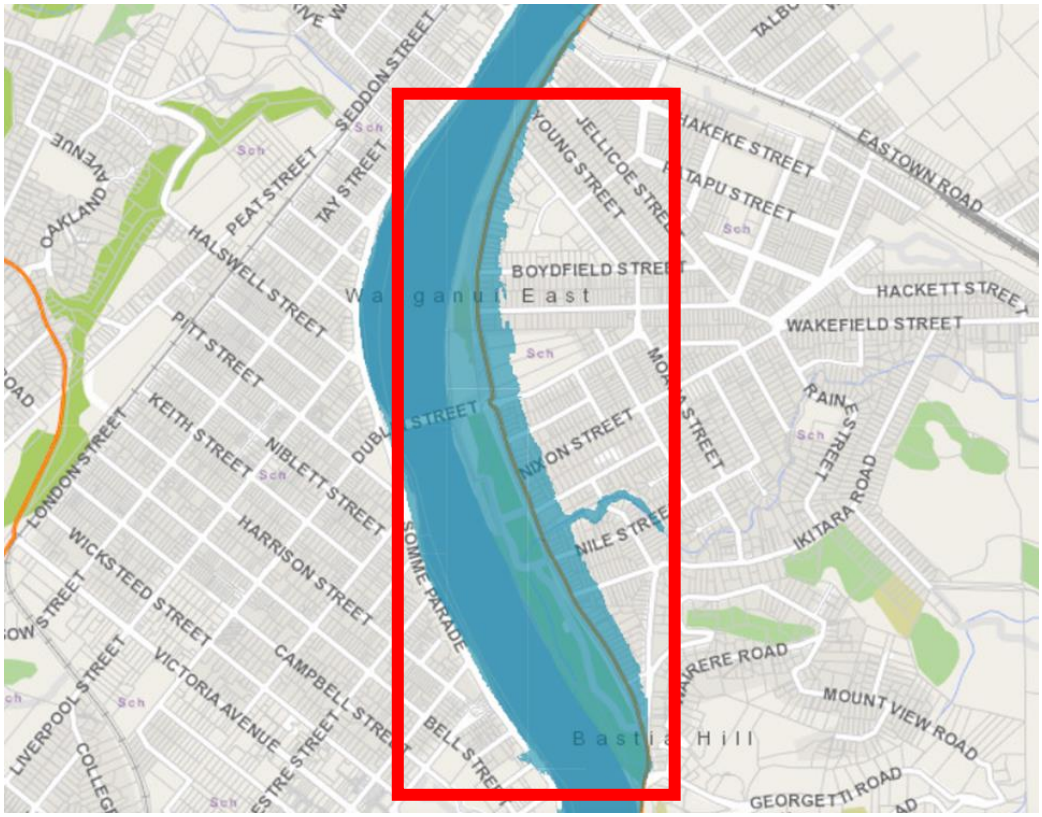


Figure 2. Anzac Parade's (in red) exposure to flood risk on Whanganui East-Riverside based on a 0.5% AEP flood event modelling (Retrieved from: https://horizonsrc.maps.arcgis.com/apps/webappviewer/index.html?id=8460e5b208e446688bb7fe4916d0559e).

Figure 3. Flooding of Anzac Parade in 2015 (Retrieved from: https://www.nzherald.co.nz/wanganui-chronicle/news/article.cfm?c_id=1503426&objectid=11478282).

Flood risk in Anzac Parade was identified as a significant issue for the district. In 2018, Horizons Regional Council developed a proposal to manage this risk by elevating existing housing stock to

accommodate greater magnitude floods and/or implementing a voluntary relocation scheme that would enable existing property owners to have their properties bought by the Regional Council and thus facilitate their relocation (Horizons Regional Council, 2018). However, some residents in the area voiced their concern about this proposal. Several news articles indicated that some residents considered these actions to be inappropriate and unacceptable, and questioned the Regional Council community consultation process on the matter (Martin, 2018). Some Anzac Parade property owners, like Baron (2017), questioned the Regional Council's assessment that raising and strengthening the stop banks was neither cost-effective nor economically viable. Baron felt that improving the protective flood works would be a better solution for people living in the area. The high exposure and escalating flood risk along Anzac Parade, and divergent views about how to address this problem underscores the need for an independent assessment of viable and cost-effective risk reduction and resilience building options for Anzac Parade, based on an effective stakeholder involvement and community engagement process.

