

Operative City Plan
Section 32 evaluation report

Plan Change 27 – Flooding from intense rainfall



Tauranga City

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1. Interpretation

In this Report:

Abbreviation	Meaning
AEP	Annual Exceedance Probability
ARI	Annual Recurrence Interval
BoPRC	Bay of Plenty Regional Council
CDEM	Civil Defence Emergency Management Act 2002
City Plan	The Operative Tauranga City Plan
IDC	Infrastructure Development Code
ISP	Integrated Stormwater Project
LGA	Local Government Act 2002
NPS-UD	National Policy Statement on Urban Development 2020
NZCPS	New Zealand Coastal Policy Statement 2010
PPC26	Proposed Plan Change 26 – Housing Choice
PPC27	Proposed Plan Change 27 - Flooding from intense rainfall
RCEP	Operative Bay of Plenty Regional Coastal Environment Plan
RNRP	Operative Bay of Plenty Regional Natural Resources Plan
RPS	Operative Bay of Plenty Regional Policy Statement
RMA	The Resource Management Act 1991
SLR	Sea Level Rise
TCC	Tauranga City Council
UFTD	Urban Form and Transport Development Committee
UFTI	Urban Form and Transport Initiative

2. Introduction

2.1. Requirements of Section 32

This report has been prepared to fulfil the obligations of Tauranga City Council (TCC) under section 32 of the RMA, with respect to undertaking a Plan Change to the Tauranga City Plan (City Plan). This report should be read together with the text of the City Plan itself and the Proposed Plan Change.

For any Plan Change to an City Plan, TCC is required under section 32 of the Resource Management Act 1991 (RMA) to carry out an evaluation of whether objectives of a proposal are the most appropriate way to achieve the purpose of the RMA (i.e. sustainable management of natural and physical resources).

A section 32 evaluation must also examine whether the provisions in the proposal are the most appropriate way to achieve the objectives by identifying other reasonably practicable options for achieving the objectives and assessing the efficiency and effectiveness of policies, rules and other methods in considering whether they are the most appropriate means of achieving these objectives.

The evaluation must consider the benefits and costs associated with each policy, rule or method and also the risk of acting or not acting if there is uncertain or insufficient information on the subject matter.

2.1.1. Overview and purpose of the plan change

Tauranga has experienced multiple flood events caused by intense rainfall over the last two decades and a regulatory response is required to reduce the risk of flooding to life and property.

TCC is required by the Bay of Plenty Regional Policy Statement (RPS) to assess and classify risk from intense rainfall based on up-to-date projections of changes in sea level, rainfall, temperature and storm frequency for a 100-year time frame.

The proposed policy and rule framework will be used to determine the type and location of land use on land subject to flooding in a 1% AEP rainfall event. The 1% AEP rainfall event takes the effects of climate change on sea level and rainfall based on the RCP 8.5 median scenario¹ as of the year 2130. This design rainfall event meets the requirements of the RPS.

2.1.2. Scope of plan change

The scope of Proposed Plan Change 27 (PPC27) is to reduce the risk of flooding to life, property and infrastructure from intense rainfall events in Tauranga over time. The key aspects of PPC27 are to:

- a) Protect floodplains and overland flowpaths;
 - i) Water will naturally follow overland flowpaths and floodplains in an intense rainfall event. These are an important part of the flood management system, allowing water to flow and recede during and after intense rainfall events. If managed inappropriately the effects can be hazardous, causing damage to life, property and infrastructure.

¹ Ministry for the Environment, 2017, Coastal Hazards: Guidance for Local Government. New Zealand: Ministry for the Environment. Retrieved from <https://www.mfe.govt.nz/sites/default/files/media/Climate%20Change/coastal-hazards-guide-final.pdf>

- b) Manage development and redevelopment within flood prone areas
 - i) This includes ensuring safe evacuation from the building, safety of people, the location of the building in relation to the level of flooding and the type of activity on the land susceptible to flooding.
- c) Manage displacement effects
 - i) Inappropriate subdivision and earthworks can increase or cause flooding in areas where there was previously minor or no flooding.
- d) Manage floor levels to reduce damage caused by flooding to life and property; and
- e) Manage the cumulative impacts of increased impervious surfaces.

For clarity, PPC27 only seeks to manage flooding from intense rainfall events. The management of any other natural hazard is out of scope.

3. Background/Existing Context

3.1. Need for plan change

3.1.1. Integrated stormwater project

Tauranga has experienced a number of major, and specifically localised flood events over a number of years caused by intense rainfall. Specifically, those of 2005 and 2013 were the most significant, resulting in TCC responding both in funding and infrastructure delivery from 2005. Following the flood events of 2013, TCC reconsidered its role in flood risk management, considering the following options:

- a) Status quo – people and property would remain at risk from flooding.
- b) Infrastructure Led Solution - Upgrading the existing stormwater network to protect property from damage.
- c) Integrated Stormwater Project – a project aimed at improving the level of service, educating the community and understanding the implications of flood management over the long-term.

The status quo was considered unacceptable as it placed an unreasonable property damage and health and safety burden on many property owners and was projected to worsen over time as a result of climate change factors.

The infrastructure led solution was found to place an unreasonable financial burden on the community due to the high capital cost and maintenance cost.

The Integrated Stormwater Project (ISP) was adopted by TCC through the Long Term Plan (2015-25). The purpose of the ISP was to identify the wider stormwater issues and implications so that Citywide flood risk management could be considered. As an outcome of this process, TCC resolved to take the following risk reduction approach to stormwater management:

- a) A safety focused level of service;
- b) Education (information provision on risk reduction and technical advice);
- c) Residual risk and emergency management;
- d) Reactive response capacity (Stormwater Reactive Reserve Fund Policy); and
- e) Regulation and policy amendment.

Following the development of the ISP, TCC continued modelling flood risk to identify the existing and projected future risk of flooding from 100-year Annual Recurrence Interval (ARI) intense rainfall events in Tauranga. In doing so, TCC has released this information to all potentially affected landowners, and provided detailed information, through information sessions to landowners as part of the education program developed. The models developed enable existing and future susceptibility (i.e. by including climate change factors) to be understood. As part of the program TCC has also surveyed building floor levels across the City to enable risk (likelihood times consequence) to be calculated.

TCC, as part of its agreed program has developed the Stormwater Reactive Reserve Fund Policy in December 2015. This policy enables landowners to seek funding assistance to reduce the risk of flooding on their property, be bought out of the risk (i.e. TCC purchases the property) and also have a clear fund in place to clean up affected parts of the City following a flood event.

Investment in infrastructure (or via land purchase) has focused on reducing risk to people's safety on private land via a defined level of service, undertaking targeted improvements to the existing stormwater network and continuing the flood modelling programme.

Plan Change 27 is the regulatory response to the wider ISP, following the above key steps being completed.

3.1.2. Growth context

Tauranga city is currently facing high population growth. Tauranga's population is projected to increase by an estimated 61,200 over the next 30 years, from 140,800 to 202,000².

TCC is required to provide housing capacity to cater for the increasing population. To provide the necessary capacity for housing, structure planning work is being progressed to inform future plan changes for land release and development of the Te Tumu and Tauriko West greenfield urban growth areas and Proposed Plan Change 26 – Housing Choice (PPC26) is being progressed to enable intensification within existing urban areas.

Plan changes to accommodate growth trigger the need for consideration of the natural hazards policies of the RPS. For these plan changes, the RPS requires a low natural hazard risk to be achieved on development sites after completion of the development.

In greenfield areas, it is feasible to provide a low natural hazard risk by avoiding areas susceptible to flooding or by lifting ground to appropriate levels to mitigate flood hazards.

The uncontrolled redevelopment of the existing urban areas at higher densities will increase risk from flooding by increasing the number of properties subject to flood damage. The RPS requires the existing High risk from flooding in affected areas to be reduced to Medium or as Low as reasonably practicable.

Proposed Plan Change 27 - Flooding from intense rainfall is directly linked with proposed Plan Change 26 – Housing Choice (PPC26) which proposes to review existing plan provisions in the City Living, Suburban Residential and Commercial zones, to better enable residential infill and intensified forms of development within these zones and provide better quality developments.

² Statistics NZ Estimated Resident Population (ERP).

Concurrently, Plan Change 30 – Earthworks is being progressed to address sediment control issues and providing controls over post-subdivision earthworks to address site stability issues.

The City Plan land use provisions do not manage flooding from intense rainfall, other than in the Wairakei Urban Growth Area where specific provisions already apply. Elsewhere, flood risk is managed under the Building Act 2004 where minimum protection standards apply under the New Zealand Building Code and subdivision is managed by s106 of the RMA. This approach does not achieve the risk outcomes sought by the RPS.

The purpose of PPC27 is to reduce flood risk caused by intense rainfall by managing land use change at a site by site basis.

4. Relevant legislations, strategies and policies

The following sections discuss legislation and the national, regional and local policy framework that provides the context for PPC27.

4.1. Resource Management Act 1991 (RMA)

Section 74 of the RMA requires a territorial authority to change its district plan in accordance with the provisions of Part 2. Similarly, section 32(1)(a) of the RMA requires an evaluation report to examine the extent to which the objectives of the proposal being evaluated are the most appropriate way to achieve the purpose of the RMA. The purpose and principles of the RMA are set out in Part 2. Other sections of the RMA which are also considered relevant to PPC27 are set out below.

Section 2 – Interpretation and application

“natural hazard”

“means 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”.

Section 3 - Meaning of effect

“In this Act, unless the context otherwise requires, the term effect includes—

- (a) any positive or adverse effect; and*
- (b) any temporary or permanent effect; and*
- (c) any past, present, or future effect; and*
- (d) any cumulative effect which arises over time or in combination with other effects—
regardless of the scale, intensity, duration, or frequency of the effect, and also includes—*
- (e) any potential effect of high probability; and*
- (f) any potential effect of low probability which has a high potential impact”.*

Section 5 – Purpose of the Act

Section 5 sets out the purpose of the RMA, which is to promote the sustainable management of natural and physical resources. Sustainable management *“means managing the use, development, and protection of natural and physical resources to enable people and*

communities to provide for their social, economic and cultural wellbeing and for their health and safety, while -

- *sustaining the potential of natural and physical resources (excluding minerals) to meet the reasonably foreseeable needs of future generations; and*
- *safeguarding the life-supporting capacity of air, water, soil, and ecosystems; and*
- *avoiding, remedying, or mitigating any adverse effects of activities on the environment”*

PPC27 will avoid or mitigate the damage to life and property by managing land use, subdivision and development on land susceptible to flooding, thus protecting the health and safety, economic and social well-being of people and community in an intense rainfall event.

In achieving this purpose, decision-makers also need to recognise and provide for the matters of national importance identified in section 6, have particular regard to other matters referred to in section 7 and take into account the principles of the Treaty of Waitangi under section 8.

Section 6 – Matters of national importance

Section 6 outlines matters of national importance including section 6(h) which requires council to recognise and provide for the management of significant risks from natural hazards. This matter is directly relevant to the assessment of this PPC27.

Section 6(h) was included as a matter of national importance under the Resource Legislation Amendment Act 2017. The aim of this amendment was to provide greater national guidance to councils to help improve planning for natural hazards³.

Flooding from intense rainfall falls within the scope of management of all hazards, as it poses a significant risk to life and property and section 6(h) requires TCC to recognise and provide for the management of this risk.

Section 7 – Other matters

Section 7 outlines other matters which require Councils to have particular regard to the effects of climate change.

It is predicted that climate change will result in a higher frequency and intensity of rainfall events, increasing the risk of flooding from intense rainfall in the future. This is reflected in the RPS Natural Hazards policies which require identification of areas susceptible to and the management of flooding from intense rainfall while taking into account sea level rise and climate change to 2130. Therefore, this matter is directly relevant to this PPC27.

Section 8 – Treaty of Waitangi

All persons exercising functions and powers under the RMA must take into account the principles of the Treaty of Waitangi (Te Tiriti o Waitangi).

In this regard, consultation with Tangata Whenua has occurred at all critical stages of this Plan Change as set out in section 5.2.3 of this report.

³ Ministry for the Environment, Improving Our Resource Management System – Discussion Document, February 2013

Section 30 – Functions of regional councils under this Act

Section 30(1)(c)(iv) requires each regional council to control the use of land for the purpose of, “the avoidance or mitigation of natural hazards”. This is reflected in the RPS Natural Hazards policies which require city and district plans to identify and manage natural hazards. How PPC27 gives effect to the RPS Natural Hazard policies is set out in Appendix 1.

Section 31 – Functions of territorial authorities under the Act

Section 31(1)(b)(i) sets out that the control of any actual or potential effects of the use, development, or protection of land, for ‘the avoidance or mitigation of natural hazards’ is a function of district councils under the RMA. Section 31 is directly relevant to this PPC27 as this provides the ability for TCC to progress a regulatory approach through the City Plan to avoid or mitigate natural hazards and in relation to this PPC27, flooding from intense rainfall.

Section 75 – Contents of district plans

This section of the RMA requires district and city plans to contain an appropriate framework to give effect to higher order statutory documents. It is considered that these matters are recognised and provided for either through the existing provisions of the City Plan or PPC27. How PPC27 gives effect to higher order documents is discussed throughout this report and in particular in Appendix 1.

Section 76 – Effects of activities on the environment

Under section 76(3) of the RMA, when evaluating rules, the Council must have regard to the actual or potential effects of activities on the environment. The actual and potential effects of PPC27 on the environment are considered further in the evaluation undertaken in sections 6-10 of this report.

Section 86B(3) – When rules in proposed plans have legal effect

This section of the RMA sets out when proposed rules have legal effect. Section 86B(3) states that proposed rules have immediate legal effect if the rules protect or relate, “*to water, air, or soil (for soil conservation)*”. PPC27 relates to water, therefore the draft provisions have legal effect from public notification.

Section 106 – Consent authority may refuse subdivision consent in certain circumstances

Section 106 (s106) relates specifically to subdivisions, where it requires the applicant and consent authority to consider the risk and potential effects on land, other properties and structures from natural hazards. This includes the worsening, accelerating and resulting of a natural hazard. The consent authority may refuse the subdivision consent or place conditions if the impacts of the natural hazard(s) are not mitigated.

S106 is directly relevant to PPC27, however while s106 deals with subdivision it does not include land use. It is also preferable to have an appropriate framework for subdivision within the City Plan. Therefore, PPC27 is still required to reduce risk of flooding in intense rainfall events.

4.2. National Policy Statement for Urban Development (NPS-UD)

Under s75(3)(a) of the RMA, a District Plan must give effect to all National Policy Statements.

The NPS-UD came into effect on 20 August 2020. This replaced the National Policy Statement on Urban Development Capacity 2016. Objective 8, of the NPS-UD, seeks that urban environments;

- “(a) support reductions in greenhouse gas emissions; and*
- (b) are resilient to the current and future effects of climate change”.*

Objective 8 is supported by Policy 1 and Policy 6, which require that the urban environment supports the reduction of greenhouse gases and is resilient to the adverse effects of climate change.

The proposed plan change will give effect the proposed NPS-UD through providing a regulatory framework that supports a resilient community from flooding and facilitates the progression of PPC26.

4.3. New Zealand Coastal Policy Statement (NZCPS)

Section 75(3)(b) of the RMA requires local government to give effect to the NZCPS. While intense rainfall occurs across the city and not only within the coastal areas, the coastal processes including sea level rise and boundary conditions impact hydrological cycles of rivers and streams further inland and can lead to increased flooding in an intense rainfall event.

