

**IN THE MATTER** of the Resource Management  
Act 1991 ("RMA" or "the  
Act")

**AND**

**IN THE MATTER** of the **PROPOSED**  
**WAIKATO DISTRICT PLAN**  
– Hearing 27 Natural Hazards  
and Climate Change

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**STATEMENT OF EVIDENCE OF ANGUS BRUCE MCKENZIE**  
**FOR MERCURY NZ LIMITED (PLANNING)**

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## **1. INTRODUCTION**

- 1.1 My name is Angus McKenzie. I am a Director and Principal Planner at Place Environmental Planning Group Limited (Place Group). I founded Place Group in November 2015. Prior to my current position, I have held various private consultancy and local government planning positions in New Zealand and the United Kingdom. I have over 19 years of experience as a professional planner with specific experience and expertise in natural resource management and natural hazard planning.
- 1.2 I hold a Bachelor of Resource and Environmental Planning degree (with Honours) which I obtained in 2000. I am a Full Member of the New Zealand Planning Institute.
- 1.3 I have been advising Mercury NZ Limited (Mercury) in relation to strategic and statutory planning, as it relates to Mercury's role as the owner and operator of the Waikato Hydro System (WHS), and Mercury's interest in wider floodplain management issues in the Lower Waikato River.
- 1.4 In December 2019, I was engaged by Mercury to provide planning advice on the Proposed Waikato District Plan (PWDP). I assisted Mercury with the preparation of its submission and further submission on 'Stage 2' of the PWDP. I also assisted Mercury with the preparation of a further submission on the Ambury Properties Limited (APL) plan change and prepared and presented planning evidence on behalf of Mercury as part of Hearing 29. I am therefore familiar with the deliberations process for the PWDP.
- 1.5 I understand that 'Stage 2' of the PWDP has now been integrated into 'Stage 1' of the PWDP and that the submissions will "be heard as a whole" by the Panel . I have prepared this statement of evidence for PWDP Hearing 27 on behalf of Mercury.

### **Expert Witness Code of Conduct**

- 1.6 I have read the Code of Conduct for Expert Witnesses, contained in the Environment Court Consolidated Practice Note (2014) and I agree to comply with it. I can confirm that the issues addressed in this statement are within my area of expertise and that in preparing my statement I have not omitted to consider material facts known to me that might alter or detract from the opinions expressed.

## **Documents reviewed**

1.7 In preparing this statement of evidence I have reviewing the following documents as relevant to Mercury's submission and further submission on 'Stage 2' the PWDP:

- (a) Proposed Waikato District Plan provisions.
- (b) Section 32 Analysis for the Proposed Waikato District Plan.
- (c) "Section 42A Report Hearing 27A: Background and Process – Natural Hazards and Climate Change" by Neil Taylor for Waikato District Council March 2021 (Taylor, 2021).
- (d) "Section 42A Report Hearing 27B: Natural Hazards: General Submissions" by Yvonne Legarth for Waikato District Council March 2021 (Legarth, 2021).
- (e) "Section 42A Report Hearing 27C: Flood Hazards and Defended Areas" by Janice Carter for Waikato District Council March 2021 (Carter, 2021).
- (f) "Section 42A Report Hearing 27F: Fire, Climate Change and Definitions" by Neil Taylor for Waikato District Council March 2021 (Taylor 27F, 2021).
- (g) The supporting appendices and evidence to the above reports.
- (h) The evidence of Dr Grant Webby on behalf of Mercury (Topic 27).

## **Scope of evidence and summary**

1.8 My evidence covers the following matters:

- (a) Outline of Mercury's key interests in relation to the natural hazards and climate change provisions of the PWDP. Specifically, ensuring that the PWDP policy framework manages land use development within the flood plain to mitigate risk, and that effects of cumulative development infill are managed over the life of the plan.
- (b) Overview of the relevant requirements under the Resource Management Act (RMA) and the Waikato Regional Policy Statement (RPS) that require the Waikato District Council (WDC) to address flood hazard risk within the PWDP framework, including the

requirement to take a risk based approach to the management of hazards.

- (c) Comments on the outstanding matters of concern to Mercury that have not been addressed through the Legarth and Carter Section 42A Reports, including the officers' recommended amendments to the PWDP provisions. These matters include ensuring:
  - (i) That the policy framework embeds a risk based best practice approach to managing **high risk and significant risk** associated with flood hazards as required by the RPS. I disagree with the statements in the Carter s 42A Report on significant risk and the interpretation of the RPS, as there are floodable areas outside those identified as High Risk Areas within the PWDP which may also pose significant risk to people and infrastructure. The RPS clearly directs WDC to manage all significant risk that is intolerable.
  - (i) That **all areas of significant flood risk**, including the known flood plain and Lake Waikare, are identified spatially within the PWDP to highlight areas that may be at risk from flooding. The Carter Section 42A concludes that the PWDP maps as proposed are sufficient (subject to some minor amendments). I disagree and consider that WDC should make use of the best available information now to spatially identify the known flood plain within the PWDP.
- (d) My conclusions on the s42A reports in relation to the above.

1.9 **Attachment A** to my evidence sets out:

- (a) Those amendments where I agree with the changes to the PWDP recommended in the Legarth and Carter s42A Reports, and
- (b) Other relief sought in the Mercury submissions that have not been accepted that I consider are still necessary. . For efficiency, Attachment A does not include those provisions that Mercury supported, and no changes were considered necessary (as set out in Mercury's primary submission).