3. Project aim, objectives and activities and timeline

The aim of the project is to contribute to the reduction of flood risk and increase community resilience in Anzac Parade. This aim will be achieved through four main objectives:

Objective 1: Conduct stakeholder mapping to identify who needs to be involved in formulating and implementing the flood risk reduction strategy for Anzac Parade.

Objective 2: Undertake a desktop institutional analysis to identify the strengths and weaknesses of regulatory and non-regulatory provisions for flood risk reduction in Whanganui.

Objective 3: Establish an Anzac Parade Community Forum (including residents and tangata whenua) to involve key stakeholders in the development of the strategy. Establish a Technical Advisory Group with experts from key government agencies, tangata whenua and researchers, to complement the current understanding of flood risk, identify options and associated implications including understanding social vulnerability elements that contribute to flood risk.

Objective 4: Co-design a strategy with property-specific interventions to reduce flood risk and increase community resilience in Anzac Parade. The strategy will be developed with the agreement of the Anzac Parade Community Forum and endorsement of the Technical Advisory Group before being presented to the Whanganui District Council and Horizons Regional Council.

The project will recommend priority actions to reduce flood risk on Anzac Parade, based on a collaborative approach and property-specific recommendations to implement tailored actions according to risk levels, with a range of interventions evaluated from protection to accommodating

flood risk and where necessary enabling managed retreat over time. Key issues and matters requiring further investigation will be identified to enable strategy implementation, e.g., how to finance interventions; the role of key institutions and governance actors (incl. government, local government, residents, insurance, etc.); legal responsibilities and liabilities; institutional risk; vulnerability assessment; psycho-social and cultural issues underpinning community resilience; relocation option, opportunities and challenges, etc.

The key project activities and timeline of the project are outlined below (Table 1).

Table 1. Project activities and timeline.

Timeline	**Project activities**
Apr –Jun 2020:	(i) *Stakeholder mapping*; (ii) Set up *Anzac Parade Community Forum* for flood risk reduction (incl. residents, tangata whenua) and *Technical Advisory Group* (incl. experts from agencies like MCDEM, Horizons and WDC, and tangata whenua, and relevant professionals / experts); (iii) *Synopsis of available information on flood risk* facing Anzac Parade; (iv) *Initiate joint learning process*
May-Jul 2020	(i) *Interview key stakeholders* (incl. residents and key informants) re risk perceptions, issues of concern, intervention options, responsibilities and possible sequencing of actions; (ii) Anzac Parade Community Forum *agrees on process for developing Strategy* endorsed by Technical Advisory Group (iii) *Transcribe interviews*.
Aug-Oct 2020	(i) *Ongoing interviews and transcriptions*; (ii) *Desktop institutional analysis* – identify strengths and weaknesses of regulatory and non-regulatory provisions for flood risk reduction in Whanganui; (iii) *Identify property specific intervention options for Anzac Parade*; (iv) *Evaluate the effectiveness of property-specific interventions and sequencing options for implementing portfolio of responses over time*.
Nov-Dec 2020	(i) *Prepare draft Strategy* with endorsement from Technical Advisory Group and agreement of Anzac Parade Community Forum.
Jan-Feb 2021	(i) Present *draft Strategy* to key agencies, including Horizons and WDC; (ii) *Prepare final Strategy* with endorsement from Technical Advisory Group and agreement of Anzac Parade Community Forum; (iii) *Circulate Strategy*

4. Key concepts

This section describes key concepts that frame the actions and scope of this project: community resilience, community well-being, social vulnerability, disaster risk reduction, and managed retreat.

4.1. Disaster risk

'Disaster risk signifies the possibility of adverse effects in the future. It derives from the interaction of social and environmental processes, from the combination of physical hazards and the vulnerabilities

of exposed elements (…) the levels of adverse effects are in good part determined by the vulnerability and exposure of societies and social-ecological systems' (van Aalst et al., 2012).