The planning horizon for PPC27 is also informed by the NZCPS (Policies 24 and 25). The 2130 planning timeframe is considered appropriate for statutory purposes by the RPS as it gives effect to the NZCPS and the Bay of Plenty Regional Coastal Environment Plan requirements to plan for at least 100 years, including a 10-year life-of-a-plan period.

The proposed plan change therefore gives effect to the relevant policies within the NZCPS.

4.4. National Policy Statement for Freshwater Management (NPS-FM)

The National Policy Statement for Freshwater Management 2014 (NPS-FM 2014) sets out objectives and policies for freshwater management under the RMA. On 3 September 2020, the NPS-FM was replaced by the National Policy Statement for Freshwater Management 2020 (NPS-FM 2020). The objective of the NPS-FM 2020 is that natural and physical resources are managed to prioritise:

1. The health and well-being of water bodies and freshwater ecosystems;
2. The health needs of people; and
3. The ability of people and communities to provide for their social, economic, and cultural well-being, now and in the future.

Although provisions within the NPS-FM 2020 are largely directed towards regional councils, Policy 3 requires the following:

“Freshwater is managed in an integrated way that considers the effects of the use and development of land on a whole-of-catchment basis, including the effects on receiving environments”.

PPC27 seeks to manage land use and development Citywide in flood prone areas, overland flowpaths and floodplains, reducing risk to life and property over time and ensuring that people

and community are able to provide for their social, economic, and cultural well-being. It is considered PPC27 is consistent with NPS-FM 2020.

4.5. National Environmental Standards

The National Environmental Standards for Freshwater 2020 (Freshwater NES) came into force on 3 September 2020. PPC27 seeks to protect overland flowpaths and floodplains from inappropriate landuse, development and subdivision, thus protecting streams and rivers from in-filling, as sought by the Freshwater NES. It is considered PPC27 is consistent with the Freshwater NES.

4.6. National Planning Standards

The first set of national planning standards came into force on 3 May 2019. They aim to make RMA plans more consistent and easier to use. They provide direction on the structure and form of plans, including definitions. Tauranga City Council has five years from when the planning standards came into effect to implement them.

For the purpose of PPC27, the definition for 'habitable room' from the National Planning Standards has been introduced to the City Plan. However, given the limited scope of PPC27, it is considered more appropriate to implement all other national planning standards in a holistic and integrated way through the City Plan Review, which will be notified in April 2024.

4.7. Regional Policy Statement (RPS)

Section 75(3)(c) of the RMA requires a district plan to give effect to the RPS. The progression of Plan Change 26 – Housing Choice, which is aimed at providing for the increased housing demand by enabling infill and intensification triggers the need for TCC to consider the natural hazards policies of the RPS. PPC27 is directly linked to Plan Change 26, which is required to ensure that Low risk is achieved. However, PPC27 will also apply to all other urban development and redevelopment within Tauranga.

The RPS promotes the sustainable management of the Bay of Plenty region's natural and physical resources and identifies the resource management issues facing the region. Plan Change 2 (Natural Hazards) to the RPS, which became operative in July 2016, guides regional, city and district plans in managing land use and associated activities in areas which are subject to a natural hazard, including undertaking a risk assessment to determine the level of risk to existing landuse. Urban flooding, among other natural hazards, is covered by the Plan Change 2 provisions.

Risk assessments have been undertaken using the existing TCC flood models, in accordance with Appendix L of the RPS. The intent of this Citywide flood risk assessment was to:

- a) Understand future risk to existing landuse from intense rainfall events resulting in flooding; and
- b) Enable the intensification plan change to proceed to meet the required outcome of a compact city.

The risk assessments have concluded that all 19 modelled catchments within Tauranga city boundaries are at High risk from flooding in the initial assessment⁴ and the secondary

⁴ Initial Assessment as per Appendix L of the RPS is the 1% AEP event modelled in combination with the effects of climate change on sea level and rainfall based on the RCP 8.5 scenario to the year 2130.

assessments⁵, all undertaken in accordance with the RPS and have been included in Appendix 1. TCC is required to use regulatory and non-regulatory methods to reduce flooding over time, to demonstrate compliance with the RPS.

Engagement has been undertaken with the Bay of Plenty Regional Council (BoPRC) and it has been indicated that the purpose of PPC27 is supported. How the plan change gives effect to the relevant objectives and policies of the RPS is addressed further in Appendix 1a.

4.8. Regional Plans

Under section 75(4) of the RMA a district plan must not be inconsistent with a regional plan for any matter specified in section 30(1).

4.8.1. Bay of Plenty Regional Natural Resources Plan (RNRP)

The purpose of the Regional Natural Resources Plan (RNRP) is to promote the sustainable and integrated management of land and water resources within the Bay of Plenty. To achieve this, the RNRP has policies and methods (which include rules) to address issues of use, development and protection of land resources, geothermal resources and freshwater resources, including the beds and margins of water bodies. The RNRP sets out objective, policies and rules for water quality and land management that are relevant to PPC27.

Objective 48 and Policy 86 in the Water Quality chapter seek to manage the effects on the natural flow of water, including flooding flows caused by land use and development. Rule 44A seeks to manage the diversion of stormwater to ensure that the activity does not cause flooding or ponding. The intent of these provisions is to protect the natural migration and flow capacity of streams and rivers in order to mitigate adverse effects on the ecological values of the streams. The purpose of these provisions is related to sediment management rather than the protection of properties from flood damage.

In the Land Management Chapter, permitted activity LM R1 (Rule 1) seeks to manage earthworks in overland and secondary flowpaths. The intent of the rule is to allow for earthworks in quarries located in Low risk areas. The Land Management Chapter also seeks to retain and enhance the vegetative cover and protect the important aquifers and the water quality of lakes, streams and rivers.

The provisions in the RNRP manage the effects of activities on waterbodies but they do not manage the risk of flooding from intense rainfall. Therefore, there may be instances where both the City Plan and the RNRP provisions apply to an activity within floodplains and overland flowpaths, however, the provisions are complementary rather than overlapping.

4.8.2. Bay of Plenty Regional Coastal Environment Plan (RCEP)

The Regional Coastal Environment Plan (RCEP) promotes sustainable management of the natural and physical resources of the coastal environment incorporating values and issues for the coastal marine areas such as natural coastal hazards.

Objective 34 of the RCEP states that the diversion of natural watercourses in the coastal marine area is only undertaken where necessary to protect people and property, including protection from the adverse effects of flooding.

Policy CH 5 supports the RPS and NZCPS requirements of planning for at least 100 years.

⁵ Secondary Assessment as per Appendix L of the RPS are the 2% AEP and 0.2% AEP events, both modelled in combination with the effects of climate change on sea level and rainfall based on the RCP 8.5 scenario to the year 2130.

The proposed provisions in PPC27 to manage flooding from intense rainfall are consistent with the RCEP objectives and policies.

4.8.3. Western Bay of Plenty District Plan (District Plan)

Under section 74(2)(c) of the RMA when changing a district plan, a territorial authority shall have regard to the extent to which the district plan needs to be consistent with the plans or proposed plans of adjacent territorial authorities.

Section 1.6 of the District Plan sets out cross-boundary issues. The District Plan recognises that the most significant boundary is with Tauranga City and similar approaches need to be used to address cross-boundary issues.

Chapter 8 of the District Plan contains provisions broadly managing development within ponding areas and maintaining the function of overland flowpaths. Consistency between the District Plan and City Plan is desirable because floodplains and overland flowpaths cross jurisdictional boundaries.

Engagement has been undertaken with Western Bay of Plenty District Council on PPC27 and general support for PPC27 has been expressed.

4.8.4. Iwi Management Plans

Under section 74(2A) of the RMA a territorial authority, when changing a district plan, must take into account any relevant planning document recognised by an iwi authority and lodged with the territorial authority.

Within the jurisdiction of Tauranga City, the following iwi management plans are relevant:

- Tauranga Moana Iwi Management Plan (2016)
- Ngati Kahu Hapū Environmental Management Plan (2011)
- Ngai Te Ahi Hapū Management Plan (2013)
- Te Mana Taiao O Ngai Tamarawaho Hapū Management Plan (2014)
- Ngaiterangi Iwi Resource Management Plan (1995)
- Ngai Tukairangi Ngati Tapu – Hapū Management Plan (2014)
- Ngāti Pūkenga Iwi ki Tauranga Trust – Iwi Management Plan (2013)
- Tapuika Environmental Management Plan (2014)
- Waitaha Iwi Management Plan (2014)
- Ngati Whakaue ki Maketu Hapū Management Plan (2018)
- Nga Potiki Environmental Plan (2019)

The relevant parts of these management plans have been identified and commentary on how they have been taken into account through PPC27 is provided in Appendix 2d.

Engagement has been undertaken with the Te Rangapu Mana Whenua O Tauranga Moana and Resource Management Unit representatives. This has been ongoing since early 2019 and has been through group hui, individual hui, presentations, video conferencing facilities, written material and draft provisions.

4.8.5. SmartGrowth Partnership

SmartGrowth was launched in 2004 and provides a unified vision, direction and voice for the western Bay of Plenty. It is a collaboration between TCC, Western Bay of Plenty District Council, Bay of Plenty Regional Council, Tangata Whenua, partner community/business organisations and key Governmental agencies such as the New Zealand Transport Agency and Bay of Plenty District Health Board.

Smartgrowth is the guiding growth management document for the sub-region and as such it is considered there are no matters relevant to this plan change.

4.8.6. Urban Form and Transport Initiative (UFTI)

UFTI is a collaborative project led by SmartGrowth and the NZ Transport Agency and involves Western Bay of Plenty District Council, TCC, the Bay of Plenty Regional Council, Tangata Whenua, and community leaders. It was formed in 2019 to undertake long-term integrated master planning for urban development and transport in the western Bay of Plenty sub-region and on 1 July 2020 it released its final report. The report sets out an integrated land use and transport programme called 'Connected Centres', which considers the key issues of housing, transport and urban development. Connected Centres will be included in the SmartGrowth Joint Spatial Plan which will undergo public consultation in the first quarter of 2021.

While this report does not directly address flooding from intense rainfall, it does recognise the need to take into account climate change when making decisions about urban form and transport systems and avoiding, "*development on hazard prone lands*". The report also recognises the need to give effect to the RPS natural hazard provisions. It is considered that PPC27 is consistent with the recommendations made in the final UFTI report.

4.9. Other Relevant Legislation

4.9.1. Local Government Act 2002 (LGA)

The purpose of the local government under s10(1)(b) of the LGA is, "to promote the social, economic, environmental, and cultural well-being of communities in the present and for the future". PPC27 rule framework has been prepared to avoid or mitigate the damage to life and property by managing land use, subdivision and development on land susceptible to flooding, thus protecting the economic and social well-being of communities in an intense rainfall event.

4.9.2. Civil Defence Emergency Management Act 2002

The purpose of the Civil Defence Emergency Management Act 2002 (CDEM) is to improve and promote the sustainable management of hazards in a way that contributes to the social, economic, cultural and environmental well-being and safety of the public and the protection of property.

It provides for planning and preparation for emergencies and for response and recovery in the event of an emergency. It requires regional and local authorities to co-ordinate, through a CDEM Group to establish a Group Plan.

Land use risk reduction policies within a CDEM Group Plan should be linked to a RPS and regional and district plans. The Bay of Plenty CDEM Group Plan 2018/2023 includes goals, which aims to reduce the risk from natural hazards by focusing on:

- Emergency management research
- Hazard risk research and analysis
- Risk assessment
- Risk reduction programmes
- Hazard risk monitoring

As per the CDEM Group Plan, reducing risk, “*involves identifying and analysing risks to life and property from hazards; taking steps to eliminate these risks if practicable, and if not, reducing the magnitude of their impact and the likelihood of their occurrence to an acceptable level*”.

The relevant objectives are:

1. Build the community’s knowledge and understanding of their hazards and risks so they can make informed decisions.
2. Manage natural hazards through a risk-based approach.
3. Increase the region’s environmental and infrastructure resilience.

PPC27 proposes a rule framework that reduces risk over time through redevelopment which is consistent with the CDEM and the Bay of Plenty CDEM Group Plan.

4.9.3. Building Act 2004

Sections 71-74 of the Building Act seek to manage building consents where land is subject to a natural hazard. A natural hazard is defined in the Building Act as erosion, falling debris, subsidence, inundation (which includes flooding from intense rainfall events) and slippage.

Section 71 states that a building consent authority must refuse a building consent if the land on which the work is to proceed is likely to be subject to one or more natural hazards or is likely to accelerate, worsen or result in a natural hazard on land or any other property. A building consent may be issued on land subject to, or potentially subject to, a natural hazard where adequate provision has been made to protect the land and building from the natural hazard(s) and it is reasonable for the council to grant a waiver from one or more provisions of the New Zealand Building Code.

The Building Code requires that all new dwellings, communal residential and communal non-residential buildings should, as per Clause E1.3.2, ensure that, “*surface water, resulting from an event having a 2% probability of occurring annually, shall not enter buildings*”. Regulation under the Building Code, which is potentially relevant to PPC27, is confined to certain aspects of “building work”, most relevantly Clause E1.3.2.

Regulation under the RMA is for the broader purpose of giving effect to the sustainable management purpose of the Act. A district plan may regulate the use, development or protection of land e.g. subdivision, earthworks, activities within buildings and location of buildings. The area of control is wider than the building site. Under the RMA, regulation and control of building work does not necessarily occur at the time of building, for example it could occur at the time of subdivision or earthworks. The RMA also provides an opportunity for area-wide mitigation that is not available under the Building Act or the Building Code.

PPC27 is in large part directed towards matters such as these which are not covered by the Building Code.

A particular interpretation issue arises in relation to section 18 of the Building Act. This section says that “*a person who carries out any building work is not required by this Act to achieve performance criteria that are additional to, or more restrictive than, the performance criteria prescribed in the building code in relation to that building work*”. This could be interpreted as precluding building floor level and free board standards that are more restrictive than the 2% AEP event. However, the preferred interpretation, which is reflected in the binding High Court decision *Building Industry Authority v Christchurch City Council* 3 ELRNZ 96, is that more restrictive flood hazard controls may be included in a district plan if they are for an RMA purpose which is not a purpose of the Building Act.

A key statutory consideration under the RMA is the requirement to give effect to the RPS. As explained in section 4.7 of this report, the RPS requires TCC to undertake Citywide risk assessment for flooding from intense rainfall. According to Appendix L of the RPS, the initial analysis shall analyse the effects of flooding in a 1% AEP event applying sea level rise and future climate change to 2130. This is a higher threshold requirement than the Building Act.

The risk assessments have indicated that the flood modelling which included effects of climate change on sea level and rainfall based on the RCP 8.5 scenario (MfE, 2017), and 2130 future climate for a 1% AEP event, has identified all 19 modelled catchments within Tauranga City as being at High risk from flooding from intense rainfall. The RPS requires that the existing High risk from flooding is reduced to Medium risk or where practicable to Low risk over time. It is unlikely that this outcome could be meaningfully achieved without reducing the risk of flooding to all buildings in the 1% AEP event. This is an RMA purpose which is not a purpose of the Building Act, which is focussed on safety and integrity of structures at a building site level. Additional controls on floor level and freeboard are therefore considered essential for giving effect to the RPS natural hazard provisions. Thus, proceeding with PPC27 is appropriate to give effect to the RPS.

5. Development of proposed plan change

5.1. Current approach to flooding

5.1.1. The Tauranga City Plan (City Plan)

The City Plan has land use provisions which manage natural hazards in general but do not specifically manage flooding from intense rainfall, other than in the Wairakei Urban Growth Area (Papamoa East).