1.10 My evidence is supported by the evidence of Dr Grant Webby on Topic 27, on behalf of Mercury.

## **2. MERCURY'S INTEREST IN FLOOD HAZARDS**

- 2.1 Mercury owns and operates the WHS which consists of the Taupo Gates, eight dams and nine power stations on the Waikato River. Karapiro dam is located South of Cambridge and is the first dam upstream of the Waikato District. Mercury's role includes managing flow (both high and low flows, to the extent possible and authorised) on the main stem of the Waikato River via the WHS and the various consents relevant to its operation. Variable flows may potentially have consequences for downstream land users as a result of water flowing through the main stem of the Waikato River within the Waikato District area.
- 2.2 Mercury is seeking policy and spatial changes to the PWDP to adequately recognise "significant risk" areas associated with natural hazards within the Waikato District. The relief sought in Mercury's primary submission includes amendments to the proposed objectives, policies, rules and mapping (see **Attachment A** to my evidence) to ensure that the full extent of the Flood Plain Management Area is acknowledged with the PWDP.
- 2.3 Mercury's primary interest is how significant flood hazard risk is represented and correspondingly managed through the PWDP framework. Mercury's focus is on the future and the inherent uncertainties around climate change potentially. The PWDP framework therefore needs to manage development within the flood plain to mitigate risk and manage the impacts of cumulative infill development over the lifetime of the plan to ensure the long term functionality of the Lower Waikato-Waipā Flood Control Scheme (LWFS) is maintained.
- 2.4 While the PWDP framework includes mapping of the flood plain (which includes "high risk" areas) relevant to the main stem of the Waikato River, several key areas have been excluded, including most notably Lake Waikare and the Rangiriri Spillway, to the extent relevant to management of a 1% AEP flood event. As I will discuss in my evidence, the additional changes to the PWDP recommended through the s42A reports have not addressed this fundamental matter.
- 2.5 The current PWDP approach is to manage flood hazard risk within these omitted areas through policies and rules, relying on data to be provided through consent/plan changes processes. I consider this approach to be inefficient, given that information regarding the extent of the known flood plain is currently available through Waikato Regional Council. Through its submissions, Mercury is seeking an approach to managing flood risks in the PWDP that utilises the best information available so as to minimise

inefficiencies, assist plan users and result in better decision making in relation to natural hazard risk. I support this approach.

### **3. STATUTORY REQUIREMENTS - MANAGING NATURAL HAZARDS AND ASSOCIATED RISK**

#### **Resource Management Act**

- 3.1 The key requirements to undertake flood hazard identification and manage risk within any district plan, including the PWDP, stem from the Resource Management Act (RMA) and the Waikato Regional Policy Statement (WRPS).
- 3.2 Section 6 of the RMA identifies "*the management of significant risks from natural hazards*" as a matter of national importance which needs to be recognised and provided by all persons exercising functions and powers under the Act. Section 7 (other matters) further requires that WDC has particular regard to the effects of climate change. Managing significant risks from natural hazards and having regard to the effects of climate change (RMA sections 6(h) and 7 (i)) are therefore important considerations in achieving the promotion of the sustainable management of natural and physical resources as required under in section 5 of the RMA (Purpose and principles).
- 3.3 The RMA gives regional councils and territorial authorities a range of functions in relation to managing natural hazard risk (ss30 and 31). In the case of the PWDP, the specific roles for each council are detailed further in Waikato Regional Policy Statement (RPS). .
- 3.4 Section 31 of the RMA sets out functions of territorial authorities (including WDC). Every territorial authority has the following functions for the purpose of giving effect to the RMA:
  - (a) *the establishment, implementation, and review of objectives, policies, and methods to achieve integrated management of the effects of the use, development, or protection of land and associated natural and physical resources of the district:*
  - (b) *the establishment, implementation, and review of objectives, policies, and methods to ensure that there is sufficient development capacity in respect of housing and business land to meet the expected demands of the district:*
  - (c) *the control of any actual or potential effects of the use, development, or protection of land, including for the purpose of—*

(i) *the avoidance or mitigation of natural hazards; and...*

3.5 The RMA definition of an "effect" is broad and 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.*

### **Waikato Regional Policy Statement**

3.6 The RPS allocates natural hazards functions to territorial authorities, including WDC, as follows:

*"4.2.10 For the purposes of avoiding or mitigating natural hazards, territorial authorities shall be responsible for the control of the use of land except for the following, which shall be the responsibility of the Waikato Regional Council:*

*a) the control of the use of land in the coastal marine area and the beds of lakes and rivers; and*

*b) the control of structures in primary hazard zones."*

3.7 In relation to climate change, RPS Policy 4.1.13 requires district plans to recognise and provide for the projected effects of climate change, having particular regard to climate data and projected increases in rainfall and sea levels.

3.8 Section 13 of the RPS sets out the natural hazard risk management approach for the region, which includes requirements on territorial authorities to identify primary hazard zones in district plans. RPS Policy 13.2 requires subdivision, use and development to be managed to reduce the risks from natural hazards to an acceptable or tolerable level.

3.9 RPS Implementation Methods 13.2.1 and 13.2.6 contain clear further direction for regional and district plans in relation to subdivision within areas of intolerable risk and the control of the land use development within the floodplain (or coastal hazard areas) as follows:

## *Implementation methods*

### *13.2.1 Control of subdivision within areas of intolerable risk*

*District plans shall control subdivision to avoid creating demand for new structures within identified high risk flood zones and identified primary hazard zones, and areas at high risk of coastal hazard.*

### *13.2.6 Control of development within a floodplain or coastal hazard area*

*Regional and district plans shall ensure that:*

*a) Subdivision, use and development can only occur in a floodplain with an annual exceedance probability of 1% (where the floodplain does not match the definition of being a High Risk Flood Zone) or in an identified potential coastal hazard area (not being a High Risk Coastal Hazard) area where:*

*i) appropriate assessment of the risks has been undertaken and these risks will not exceed acceptable levels;*

*ii) appropriate assessment of the likely effects has been undertaken, including the effects of any new structure or fill on the diversion of overland flows or any consequential increased runoff volumes;*

*iii) the creation of a new, or exacerbation of an existing hazard, including those off site, and any adverse effects are avoided, remedied or mitigated;*

*iv) any adverse effects of a 1% annual exceedance probability flood event on habitable buildings are avoided or mitigated;*

*v) has been designed and located to minimise the level of coastal hazard risk over its intended lifetime; and*

*vi) any hazardous substance stored as part of the development, or during the construction, or found on or near to the site, will not create a hazard; or*

*b) it is essential infrastructure, and:*

*i) it cannot be located elsewhere;*

*or ii) it will not increase the risk of or from natural hazard.*

3.10 The RPS also requires that assessment of risk within a district plan should be in accordance with relevant standards and plans including, as relevant:

- (a) *NZS9401:2008 (Flood Risk Management – A Process Standard);*
- (b) *the Waikato Civil Defence and Emergency Management Group Plan;*
- (c) *National standard AS/NZ ISO31000: 2009 – Risk Management Principles and Guidelines.*



3.11 Mercury's interpretation of a risk-based approach in accordance with AS/NZ ISO31000:2009 means understanding and quantifying risk in terms of:

- (a) Location (including through the spatial identification of locations that are subject to significant risk);
- (b) probability (e.g. 1 in 100 years);
- (c) magnitude; and
- (d) consequences (e.g. 1m inundation x 2m<sup>3</sup>/s flow).