4.2. Community resilience

The concept of community resilience can be conceived as the ability of any given community to actively mobilise resources to change and adapt in the face of multi-scalar uncertainty and changing social and ecological conditions in order to reach sustained, higher levels of community well-being (Berkes & Ross, 2013; Kulig et al., 2008; Magis, 2010; Norris et al., 2008; Paton et al., 2006; Pooley et al., 2006).

4.3. Community well-being

'*The term 'community wellbeing' encompasses the broad range of economic, social, environmental, cultural and governance goals and priorities identified as of greatest importance by a particular community, population group or society*' (Cox et al., 2010, p. 72). The recent amendment passed in parliament saw the Local Government Act of 2002 amended to integrate Community Well-being as the key policy outcome to be achieved through public policy. In addition, the Local Government (Community Well-being) Amendment Act 2019 also emphasises that community well-being should be guided by sustainable development principles. This means that sustainable development principles should inform efforts to develop community well-being.

4.4. Social vulnerability

'*(…) social vulnerability is most often described using the individual characteristics of people (age, race, health, income, type of dwelling unit, employment). Social vulnerability is partially the product of social inequalities—those social factors that influence or shape the susceptibility of various groups to harm and that also govern their ability to respond. However, it also includes place inequalities—those characteristics of communities and the built environment, such as the level of urbanization, growth rates, and economic vitality, that contribute to the social vulnerability of places*' (Cutter et al., 2003, p. 243).

4.5. Disaster Risk Reduction

'*The concept and practice of reducing disaster risks through systematic efforts to analyse and manage the causal factors of disasters, including through reduced exposure to hazards, lessened vulnerability of people and property, wise management of land and the environment, and improved preparedness for adverse events*' (UNISDR, 2009, p. 10-11).

4.6. Managed Retreat

'*Managed retreat is a deliberate strategy to remedy unsustainable land use patterns that expose people, ecosystems, and assets to significant natural (and socio-natural) hazard and climate induced risks (…) there are a number of socio-political-cultural, environmental, economic, and institutional barriers affecting its implementation, particularly in contexts with extensive existing development. There may also be significant challenges in integrating relocated and receiving communities. In practice, people are deeply connected to, and reliant upon, the security, networks and cultural values of their lands, homes, communities, and livelihoods*' (Hannah et al., 2019, p. 1).

4.6.1. Managed retreat in New Zealand

Recently, risk reduction actions that involve managed retreat have begun to be implemented in New Zealand. One example can be found in the risk reduction strategy designed for the Matatā settlement in Bay of Plenty. In 2005, this township experienced an extreme debris flow that caused significant damage. Members of the Matatā community agreed that the associated risk required risk reduction actions to enable them to move forward in their recovery. After a protracted process, a relocation program, combining funding sources from national government, regional government, and local residents, was eventually agreed as the best way forward, and is currently being implemented (Whakatane District Council, 2017). There is much to learn from this experience. In particular, there is a compelling need to understand how to initiate timely managed retreat in circumstances where communities face of imminent danger (Hanna et al., 2017, 2019, 2020). Other New Zealand communities are also exposed to significant natural hazard risks and need to relocate to safer ground. This is a situation facing some residents of the Whangaehu Village on the Rangitikei River on the boundary of the Whanganui and Rangitikei districts. An assessment involving extensive stakeholder and community consultation, of this highly flood exposed village in the Manawatu in 2017 concluded that relocation of those most at risk was the best way forward (Glavovic, 2017). However, no funding solution could be resolved at that time, hampering the implementation of the recommended actions. Overall, managed retreat in New Zealand, like other countries, is proving to be a challenging, but necessary way forward to achieve the mandated balance between community well-being, risk reduction, resilience and sustainable development (Hanna et al., 2020).

5. Institutional setting for reducing vulnerability and risk and building resilience in Anzac Parade

There is a range of statutory provisions that enable regional and district councils to play an active role in reducing natural hazard risk and building resilience.