Chapter 8 has objectives and policies for the management of natural hazards. Objective 8A.1.1 requires that adverse effects of natural hazards on people, property and infrastructure are managed. Policies 8A.1.1.1 to 8A.1.1.3 aim to manage subdivision, use and development on land susceptible to a natural hazard, while ensuring that development within existing areas does not result in increased vulnerability and reduces net vulnerability over time. The existing objectives and policies in section 8A do not specifically manage flooding from intense rainfall and therefore do not achieve the risk outcomes sought by the RPS.

Existing provisions in Sections 8B and 8C specifically manage inundation from the sea within the Coastal Hazard Erosion Plan Area (CHEPA), Coastal Hazard Plan Area (CHPA) and the Flood Hazard Plan Area (FHPA). The provisions in these sections can only be implemented in the CHEPA, CHPA and FHPA overlays, as identified in the City Plan Maps. These existing provisions do not relate to flooding from intense rainfall.

The City Plan subdivision provisions seek to manage flooding from intense rainfall. Rule 12B.3.1.5. considers the location of building platforms where there is potential risk of inundation to a proposed allotment (not limited to FHFA). Rule 12B.3.1.6 requires a minimum building platform level for subdivision in Papamoa but does not take into consideration the impacts of sea level rise and climate change. When sea level rise and future climate to 2130 based on the RCP 8.5 scenario, are taken into account for a 1% AEP intense rainfall event, which is the design rainfall event that PPC27 is proposing to manage to demonstrate compliance with the RPS, the flood levels in Papamoa increase. Therefore, there is a possibility for dwellings complying with Rule 12B.3.1.6 to flood in this design rainfall event. PPC27 is required to reduce this risk of flooding in intense rainfall events.

5.1.2. Tauranga Infrastructure Development Code (IDC)

The IDC is a non-statutory document used to provide guidance on infrastructure development work within Tauranga, specifically relating to assets being vested to TCC. The purpose of the IDC is to provide technical and process information to ensure that landforms and infrastructure developed in Tauranga achieve appropriate outcomes, while considering co-stakeholders and community needs. It provides a means of compliance to achieve the requirements in the Tauranga City Plan as well as any consent conditions.

The IDC currently has definitions and design standards to manage development on land susceptible to flooding, specifically protecting the conveyance function of overland flowpaths and requiring freeboard. As a 'live' document, the IDC will be updated to ensure that it is consistent with PPC27.

5.1.3. Summary of section

As noted in section 3.1.2 of this report, Tauranga is facing an increased demand for housing to cater for an increasing population. Providing for this growth triggers the RPS requirement for TCC to consider the impact of natural hazards on the city taking into account sea level rise and climate change.

Flood modelling has identified that Tauranga city is susceptible to flooding from intense rainfall. It is expected that intense rainfall events will be more frequent and hazardous due to climate change and sea level rise. Uncontrolled redevelopment of the existing urban areas will increase risk from flooding by increasing the number of properties subject to flood damage. The flooding modelling which included effects of climate change on sea level and rainfall based on the RCP 8.5 scenario to the year 2130 has identified all 19 urban flood model catchments within Tauranga City are at High risk from flooding from intense rainfall. The RPS requires that the existing High risk from flooding is reduced to Medium risk or where practicable to Low risk over time.

Other than in the Wairakei Urban Growth Area where specific City Plan provisions apply, flood risk from intense rainfall is currently managed on a site by site basis by the Building Act and Building Code or at subdivision through s106 of the RMA. As explained above, the Building Act and Building Code provide very limited management flooding, essentially by requiring that surface water, resulting from a 2% AEP rainfall event, shall not enter buildings. This current approach of relying on the City Plan, NZ Building Code and Building Act and the RMA to manage flood risk does not achieve the risk outcomes sought by the RPS, which is a 1% AEP rainfall event which takes into account the effects of climate change on sea level and rainfall based on the RCP 8.5 scenario to the year 2130.

Plan Change 27 is being proposed to reduce the long-term risk of flooding caused by intense rainfall across Tauranga, while continuing to enable urban development to aid in the delivery of a compact city.

5.2. Consultation and engagement

5.2.1. Bay of Plenty Regional Council (BoPRC)

Engagement with BoPRC staff on PPC27 has been ongoing since late 2018. This engagement included workshops, meetings, presentations, the provision of written material such as letters, overview documents, the Citywide flood risk assessment, draft provisions, supporting documents and the draft section 32 evaluation report.

Through this process, general support was expressed for PPC27, however there were two key matters which required consideration, being potential duplication of functions and the risk assessment.

Section 32(b) of the RMA requires that TCC identify other reasonably practicable options for achieving the objective, that is reducing risk of flooding to life and property in intense rainfall. The Regional Natural Resources Plan (RNRP) has provisions within it which manage to an extent flooding and earthworks, this is discussed in section 4.8.1 of this report. Engagement on this matter with BoPRC staff was first initiated in December 2018 and a final position was reached mid-2019. As discussed in section 4.8.1 of this report, the RNRP manages the effects on waterbodies but PPC27 seeks to manage the risk of flooding from intense rainfall and while there may be instances where both the City Plan and the RNRP provisions apply, the provisions are complementary rather than overlapping.

The second key matter was to determine how to step through the Appendix L risk assessment methodology and demonstrate compliance with the RPS Natural Hazard policies. Engagement on this began in December 2018 and was on-going until September 2020. Correspondence with BoPRC on this matter has been attached in Appendix 1c.

5.2.2. Consultation with key stakeholders

Key stakeholder engagement was undertaken from March-July 2020. Engagement has taken the form of presentations to BoPRC, Western Bay of Plenty District Council, meetings and the circulation of overview documents and draft provisions with other key stakeholders. Due to the direct link PPC27 has with PPC26, a dual approach was undertaken for key stakeholder engagement as set out below.

The impervious surfaces provisions, proposed to be in Chapter 14 – Residential Zones, were circulated to a larger number key stakeholders with the PPC26 provisions. The key stakeholders included were members of the Housing Affordability Forum, members of the Property Developers Forum, Western Bay of Plenty District Council, Waka Kotahi NZ Transport Agency, Heritage New Zealand, social housing providers, New Zealand Planners Institute, New Zealand Institute of Architects, Property Council New Zealand, First Gas, central government agencies, group builders and local developers.

Due to the technical nature and limited scope of this Plan Change, more specific engagement was undertaken on the content of all other provisions proposed by PPC27. Meetings were held and feedback on the draft provisions was sought from selected key stakeholders, namely, members of the Property Developers Forum, Western Bay of Plenty District Council, Kāinga Ora and First Gas and BoPRC. General support has been expressed for PPC27.

Schedule 1, clause 3(1)(a) and (b) requires consultation with the Minister for the Environment and other affected Ministers of the Crown. An email has been sent to the Minister for the Environment, Minister for Housing and Minister for Urban Development.

5.2.3. Iwi and Hapū

Section 6(e) of the RMA requires, as a matter of national importance that, “the relationship of Māori and their culture and traditions with their ancestral lands, water, sites, wāhi tapu, and other taonga” shall be recognised and provided for.

Engagement for PPC 27 has been ongoing since January 2019 with Te Rangapū Mana Whenua o Tauranga Moana Partnership (formerly the Tauranga Moana Tangata Whenua Collective) which is an autonomous body comprising representatives from each hapū and iwi and the Resource Management Unit Representatives in the Tauranga City Council area. This engagement included workshops, hui (both as a group and individual hapu/iwi), presentations and the provision of written material such as overview documents and draft provisions. Appendix 2b contains a record of engagement undertaken with iwi and hapu.

Initial feedback identified the key issue that marae susceptible to flooding would be unable to relocate. In early 2019, when the draft provisions were being developed, marae were defined as being a “Social and Cultural building”, for consistency with the RPS. This definition meant that the proposed activity standards would place significant planning constraints on the development or redevelopment of marae. However initial feedback from Tangata Whenua noted that marae have functional locational needs because of spiritual and cultural relationships with the land.

It is appropriate to note here that while the RPS requires all social and cultural buildings to be protected from flooding, Policy NH 6B - Exemptions from the natural hazard risk management approach, states that,

“Policies NH 3B, NH 4B, NH 5B and NH 12A do not apply to the establishment, operation, maintenance and upgrading of activities that have more than low natural hazard risk or which are located in high and medium risk natural hazard zones if the activity:

- (a) Has a significant social, economic, environmental or cultural benefit to the community it services, or is a lifeline utility; and*
- (b) Has a functional need for the location”.*

“Functional need” is not defined in the RPS and the policy explanation refers to functional need being assessed in terms of the efficiency and effectiveness of the location in relation to a given natural or physical resource.

The National Planning Standards includes the following definition of “functional need”:

“means the need for a proposal or activity to traverse, locate or operate in a particular environment because the activity can only occur in that environment.”

Marae have elements of being able to occur only in the environment they are located in because of the spiritual and cultural connection mana whenua have to the land. Marae also have a significant social and cultural benefit to mana whenua. Therefore, it is considered that Marae are exempt from a risk management approach under the RPS.

Nevertheless, it would be inappropriate not to manage the risk of flooding to marae, as these are gathering places and have a cultural significance to the community. Not protecting marae from flooding will increase the risk of the flood hazard to people and place an unreasonable burden on the community to manage the impacts of flooding without direction from the City

Plan. Therefore, further work was undertaken by staff and separate provisions have been included for marae in PPC27 to have a similar consenting pathway as residential buildings. This approach seeks to ensure that flood risk to people and property is managed, while also providing a planning approach that acknowledges the functional locational requirement of marae.

Engagement has also identified that in general, there is a desire to understand and work with natural processes rather than to constrain or control the natural environment. For example, floodplains play an important role in not just protecting communities from flood events, but they also provide habitat for wildlife and enhance water quality. Thus, it can be reasoned that mitigating adverse effects of flooding by protecting and maintaining the natural water storage capacity of floodplains can also enhance the mauri of the natural environment.

The results of the consultation undertaken to understand the aspirations for the use and development of Māori land and the effects PPC27 have on these aspirations have been discussed further in Appendix 2b.

Customary Marine Title applicants under the Marine and Coastal Area (Takutai Moana) Act 2011 have also been identified and were invited to consult with TCC should they wish to via a letter sent on 17 September 2019.

5.2.4. Council meetings

PPC27 has been progressed with PPC26 as future development needs to be managed to ensure risk of flooding is reduced to new properties. The development of the PPC27 has been discussed with the councillors on the following dates.

Date	Meeting and discussions
3 September 2018	<p>City Transformation Committee (DC 263)</p> <p>It was proposed that the Stormwater plan change scope should be widened to management of waters-based natural hazards to incorporate intensive rainfall events, storm surge, inner harbour erosion and groundwater rise with City Plan provisions as well as potentially tsunami risk in order to align the in outcomes of these natural hazards.</p> <p>Meeting Outcomes</p> <p>The Committee approved proceeding with the development of the plan change relating to water based natural hazards.</p>
3 December 2018	<p>City Transformation Committee (DC 349)</p> <p>It was sought that the Committee approves to proceed with PPC27 limited to flooding from intense rainfall events.</p> <p>A wider scope was proposed in September 2018 in order to align outcomes of water based natural hazards. However, it was determined that it is necessary to consider the need to address flooding before enabling intensification across the city through upcoming plan changes. Therefore, it was considered that the plan change focus should be just on flooding caused by intense rainfall as opposed to all water-based hazards.</p> <p>The rescope PPC27, will address the modelled flood risks caused by intense rainfall across Tauranga, in order to assist in ensuring that Medium and long term intensification is directed to appropriate locations. The plan change will ensure through an appropriate rule framework that mitigation measures are incorporated in flood prone areas and overland flow paths. The plan change is likely to include the management of impervious areas in the upper catchments which can exacerbate flooding in lower catchments.</p>

Date	Meeting and discussions
	<p>Addressing all water-based hazards into a single plan change was determined to be too complex at this stage and that it would be better to initially address these hazards in the upcoming review of the City Plan.</p> <p>Meeting Outcomes:</p> <p>The Committee approved the progression of PPC27 in relation to addressing the modelled flood risks caused by intense rainfall across Tauranga.</p>
12 March 2019	<p>Urban Form & Transport Development Committee (DC34)</p> <p>Update on PPC27 was provided which outlined the scope of the plan change is to address flooding caused by intense rainfall. Development of flood modelling and mapping is complete and significant flooding is predicted through the modelling. The premise of the plan change is risk reduction. The development of Citywide framework for this plan change was outlined, which includes managing impervious surfaces, floor levels, protecting overland flowpaths and taking into account climate change.</p> <p>Meeting Outcomes:</p> <p>The Committee noted the progress made on the proposed Plan Change 27 and endorsed the development of detailed provisions for Council approval and future public notification.</p>
23 July 2019	<p>Urban Form & Transport Development Committee</p> <p>An update on PPC27 was provided as part of the Intensification Plan Changes to the Urban Form and Transport Development Committee discussing the timing of notification.</p>
20 August 2019	<p>Urban Form & Transport Development Committee (DC265)</p> <p>Update on PPC27 was provided which outlined staff was engaging with tangata whenua and BoPRC on the duplication of functions. Draft provisions were being developed at the time and a short summary of the issues and the methods to manage the issues, such as protecting earthworks, was provided in the Quarterly update.</p> <p>The link between PPC26 and PPC27 was also highlighted, noting that it is imperative that PPC27 is notified before or at the same time as PPC26 (Housing Choice) to ensure that the risk of flooding to life, property and lifelines from intense rainfall events is avoided or mitigated appropriately as development and redevelopment occurs across Tauranga.</p>
9 June 2020	<p>Urban Form & Transport Development Committee</p> <p>A progress update on PPC27 engagement undertaken with tangata whenua, internal TCC teams, BoPRC and Western Bay of Plenty District Council during March-May 2020 through face-to-face and online meetings.</p>

In addition to the above, progress on PPC27 was provided to the Urban Form and Transport Development Committee through quarterly updates.

6. Methodology and approach to evaluation

6.1. Scale and significance

Under section 32(1)(c) of the RMA, this evaluation report needs to:

“contain a level of detail that corresponds to the scale and significance of the environmental, economic, social, and cultural effects that are anticipated from the implementation of the proposal”.

The following scale and significance assessment discusses the PPC27 in terms of eight factors, and scores each high, Medium or low.

The assessment concludes with a summary and gives a final overall score for the scale and significance of PPC27.