3.12 Given the above, I conclude that:

- (a) WDC is clearly required and mandated to manage the significant flood hazard risk with the Waikato district and that this function assists in giving effect to the purpose and principles of the RMA.
- (b) The PWDP is the primary land use planning tool available to WDC for managing significant flood hazard risk within the Waikato District and therefore, in my view, it needs to be optimised to include the best information available for identifying and managing natural hazard risk.
- (c) The RPS directs a risk-based approach to the development and implementation of the PWDP in relation to the management of natural hazards.
- (d) In the absence of a risk-based approach being taken for the PWDP, there is potential for other areas being exposed to intolerable risk, which without management, or mitigation measures may leave people and infrastructure vulnerable. .

#### **4. SPATIAL IDENTIFICATION OF FLOOD HAZARD RISK**

4.1 The Carter s42A Report addresses spatial identification of flood hazard risk within the PWDP. The report considers that "*robustly constructed and peer reviewed modelled flood extents placed on the planning maps*" gives the community the greatest certainty as to affected and non-affected areas. Ms Carter considers that such information is more likely to be informed by evidence because of the rigour of the planning process (paragraphs 466 and 467).

4.2 Ms Carter does not accept that a non-statutory map (e.g. a GIS layer) provides enough certainty to ensure the flood plain is given appropriate statutory weight in land use development decision making (paragraph 463).

I agree with this position. Mercury is seeking changes to the maps within the plan to ensure that areas identified as significant risk are given the appropriate statutory weight in the planning process.

- 4.3 The Carter s42A Report notes that not all High Risk Flood Areas in the District have been mapped. This includes the 1% AEP flood extent for the Rangiriri Spillway and Lake Waikare (paragraph 469). In respect of this I refer to the evidence of Dr Webby (Section 6), in which he explains that both the Rangiriri Spillway and Lake Waikare are critical components of the LWFS.
- 4.4 Ms Carter advises that work by WRC to revise the 1% AEP design flood level for Lake Waikare, including the effects of climate change, has yet to be commissioned, although it is understood to be scheduled for the next financial year. She expresses the view that, *"in time, the results of that modelling can be included in the 1% AEP flood extent mapping"*. (paragraph 470).
- 4.5 The omission from the planning maps of the 1% AEP flood extent for Lake Waikare and other areas where the 1% AEP flood extents have not been adequately defined, based on current knowledge, leads me to question how the PWDP manages flood risk until the 1% AEP design flood level (accounting for future climate change effects) is revised. I concur with the evidence of Mr Webby in this respect and consider that not defining flood hazard in areas in the PWDP where there is known flood hazard risk is a flawed approach. In my view it is unnecessary to wait for further information to determine these areas, when historic information (flood data and photographic evidence) is available to hand that could be used to map known areas of the flood plain that may be subject to significant risk.
- 4.6 Based on the evidence of Dr Webby and my review of the relevant s42A reports, I remain of the view that flood hazard mapping and the related planning framework within the PWDP is inadequate. Dr Webby's evidence clearly sets out the hydrological and technical reasons why the current framework fails in its approach, and I rely on his expertise in this regard.
- 4.7 I also concur with the evidence of Dr Webby that the PWDP should:
  - (a) Include reference to the current assessed 1% AEP design flood level of RL 7.37 m for Lake Waikare as an interim measure by appropriately depicting this on the planning maps;
  - (b) require that the effects, including cumulative effects, of any future developments within the above area (including that area covered by

the Ohinewai Structure Plan) on the flood storage capacity of Lake Waikare be considered;

- (c) include a policy response to manage land use development below RL 7.37m around Lake Waikare ; and
- (d) provide for the revised 1% AEP design flood level for Lake Waikare now, acknowledging that the effects of future climate change can be incorporated via a plan change when that technical information becomes available.

## **5. POLICY FRAMEWORK FOR MANAGING FLOOD RISK**

- 5.1 I support Mercury's position that significant risk that presents potentially intolerable levels of risk should be assessed in a risk-based manner to inform the PWDP framework.
- 5.2 I understand that Mercury's approach to risk management is guided by the same risk management principles that the RPS relies upon, particularly ISO31000:2009. The changes sought by Mercury are based on best practice risk management principles to manage natural hazard risk.
- 5.3 The Legarth s42A Report considers submissions and further submissions on the natural hazards chapters and maps where the concern, or decision sought, is of a general nature or applies to the provisions notified as part of Stage 2 / Variation 2 as a whole. This report has accepted some of the relief sought in the Mercury submissions. However, I consider that proposed amendments to the objectives and policies in that report fail to fully acknowledge the need to manage risk within the flood plain.
- 5.4 The Carter s42A Report considers submissions in relation to the provisions on flood hazards and defended areas within Stage 2 of the Waikato Proposed District Plan. Provisions relating to management of flood hazards and Defended Areas include activities, buildings, and subdivision. Ms Carter largely does not accept the relief sought by Mercury in relation to these provisions.
- 5.5 **Attachment A** to my evidence sets out those amendments where Mercury accepts the recommendations contained within the Legarth and Carter reports that I support, and specifies further amendments that I consider are necessary in order to give effect to the RPS. .
- 5.6 The Carter s42A Report rejects (paragraph 80) Mercury's submission to amend the definition for Flood Ponding Area to include reference to the

floodplain. Based on the evidence of Dr Webby, I consider it is clear that the identified Flood Ponding Area is indeed part of the floodplain and is part of its functionality. I am therefore of the view that the amendments proposed to Mercury in relation to this definition are logical and provide greater clarity for plan users. I support the inclusion of these amendments.

- 5.7 Paragraphs 140-144 of the Carter s42A Report discuss risk related topics that, in my opinion, deserve greater scrutiny given the gravity of potential outcomes on people's health and safety.
- 5.8 I agree with Ms Carter, at paragraph 144, where she states that all areas of high risk, are significant, and are also intolerable without mitigation. However, in my respectful opinion the Carter s42A Report fails to adequately conceptualise relevant risk management principles (which are reinforced by the RPS), including the practical application of risk management concepts to flood affected areas in the district, through the use of spatial tools to identify and allow for efficient management of risk.
- 5.9 Ms Carter references the relevant parts of the RPS. However, I disagree with her interpretation of RPS policies and methods. I consider the relevant RPS policy framework, including implementation methods, is explicit and directive in terms of taking a risk based approach to natural hazard identification and management. Notably, Implementation Methods 13.2.6 and 13.2.7 clearly set requirements for undertaking a comprehensive risk based approach to managing flood hazards.
- 5.10 The PWDP framework and the Carter s42A Report use "significant risk" as a surrogate for "high risk". I am of the opinion that this approach is flawed, as a "one to one" relationship does not always exist between significant risk and high risk, notably where floodable areas maybe outside high-risk areas but still present significant risks to people and property. Figure 1 of the evidence of Dr Webby conceptually illustrates the area of potentially unmanaged significant risk that has not been integrated into the PWDP framework. For ease of reference, I include this Figure below.