5.1. Civil Defence and Emergency Management

The CDEM Act 2002 mandates local and regional councils (amongst other social actors) to develop reduction, readiness, response, and recovery planning and implementation actions for the sustainable management of hazards in New Zealand across multiple environments (natural, social, economic, and built). Furthermore, CDEM Act 2002 explicitly highlights the importance of 'well-being', signalling that all risk management actions should always 'contribute to the social, economic, cultural, and environmental well-being and safety of the public' (CDEM Act 2002, Section 3.a.). Although this Act and all its associated provisions, such as the CDEM Plan 2015 and CDEM Plan Guide 2015, provide clear guidance on readiness, response and recovery, guidance is less clear in regards to reduction. Other statutory provisions (e.g., RMA) provide legal support to enable risk reduction actions at local and regional levels.

The recently approved National Disaster Resilience Strategy provides an overarching and integrated guide that includes well-being and risk and social vulnerability reduction as essential parts of the national resilience building process. Furthermore, the document also highlights the importance of a multi-sectorial participatory governance structure that guides decisions related to resilience building, including social vulnerability and risk reduction (NDRS, 2019, p. 27-28). However, this document does not provide clarity on specific risk reduction responsibilities for the different governance levels (national, regional, local), nor on the funding structures and provisions that are needed to support the risk and social vulnerability measures that underpin resilience building processes.

5.2. Resource Management Act 1991

Section 6(h) of the RMA establishes natural hazards risk management as a matter of national importance. Subsequent provisions within the RMA provide key statutory provisions for Regional and Local Governments to take risk reduction actions. For instance:

- Section 30(c)(iv) establishes the statutory functions of regional councils including the avoidance or mitigation of natural hazards.
- Section 35(5)(j) establishes the responsibility of local authorities to gather information and keep records of natural hazards in their jurisdiction.
- Section 62(1)(i) determines the content of regional policy statements including the objectives, policies, and methods for land use control to avoid or mitigate natural hazards.

- Section 106(1) enables consent authorities to refuse development consents if there is a significant risk from natural hazards.

The RMA is the key statutory platform for managing flood risk in development planning and subdivisions, however, it does not provide the support local authorities need to address the escalating flood risks in pre-existing urban settlements.

5.3. Local Government Act 2002

The LGA provides an overarching legal framework for local governments in New Zealand to promote the sustainable development of communities by enhancing their social, economic, environmental, and cultural well-being. The LGA also provides specific statutory norms to manage natural hazards. Firstly, Section 101B(3)(e) refers to the management of public infrastructure assets from a physical and financial point of view. And secondly, the LGA 2002 also provides important provisions that enable local and regional governments to include flood management and protective works in financial strategies, infrastructure strategies, as well as providing special powers to regional councils to establish bylaws for flood protection and flood control works.

5.4. Building Act 2004

The BA provides a comprehensive statutory legal framework to ensure that the building stock in New Zealand does not endanger people's health, contributes to people's well-being, and promotes sustainable development through building design and construction. Section 71 of the BA provides complementary provisions to the RMA in that it enables consenting authorities to refuse building consents for the construction or alterations of buildings that are exposed to natural hazards such as floods.

5.5. Te Awa Tupua (Whanganui River Claims Settlement) Act 2017

The TAT Act acknowledges Te Awa Tupua (Whanganui River Catchment) as an indivisible and living whole which extends from the river's head on the northern slopes of Mt. Tongariro to its mouth in Whanganui, including all its tributaries, lakes, and wetlands, as well as all its physical and metaphysical elements. Framing the awa as a living entity and an ancestor, TAT provides a legal framework that entitles Te Awa Tupua with legal personhood, and whom will be represented by Te Pou Tupua, a position established to act on behalf of Te Awa Tupua and to be its human face (Section 18; Section 19). Furthermore, Section 19(2)(a) establishes that one of the statutory functions of Te Pou Tupua is to ensure that there are appropriate mechanisms to engage and report to: 'the iwi and hapū with interests in the Whanganui River on matters relating to Te Awa Tupua, as a means of recognising the inalienable connection of those iwi and hapū with Te Awa Tupua'. Lastly, Section 101 of the Act recognises a Ngā Tāngata Tiaki o Whanganui as the mandated iwi organisation for Whanganui Iwi. This

organisation is key in its role as tangata tiaki in the overall constelation of novel governance arrangements.

Although there are no explicit provisions in regards to risk management, natural hazards, or flood management, this Act establishes a strong legal framework for the participation of tangata whenua as representatives and voice of the Te Awa Tupua and matters associated to it.