Criteria	Matters for consideration	Comments	Score
Reasons for the change	<ul style="list-style-type: none"> • Giving effect to a higher order document; • Implementation of a non-statutory planning initiative; • Initiated locally because of plan effectiveness monitoring, community reaction to resource use etc. 	<p>The reasons for the change are:</p> <ul style="list-style-type: none"> • To give effect to the RPS Natural Hazards Objective 2.11; • The continuation of the ISP adopted by TCC through the Long Term Plan (2015-25) to reduce flood risk through stormwater management; • To reduce the risk of flooding caused by intense rainfall as Tauranga City is developed and redeveloped to meet the growth demand. 	High
Degree of shift from the current approach	<ul style="list-style-type: none"> • Addressing existing or new resource management issue; • Proposing a new management regime/minor or major change in rule framework; • Extent and scale of regulatory impact; • Degree of 'Packaging' with other plan changes or other interventions; • Discrete provisions, or broader suite of existing provisions; • Changing existing plan objectives, and to what degree. 	<p>Flooding from intense rainfall has not been identified as an issue in Chapter 2 of the City Plan. However, as discussed in Section 3.1.1 of this report, Tauranga has experienced multiple flood events from intense rainfall over the last 15 years and it is expected that Tauranga will be affected by more intense rainfall events more frequently over the next 100 years due to climate change and seal level rise.</p> <p>The City Plan has rule frameworks for other natural hazards and general natural hazard objectives and policies, however there is no rule framework specific to flooding from intense rainfall.</p> <p>Currently, flood hazard is managed through the Building Act 2004 and Building Code and s106 of the RMA (subdivision). However, as discussed in 4.9.3 of this report, the Building Code and Building Act will meet the RPS requirements to reduce natural hazard risk over time.</p> <p>Therefore, PPC27 proposes a new rule framework to be included in the City Plan to manage floodplains, overland flowpaths, flood prone areas across the City and impervious surfaces in the City Living Zone, Suburban Residential Zone and Large Lot Zone.</p> <p>As discussed in Section 3.1.1 of this report, PPC27 is the regulatory response to the wider Integrated Stormwater Project which was adopted by TCC through the Long Term Plan (2015-25) and seeks to reduce risk of flooding through stormwater management.</p> <p>PPC27 is also directly linked to PPC26 which seeks to enable greater residential development capacity and housing choice within existing urban areas. The RPS requires that natural hazard risk needs to be assessed and managed before development occurs. PPC26 relies on the risk assessment undertaken and rule framework developed through PPC27 to meet the RPS natural hazard outcomes for flooding from intense rainfall.</p>	Medium-High

Criteria	Matters for consideration	Comments	Score
		PPC27 is consistent with the existing general natural hazard objectives and policies in the City Plan.	
Who and how many will be affected?	<ul style="list-style-type: none"> Degree of public interest and engagement in issue; Degree to which proposal will address identified community outcomes; How many will be affected? Single landowner/multiple landowners/occupiers/neighbourhoods/businesses/cities/future generations; Degree of impact on private property. 	<p>All properties located within a floodplain, overland flowpath and flood prone areas are affected.</p> <p>Approximately 50% of the properties in Tauranga are modelled to have some flooding in a 1% AEP intense rainfall event taking into account effects of climate change and sea level rise based on the RCP 8.5 scenario to 2130 (MfE, 2017) and will be affected by PPC27.</p>	High
Degree of impact on, or interest from iwi/Maori	<ul style="list-style-type: none"> Level of interest from iwi/Māori engagement with iwi on the issue; Likely degree of impact on iwi/hapū? Impact on sites, areas or resources of significance to iwi/Māori; Degree of consistency with iwi management plans. 	<p>There has been ongoing engagement with Tangata Whenua since early 2019 on PPC27. Issues identified are, for the most part, outside of the scope of the plan change, and are better addressed through the full City Plan review. However, concerns regarding the location and redevelopment of marae have been addressed through PPC27.</p> <p>Further details of Tangata Whenua engagement are contained in Appendix 2 which includes recommendations to undertake a cultural risk assessment and an assessment against iwi management plans.</p>	Medium
When will effects occur?	<ul style="list-style-type: none"> Temporarily (weeks or months); For the next 1–5 years; Ongoing into the future. 	PPC27 seeks to manage development and redevelopment over time to reduce risk to life and property from flooding.	High
Geographic scale of impacts	<ul style="list-style-type: none"> Very localised or wide ranging (i.e., single site/whole zones/one or more regions/single or multiple natural resources). 	PPC27 is a Citywide plan change which applies to all properties susceptible to flooding from an intense rainfall event. The provisions for impervious surfaces apply to the City Living Zone, Suburban Residential Zone and Large Lot Residential Zone.	High
Type of effect	<ul style="list-style-type: none"> Acute/chronic/temporary/cumulative/positive/negative/irreversible; Likelihood and consequence (e.g. low probability, high consequence). 	PPC27 will have ongoing positive effects in terms of reducing risk of flooding to life and property.	Medium

Criteria	Matters for consideration	Comments	Score
	<ul style="list-style-type: none"> • Part(s) of environment affected (ecosystems, infrastructure, amenity); • Degree of impact on social, cultural or economic well-being; • Degree of impact (positive/negative) on Part 2 matters. 	<p>Research undertaken after the Christchurch earthquakes shows that a natural hazard event resulting in property and infrastructure damage adversely affects people's mental health⁶. It follows that the implementation of a planning framework to avoid and minimise property damage from flood events will improve the well-being of residents who would, in the absence of the planning framework, experience flooding.</p> <p>The cost analysis, included as Appendix 4, undertaken for PPC27, concludes that the cost of remediating flood damage far outweighs the initial cost of raising floor level at the construction stage and will have positive effects on economic wellbeing.</p> <p>Floodplains and overland flowpaths are part of the natural system and work alongside stormwater infrastructure to reduce flooding and in the long-term can have positive impacts on the ecosystems in and around streams, rivers and general neighbourhood amenity.</p> <p>PPC27 seeks to manage the use and development of land which is either located within areas affected by flooding from intense rainfall or sites which could cause or exacerbate flooding on downstream properties. The proposed plan change will provide for the social and economic well-being and for the health and safety of people and communities over the long term.</p>	
Degree of policy risk, implementation risk, or uncertainty	<ul style="list-style-type: none"> • Community reaction; • Whether: <ul style="list-style-type: none"> ○ novel, untested approach; ○ weak evidence base; ○ highly uncertain benefits and costs; ○ dependent on other initiatives (such as non-RMA mechanisms); ○ challenging implementation timeframes. 	<p>The general approach to be applied has been tested in other councils such as Auckland.</p> <p>TCC's City Plan Review project is to commence in 2021, with notification in 2024. This provides an opportunity to implement and monitor PPC27 to determine if further changes need to be made through the City Plan Review.</p>	Low

⁶ Bellamy, P., 8 October 2014, Social effects of Canterbury earthquakes, New Zealand Parliament Library Research Papers, <https://www.parliament.nz/en/pb/research-papers/document/00PlibC51211/social-effects-of-the-canterbury-earthquakes>

Criteria	Matters for consideration	Comments	Score
Summary			
<p>TCC is a high growth council facing increasing demand for housing and development. The RPS requires TCC to demonstrate risk reduction from flooding from intense rainfall before any development occurs. The City Plan does not have specific objectives, policies and rules managing flooding from intense rainfall, however the hazard of flooding from intense rainfall is known to the community. Through the ISP, TCC has identified and mapped areas affected by flooding and undertaken education programmes, as discussed in section 3.1.1 of this report, ensuring that the community is generally aware of this natural hazard.</p>			
<p>PPC27 will reduce the risk of flooding from intense rainfall by managing earthworks and development on all properties identified as being within a floodplain, overland flowpath and flood prone area, as well as managing impervious surfaces in City Living, Suburban Residential and Suburban Large Lot Zones. Engagement with Tangata Whenua has been ongoing since early 2019 and concerns regarding the location and redevelopment of existing Marae have been addressed through PPC27. PPC27 gives effect to Section 5 of the RMA as it will have positive ongoing effects into the future in terms of social and economic well-being as well as the health and safety of people and communities over the long term.</p>			
<p>The general approach used for PPC27 has been applied and tested in other councils in New Zealand, however there is further opportunity with the upcoming City Plan Review to closely monitor the Plan Change and make further changes if required.</p>			
<p>The above assessment concludes that the scale and significance of proposed Plan Change 27 is Medium-High. In accordance with s32(1)(c) of the RMA, this evaluation report is required to contain a level of detail that corresponds to the scale and significance of the environmental, economic, social, and cultural effects that are anticipated from the implementation of the proposal.</p>			

6.2. Quantification

Section 32(2)(b) requires that if practicable, the benefits and costs of a proposal are quantified. Given the medium-high scale and significance of the proposal, significant work has been undertaken to understand the impacts of the proposed plan change and to prepare the provisions. This includes but is not limited to flood modelling and risk assessment, cost analysis and architectural testing for the impervious surfaces provisions. However, it would be costly and time consuming to quantify all benefits and costs of the proposal. There are many social benefits to the proposed Plan Change that are difficult to monetise or quantify. Therefore, exact quantification of the benefits and costs in this report was not considered necessary, beneficial or practicable. Rather, this report identifies where there may be additional costs or cost savings.

6.3. Choice of evaluation method / approach

The evaluation method should be appropriate to the scale and significance of the proposal, and to the type of information and issue. Although the scale and the significance of the proposal has been identified as medium-high, as noted above, it is difficult to quantify many of the costs and benefits. To the extent that applies, an appropriate and fulsome evaluation can be undertaken on a qualitative basis.

The following sections start with the identification the high-level resource management issues and then move into an assessment of the appropriateness of objectives and an evaluation of options for achieving the objectives. Section 10 presents a detailed evaluation of the proposed provisions for the preferred approach.

7. Resource management issues

This section identifies the appropriateness of PPC27 in identifying the resource management issues and achieving the purpose of the RMA.

7.1. Population growth

Tauranga City has seen a rapid and sustained increase in population in the last few decades. Consequently, the City needs to provide sufficient housing to meet expected demand for housing as directed through the National Policy Statement on Urban Development. This direction is reflected in the adopted SmartGrowth Strategy, the approved Urban Form and Transport Initiative, the Proposed SmartGrowth Future Development Strategy and Proposed Tauranga Urban Strategy 2050, both recommending that Tauranga must develop 'up' and 'out' to accommodate for the increasing demand.

This presents a challenge for Tauranga in accommodating future population growth in a way that meets the guiding purpose and principles of the RMA. The result of population growth and the finite nature of the land resource in Tauranga is that residential development needs to occur within existing urban limits through infill and intensification.

7.2. Targets for housing development capacity

TCC is required by the National Policy Statement for Urban Development 2020, to set and meet minimum targets for development capacity within Tauranga. TCC must demonstrate compliance with the National Policy Statement by planning for housing to accommodate the increasing population by enabling development through the City Plan, structure plans, Infrastructure Strategies and strategic growth strategies.

7.3. Natural hazards and climate change impact

It is expected that as sea levels continue to rise and climate change occurs, over time the intensity and frequency of natural hazard occurrences, such as flooding caused by intense rainfall will increase. This increase will affect the existing urban landform and it is critical that future landuse and development within Tauranga is planned to be resilient to the increasing natural hazard events.

Therefore, TCC seeks to achieve a balance between PPC26 and PP27 that provides for intensification in appropriate areas and that the risk of flooding from intense rainfall is reduced over time.

7.4. Bay of Plenty Regional Policy Statement - risk assessment

The Bay of Plenty Regional Policy Statement (RPS) sets a strategic direction to be given effect by territorial authorities. The RPS provides a statutory framework for managing natural hazards in the Bay of Plenty Region which requires TCC to reduce the risk of flooding caused by intense rainfall from High risk to Medium and where reasonably practicable to Low risk over time, as development occurs across the City.

7.5. RMA purpose and principles

Section 5

Section 5 sets out the purpose of the RMA, which is to “promote the sustainable management of natural and physical resources”. As discussed in section 2 of this report, PPC27 provides a rule framework which will aid in developing a community that is resilient to flooding in the event of intense rainfall event.

TCC also needs to recognise and provide for the matters of national importance identified in section 6, have particular regard to other matters referred to in section 7 and take into account the principles of the Treaty of Waitangi under section 8. The evaluation of these sections is set out below.

Section 6

The proposed Plan Change objectives will appropriately recognise and provide for relevant matters of national importance as set out below.

Matter	Evaluation
(a) the preservation of the natural character of the coastal environment (including the coastal marine area), wetlands, and lakes and rivers and their margins, and the protection of them from inappropriate subdivision, use, and development:	Parts of the City are within the coastal environment. Tauranga Harbour is an outstanding natural feature and landscape. PPC27 relates to flooding only and does not seek any changes to outstanding natural feature, important amenity landscapes or significant Maori areas.
(b) the protection of outstanding natural features and landscapes from inappropriate subdivision, use, and development:	Floodplains and overland flowpaths are key features of the natural landscape. By keeping them in a natural state instead of piping (overland flow paths) and channelling (floodplains) them the natural landscapes are more likely to be preserved.
(c) the protection of areas of significant indigenous vegetation and significant habitats of indigenous fauna:	

Matter	Evaluation
(d) the maintenance and enhancement of public access to and along the coastal marine area, lakes, and rivers:	<p>Mitigation of flood risk to urban activities will also reduce the need for new stormwater infrastructure to manage flooding in a 1% AEP rainfall event taking into account sea level rise and climate change, to be located in the coastal environment and reduce the need for the scale of existing infrastructure to be increased over time, which could potentially:</p> <ul style="list-style-type: none"> • detract from the natural character of the coastal environment; • detract from the values that make the harbour outstanding; • affect significant indigenous vegetation and significant habitats of indigenous fauna; and • impede access to and along the coastal marine area, lakes, and rivers.
(e) the relationship of Maori and their culture and traditions with their ancestral lands, water, sites, waahi tapu, and other taonga:	<p>PPC27 will support a strategy for urban intensification. This will have positive long term cumulative effects arising from a more compact urban form, with reduced pressure on resources including ancestral lands, water, sites, waahi tapu, and other taonga.</p> <p>PPC27 will place greater protection requirements on cultural buildings and activities located in areas susceptible to flooding. However, in the long term this will have positive effects through avoiding or reducing the potential for these activities to be functionally compromised during flooding events.</p>
(f) the protection of historic heritage from inappropriate subdivision, use, and development:	No effects on historic heritage are identified or expected.
(g) the protection of protected customary rights:	No effects on areas of protected customary rights are identified or expected.
(h) the management of significant risks from natural hazards.	The proposed plan change will reduce flooding risk associated with intense rainfall.

Section 7

The proposed Plan Change objectives have appropriate regard to other relevant matters as set out below.

Matter	Evaluation
(a) kaitiakitanga:	<p>Engagement with Tangata Whenua has identified that protecting floodplains and waterways to protect the natural ecosystem is important.</p> <p>PPC27 proposes to protect floodplains and overland flowpaths to reduce risk of flooding, which has the potential to protect and enhance the natural ecosystems in streams and rivers.</p>
(aa) the ethic of stewardship:	Stewardship is an ethic that embodies the responsible planning and management of resources.

Matter	Evaluation
	PPC27 takes a long term view. It responds to an identified significant risk from flood hazards, taking into account climate change effects.
(b) the efficient use and development of natural and physical resources:	<p>The proposed Plan Change promotes efficient use and development of natural and physical resources through supporting the strategy for urban intensification, whilst increasing resilience to natural hazards.</p> <p>Positive cumulative effects on the use and development of natural and physical resources will result from a more compact urban form.</p>
(ba) the efficiency of the end use of energy:	While not a directly relevant consideration, urban form efficiency will be promoted along with commensurate energy savings. Appropriately protected buildings will reduce the need for remediation following flooding events, reducing waste and related energy losses.
(c) the maintenance and enhancement of amenity values:	While not a directly relevant consideration, amenity outcomes may be affected by changes in building design, responding to flood levels in areas susceptible to flooding. For example, creating open space for amenity purposes and opportunities for biodiversity linkages.
(d) intrinsic values of ecosystems:	<p>Mitigation of flood risk to urban activities through building design, impervious surface control and location of hazardous material will reduce the need for new and expanded stormwater infrastructure within or adjacent to ecosystems and will reduce the need to modify natural water courses.</p> <p>By protecting floodplains, opportunities for biodiversity linkages are provided, supporting the health of the ecosystems in and around rivers and streams.</p>
(e) [Repealed]	N/a
(f) maintenance and enhancement of the quality of the environment:	Environmental quality will be enhanced through the protection of floodplains and overland flowpaths.
(g) any finite characteristics of natural and physical resources:	While not a directly relevant consideration, urban form efficiency will be promoted with broad benefits from the reduced input of finite resources for more compact urban development.
(h) the protection of the habitat of trout and salmon:	Not relevant.
(i) the effects of climate change:	The proposed plan change has regard to climate change. The flood level standards apply appropriate climate change factors.
(j) the benefits to be derived from the use and development of renewable energy	Not relevant

Section 8

The principles of the Treaty of Waitangi (Te Tiriti o Waitangi) have been taken into account in the proposed Plan Change as set out below.