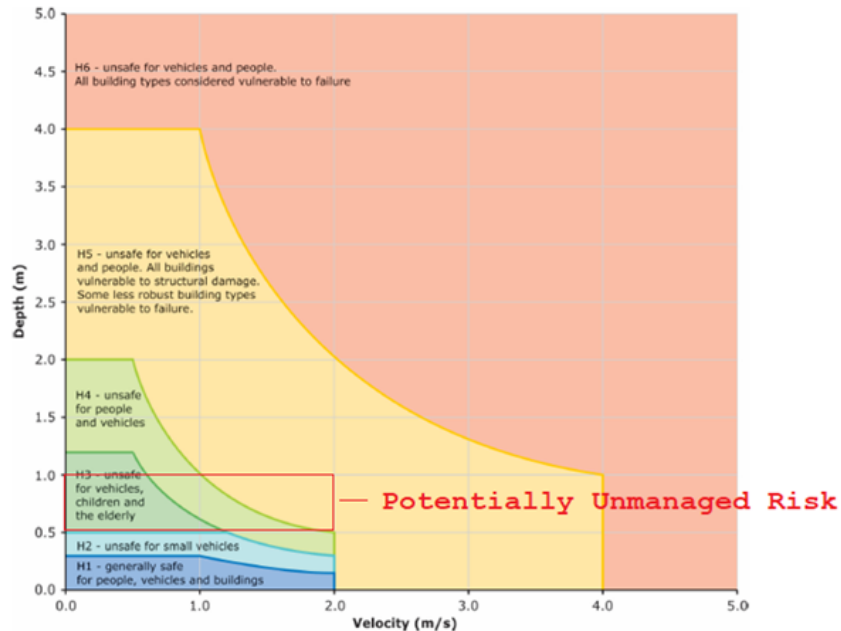


Figure 6.7.9. Combined Flood Hazard Curves (Smith et al., 2014)

**Figure 1: Conceptual Representation of Potentially Unmanaged Risk**

- 5.11 I am of the opinion that the best practice documents referenced in the RPS support a more comprehensive assessment and management of natural hazard risk associated with significant risk. Notably, I understand that significant risk may have consequences (e.g. 99.9cm inundation) which, without mitigation, certain land uses are not able to tolerate. I therefore consider that all significant risk areas should be managed through the PWDP policy framework.
- 5.12 As set out in the evidence of Mr Webby, Paragraph 143 of the Carter Section 42a report describes the approach used to develop Policy 15.2.1.12 Reduce Potential for Flood Damage as being a risk-based approach as it distinguishes between intolerable risk and significant risk, the latter being equated to high risk. Paragraph 144 further states that floodable areas within the 1% AEP floodplain which fall outside those areas which meet the test for a High Flood Risk Area are areas of tolerable risk.
- 5.13 I disagree with this approach as it fails to recognise the continuum of hazard categories as shown in Attachment 3 of the evidence of Mr Webby. Policies

15.2.1.1 and 15.2.1.12 as they are currently drafted would imply that the hazard categories H4 and H3 are 'tolerable' (refer Figure 1 above). In this respect I concur with Mr Webby and do not consider hazard categories H4 and H3 to be tolerable.

- 5.14 I am of the opinion that the panel needs to consider the extent to which existing hydrology information could be utilised within the PWDP to address significant risk that may exist outside high-risk areas. A risk assessment would clarify the risk consequences to ensure sound land use decision making. Unfortunately, it appears this step has been missed, which leaves the panel in a position to make decisions on what information is available now.
- 5.15 Mercury considers that high risk is always significant risk, yet significant risk can also be less than high risk, but still deserves management given potential consequences (effects), including inundation from a 100 year event of 99.9cm or less. The RPS reinforces this point in Implementation Methods 13.2.1 and 13.2.6, which sets policy requirements relating to areas outside of high risk areas, within areas of significant risk that are intolerable.
- 5.16 In requesting further information from Mercury regarding its submissions on the High Risk Flood Area, paragraph 488 of the Carter s42A Report appears to suggest that the onus is on Mercury to undertake a risk assessment to justify tolerability. One of the key concepts in ISO 31000: 2009 (Risk Management) is accountability for decision making. Mercury is not accountable for land use decision making in the PWDP.
- 5.17 . I consider the relief sought by Mercury through its primary submission is logical, pragmatic, and reasonable and would improve the PWDP, from both an identification of risk and risk management perspective. There are not any adverse outcomes I can see from a risk perspective. However, I strongly note that this approach is "less than ideal" and I consider a comprehensive risk based assessment should be completed to underpin the logic of the PWDP.

## **6. CONCLUSIONS**

- 6.1 In my opinion, if WDC is to manage risk in accordance with its RMA statutory obligations, the RPS and current best practice risk management principles, then the amendments to the PWDP discussed in my evidence, as set out in **Attachment A** would improve outcomes for people and communities health and safety through thorough identification and management of significant risk associated with the flood plain.

- 6.2 The spatial and policy outcomes sought in Mercury's submission are logical and pragmatic and can be integrated utilising information that is currently to hand. My conclusion is that the Carter s42A Report has failed to conceptualise the risk management based points made in Mercury's submission and/or integrate these into the PWDP.
- 6.3 I consider that the PWDP should use the best information currently available to ensure significant flood risk is spatially represented within the PWDP and managed within the policy framework. By reference to Dr Webby's evidence, amendments should include, as a minimum, recognition of Lake Waikare and its surrounding catchment (including the Rangiriri Spillway) below RL 7.37m, which forms an integral part of the flood plain and the LWFS.
- 6.4 I do not consider that the PWDP provisions as proposed and amended by the relevant s42A reports ensure that significant flood hazard risk is adequately managed or that cumulative infill effects on flood plain storage are managed long term. Therefore, without the amendments set out in Attachment A, I do not consider that the PWDP gives effect to the RPS and meets WDC's obligations under the RMA.
- 6.5 In lieu of a comprehensive risk-based based approach, I support the relief sought by Mercury and am happy to provide further clarification on the matters raised in this evidence at the hearing.