5.6. The Living Standards Framework

The Living Standards Framework (LSF) (Figure 4), provides a non-statutory institutional tool that effectively integrates the ideas of well-being and resilience as concepts to guide the implementation and expected outcomes of public policy efforts across New Zealand. To do so, this framework presents twelve domains of well-being, and four capitals (natural, human, social, and financial/physical capitals) to be considered as the main capital stocks upon which well-being is built. These domains and capitals were integrated into what is denominated the 'LSF Dashboard' which uses indicators to reflect the impact of different policies in the different domains and capitals that underpin the main concept of well-being. Although there are no current indicators developed to measure 'resilience', the progress made so far with this framework highlights the current Government's intention to mainstream and embed the idea of well-being as a measurable outcome of public policy across the different tiers of government, including social vulnerability and risk reduction.

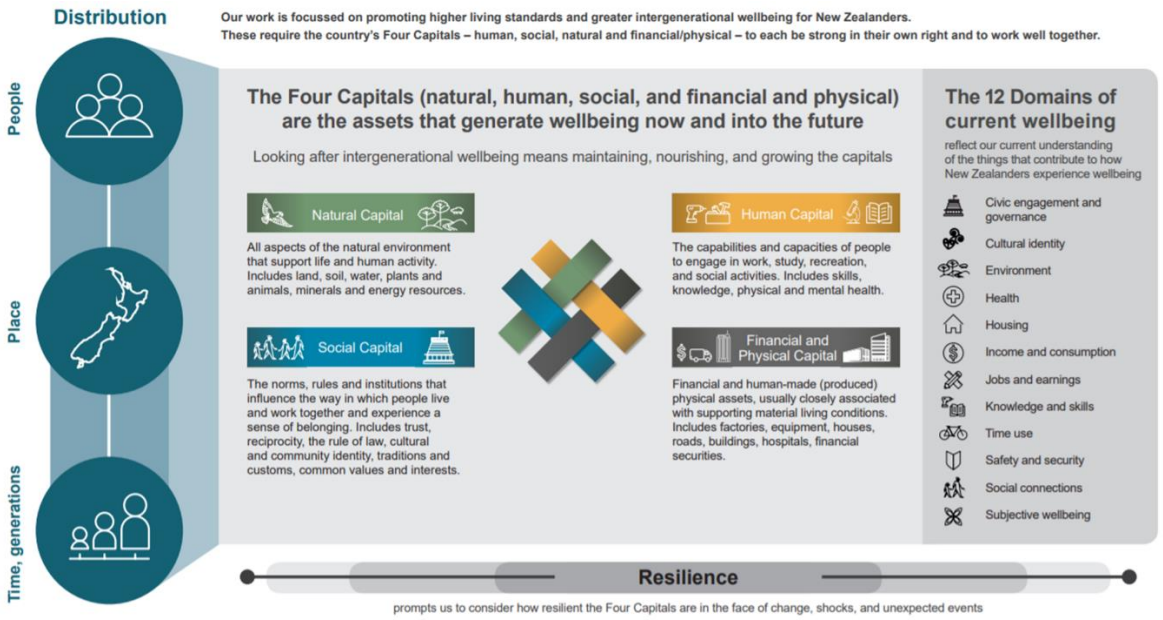


Figure 4. Living Standards Framework (New Zealand Treasury, 2019).

5.7. Coastal Policy Statement 2010

A statutory policy under the RMA, Policy 27 of the CPS provides clear guidance on how to face coastal hazard risk in existing coastal development. It recognises that actions range from 'doing nothing' to

the improvement or construction of hard protection structures, to the possible relocation or removal of existing coastal development. However, the policy prioritises long-term sustainable solutions over dependence on hard protective structures or other engineered solutions. Furthermore, it stipulates the need to consider the implications of climate change compounded hazard risk occurrence over at least the next 100-years. This policy provides a strong foundation for risk reduction actions at the local level.