Matter	Evaluation
Partnership	<p>Consultation, or the need to consult, arises from the principle of partnership in the Treaty of Waitangi. This requires the partners to act reasonably and to make informed decisions.</p> <p>The Council has identified and engaged with Tangata Whenua. Through the engagement process, a need to prepare a cultural risk assessment was identified. An assessment criteria has been recommended to TCC in the summary report in Appendix 2b.</p> <p>An assessment criteria is being implemented in parallel with the Plan change to ensure that outcomes are appropriately identified, and measures put in place to ensure effective implementation.</p>
Active Protection	<p>A cultural risk assessment criteria has been prepared to monitor the impacts, positive and negative, of PPC27 and other natural hazards on Māori land over the next three to four years, until the City Plan Review (2024 notification).</p> <p>It is considered that this timeframe will allow sufficient time to evaluate any issues of concern to Māori communities as a result of the provisions.</p>

7.6. Summary

Tauranga's approach to accommodate growth is to provide for intensification in existing urban areas as well as greenfield. As part of planning for this growth, existing urban areas have been identified as susceptible to flooding from intense rainfall. This has resulted in a complex relationship between the built and natural environment. It is necessary to ensure that growth is not encumbered by the City Plan, but concurrently it also needs to be ensured that future development does not occur in a manner that will increase the risk to life and property from flooding and in fact reduces risk over time.

The proposed objectives are necessary and appropriate having regard to the purpose and principles of the Act.

8. Description of Options

8.1. Appropriateness of existing objectives

Under section 32(1)(a) the appropriateness of the objectives must be assessed.

8.1.1. Objectives

The general purpose of the Plan Change is to introduce new objectives, policies and rules to the City Plan that will avoid or mitigate risks from flooding caused by intense rainfall in the manner required by the RPS.

8.1.2. District Plan Objectives

The objective within the City Plan of relevance to flooding from intense rainfall is:

*“8A.1.1 Objective - Adverse effects of Natural Hazards on People, Property and Infrastructure
People, property and infrastructure are not adversely affected by natural hazards.”*

Objective 8A.1.1 is a general natural hazards objective. The City Plan has this high level objective, followed by hazard specific objectives. There is no objective specific to flooding from intense rainfall in the City Plan. The insertion of proposed Objective 8D.1.1 is necessary to achieve consistency with how other significant natural hazards are managed in the City Plan, and to give effect to the RPS, as discussed below.

8.1.3. Appropriateness of Objective

<p>Objective:</p> <p>Introduce the following Objective</p> <p><i>8D.1.1 Objective - Avoidance or Mitigation of Flooding from Intense Rainfall Events</i></p> <p><i>The flood risk to life, property and infrastructure resulting from subdivision, use and development of land is reduced over time.</i></p>

Category	Criteria	Comment
Relevance	Directed to addressing a resource management issue	<p>As noted in section 3.1.2 of this report, Tauranga needs to provide housing for an increasing population. The accommodation for this growth requires TCC to consider the impact of natural hazards taking into account sea level rise and climate change.</p> <p>Objective 8D.1.1 seeks to ensure that future development does not occur in a manner that will increase the risk to life and property from flooding from intense rainfall. The insertion of proposed Objective 8D.1.1 is necessary to achieve consistency with how other significant natural hazards are managed in the City Plan, and to give effect to the RPS.</p>
Relevance	Focused on achieving the purpose of the RMA (Part 2)	<p>The proposed objective achieves the purpose of the RMA as it aims to avoid or mitigate the adverse effects of flooding from intense rainfall on life, property and infrastructure, enabling people and communities to provide for their social, economic, and cultural well-being and for their health and safety, as discussed in section 7.5 of this report.</p> <p>The proposed objective specifically gives effect to s6(h) of the RMA, which requires that the management of significant risk from natural hazards, which includes flooding, shall be recognised and provided for.</p> <p>The proposed objective will also give effect to s7(i) which states that appropriate regard must be given to the effects of climate change.</p>
Relevance	Assists TCC in carrying out its statutory functions (s31)	TCC has the function under s31(b) of the RMA to control any adverse effects of the use, development or protection of land to avoid or mitigate natural hazards. The proposed objective will assist TCC to carry to this function. This is further discussed in section 4.1 of this report.
Relevance	Within scope of higher-level documents	The proposed objective will give effect to the RPS. See Appendix 1 for an assessment of how PPC27 gives effect to the RPS.
Feasibility	Acceptable level of uncertainty and risk	The proposed objective presents an acceptable level of uncertainty and risk. Learnings have been taken from other Councils who have faced similar issues and considered these issues through their full plan review. Furthermore, a cost analysis (Appendix 4) and risk assessments (Appendix 1b) have been undertaken to assist with determining the approach.

Category	Criteria	Comment
Feasibility	Realistically able to be achieved within council's powers, skills and resources	<p>The proposed objective is realistically able to be achieved within council's powers, skills and resources. PPC27 will provide a rule framework for these objectives to be achieved, aiding homeowners and developers to ensure that new buildings and people will be protected from intense rainfall flood events by either building out of hazardous areas or building above the flood levels. A guidance document has been developed by TCC to provide guidance on design requirements for the regulatory provisions set out in PPC27.</p> <p>It is expected that the risk of flooding will be reduced as redevelopment occurs. It is outside of the TCC's control of when this redevelopment occurs, therefore risk reduction will occur slowly, over time.</p>
Acceptability	Consistent with identified iwi/Maori and community outcomes	<p>Engagement with Tangata Whenua has taken place since January 2019. Issues raised have been mostly outside of the scope of the plan change. However, there have been some comments/ questions around the impacts of natural hazards and the protection of culturally significant land and buildings. See Appendix 2 for an assessment of PPC27 against Iwi management plans and for a report on the engagement with Tangata Whenua in relation to the draft provisions.</p> <p>Key stakeholder engagement was undertaken from March-May 2020. Section 5.2.2 of this report discusses the engagement further.</p>
Acceptability	Will not result in unjustifiably high costs on the community or parts of the community	<p>The proposed objective is enabling and provides greater clarity and certainty to applicants on reducing risk of flooding, potentially reducing consenting costs.</p> <p>Furthermore, the objective will protect properties susceptible to flooding in an intense rainfall, saving property owners the cost of flood damage remediation. The one-off cost at the consenting and construction stage will also protect the properties from multiple flood events in the long-term, while the cost of remediation will occur every time there is a flood event if risk of flooding is not managed appropriately. See Appendix 4 for the cost analysis for the upfront costs of to build above the flood level versus remediation costs following a flood event.</p> <p>The protection of floodplains and overland flowpaths will also reduce the impact of flooding on adjacent properties in a flood event, thus avoiding or reducing the cost of remediating flood damage.</p>

9. Options to achieve objective

9.1. Description of options

Five options were considered for achieving proposed Objective 8D.1.1 - Avoidance or mitigation of flooding from intense rainfall. Additional policies are proposed as part of options 2-5 to specify the course of action to achieve a reduction in risk over time.

9.1.1. Overview

The reasonably practicable options identified for evaluation are:

- a) Status Quo;
- b) Permissive;
- c) Enabling;
- d) Restrictive;
- e) Most Restrictive.

The options are described below in detail sufficient for comparative evaluation, including policies, land use and subdivision rules and any related assessment processes.

Non-regulatory options were considered as part of the Integrated Stormwater Project, which has been discussed in section 3.1.1 of this report. An infrastructure led solution to flood risk management was found to place an unreasonable financial burden on the community due to the high capital cost and maintenance cost.

Mapping is required to identify floodplains, overland flowpaths and flood prone areas across the city as part of PPC27. The following two options were considered for mapping the flood risk:

1. Include maps in the City Plan – The flood maps are included in the City Plan through PPC27. Any updates to the maps will require a plan change.
2. Non-statutory maps - There are no planning maps in the City Plan that show areas susceptible to flooding. PPC27 defines floodplain, overland flowpath and flood prone area. To identify whether one or more of these definitions apply to a property, flood hazard information is provided in a publicly available GIS web-viewer and LIMs outside of the City Plan. Flood hazard information is updated over time as information and methods improve.

The mapping options assessment is included in Appendix 7.

9.1.2. Option 1 - Status Quo

There are no specific objectives and policies for flooding from intense rainfall in the City Plan. General natural hazard objectives and policies (all hazards) apply.

Urban activities are generally permitted in areas susceptible to flooding, with flood protection hazard mitigation measures applied under Building Act⁷.

There are no rules that manage cumulative flooding effects from impermeable surfaces.

⁷ Flood protection measures for buildings are applied under Building Code, being a 2% AEP Event for building and 1% AEP event, when assessing the land.

Where a Discretionary Activity status applies to an activity, the general natural hazard objectives and policies must then be considered.

Subdivision requires an assessment under section 106 of the RMA of natural hazards and applies the standards in the City Plan and IDC for setting minimum building platform levels and freeboard, with 2% AEP event criteria applicable at most locations⁸.

Applications are notified unless effects are assessed as less than minor.

There are no planning maps that show areas susceptible to flooding. Flood hazard information is provided in publicly available GIS web-viewer and LIMs.

9.1.3. Option 2- Permissive

Specific objectives and policies to avoid or reduce risk from flooding from intense rainfall, including 1% AEP event which takes into account the effects of climate change on sea level and rainfall based on the RCP 8.5 scenario (MfE, 2017) and 100 year timeframe for flood hazard identification are included in the City Plan.

All land use activities are permitted, subject to a rule that requires protection from the 1% AEP design event.

All activities in areas susceptible to flooding are subject to a site specific assessment and recommendations on risk management measures, certified by suitably qualified person as “Low risk”.

Rules to manage cumulative, downstream flooding effects from impermeable surfaces are imposed on all development.

Subdivision is a controlled activity in areas susceptible to flooding if independently assessed and proven to be Low risk.

The assessment procedure is similar to that applying to geotechnical assessment.

Risk in floodplains, overland flowpaths and flood prone areas is assessed at site level on a case by case basis. This is guided by a technical specification like those used for geotechnical reporting in the IDC (risk assessment method, suitably qualified person, form of reporting, etc). Risk management measures are applied as required, following expert opinion and best practice methods.

Notification of resource consent applications is generally precluded.

Flood hazard information is certified by TCC as compliant with the design event defined in the flood hazard policy, for use by suitably qualified persons undertaking the assessment.

9.1.4. Option 3 - Enabling (Plan Change 27)

Specific objectives and policies to avoid or reduce risk from flooding from intense rainfall, including 1% AEP event which takes into account the effects of climate change on sea level and rainfall based on the RCP 8.5 scenario (MfE, 2017) and 100 year timeframe for flood hazard identification are included in the City Plan.

⁸ There are two exceptions to this:

- Papamoa specifies 5m RL minimum building platform level for subdivision and building. Restricted Discretionary activity if standard not met.
- Wairakei specifies 1% AEP minimum building platform level for land use and subdivision. Non-complying activity if standard not met.

Land use activities are permitted, subject to rules that require protection from the 1% AEP design event. Floors must be located above the design flood level and other standards met that achieve a Low risk. (e.g. depth/velocity of flooding, scale limits on additions to existing activities).

Rules to manage cumulative, downstream flooding effects from impermeable surfaces are imposed on all development.

Higher risk activities (e.g. activities in flood plains, social, cultural and critical buildings) require resource consent, generally as a restricted discretionary or discretionary activity. Matters of discretion are provided for assessment of higher risk activities to ensure onsite and offsite effects are adequately mitigated.

Subdivision is controlled in areas susceptible to flooding where stormwater management provides protection for the 1% AEP design event, through an appropriate rule framework which gives effect to the Objective 8D.1.1.

Notification of resource consent applications is generally precluded.

Flood hazard information is certified by Council as compliant with the design event defined in the flood hazard policy, for use by the public, regulators and suitably qualified persons undertaking any specific assessments.

9.1.5. Option 4 - Restrictive

Specific objectives and policies to avoid or reduce risk from flooding from intense rainfall, including 1% AEP event which takes into account the effects of climate change on sea level and rainfall based on the RCP 8.5 scenario and 100 year timeframe for flood hazard identification are included in the City Plan.

All land use activities in areas susceptible to flooding require resource consent, generally as a restricted discretionary or discretionary activity. Matters of discretion are provided for assessment of activities to ensure onsite and offsite effects are adequately mitigated.

Rules to manage cumulative, downstream flooding effects from impermeable surfaces are imposed on all development.

Subdivision is a restricted discretionary activity in areas susceptible to flooding where stormwater management provides protection for the 1% AEP design event. This is guided by a technical specification like those used for geotechnical reporting in the IDC (risk assessment method, suitably qualified person, form of reporting, etc).

Risk in floodplains, overland flow paths and flood prone areas is assessed at site level on a case by case basis. This is guided by technical specifications set out in the City Plan like those used for the Flood Hazard Plan Area. Risk management measures are applied as required, following expert opinion and best practice methods.

Notification of resource consent applications is generally precluded.

9.1.6. Option 5 – Most Restrictive

Specific objectives and policies to avoid risk from flooding from intense rainfall, including 1% AEP event which takes into account the effects of climate change on sea level and rainfall based on the RCP 8.5 scenario and 100 year timeframe for flood hazard identification are included in the City Plan.

All land use activities in areas susceptible to flooding are a non-complying activity. In all but exceptional cases, development is discouraged in areas that are susceptible to flooding including flood prone areas, overland flow paths and flood plains.

Rules to manage cumulative, downstream flooding effects from impermeable surfaces are imposed on all development.

Subdivision is a restricted discretionary activity in areas susceptible to flooding. Stormwater management must provide protection for the 1% AEP design event for new development. This is guided by a technical specification like those used for geotechnical reporting in the IDC (risk assessment method, suitably qualified person, form of reporting, etc). Where the design standard is not achieved, the application becomes non-complying.

Applications are notified unless effects are assessed as less than minor.

9.2. Analysis of options

9.2.1. Evaluating Effectiveness

Effectiveness generally means consideration of the extent to which an intended outcome will be achieved by an option.

In this case, the relevant outcomes against which effectiveness of an option should be assessed are:

- a) Achieving compact urban form objectives and policies for greenfield and urban intensification;
- b) Achieving natural hazard risk management objectives including:
 - i) Risk reduction in the High risk Area to Medium levels (and lower if reasonably practicable);
 - ii) Achieving a Low risk on development sites after completion of the development.

An option should be evaluated as reasonably effective and not fatally flawed before its efficiency is considered.

9.2.2. Evaluating Efficiency

The most efficient option will be the one that can achieve the outcome at least overall or net cost, taking into account all costs and benefits arising from the intervention.

This is confirmed and emphasised by the Environment Court in *Royal Forest & Bird Protection Society Inc v Whakatāne District Council* [2017] NZEnvC 051 (*Royal Forest & Bird*)⁹.

The obligation under section 32(b)(ii) is to give effect to the objective in the least restrictive manner possible or at the least cost possible.