**Angus McKenzie**

**16 April 2021**

**Attachment A – Relief sought, including analysis of changes to the PWDP recommended in Carter and Legarth s42A Reports**



Section reference	Paragraph/ Provision	PWDP wording including any changes recommended in s42A reports	Relief Sought in Mercury Submission	Mercury position as result of s42A recommendations
15.1 Introduction	1	(1) The Natural Hazards chapter <u>identifies risks associated with natural hazards and</u> manages land use in areas subject to a <u>the</u> risk from natural hazards. It identifies areas where certain types of new development will be avoided because of the natural hazards present, but also recognises that there is existing development, including infrastructure and historic heritage, already located on land subject to natural hazards, <u>and that in some circumstances new infrastructure development in natural hazard areas may be appropriate where the criteria in the plan are met.</u> These areas will require management through mitigation and adaptation to ensure that the risk of damage to property, <u>historic heritage or sites and areas of Significance to Maaori</u> or injury or loss of lives is not increased.”	The Natural Hazards chapter <u>identifies risks associated with natural hazards</u> and manages land use in areas subject to the risk from natural hazards. It identifies areas where certain types of new development will be avoided because of the natural hazards present, but also recognises that there is existing development, including infrastructure and historic heritage, already located on land subject to natural hazards. These areas will require management through mitigation and adaptation to ensure that the risk of damage to property or injury or loss of lives is not increased.	Support recommended changes in Carter s42A Report
15.1 Introduction	3	This district plan adopts a risk-based approach to natural hazard management. The risk that natural hazards pose to the Waikato District is made up of several factors including: a) the nature, magnitude and extent of the hazard; b) the anticipated frequency or probability of the hazard event occurring; and c) the exposure and vulnerability of the environment to the hazard, including the likely community losses/damages that could occur.	Mercury seeks the principles articulated in paragraph 3 are implemented in the plan. Better use of spatial tools is needed to ensure the principles are implemented.	Amend as per submission
15.1 Introduction	4	An understanding of both the scale and likelihood of the natural hazard event, and the likely consequences to the community, are central to the risk-based approach. From a district plan perspective, a risk-based approach requires identification and management of activities based on the level of risk to which they are exposed (e.g. farming may be acceptable in a high flood risk area, whereas residential development may not). The level of control over activities in the district plan is therefore related to the level of risk, and whether such risks are considered acceptable or not.	Mercury seeks the principles articulated in paragraph 4 are implemented in the plan. Better use of spatial tools is needed to ensure the principles are implemented.	Amend as per submission

Section reference	Paragraph/ Provision	PWDP wording including any changes recommended in s42A reports	Relief Sought in Mercury Submission	Mercury position as result of s42A recommendations
15.1 Introduction	8	High quality up-to-date information is important for natural hazard risk management. The district plan requires the use of the best information available to identify land that may be subject to natural hazards. This includes <a href="#">historical flood data and photographic evidence of flood or high flow events</a> , hazard maps, databases (such as the regional and district hazard registers) and technical reports held by the Council, and the interpretation of these by qualified and experienced professionals.	Amend to include reference to use of existing relevant evidence to inform land use planning and management within the flood plain, including historical flood data, and photographic evidence of flood or high flow events.	Support changes as recommended in Legarth s42A Report
15.1 Introduction	9	Climate change has the potential to increase risk through exacerbating natural hazards, but will also have effects on the environment beyond natural hazards. The Ministry for the Environment predicts the effects of climate change on the Waikato District to include overall warmer temperatures, fewer frosts, a decrease in spring rainfall, increased storm events (including extreme winds) and an average rise in mean sea level. This is likely to mean more frequent droughts leading to water shortages, more inland flooding and salt water intrusion in low-lying coastal areas and an increase in erosion and land instability. For this reason, an allowance for the projected effects of climate change, <a href="#">based on the RCP 6.0 scenario over a 100-year period to 2120</a> , has been included in the 2D flood modelling of key risk areas within this district plan. <a href="#">The key risk areas are located from (Horotiu – Huntly – Ohinewai) and include the Flood Plain Management Area, the High Risk Flood Area and two Flood Ponding Areas. No climate change allowance is included in the 1D modelling for the remainder of the Flood Plain Management Areas.</a> <sup>2</sup> Specific provision has also been made within the Coastal Sensitivity Areas in respect to development that may be impacted by the projected effects of sea level rise over a 100-year timeframe.	None	Support changes as recommended in Legarth s42A, noting that an allowance for climate change should be part of any future modelling of risk.

Section reference	Paragraph/ Provision	PWDP wording including any changes recommended in s42A reports	Relief Sought in Mercury Submission	Mercury position as result of s42A recommendations
15.1 Introduction	10	The Flood Plain Management Area is the 1% Annual Exceedance Probability (AEP) floodplain, and is identified through both 1D and 2D modelling, depending on the level of information available. Between Horotiu – Huntly – Ohinewai, where 2D modelling is available, High Flood Risk Areas have also been identified. These are areas within the floodplain where the depth of flood water in a 1% AEP flood event exceeds 1 metre <del>or and</del> the speed of flood water exceeds 2 metres per second <u>or the flood depth multiplied by the flood speed exceeds one</u> , which is considered to put the community at an unacceptable (or intolerable) level of risk in terms of the potential for loss of life, injury or serious damage to property. Subdivision and new activities within the High Flood Risk overlay are carefully regulated	Map full extent of flood plain, which high risk flood areas is a subset only. Mercury seeks that Lake Waikare and the surrounding catchment where ground levels are below 8m RL (Moturiki datum) is included as a Floodplain Management Area overlay within the District Plan.	Amend as per submission. The flood plain management area excludes flood data and photographic evidence
15.2 Objectives and Policies	Objective 15.2.1 Resilience to natural hazard risk	A resilient community where the risks from natural hazards on to people, property, infrastructure and the environment from subdivision, use and development of land are avoided, or <del>appropriately</del> mitigated to acceptable levels.”	Mercury seeks a clear link between areas subject to flooding, including the Floodplain Management Area and High Risk Flood Areas and other chapters relating to land uses that are at significant risk from flooding, and rules controlling these activities in the Floodplain Management Area and High Risk Flood Areas.	Delete and amend as per submission
15.2 Objectives and Policies	Policy 15.2.1.1 New development in areas at significant risk from natural hazards	(a) Avoid new subdivision, use and development where they will increase the risk to people’s safety, well-being and property in the following areas identified as being at significant risk from natural hazards: (i) High Risk Flood Area; (ii) High Risk Coastal Hazard (Inundation) Area; (iii) High Risk Coastal Hazard (Erosion) Area.	Splitting this objective into two to create:  a) One objective to manage significant risk, and b) one objective to manage high risk.  Mercury seeks to ensure significant risk from flood events is managed and that would include flood plain management areas.	Amend as per submission