5.8. One Plan (Horizons Regional Policy Statement 2018)

Sections 9, and parts of Section 4 and 5 of the One Plan provide clear guidance and specify expected outcomes for regional and local councils in relation to risk reduction policies, methods, and indicators; with a preference to avoid exposure to natural hazards, or if necessary, to mitigate the effects of natural hazards on future and existing infrastructure. A specific flood-centred approach to natural hazards was adopted in the One Plan due to the prominence of this peril in the region, and specific guidance is provided on how and where to build residential as well as critical infrastructure. Although there is no specific guidance on how to reduce social vulnerability and risk in existing urban settlements, which were historically and are currently exposed to significant flooding events, implementation of the One Plan's policies seek reduce the risk to people, property and critical infrastructure.

5.9. Horizon's Regional Council Long-term Plan 2018-2028

The 2018-2028 Long-term plan provides very clear, concise, and explicit guidance on multiple river schemes and management options to reduce risk on existing development and activities for this ten-year period (pp. 11-15). Amongst the different river schemes described is the Lower Whanganui River Scheme, and even more specifically, the Anzac Parade section of the river. In this document, the priority for action is set to establish a fund to motivate homeowners living on the margin of the floodable area to either (i) raise their houses to a higher level suitable to accommodate the increasingly frequent and extreme flood events; or (ii) for those home-owners most exposed and at risk to participate on a non-mandatory relocation scheme.

5.10. Conclusion

This section underscores the need to develop deeper understanding of the statutory and non-statutory provisions, and associated strengths and weaknesses, as well as the financial provisions, relevant to flood risk reduction and resilience building in New Zealand. In framing the flood risk reduction strategy for Anzac Parade, it is also important to recognise that risk is not merely a technical concern, but there is a need enhance the 'capitals' that underpin the multiple dimensions of community well-being. Furthermore, steps taken to reduce vulnerability and risk need to be taken in collaboration with the affected communities and with tangata whenua who speak for Te Awa Tupua.

6. Social vulnerability overview of Anzac and Whanganui East-Riverside

This section presents the information available on socio-economic deprivation developed through two different deprivation indexes: The New Zealand Index of Deprivation (NZDep), and the New Zealand Index of Multiple Deprivation (IMD).

The New Zealand Index of Deprivation (NZDep) is a tool developed by the University of Otago. It uses indicators such as unemployment, access to education and qualifications, access to internet, income, house ownership, and access to cars amongst others, to measure deprivation. Small geographical units are categorised into quintiles or deciles of deprivation where the lowest quintiles or deciles correspond to the least deprived (with most access to the resources), and the higher quintiles and deciles associated to the most deprived (less access to resources). Being located in the higher quintiles and deciles of deprivation means that people living in these areas are more vulnerable to environmental risks and psycho-social health problems associated with these risks in that they might not be able to afford good quality housing, insulation, refurbishing housing infrastructure, access health services, amongst other issues.

By drawing on information developed through the New Zealand Index of Deprivation (NZDep), and the New Zealand Index of Multiple Deprivation, a tool developed by Auckland University, a general overview of the social vulnerability of Whanganui East-Riverside can be provided (Figure 5). Most of the area that is currently exposed to flood risk falls in the higher deciles of deprivation (deciles 7 and 8), except for two smaller areas which are placed in the mid-range (decile 5). This means that the population of this area has limited resources to face the economic and psycho-social consequences of extreme events and environmental stress.

Figure 5. Deprivation in Whanganui, with Anzac Parade in red frame (Extracted from: https://massey.maps.arcgis.com/apps/Embed/index.html?webmap=449633d9f5b74954ab44973c6b046d04&extent=164.7366,-47.4217,180-34.200&zoom=true&scale=true&legend=true&disable_scroll=true&theme=light).

This data is corroborated by information generated by the IMD, which was developed by the University of Auckland in collaboration with the Health Council of New Zealand using similar indicators to the NZDep. IMD indicators also categorise the Anzac Parade area as medium to highly deprived (Figure 6).