Hence the efficiency of the options can be evaluated and compared by assessing the following:

⁹ "(59) In considering what rule may be the most appropriate in the context of the evaluation and section 32 of the Act, we consider that notwithstanding the amendments that have been made to that section in the meantime, the presumptively correct approach remains as expressed in *Wakatipu Environmental Society Inc v Queenstown Lakes District Council*: that where the purpose of the Act and the objectives of the plan can be met by a less restrictive regime than that regime should be adopted. Such an approach reflects the requirement in section 30(1)(b)(ii) to examine the efficiency of the provision by identifying, assessing and, if practicable, quantifying all of the benefits and costs anticipated from its implementation. It also promotes the purpose of the Act by enabling people to provide for their well-being while addressing the effects of their activities."

- a) Costs and benefits of establishing the provisions;
- b) Costs and benefits of compliance with the provisions.

9.2.3. Assessment of Options

Options are evaluated below against criteria for effectiveness and efficiency.

Colour coding of the table cells provide an overall qualitative rating of the extent to which an option will meet the criteria:

- Green - High
- Orange – Moderate
- Red – Low

The text within each cell explains the reasoning for the overall qualitative rating.

A low (red) rating on effectiveness is generally viewed as an indication of ineffectiveness and a “fatal flaw”.

9.2.4. Analysis of options

The following table provides an analysis of the five options described above.

	1. Status Quo – Activities are generally permitted in a flood area with mitigation measures applied under the Building Act.	2. Permissive – All land use activities are permitted in a flood area, subject to a rule that requires protection from the 1% AEP design event	3. Enabling – Permitted baseline, High risk activities in a flood area are RD or Discretionary	4. Restrictive – All land use activities in a flood area are RD or Discretionary	5. Most restrictive – All land use activities in a flood area are NC
Costs					
Environmental	<p>Increased incidents of flooding because of inappropriate use and development in areas susceptible to flooding resulting in harmful and irreversible adverse effects on the environment from inappropriate mitigation measures used to reduce flooding on properties.</p> <p>Increasing and ongoing impacts from climate change and sea level rise on the natural and physical environment.</p>	<p>There are no environmental costs associated with this option as adverse effects of flooding from intense rainfall on the natural and physical environment will be reduced as development occurs.</p>	<p>There are no environmental costs associated with this option as adverse effects of flooding from intense rainfall on the natural and physical environment will be mitigated.</p>	<p>There are no environmental costs associated with this option as the natural and physical environment will be protected from the adverse effects of flooding from intense rainfall.</p>	<p>There are no environmental costs associated with this option as adverse effects of flooding from intense rainfall on the natural and physical environment will be largely avoided.</p>
Economic	<p>The economic loss of flood damage remediation (see Appendix 4 for Cost Analysis).</p> <p>The economic losses to community, businesses and local government from flood damage, e.g. community buildings.</p>	<p>Site specific assessments through a suitably qualified person will be undertaken to demonstrate that risk of flooding is reduced, and the permitted rule is met, adding further cost to the applicant. Therefore, the implementation is likely to be costly and time consuming.</p> <p>Cost to Council of progressing plan change.</p>	<p>Compliance costs are increased for some developments, such as developments which do not meet the permitted standards for risk mitigation, developments located within a floodplain and for other identified vulnerable activities.</p> <p>Raising floor levels to create more resilient buildings will limit the available building development envelope potentially creating a disincentive to redevelopment.</p>	<p>All activities affected by flooding will require a resource consent. Therefore, compliance costs are increased for all development, including development that could meet standards for risk mitigation.</p> <p>This may also limit the scope of redevelopment for some properties.</p> <p>Raising floor levels to create more resilient buildings will limit the available building development envelope</p>	<p>The scope of redevelopment on land affected by flooding will be within the existing use right limits of scale, intensity, and character effects, limiting the opportunity for redevelopment and intensification.</p> <p>Cost to Council of progressing plan change.</p>

	1. Status Quo – Activities are generally permitted in a flood area with mitigation measures applied under the Building Act.	2. Permissive – All land use activities are permitted in a flood area, subject to a rule that requires protection from the 1% AEP design event	3. Enabling – Permitted baseline, High risk activities in a flood area are RD or Discretionary	4. Restrictive – All land use activities in a flood area are RD or Discretionary	5. Most restrictive – All land use activities in a flood area are NC
			Cost to Council of progressing plan change.	potentially creating a disincentive to redevelopment. Cost to Council of progressing plan change.	
Social	Escalating risk from flooding from intense rainfall to new and existing development. Inappropriate development in High risk areas and therefore the community with insufficient mitigation measures. Potential harm to or loss of life.	Site specific assessments will be undertaken to demonstrate that risk of flooding is reduced. Therefore, the implementation is likely to be costly and time consuming. Also creates uncertainty of time and cost to the community. Potential inconsistent outcomes could mean that risk to life is not reduced in all instances.	Community, people, businesses and local government will need to familiarise themselves with a new rule framework.	Community, people, businesses and local government will need to familiarise themselves with a new rule framework.	Existing dwellings susceptible to flooding will be unable to build out of the situation because of prohibitive nature of the rule framework, therefore the risk of flooding to life and property will not decrease significantly.
Cultural	Increased incidences of flooding from intense rainfall on Maori owned land resulting in damage including flooding of papakainga housing and some marae (Whareroa and Maungatapu). Potential loss of cultural heritage and degradation of mauri.	Site specific risk assessment will be undertaken to demonstrate risk reduction. Development or redevelopment of culturally significant buildings susceptible to flooding will be costly and time consuming, with potential for inconsistent outcomes over time.	Specific rules will apply to cultural buildings and marae to mitigate flooding. People will need to familiarise themselves with this new rule framework.	Specific rules will apply to cultural buildings to mitigate flooding. People will need to familiarise themselves with this new rule framework.	Existing buildings of cultural significance will be unable to build out of the flood hazard because of prohibitive nature of this option, therefore the risk of flooding to life and property will not reduce as required by the RPS.

	1. Status Quo – Activities are generally permitted in a flood area with mitigation measures applied under the Building Act.	2. Permissive – All land use activities are permitted in a flood area, subject to a rule that requires protection from the 1% AEP design event	3. Enabling – Permitted baseline, High risk activities in a flood area are RD or Discretionary	4. Restrictive – All land use activities in a flood area are RD or Discretionary	5. Most restrictive – All land use activities in a flood area are NC
Benefits					
Environmental	There are no environmental benefits to retaining the status quo.	Appropriate mitigation measures used at subdivision, land use and development in areas susceptible to flooding, mitigating damage to the natural and physical environment. Provides flexibility to adopt changing best practice approach and availability of new information.	Controls over maximum impervious surfaces have the potential to improve amenity. Positive effect on the natural environment due to the protection of floodplains and overland flowpaths.	Controls over maximum impervious surfaces have the potential to improve amenity. Positive effect on the natural environment due to the protection of floodplains and overland flowpaths.	Adverse effects of flooding from intense rainfall on the natural and physical environment will be largely avoided, leading to improved amenity and generally a positive impact on the natural environment.
Economic	Avoids the costs associated with preparing and implementing a plan change.	Reduced pressure and impact of flooding on infrastructure over time. While compliance costs are increased, consenting requirements and costs are not significantly different to present. Low level of regulation may be supported by property owners.	Buildings will be protected from flooding in the designed rainfall event and any other smaller events, having an immediate benefit of not requiring remediation of flood damage over the short and long term. Appendix 4 includes the costs analysis of building above the flood level at construction versus the cost of remediation where the cost of remediation is shown to be much higher. The protection of overland flowpaths and control of impervious surfaces will reduce the pressure and	Properties which are able to feasibly redevelop will be protected from flooding in the design rainfall event and any other smaller events, having an immediate benefit of not requiring remediation of flood damage over the short and long term. Appendix 4 includes the costs analysis of building above the flood level at construction versus the cost of remediation where the cost of remediation is shown to be much higher. The protection of overland flowpaths and control of impervious surfaces will	Due to the prohibitive rule framework there is a possibility of reduced costs to Council of maintaining and upgrading infrastructure in these areas over the long term. Due to the prohibitive nature of this option, there will be no economic benefits to private properties.

	1. Status Quo – Activities are generally permitted in a flood area with mitigation measures applied under the Building Act.	2. Permissive – All land use activities are permitted in a flood area, subject to a rule that requires protection from the 1% AEP design event	3. Enabling – Permitted baseline, High risk activities in a flood area are RD or Discretionary	4. Restrictive – All land use activities in a flood area are RD or Discretionary	5. Most restrictive – All land use activities in a flood area are NC
			impact of flood damage on infrastructure, reducing cost to community and local government.	reduce the pressure and impact of flood damage on infrastructure and adjacent properties reducing cost to community and local government.	
Social	Provides a continuation of the existing City Plan approach which has a level of familiarity for Plan users.	Despite the potentially inconsistent outcomes, flood mitigation will reduce risk of injury and death to a significant portion of the community and reduce the risk of flood damage to property.	<p>Provide greater certainty around development and redevelopment on land susceptible to flooding.</p> <p>Compliance will significantly reduce the risk of flooding to life and property for all buildings in a 1% AEP intense rainfall event that takes into account the effects of climate change on sea level and rainfall based on the RCP 8.5 scenario to the year 2130.</p> <p>The rule framework identifies and protects social and critical buildings, ensuring that they continue to function during and after a flood event. The nature of the buildings means that that they provide significant services to the community and need to be protected.</p>	<p>Provide greater certainty around development and redevelopment on land susceptible to flooding.</p> <p>Compliance will significantly reduce the risk of flooding to life and property for all buildings in a 1% AEP intense rainfall event that takes into account the effects of climate change on sea level and rainfall based on the RCP 8.5 scenario to the year 2130.</p>	The scope of redevelopment on land affected by flooding will be within the existing use right limits of scale, intensity, and character effects, limiting the opportunity for intensification. Due to this prohibitive nature there will be no social benefits.

	1. Status Quo – Activities are generally permitted in a flood area with mitigation measures applied under the Building Act.	2. Permissive – All land use activities are permitted in a flood area, subject to a rule that requires protection from the 1% AEP design event	3. Enabling – Permitted baseline, High risk activities in a flood area are RD or Discretionary	4. Restrictive – All land use activities in a flood area are RD or Discretionary	5. Most restrictive – All land use activities in a flood area are NC	
Cultural	Culturally significant buildings and marae will not be protected from flooding. This option has no cultural benefits.	Low level of regulation may be supported when developing or redeveloping culturally significant buildings and marae within flood areas.	Provide greater certainty around development and redevelopment of culturally significant buildings and marae in High risk areas. Compliance will significantly reduce flood damage and associated costs, protecting the building which, due to its heritage and/or cultural significance to the community should be protected.	Provide greater certainty around development and redevelopment of culturally significant buildings and marae in High risk areas. Compliance will significantly reduce flood damage and associated costs, protecting the building which, due to its heritage and/or cultural significance to the community should be protected.	This option has no cultural benefits. Development or redevelopment of buildings of cultural significance and marae will be unfeasible due to the prohibitive nature of this option, meaning the risk of flooding to the buildings will not decrease significantly.	
Effectiveness						
Urban Growth	A compact, well designed and sustainable urban form that effectively and efficiently accommodates the region's urban growth ¹⁰ through greenfield urban growth and urban intensification.	Under this option, greater enablement of intensification cannot proceed as planned. Urban growth is directed increasingly towards greenfield areas as intensification at densities and scale beyond current plan provisions is not positively enabled.	Urban growth enabled as envisaged by the RPS.	Urban growth enabled as envisaged by the RPS.	Urban growth can be provided for as envisaged by the RPS, but slower take up due to additional regulatory burden.	Urban growth is directed to greenfield areas as intensification areas susceptible to flooding is non-complying. Opportunities for intensification are limited to areas with Low risk.

¹⁰ Bay of Plenty Regional Policy Statement Objective 23

	1. Status Quo – Activities are generally permitted in a flood area with mitigation measures applied under the Building Act.	2. Permissive – All land use activities are permitted in a flood area, subject to a rule that requires protection from the 1% AEP design event	3. Enabling – Permitted baseline, High risk activities in a flood area are RD or Discretionary	4. Restrictive – All land use activities in a flood area are RD or Discretionary	5. Most restrictive – All land use activities in a flood area are NC	
Natural Hazards	In natural hazard zones subject to High natural hazard risk reduce the level of risk from natural hazards to Medium levels (and lower if reasonably practicable).	<p>Lack of guidance through the City Plan on redevelopment in areas susceptible to flooding will lead to a less resilient housing stock and will increase the number of people at risk from flooding. This option does not meet the RPS Natural Hazards Objective to reduce risk to life, property and infrastructure.</p> <p>Lack of control of impermeable area limit increases potential for cumulative downstream flooding effects.</p> <p>Retaining the status quo does not comply with the Policy NH 3B as it will not enable a reduction in existing High risk. The status quo will not support the enablement of greater urban intensification,</p>	Natural hazard risk reduction strategy implemented as envisaged by the RPS.	Natural hazard risk reduction strategy implemented as envisaged by the RPS.	Restriction on redevelopment in areas susceptible to flooding reduces propensity to replace housing stock with more resilient designs.	<p>Prohibition on redevelopment on land susceptible to flooding significantly reduces propensity to replace housing stock with more resilient designs.</p> <p>Does not align with the policy explanation provided in Policy NH 3B in the RPS.</p>

	1. Status Quo – Activities are generally permitted in a flood area with mitigation measures applied under the Building Act.	2. Permissive – All land use activities are permitted in a flood area, subject to a rule that requires protection from the 1% AEP design event	3. Enabling – Permitted baseline, High risk activities in a flood area are RD or Discretionary	4. Restrictive – All land use activities in a flood area are RD or Discretionary	5. Most restrictive – All land use activities in a flood area are NC	
	including through Plan Change 26.					
	<p>Require a Low natural hazard risk to be achieved on development sites after completion of the development (without increasing risk outside of the development site).</p>	<p>Current Building Code based approach does not achieve a Low risk as defined by the RPS.</p> <p>This could be addressed by a national policy change, but that is not currently foreseeable.</p> <p>Retaining the status quo does not comply with Policy NH 4B as it will not enable Low risk to be achieved on development sites after completion of the development.</p> <p>The effectiveness of this option is low because the objective is not met.</p>	<p>A permissive approach can be effective in achieving the desired natural hazard and urban form/growth management outcomes.</p>	<p>An enabling approach can be effective in achieving the desired natural hazard and urban form/growth management outcomes.</p> <p>A moderate level of regulation with well prescribed permitted activities is likely to be generally favourable due to certainty and foreseeability of compliance costs. Compliance costs are minimised for development that meets standards for risk mitigation.</p> <p>Consenting requirements and costs for subdivision and more complex land uses are not significantly different to present.</p>	<p>A restrictive approach can be effective in achieving the desired natural hazard and urban form/growth management outcomes. However, the level of regulation may discourage redevelopment in flood prone areas, reducing the propensity to replace existing at-risk housing stock with more resilient designs.</p> <p>Compliance costs are increased for all development, including development that meets accepted standards for risk mitigation, making this option relatively inefficient in terms of compliance costs.</p>	<p>A prohibitive approach would be ineffective in achieving the desired natural hazard and urban form/growth management outcomes. Urban growth is directed to greenfield areas as intensification on any land susceptible to flooding would be actively discouraged, limiting opportunities for intensification.</p> <p>Prohibition on redevelopment in floodable areas significantly reduces propensity to replace housing stock with more resilient designs and does not align with the RPS policy intent.</p> <p>Redevelopment with appropriate risk reduction measures in place is recognised as a pathway</p>

	1. Status Quo – Activities are generally permitted in a flood area with mitigation measures applied under the Building Act.	2. Permissive – All land use activities are permitted in a flood area, subject to a rule that requires protection from the 1% AEP design event	3. Enabling – Permitted baseline, High risk activities in a flood area are RD or Discretionary	4. Restrictive – All land use activities in a flood area are RD or Discretionary	5. Most restrictive – All land use activities in a flood area are NC
					to natural hazard risk reduction.
Efficiency					
Costs and benefits of establishing the provisions and compliance with the provisions	This option does not comply with the RPS Natural Hazards policies NH 3B and NH 4B, resulting in low effectiveness. Therefore, this option cannot efficiently achieve the objective.	The site specific assessments required by a suitably qualified person to demonstrate that risk of flooding is reduced can be costly and time consuming, with potential for inconsistent outcomes over time. The costs of demonstrating compliance with the provisions will outweigh the benefits. Therefore, this is not the most efficient option to achieve the objective.	A permitted baseline and clear matters of discretion are provided for assessment to ensure onsite and offsite effects are mitigated. This will provide certainty of compliance costs and provides a pathway for landowners and developers to demonstrate risk reduction. There will be more resource consents required for developing on land susceptible to flooding, however, well prescribed standards will reduce risk of flooding and provide certainty of compliance costs. The consenting requirements and costs for subdivision and more complex land use activities will not be significantly different to present.	High level of regulation will result in increased compliance costs for all development, including developments which meet the standards for risk mitigation. This could disincentivise redevelopment in areas susceptible to flooding, reducing the propensity to replace housing stock with more resilient designs. The costs of compliance with the provisions outweigh the benefits. This option is not the most efficient option to achieve the objective.	Redevelopment will only occur within the existing use right limits of scale, intensity, and character effects. Therefore, Citywide risk will not be reduced as envisaged by Policy NH 3B. This option will not achieve the objective.