Section reference	Paragraph/ Provision	PWDP wording including any changes recommended in s42A reports	Relief Sought in Mercury Submission	Mercury position as result of s42A recommendations
15.2 Objectives and Policies	Policy 15.2.1.2 Changes to existing land use activities and development in areas at significant risk from natural hazards	In areas of High Risk Flood, High Risk Coastal Hazard (Erosion) and High Risk Coastal Hazard (Inundation), ensure that when changes to existing land use activities and development occur, a range of risk reduction options are assessed, and development that would increase risk to people's safety, wellbeing and property is avoided.	In areas of High Risk Flood, <u>Flood Plain Management Area</u> High Risk Coastal Hazard (Erosion) and High Risk Coastal Hazard (Inundation), ensure that when changes to existing land use activities and development occur, <u>people and communities are not exposed to intolerable levels of risk from natural hazards and a</u> range of risk reduction options are assessed, and development that would increase risk to people's safety, wellbeing and property is avoided.	Amend as per submission
15.2 Objectives and Policies	Policy 15.2.1.3 New emergency services and hospitals in areas at significant risk from natural hazards	Avoid locating new emergency service facilities and hospitals in areas which are at significant risk from natural hazards, including High Risk Flood, High Risk Coastal Hazard (Inundation) and High Risk Coastal Hazard (Erosion), unless, considering engineering and technical constraints or functional and operational requirements, they cannot be reasonably located elsewhere and will not increase the risk to or vulnerability of people or communities	Avoid locating new emergency service facilities and hospitals in areas which are at significant risk from natural hazards, including High Risk Flood, <u>Flood Plain Management Area</u> , High Risk Coastal Hazard (Inundation) and High Risk Coastal Hazard (Erosion), unless, considering engineering and technical constraints or functional and operational requirements, they cannot be reasonably located elsewhere and will not increase the risk to or vulnerability of people or communities	Amend as per submission
15.2 Objectives and Policies	Policy 15.2.1.4 New infrastructure and utilities in areas subject to significant risk from	(a) Enable the construction of new infrastructure and utilities in areas at significant risk from natural hazards, including High Risk Flood, High Risk Coastal Hazard (Inundation) and High Risk Coastal Hazard (Erosion) areas only where: (i) the infrastructure and utilities are technically, functionally or operationally required to locate in areas subject to natural hazards, or it is not reasonably practicable to be located elsewhere; and (ii) any increased risks to people, property and the environment are mitigated to the extent practicable; and	(a) Enable the construction of new infrastructure and utilities in areas at significant risk from natural hazards, including High Risk Flood, <u>Flood Plain Management Area</u> , High Risk Coastal Hazard (Inundation) and High Risk Coastal Hazard (Erosion) areas only where: (i) the infrastructure and utilities are technically, functionally or operationally required to locate in areas subject to natural hazards, or it is not	Amend as per submission

Section reference	Paragraph/ Provision	PWDP wording including any changes recommended in s42A reports	Relief Sought in Mercury Submission	Mercury position as result of s42A recommendations
	natural hazards	(iii) the infrastructure and utilities are designed, maintained and managed, including provision of hazard mitigation works where appropriate, to function to the extent practicable during and after natural hazard events.	reasonably practicable to be located elsewhere; and (ii) any increased risks to people, property and the environment are avoided, remedied or mitigated <del>to the extent practicable</del> ; and (iii) the infrastructure and utilities are designed, maintained and managed, including provision of hazard mitigation works where appropriate, to function to the extent practicable during and after natural hazard events.	
15.2 Objectives and Policies	Policy 15.2.1.6 Managing natural hazard risk generally	Provide for rezoning, subdivision, use and development outside High Risk Flood, High Risk Coastal Hazard (Inundation) and High Risk Coastal Hazard (Erosion) Areas where natural hazard risk has been appropriately identified and assessed and can be adequately avoided, remedied or mitigated and does not transfer or exacerbate risk to adjoining properties.	Provide for rezoning, subdivision, use and development outside High Risk Flood, <u>Flood Plain Management Area</u> , High Risk Coastal Hazard (Inundation) and High Risk Coastal Hazard (Erosion) Areas where natural hazard risk has been appropriately identified and assessed and can be adequately avoided, remedied or mitigated and does not transfer or exacerbate risk to adjoining properties.	Amend as per submission
15.2 Objectives and Policies	Policy 15.2.1.10 – Areas defended by stopbanks adjacent to the Waikato River	(a) Control subdivision, use and development in areas identified as Defended Areas adjacent to the Waikato River by: (i) assessing the potential risk of overtopping or structural failure of the stopbanks, and overwhelming of associated flood protection structures, before subdivision, <u>use</u> and development occurs; and	Further information and spatial data on risk needs to be provided in the plan to assist assessment of risk in defended areas.	Amend as per submission once spatial data is provided

Section reference	Paragraph/ Provision	PWDP wording including any changes recommended in s42A reports	Relief Sought in Mercury Submission	Mercury position as result of s42A recommendations
		<p>(ii) requiring that consideration be given to appropriate mitigation to reduce any residual risk identified <u>to acceptable levels<sup>1</sup></u>; and</p> <p>(iii) ensuring that any residual risk is not transferred to neighbouring sites-; and (iv) <u>recognising the functional needs and operational needs of the National Grid.<sup>2</sup></u> (a) Specify minimum setbacks for buildings and earthworks from stopbanks to:</p> <p>(i) protect the structural integrity of the stopbanks; and</p> <p>(ii) provide a buffer to reduce the potential risk to life and damage to property from deep and fast-flowing flood waters in the event of a breach.</p>		
15.2 Objectives and Policies	Policy 15.2.1.11 New development that creates demand for new protection structures and works	(a) Avoid locating new subdivision, use and development in High Risk Flood, High Risk Coastal Hazard (Inundation) and High Risk Coastal Hazard (Erosion) Areas where a demand or need for new structural protection works will be required to reduce the risk from natural hazards to acceptable levels.	(a) Avoid locating new subdivision, use and development in High Risk Flood, <u>Flood Plain Management Area</u> , High Risk Coastal Hazard (Inundation) and High Risk Coastal Hazard (Erosion) Areas where a demand or need for new structural protection works will be required to reduce the risk from natural hazards to acceptable levels.	Amend as per submission