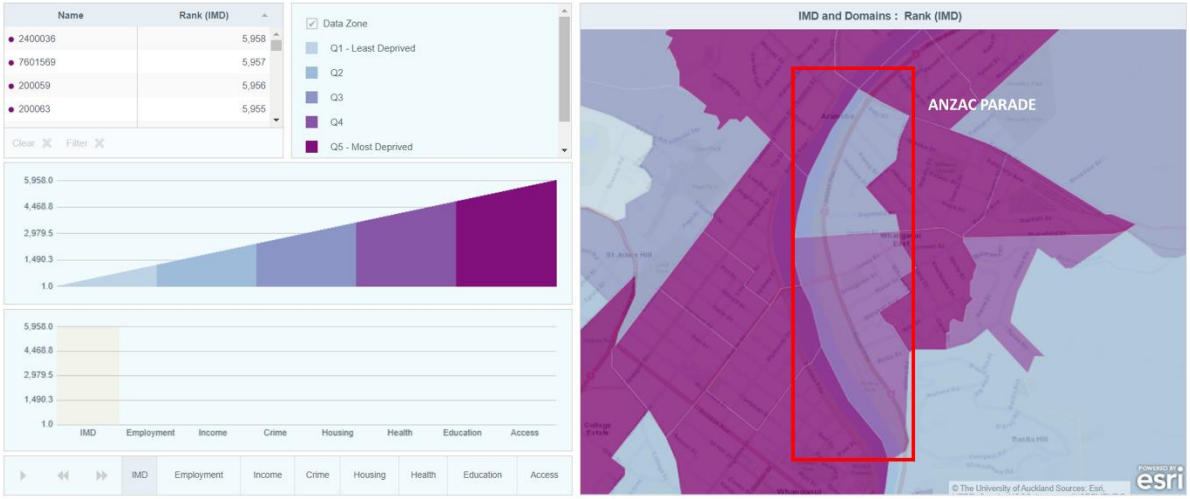


Figure 6. Deprivation in Whanganui based on the New Zealand Index of Multiple Deprivation (Extracted from: http://www.imd.ac.nz/NZIMD_Single_animation_w_logos/atlas.html).

Being categorised as mid- to high-range deprivation has important implications for identifying and developing viable options for vulnerability and risk reduction for residents in Anzac Parade. In

developing options, consideration will need to be given to affordability and equity issues given deprivation levels. For example, how many people are renting homes in Anzac Parade, and what might the impact be on renters if property owners have to raise rents to cover the costs of building improvements, or if they are displaced if property owners decide to relocate. Communication strategies and risk information sharing also need to be sensitive to potentially variable access to flood risk information and opportunities to participate in strategy formulation.

7. Stakeholder mapping and engagement

A stakeholder mapping process has been initiated to identify key public, private, and civil society stakeholders with a potential interest in and / or contribution to make to the Anzac Parade flood risk reduction and resilience building process. This stakeholder mapping will ultimately inform the constitution of the Community Forum and the Technical Advisory Group, and the associated interviewing and information gathering process. Four key informants from Horizons and the Whanganui District Council were consulted at this stage and, including these four key informants, a total of 29 individuals from different organisations were identified to inform the development of the strategy (Table 2). This represents only the start of the stakeholder mapping process. In particular, attention will need to be focused on consulting residents of Anzac Parade before taking steps to set up the Community Forum. Other key informants are likely to be identified in the next stage of the project.

Table 2. Initial list of key informants to date (as of 17th of April, 2020).

Name	Organisation	Sector
Steve Baron	Property owner and resident	Residents
Dave Hill	Whanganui Ratepayers Association Inc.	Residents
Jill Walker	Whanganui Ratepayers Association Inc.	Residents
Raymond Hall	Nga Tangata Tiaki o Whanganui Trust (CE)	Iwi
John Maihi	Te Rūnanga o Tupoho (Kaiwhakahaere)	Iwi
No name	Ngāti Tupoho	Hapū
No name	Insurance Council of New Zealand	Insurance
No name	AON Insurance	Insurance
Tim Stubbs	Property Group	Property assessor
Ken Billing	Property Group	Property assessor
Nicola Patrick	Horizons Regional Council (Councillor for Whanganui)	Regional Council Elected Official
David Cotton	Horizons Regional Council (Councillor for Whanganui)	Regional Council Elected Official
Wayne Spencer	Horizons Regional Council	Regional Council Staff
Ramon Strong	Horizons Regional Council	Regional Council Staff
Charlotte Almond	WDC - Strategy Manager	WDC Staff
Leighton Toy	WDC - Property Manager	WDC Staff
Alan Taylor	WDC - Infrastructure, Climate Change and Emergency Management Committee	WDC Staff
Kate Joblin	WDC - Finance and Strategy Committee (Chair)	WDC Staff
Helen Craig	WDC - Property and Community Services (Chair)	WDC Staff
Dion Walker	WDC - Insurance manager	WDC Staff
Greg Hoobin	WDC - Building Control	WDC Staff
Bill Lesley	WDC - Building Control	WDC Staff
Mark Hughes	WDC - Infrastructure General Manager	WDC Staff
Tim Crowe	CDEM (Local)	CDEM Staff
Anthony Edwards	CDEM (Local)	CDEM Staff
Wendy Saunders	GNS	Researcher
Gavin Smith	University of North Carolina, USA	Researcher
Iain White	University of Waikato	Researcher
Bruce Glavovic	Massey University	Researcher