	1. Status Quo – Activities are generally permitted in a flood area with mitigation measures applied under the Building Act.	2. Permissive – All land use activities are permitted in a flood area, subject to a rule that requires protection from the 1% AEP design event	3. Enabling – Permitted baseline, High risk activities in a flood area are RD or Discretionary	4. Restrictive – All land use activities in a flood area are RD or Discretionary	5. Most restrictive – All land use activities in a flood area are NC
			On balance, the benefits of demonstrating compliance with the provisions will outweigh the costs. This is the most efficient option to achieve the objective.		
Risk of acting or not acting					
There are risks associated with not acting and retaining the status quo. The status quo option does not give effect to the RPS, which requires a Low risk to be achieved to comply with Policies NH3B and NH4B. The implementation of an enabling rule framework through a plan change to the City Plan is appropriate to manage flooding from intense rainfall.					

9.2.5. Preferred Option

As experienced by Tauranga, flood hazard events are costly to the community and require enormous resources for the response and recovery effort. Avoiding and mitigating the adverse effects of natural hazards has significant social and economic benefits as discussed in this report. It is often more cost effective to use flood hazard planning than to rely on expensive mitigation works.

Mapping is an important part of how TCC and the community identify, manage and reduce the risk of flooding from intense rainfall. Option 2, which proposes the mapping to be non-statutory, provides flexibility to adopt changing best practice approach and up to date information without requiring a costly and time consuming plan change. Options for mapping are discussed in Appendix 7.

A Citywide risk assessment has highlighted that Tauranga is at High risk from flooding from a 1% AEP event which takes into account the effects of climate change on sea level and rainfall based on the RCP 8.5 scenario (MfE, 2017) to the year 2130, which is consistent with the RPS (see Appendix 1). TCC is required to give effect to the RPS, which sets out the requirements to reduce the City wide risk of flooding caused by intense rainfall from High to Medium risk and where practicable to Low risk. Therefore, an assessment of options has been undertaken to consider how this risk is reduced by TCC in the design rainfall event noted above.

Option 1 of maintaining the status quo will not reduce the risk of flooding caused by intense rainfall to the community. There are no existing rules in the City Plan which will give effect to Objective 8D.1.1, to reduce the risk of flooding from intense rainfall. Currently, any flood mitigation measures are applied under the Building Act or s106 of the RMA for subdivision. As discussed in section 4.9.3 of this report, the Building Act protects the building work in a 2% AEP event, however it does not reduce risk to life in a 1% AEP event. Therefore the status quo option does not give effect to the RPS Natural Hazards Policies NH 3B and NH 4B, which requires risk reduction to be achieved Citywide and on the development site after the completion of development.

Option 2 of introducing a permissive rule framework through a plan change will be a relatively inefficient option. All land use activities will be permitted in this option, subject to a rule that requires protection from flooding in the 1% AEP design rainfall event. This option would require that risk is assessed at a site specific level by a suitably qualified person before risk management measures are applied based on expert opinion and best practice. Therefore, while this option will give effect to the RPS, the cost of demonstrating compliance could potentially be high. Furthermore, if assessment and risk mitigation is undertaken with no guiding standards in City Plan, the risk of inconsistent outcomes over time may increase, making this option comparatively ineffective and therefore inefficient due to the uncertainty of outcome and cost of compliance. While this option is better than the status quo, it is considered that the new provisions need to be more explicit to give effect to the RPS.

Option 4 will require a Restricted Discretionary or Discretionary resource consent for all land use activities located in a floodable area. While this will provide explicit standards to mitigate flood risk, this option will also result in a high compliance cost for all developments. The high level of regulation could disincentivise redevelopment in areas susceptible to flooding, reducing the propensity to replace housing stock with more resilient designs. This option will give effect to the RPS by reducing risk over time, however the uptake of redevelopment is likely to be slow if at all, which reduces the effectiveness of this option. The efficiency of this option is low due to the high costs of compliance and low effectiveness.

In option 5, all land use activities located on land susceptible to flooding will be Non-complying. The restrictive nature of this option would limit the scope of redevelopment to existing use rights, and therefore limits the scale and intensity of the built form. Redevelopment is essential in reducing the existing and future risk of flooding. This option will not give effect to Policy NH 3B of the RPS and therefore the effectiveness and efficiency of option 5 is low.

Option 3 introduces an enabling rule framework through a plan change is assessed as the most effective and efficient option. An enabling approach can be effective in achieving the desired natural hazard and urban form/growth management outcomes. This option will encourage redevelopment in flood prone areas, increasing the propensity to replace at risk housing stock with more resilient designs.

A moderate level of regulation with well prescribed permitted activities and standards is also likely to be generally favourable due to certainty of compliance costs. Furthermore, compliance costs are minimised for developments that meet the permitted standards for risk mitigation and consenting requirements and costs for subdivision and more complex land uses are not significantly different to present.

Option 3 gives will reduce the risk of flooding across Tauranga and on the development site as envisaged by Policies NH 3B and 4B of the RPS. This option has high efficiency and effectiveness because the benefits significantly outweigh the costs. Consequently, of the options described and assessed, an enabling approach is the most appropriate option.

10. Detailed evaluation of proposed provisions for preferred approach

The changes to existing provisions applying to the preferred option are discussed below in groups of related provisions.

10.1. Chapter 3 - Definitions

Definition	Comment
<p>‘annual exceedence probability (AEP)’</p> <p><i>Means the probability that a natural hazard event of a certain size will occur, or will be exceeded, in a time period of one year.</i></p>	<p>The existing definition refers to flooding only, however AEP is the probability of a natural hazard occurring in any given year. The proposed rewording is intended to provide clarity to plan users when considering natural hazards other than flooding.</p>
<p>‘critical buildings’</p> <p><i>Means activities, landuse, buildings and structures:</i></p> <ul style="list-style-type: none"> a) <i>Operated by agencies assisting the public in times of emergency, including the New Zealand Fire Service or an equivalent emergency fire service, the New Zealand Police, the Coastguard and ambulance services (including air ambulance services);</i> b) <i>Public and private hospitals and other similar facilities providing emergency medical services;</i> c) <i>Civic Defence Emergency centres</i> <p>‘marae’</p> <p><i>Means a specific area containing a complex of buildings which a hapū regards as their base for hosting meetings and other ceremonial occasions (hui).</i></p> <p>‘social and cultural buildings’</p> <p><i>For the purpose of Chapter 8 – Natural Hazards, means activities, landuse, buildings and structures for places of worship, art galleries, museums, libraries, community centres, community halls, rest homes and education facilities.</i></p>	<p>These terms have been introduced as part of PPC27. The addition of these definitions will provide clarity and certainty to plan users.</p> <p>The proposed definitions are consistent with the RPS.</p>

Definition	Comment
<p>‘flood depth’ Means the depth of water measured from the ground to the top water level in a flood.</p> <p>‘flood level’ Means the level a flood reaches in the 1% annual exceedence probability (AEP) rainfall event concurrent with a 5% annual exceedence probability (AEP) storm-tide event, taking into account the effects of climate change on rainfall and sea level based on the RCP 8.5 median scenario as of the year 2130.</p> <p>‘floodplain’ Means the land adjacent to a stream or river channel, susceptible to flooding in the 1% annual exceedence probability (AEP) rainfall event concurrent with a 5% annual exceedence probability (AEP) storm-tide event, taking into account the effects of climate change on rainfall and sea level based on the RCP 8.5 median scenario as of the year 2130.</p> <p>‘flood prone area’ Means the land susceptible to flooding in the 1% annual exceedence probability (AEP) rainfall event concurrent with a 5% annual exceedence probability (AEP) storm-tide event, taking into account the effects of climate change on rainfall and sea level based on the RCP 8.5 median scenario as of the year 2130, but is not within the definition of overland flowpath or floodplain.</p>	<p>These terms have been introduced as part of PPC27. The addition of these definitions will provide clarity and certainty to plan users.</p> <p>These definitions are required for the Plan’s ease of use and efficient administration.</p> <p>See Appendix 7 for further discussion on the development of the mapping.</p>
<p>‘freeboard’ Means the minimum height of the finished floor level above the flood level.</p>	<p>The ‘freeboard’ definition has been introduced as part of PPC27 to provide clarity and certainty to plan users.</p>
<p>‘habitable room’ Means any room used for the purposes of teaching or used as a living room, dining room, sitting room, bedroom and office or other room specified in the Plan to be a similarly occupied room.</p>	<p>The ‘habitable room’ definition has been introduced as part of PPC27 to provide clarity and certainty to plan users. This definition has been used from the National Planning Standards.</p>
<p>‘impervious surfaces’ Means an area with a surface which prevents the infiltration of rainfall into the ground. For the purposes of this definition impervious surfaces include:</p> <ul style="list-style-type: none"> a) roofs; b) paved areas including driveways and sealed/compacted metal parking areas; c) patios; d) swimming pools; e) sealed and compacted metal roads; and 	<p>The proposed definitions have been introduced as part of PPC27 to provide clarity and certainty to plan users.</p>

Definition	Comment
<p>f) <i>soil layers engineered to be impervious such as compacted clay.</i></p> <p><i>For the purposes of this definition impervious surfaces excludes:</i></p> <p>a) <i>any natural surface;</i></p> <p>b) <i>grass and bush areas;</i></p> <p>c) <i>gardens and other vegetated areas;</i></p> <p>d) <i>porous or permeable paving and living roofs;</i></p> <p>e) <i>permeable artificial surfaces, fields or lawns;</i></p> <p>f) <i>slatted decks; and</i></p> <p>g) <i>stormwater management devices.</i></p>	
<p>‘land drainage works’</p> <p><i>Means drainage works of any sort, including the making of drains for receiving water in its natural flow on or from any hills or other sloping lands, and diverting the same to prevent its overflow on to any other lands on a lower level, as well as drains for carrying off water from any lands.</i></p>	<p>The proposed definitions have been introduced as part of PPC27 to provide clarity and certainty to plan users.</p> <p>This definition is consistent with the Land Drainage Act 1972.</p>
<p>‘major overland flowpath’</p> <p><i>Means an overland flowpath with a contributing catchment of 2 hectares or more.</i></p> <p>‘minor overland flowpaths’</p> <p><i>Means an overland flowpath with a contributing catchment which is less than 2 hectares in area.</i></p>	<p>These terms have been introduced as part of PPC27. The addition of these definitions will provide clarity and certainty to plan users.</p> <p>The concept of Major and Minor overland flowpaths is introduced by PPC27 to provide better management of the more hazardous major overland flowpaths while allowing for some changes to the minor overland flowpaths to allow for development to occur (see Appendix 7 Technical Report on Mapping).</p>
<p>‘overland flowpath’</p> <p><i>Means the land overflown by a concentrated flow of water resulting from a 1% annual exceedence probability (AEP) rainfall event concurrent with a 5% annual exceedence probability (AEP) storm-tide event, taking into account the effects of climate change on rainfall and sea level based on the RCP 8.5 median scenario as of the year 2130, as it flows towards the stormwater network, streams, rivers, harbour or the coast. Overland flowpath includes a secondary flowpath which is activated when the primary (often piped) stormwater system gets blocked or when the capacity of the piped system is exceeded. For the purposes of this definition, an overland flowpath includes an artificially designed route using formed or hard surfaces.</i></p>	<p>The proposed definition for overland flowpaths is more comprehensive than the current definition. The update is appropriate as it provides more clarity on the scenario being managed and the role of overland flowpaths when managing flooding.</p>

Definition	Comment
<p>‘stormwater management devices’</p> <p><i>Means a device or facility used to reduce stormwater runoff volume, flow and/or contaminant loads prior to discharge. This includes but is not limited to:</i></p> <ul style="list-style-type: none"> a) <i>rain gardens and swales;</i> b) <i>porous or permeable paving;</i> c) <i>rainwater tank;</i> d) <i>infiltration trenches;</i> e) <i>sand filters;</i> f) <i>green roofs;</i> g) <i>wetlands;</i> h) <i>ponds; and</i> i) <i>proprietary devices.</i> 	<p>The proposed definition for ‘impervious surfaces’ excludes stormwater management devices. This proposed definition for ‘stormwater management devices’ has been introduced as part of PPC27 for the purposes of clarity and ease of administration of the Plan.</p>
<p>‘storm-tide event’</p> <p><i>Means the total observed seawater level which is the combination of storm surge and normal high tide.</i></p>	<p>The definition for floodplains, overland flowpath and flood prone area specify a storm-tide event of 5%. The proposed definition for ‘storm-tide’ has been introduced to provide clarity to plan users and ease of administration of the Plan.</p>