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1 2102.69

2 2101.9

Section reference	Paragraph/ Provision	PWDP wording including any changes recommended in s42A reports	Relief Sought in Mercury Submission	Mercury position as result of s42A recommendations
15.2 Objectives and Policies	Policy 15.2.1.12 Reduce potential for flood damage to buildings located on the Waikato and Waipa River floodplains and flood ponding areas	<p>(a) Reduce the potential for flood damage to buildings located on <del>the Waikato and Waipa</del><sup>3</sup> River floodplains and flood ponding areas by ensuring that the minimum floor level of building development is above the design flood levels/ponding levels in a 1% AEP flood event, plus an allowance for freeboard, unless:</p> <ul style="list-style-type: none"> <li>(i) the building <del>development</del> is of a type that is not likely to suffer material damage during a flood; or</li> <li>(ii) the building is a small-scale addition to an existing building; or</li> <li>(iii) the risk from flooding is otherwise avoided, remedied or mitigated.</li> </ul>	No specific relief.	Support changes as recommended in Legarth s42A Report
15.2 Objectives and Policies	Policy 15.2.1.13 Control filling of land within the 1% AEP floodplain and flood ponding areas	(a) Control filling of land within the 1% AEP floodplain and flood ponding areas to ensure that the potential adverse effects on flood storage capacity, overland flows, run-off volumes on surrounding properties <del>or</del> or infrastructure, are avoided or mitigated.	<p>Mercury seeks that the flood plain surrounding Lake Waikare, which is represented by ground levels less than RL8m is mapped and included in the district plan maps as part of the Floodplain Management Area overlay.</p> <p>Mercury seeks that infill development is documented and recorded over time to ensure that infill volumes and cumulative loss of the storage capacity of the Lower Waikato Flood Protection Scheme is managed and displacement of water is understood.</p>	Amend as per submission – policy may need amendments once mapping is complete and a process is agreed for documenting infill development and potential effects overtime

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3 [2102.63]

Section reference	Paragraph/ Provision	PWDP wording including any changes recommended in s42A reports	Relief Sought in Mercury Submission	Mercury position as result of s42A recommendations
15.2 Objectives and Policies	Policy 15.2.1.14 – Hazardous substances located within floodplain and flood ponding areas	<p><b>Policy 15.2.1.14 Hazardous substances located within the 1% AEP floodplain and flood ponding areas, and High Risk Flood Areas</b></p> <p>(a) Ensure that the location and storage of hazardous substances within the 1% AEP floodplain and flood ponding areas, <u>including High Risk Flood Areas, are managed to prevent</u> do not create an unacceptable hazard <u>risks</u> to people, property, <u>infrastructure</u> or the environment.</p> <p>Alternative amendment:</p> <p>(a) Ensure that the location and storage of hazardous substances within the 1% AEP floodplain and flood ponding area <u>areas affected by natural hazards are managed to prevent</u> do not create an unacceptable hazard <u>risks</u> to people, property, <u>infrastructure</u> or the environment.</p>	<b>Avoid</b> the location and storage of hazardous substances in areas which are at significant risk from natural hazards, including High Risk Flood, Flood Plain Management Area, High Risk Coastal Hazard (Inundation) and High Risk Coastal Hazard (Erosion), unless, considering engineering and technical constraints or functional and operational requirements, they cannot be reasonably located elsewhere and will not increase the risk to or vulnerability of people or communities	Amend as per submission
15.2 Objectives and Policies	Policy 15.2.1.15 Flood ponding areas and overland flow paths	<p><b>Policy 15.2.1.15 <del>Flood ponding areas and overland flow paths</del> Managing flood hazards through integrated catchment management</b></p> <p>(a) Manage <del>stormwater flood</del> hazards by requiring new subdivision and development within <u>floodplains</u>, flood ponding areas and overland flow paths to adopt integrated catchment plan-based <del>stormwater</del> management methods which:</p> <ul style="list-style-type: none"> <li>(i) maintain the <del>flood storage capacity function</del> of natural floodplains, wetlands and ponding areas <u>including flood storage capacity</u>; and</li> <li>(ii) retain the function and capacity of overland flow paths to convey stormwater runoff; and</li> </ul>	(a) <u>New subdivision and development that is within a flood ponding area and/or overland flowpath should adopt an integrated catchment plan based stormwater methodology which:</u> (i) <u>maintains</u> the flood storage capacity of natural floodplains, wetlands and ponding areas; and (ii) <u>retains</u> the function and capacity of overland flow paths to convey stormwater runoff; and (iii) <u>does not</u> transfer or increase risk elsewhere; and (iv) <u>promotes</u> low impact stormwater management practices with reference to the Waikato Stormwater Management Guideline and the Regional Infrastructure Technical Specifications	Support intent of changes as recommended in Legarth s42A Report



Section reference	Paragraph/ Provision	PWDP wording including any changes recommended in s42A reports	Relief Sought in Mercury Submission	Mercury position as result of s42A recommendations
		<p>(iii) do not transfer or increase risk elsewhere <u>within the catchment</u>; and</p> <p>(iv) promote <del>low impact best practice</del> stormwater management <del>practices</del><sup>9</sup> with reference to the Waikato Stormwater Management Guideline and the Regional Infrastructure Technical Specifications (RITS); and</p> <p>(v) minimise impervious surfaces.</p>	(RITS); and (v) minimises impervious surfaces.	
15.2 Objectives and Policies	Objective 15.2.2 Awareness of natural hazard risks	<p>A well informed community that: (a) is aware of, and understands, which natural hazards affect the district; and (b) is able to effectively and efficiently respond to, and recover from, natural hazard events.</p> <p><u>Relocate Objective 15.2.2 is moved and located together with the other Objectives in Chapter 15.</u></p>	See definitions for overlays.	Support changes as recommended in Carter s42A Report
15.2 Objectives and Policies	Policy 15.2.2.1 Natural hazard risk information	<p>(a) Enable people to be informed and have access to information on the natural hazards affecting their properties and surrounding area, including through:</p> <p>(i) provision of Land Information Memoranda;</p> <p>(ii) ... natural hazard technical information <u>including the projected effects of climate change</u>, risk registers and mapping on the Council's website, the Waikato Regional Council Hazards Portal, this district plan and accompanying planning maps;</p> <p>(iii) education, provision of information and community engagement; and</p> <p>(iv) alignment with the work of other agencies including iwi and the Waikato Regional Council.</p>	See definitions for overlays	Support changes as recommended in Carter s42A Report