This initial list focuses on local and regional council key informants, as well as some key researchers, but the list will be expanded to include affected residents of Anzac Parade as well as other key stakeholders.

Initial discussions with the WDC provided an overview of what is known about flood risk in Anzac Parade. There are no residents' organisations in the area that could facilitate the engagement of residents. Further work is required to identify community representatives and community dynamics to better understand the community, the appropriate engagement approach, and how to set up the proposed community forum as well as identifying potential participants for the interview process.

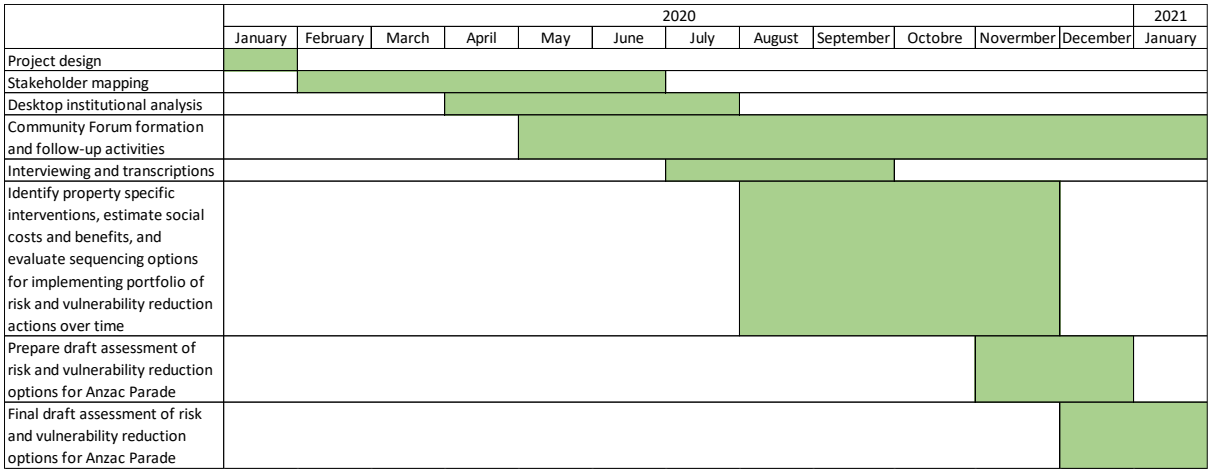
Understanding residents' perspectives on flood risk and the variety of potential solutions is essential for assessing the viability of vulnerability and risk reduction strategies.

8. Initial reflections on the way forward

The high exposure to increasingly frequent and high magnitude flood events, in combination with the mid- to high-deprivation levels that characterises the Anzac Parade, underscores the need for urgent vulnerability and risk reduction actions that enhance community well-being and resilience. The deprivation information brings to the fore the need to consider creative ways to reduce vulnerability in developing the strategy. The concerns expressed by some local residents about the Regional Councils' community engagement practices and relocation plans reinforce the need to develop a robust stakeholder and community engagement process in this project.

The unanticipated 'lock-down' measures taken in the face of the Covid-19 have a material impact on how to develop the strategy. Uncertainty about the appropriateness and feasibility of face-to-face interviews and meetings may affect setting up the Community Forum and Technical Advisory Group. However, it is expected that clarification will be forthcoming in the coming month or 6 weeks and that the overall aim and objectives of the project can be fulfilled.

9. Schedule



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