10.2. Policies and rule/assessment criteria evaluation

Policy	Rule/Assessment Criteria	Comment
<p>8D.2.1.1 Policy – Floodplains – General</p> <p>Maintain the conveyance function and storage capacity of floodplains by:</p> <p>a) Restricting the infilling of floodplains;</p> <p>b) Restricting activities within the floodplain; and</p> <p>c) Restricting urban development and subdivision within the floodplain.</p>	<p>Rule 4C.2.10 Floodplains, Major Overland Flowpaths and Flood Prone Areas</p> <p>Rule 4C.3.2.7 For Earthworks in the Floodplain, Major Overland Flowpath and Flood Prone Area</p>	<p>The proposed policy and rules ensure that any adverse impacts of displacement are managed. Raising land above flood level will decrease the storage area, causing the water to overflow onto neighbouring properties.</p> <p>The requirements will achieve the objective of reducing risk to life and property.</p> <p>Almost all new land use activities within a floodplain are discretionary. The proposed policy maintains the storage and conveyance capacity of flood water in these areas, ensuring that new development does not occur in hazardous areas and reducing risk over time. Appendix 6 further discusses the management of earthworks in floodplains.</p> <p>There is also an opportunity to improve the natural ecosystem of rivers and streams as a by-product of protecting floodplains.</p>
	<p>Rule 8D.3.1 Walls and Fences</p>	<p>The proposed policy and rules ensure that existing flood risks are not made worse by alterations to the flow of water in a floodplain. A decrease in the available flow area due to obstruction can increase flood levels upstream and increase the velocity past the obstruction. This increase in velocity can introduce safety issues and cause erosion downstream.</p>
	<p>Rule 8D.3.3 Major overland flowpaths and Floodplains</p> <p>Rule 8D.3.4 Additions in Floodplains</p> <p>12A.6(i) Subdivision, not including boundary adjustments or conversion of cross lease to freehold, located partly within the floodplain</p> <p>12A.8(e) Subdivision, not including boundary adjustments or conversion of cross lease to freehold, located wholly within the floodplain.</p>	<p>The proposed policy and rules prevent higher flood levels from occurring due to reductions in flood storage volume and loss of flood attenuation. The impacts of subdivision, land use and the long-term cumulative impacts arising from similar developments have the potential to cause higher flood levels.</p> <p>Floodplain storage reduces the peak of the flow passed on downstream. Without the storage the peak flow to be dealt with downstream would be higher and the flood risk greater.</p> <p>A maximum gross floor area of 20m² has been included in Rule 8D.3.4 to provide certainty regarding the maximum size of additions and avoid interpretations that argue that even a significant addition could still be assessed as permitted, increasing risk of damage to the building and the people inside.</p> <p>Minimum freeboard level is required to ensure that any additions are set above the flood level, reducing the risk of damage to property and to people inside the building (See Appendix 3 – Technical Report on Freeboard).</p>

Policy	Rule/Assessment Criteria	Comment
<p>8D.2.1.2 Policy - Overland Flowpaths - General</p> <p>Maintain the function of overland flowpaths to safely convey flood water and reduce risk to life, property and infrastructure by:</p> <p>a) Maintaining the water carrying capacity of an overland flowpath; and</p> <p>b) Maintaining the water storage capacity of a major overland flowpath; and</p> <p>c) Restricting activities that may obstruct an overland flowpath; and</p> <p>d) Ensuring that the risk of flooding is not transferred to other people, property or infrastructure; and</p> <p>e) Ensuring that the that the minimum freeboard level of habitable rooms is 500mm above the flood level; and</p> <p>f) Demonstrating that safe evacuation during flood events is provided.</p>	<p>Rule 4C.2.10 Floodplains, Major Overland Flowpaths and Flood Prone Areas</p> <p>Rule 4C.3.2.7 For Earthworks in the Floodplain, Major Overland Flowpath and Flood Prone Area</p> <p>Rule 8D.3.1 Walls and Fences</p> <p>Rule 8D.3.2 Minor Overland Flowpaths</p> <p>Rule 8D.3.3 Major Overland Flowpaths and Floodplains</p> <p>Rule 12A.5(e) Subdivision of a site located wholly or partly within the major overland flowpath.</p> <p>Appendix 12B c) iv) and viii) - Primary and secondary stormwater systems</p>	<p>The proposed policy and rules ensure that any adverse impacts of displacement are managed. Raising land above flood level will decrease the storage area, causing the water to overflow onto neighbouring properties.</p> <p>The proposed rules aim to manage overland flowpaths to provide for the important function of water storage and conveyance while protecting people and property. If overland flowpaths are managed poorly, the potentially destructive power of the water can cause damage to land, property and people.</p> <p>Justification for controlling earthworks is included in Appendix 6</p> <p>The proposed policy and rules to ensure that existing flood risks are not exacerbated by alterations to the flow of water in an overland flowpath. Flow rates can be affected by changes to the gradient, diversion or obstruction of an overland flowpath. A decrease in the available flow area due to obstruction can increase flood levels upstream and increase the velocity past the obstruction. This increase in velocity can introduce safety issues and cause erosion downstream.</p> <p>Water will naturally flow to low points and follow overland flowpaths towards the stormwater network, floodplains or the harbour. This is a natural occurrence, and overland flow paths are an important part of the system in an intense rainfall event. Water must be allowed to flow through areas where this would naturally occur.</p> <p>Vesting and easements allow overland flowpaths to become part of the public network for stormwater management, as well creating any associated recreational, amenity and ecological linkages.</p> <p>The policy ensures that more people are not located within an overland flowpath through inappropriate subdivision and landuse, ensuring that the risk of flooding to life and property is not increased and is reduced over time.</p>
<p>8D.2.1.3 Policy – Floodplains and Overland Flowpaths - Critical Buildings and Social and Cultural buildings</p> <p>Manage activities to reduce the risk to life and property from flooding including:</p>		<p>This policy seeks to ensure that new social and cultural buildings and critical buildings are not located in hazardous locations. These buildings can house more vulnerable people and/or must continue to provide essential services during and after a flood event. It is therefore essential that these buildings are protected from flooding in an intense rainfall event.</p>

Policy	Rule/Assessment Criteria	Comment
<p>a) Avoiding new critical buildings being located within floodplains and overland flowpaths; and</p> <p>b) Avoiding new social and cultural buildings being located within floodplains and overland flowpaths; and</p> <p>c) Restricting additions to existing buildings located within the floodplain and overland flowpaths.</p>		
<p>8D.2.1.4 Policy – Flood prone area - General</p> <p>Requiring new buildings and additions to existing buildings (other than social and cultural buildings and critical buildings) within the flood prone area to mitigate risks from flood hazards by:</p> <p>a) Requiring that the minimum freeboard level of habitable rooms is 500mm above the flood level</p> <p>b) Ensuring that the risk of flooding is not transferred to other people, property or infrastructure; and</p> <p>c) Ensuring that business and industrial activities are designed to minimise damage</p>	<p>Rule 4C.2.10 Floodplains, Major Overland Flowpaths and Flood Prone Areas</p> <p>Rule 4C.3.2.7 For Earthworks in the Floodplain, Major Overland Flowpath and Flood Prone Area</p> <p>Rule 8D.3.5 Flood Prone Areas</p> <p>Rule 8D.3.6 Additions in the Flood Prone Area</p>	<p>The proposed policy and rules ensure that any adverse impacts of displacement caused by earthworks are managed. Raising land above flood level will decrease the storage area, causing the water to overflow onto neighbouring properties. If the displacement effects are not managed, flood risk is transferred to neighbouring and/or downstream properties. Justification for controlling earthworks is included in Appendix 6.</p> <p>Ponded water can create risks for people due to flood depth and damage property from water entering the building.</p> <p>The proposed policy and rules enable development to occur within the flood prone area while protecting property, including goods from flood damage. This includes setting minimum freeboard level above flood levels requirements to mitigate the risk of flooding to people and property from unpredicted circumstances. Justification for setting freeboard is included in Appendix 3.</p> <p>A maximum gross floor area of 20m² has been included in Rule 8D.4.6 to provide certainty regarding the maximum size of additions and avoid interpretations that argue that even a significant addition could still be assessed as permitted, increasing risk of flood water entering the building.</p> <p>Although PPC27 introduces controls for Flood Prone Areas, building in an area with a depth less than 300mm is a permitted activity. Where the depth of ponded water is over 300mm the potential drowning risk and effect on trafficability increases. Mapping of flood prone areas and setting a threshold of 300mm is included in Appendix 7.</p>

Policy	Rule/Assessment Criteria	Comment
<p>to goods and internal fittings caused by flooding.</p>	<p>Table 8D.1 Childcare and Homebased childcare within the Flood Prone Area, where the flood water depth exceeds 300mm.</p>	<p>As noted above, where the depth of water is greater than 300mm the drowning risk increases, especially for toddlers (Appendix 7). The proposed policy and rule seek to mitigate this risk during an intense rainfall.</p>
<p>8D.2.1.5 Policy – Flood prone area – Social and Cultural Buildings and Critical Buildings</p> <p>Manage activities to reduce the risk of flooding in flood prone areas by:</p> <p>a) Requiring new social and cultural buildings and critical buildings to be located outside the flood prone area; and</p> <p>b) Requiring the additions or alterations to existing social and cultural building and critical buildings located within the flood prone area to mitigate risks from flood hazard by:</p> <p>i) Ensuring that the minimum freeboard level of habitable rooms is 500mm above the flood level; and</p> <p>ii) Ensuring that the risk of flooding is not transferred to other people, property or infrastructure; and</p> <p>iii) Demonstrate that safe evacuation during flood events is provided; and</p>	<p>Table 8D.1 New Social and Cultural buildings and Critical buildings</p> <p>8D.4.2.5 Additions in the Flood Prone Areas</p>	<p>This proposed policy, as with Policy 8D.2.1.3, also seeks to ensure that new social and cultural buildings and critical buildings are not located in hazardous locations. As discussed in this table, these buildings house more vulnerable people and/or must continue to provide essential services during and after a flood event. It is therefore essential that these buildings and the people inside are protected from flooding during an intense rainfall event.</p>

Policy	Rule/Assessment Criteria	Comment
<p>iv) Ensuring buildings are designed to minimise damage caused by flooding; and</p> <p>v) For critical buildings located within a flood prone area, ensuring that the activity within the critical building continues in its normal function during and after a 1% AEP rainfall event taking into account the effects of climate change on rainfall and sea level based on the RCP 8.5 median scenario as of the year 2130.</p>		
<p>8D.1.1.6 Policy - Impervious surfaces</p> <p>By restricting on-site impervious surfaces to manage the amount of stormwater run-off generated by a development and ensure that adverse effects of flooding are avoided or mitigated.</p>	<p>Rule 14B.3.7(b) Site Coverage – Suburban Residential Zone (Impervious Surfaces)</p> <p>Rule 14B.3.8(b) Site Coverage – Large Lot Residential Zone (Impervious Surfaces)</p> <p>Rule 14D.4.2.14 (t) Site Coverage - Maximum impervious surfaces</p>	<p>The proposed policy and rules seek to reduce the cumulative effects of development by managing the increase in impervious surfaces which can lead to increased flooding on downstream properties and put additional pressure on the existing stormwater network. The technical report for applying impervious surfaces is included in Appendix 5.</p> <p>It is common practice for Councils to restrict maximum impervious surfaces in order to manage the amount of stormwater runoff generated by development to ensure risk of flooding is reduced. For example, the Auckland Unitary Plan restricts impervious surfaces in certain zones.</p> <p>Architectural testing indicates that it is possible to intensify on an average site size of 720m² and achieve permeable surfaces of up to 30%¹¹.</p>
<p>9A.1.1. Policy – Management of Hazardous Substances in Floodplains, Overland Flowpaths and Flood Prone Areas.</p>		<p>This policy seeks to ensure that any hazardous activities located within floodplains, overland flowpaths and flood prone areas, are appropriately managed to prevent adverse effects on public health and contamination of water in a flood event.</p>

¹¹ Tauranga City Council: Architectural Testing, 2020, Included in PPC26 section 32 evaluation report.

Policy	Rule/Assessment Criteria	Comment
By ensuring that facilities within floodplains, overland flowpaths and flood prone areas, involving the manufacturing, storage, use and disposal of hazardous substances are designed, located and managed to prevent adverse effects on public health and contamination of water		

10.3. Consequential changes

Objective/Policy	Comment
8C.1.1 Objective - Avoidance or Mitigation of Flood-Prone Areas	The current provisions for harbour inundation refer generally to “flood prone-areas” whereas the objective and related policies are specific to flooding caused by harbour inundation. The proposed amendments will remove uncertainty over the scope of the objectives and policies.
4C.1.1.3 Policy – Flood-prone areas	
8C.1.1.1 Policy - Avoidance or Mitigation of Flood-Prone Areas	
12G.1.3 Objective – Stormwater	The proposed amendment is a minor change to the existing objective, seeking to improve clarity without making substantial changes to the meaning. The current objective safeguards from the adverse effects of flooding and inundation from stormwater run-off. However, in this case, flooding and inundation have the same meaning. ‘Inundation’ is being removed to simplify the objective.
12G.1.3.1 Policy – Stormwater	These proposed amendments are minor changes to existing policy and are intended to improve clarity without making substantial changes to the meaning.

11. Conclusion

The Council proposes a change to the Tauranga City Plan to manage development within Tauranga to reduce the risk of flooding from intense rainfall events.

It has been identified, through past flood events and flood modelling that Tauranga is susceptible to flooding from intense rainfall. Tauranga is also a growing city and needs to cater for the increasing demand in housing. This has resulted in a complex relationship between the built and natural environment. As a growing City, greater certainty in provisions is required to ensure future development does not increase or cause flooding. Furthermore, the RPS Natural Hazards objective and policies require that risk of flooding is reduced from High to Medium and where practicable Low risk over time, at the development and city-wide level.

The proposed Plan Change will specifically manage flooding from a 1% AEP intense rainfall event taking into account the effects of climate change on sea level and rainfall based on the RCP 8.5 (MfE, 2017) scenario to the year 2130 as per the requirements of the RPS.

The Plan Change seeks to introduce a new objective and policies to ensure risk reduction is achieved over time. Broadly, this includes protecting floodplains and overland flowpaths, managing development in flood prone areas and controlling earthworks and impervious surfaces to manage the cumulative effects of displacement.

The evaluation of the effectiveness and efficiency of the options has concluded that an enabling approach provides the best long term outcome and with the greatest overall environmental, economic, social and cultural benefit, with strong alignment with the existing natural hazard City Plan objectives.

The enabling approach ensures that growth is not encumbered by the City Plan, but concurrently it will also ensure that future development does not occur in a manner that will increase the risk to life and property from flooding.

12. Appendices

1. Bay of Plenty Regional Council– Regional Policy Statement (A11863914)
 - a. Assessment against the Regional Policy Statement
 - b. Risk Assessments
 - i) Tonkin and Taylor Citywide Risk Assessment
 - ii) Awa Citywide Risk Assessment
 - c. Correspondence - Risk Assessment
 - d. Regional Policy Statement Summary Table
2. Iwi/Hapu Engagement (A11833180)
 - a. Consolidated engagement summary table
 - b. Tangata Whenua responses to Plan Change 27 Summary Report
 - c. Memo - Land affected by floodplains and other Te Rangapu requested information
 - d. Assessment against relevant provisions of iwi/hapu management plans
3. Technical report on Freeboard, 2020 (A11864514)

4. Technical report on Cost Analysis, 2020 (A11564264)
5. Technical report on Impervious Surfaces, 2020 (A11849520)
6. Technical report on Earthworks, 2020 (A11862583)
7. Technical report on Mapping, 2020 (A11864653)

13. References

1. Bay of Plenty Regional Council, 2012, Stormwater Management Guidelines for the Bay of Plenty region.
2. Bay of Plenty Regional Council, 2016, Natural Hazard Risk Assessment User Guide.
3. Bellamy, P., 8 October 2014, Social effects of Canterbury earthquakes, New Zealand Parliament Library Research Papers, <https://www.parliament.nz/en/pb/research-papers/document/00PlibC51211/social-effects-of-the-canterbury-earthquakes>
4. Ministry for the Environment, 2017, Coastal Hazards: Guidance for Local Government. New Zealand: Ministry for the Environment. Retrieved from <https://www.mfe.govt.nz/sites/default/files/media/Climate%20Change/coastal-hazards-guide-final.pdf>
5. Ministry for the Environment, February 2013, Improving Our Resource Management System – Discussion Document.
6. Ministry for the Environment, 2009, Preparing for Future Flooding: A Guide for Local Government in New Zealand
7. Ministry of Business, Innovation and Employment, 2010, NZS 4404:2010 – Land Development and Subdivision Infrastructure.
8. Tauranga City Council, 2020, Infrastructure Development Code
9. Tauranga City Council, 2020, Architectural Testing, Included in PPC26 section 32 evaluation report.