Section reference	Paragraph/ Provision	PWDP wording including any changes recommended in s42A reports	Relief Sought in Mercury Submission	Mercury position as result of s42A recommendations
15.2 Objectives and Policies	Policy 15.2.3.1 Effects of climate change on new subdivision and development	(a) Ensure that adequate allowances are made for the projected effects of climate change in the design and location of new subdivision and development throughout the district, including undertaking assessments where relevant that provide for: (i) the projected increase in rainfall intensity, as determined by national guidance, but being not less than 2.3oC by 2120; (ii) the projected increase in sea level, where relevant, as determined by national guidance, but being not less than 1m by 2120; (iii) in respect to new urban zoning, stress testing under the RCP 8.5 scenario for rainfall [1] and RCP 8.5H+ for sea level rise [2]; and (iv) in respect to the coastal environment, increases in storm surge, waves and wind	No specific relief but note that potentially significant equity issues exist with this policy in relation to cost of assessments.	Retain as per submission
15.2 Objectives and Policies	Policy 15.2.3.2 Future land use planning and climate change	(a) Increase the ability of the community to adapt to the effects of climate change when undertaking future land use planning by: (i) ensuring the potential environmental and social costs of climate change, including effects on indigenous biodiversity (inland migration), historic heritage, Maaori Sites and Areas of Significance, mahinga kai, public health and safety, public access to the coast and waterway margins, and the built environment are addressed. (ii) encouraging the incorporation of sustainable design measures within new subdivision, landuse and development, including: (A) low impact, stormwater management, urban design and green infrastructure; (B) of relocatable buildings and structures in areas potentially at risk due to sea level rise or increased flood levels; (C) efficient water storage; (D) provision of renewable energy generation; and (E) transferring to activities with lower greenhouse gas emissions.  (iii) providing ongoing monitoring of changes to the environment due to climate change; and	See definitions for overlays	Retain as per submission

Section reference	Paragraph/ Provision	PWDP wording including any changes recommended in s42A reports	Relief Sought in Mercury Submission	Mercury position as result of s42A recommendations
		(iv) facilitating community discussion on adaptive pathways to manage the risks associated with climate change and incorporating them, where appropriate, into the district plan through plan changes.		
15.2 Objectives and Policies	Policy 15.2.3.3 Precautionary approach for dealing with uncertainty	In areas throughout the district likely to be affected by climate change over the next 100 years, adopt a precautionary approach towards new subdivision, use and development which may have potentially significant or irreversible adverse effects, but for which there is incomplete or uncertain information.	To limit the burden of responsibility, need to limit extent of policy where valid data sets exist. Mercury considers Council has an obligation to utilise best information available, and ensure timely planning response to natural hazards. Mercury seeks Council undertakes risk assessment, and bases risk upon available data sets including modelled effects, as well as photographic evidence, event reporting, and other relevant information. This will allow for reconciliation of all of the areas within the Waikato River catchment within proposed land use zones and areas that are the subject of submissions for up zoning.	Amend as per submission

Section reference	Paragraph/ Provision	PWDP wording including any changes recommended in s42A reports	Relief Sought in Mercury Submission	Mercury position as result of s42A recommendations
15.2 Objectives and Policies	Policy 15.2.3.5 Assess the impact of climate change on the level of natural hazard risks	For all new subdivision, use and development requiring rezoning or a resource consent, ensure that account is taken of the projected effects of climate change over the next 100 years when assessing any identified risks from natural hazards, and their effects on people, property, infrastructure and the environment. (a) Ensure that, when assessing the effects of climate change on the level of natural hazard risk in accordance with Policy 15.2.3.5(a) above, the allowances in Policy 15.2.3.1(a)(i)(iv) are applied. (b) Where the assessment required by Policy 15.2.3.5(a) and Policy 15.2.3.5(b) above indicates that natural hazards are likely to be exacerbated by climate change, ensure that subdivision and development are designed and located to avoid, or appropriately mitigate, any increased and cumulative risk, including increased risk of flooding, liquefaction, coastal inundation, coastal erosion, slope instability, fire, and drought.	see comment in 15.2.3.3	Amend as per submission
15.2 Objectives and Policies	15.3 How to use and interpret the rules	The activities covered by the rules in this chapter are also subject to the rules in the relevant zone chapters and the districtwide rules in Chapter 14 Infrastructure and Energy.	Mercury seeks a clear link between areas subject to flooding, including the Floodplain Management Area and High Risk Flood Areas and other chapters relating to land uses that are at significant risk from flooding, and rules controlling these activities in the Floodplain Management Area and High Risk Flood Areas.	Amend as per submission
15.2 Objectives and Policies	15.4 Flood Plain Management Area and Flood Ponding Areas 15.4.1	The activities listed below are permitted activities within the Flood Plain Management Area shown on the Planning Maps or in a Flood Ponding Area, if they meet the activity specific conditions set out in this table. (a) Activities may also be restricted discretionary or discretionary	Mercury notes the exclusion of Lake Waikare and the surrounding catchment below ground level of 8m RL from the Floodplain Management Area and requests the inclusion of this area in the overlay as per previous comments.	Amend as per submission

Section reference	Paragraph/ Provision	PWDP wording including any changes recommended in s42A reports	Relief Sought in Mercury Submission	Mercury position as result of s42A recommendations
	Permitted Activities	activities, as specified in Rules 15.4.2 and 15.4.3.		
15.4 Flood Plain Management Area and Flood Ponding Areas	15.4.1 Permitted Activities		Permitted activities within Land Use Zones which could be affected by the Flood Plain need to be identified and rationalised in the risk based manner.	Amend as per submission
15.4 Flood Plain Management Area and Flood Ponding Areas	15.4.1 Permitted Activities P1	Construction of a new building or an addition to an existing building, unless specified in P2 – P5 in Rule 15.4.1. The minimum floor level is at least 0.5m above the 1% AEP flood level; and (a) Compliance with condition (1) shall be demonstrated by a suitably qualified engineer with experience in hydrology.	Construction of a new building or an addition to an existing building, <del>unless specified in P2 – P5 in Rule 15.4.1.</del> where the minimum floor level is at least 0.5m above the 1% AEP flood level. Compliance with <u>rule 15.4.1</u> shall be demonstrated by a suitably qualified engineer with experience in hydrology.	Amend as per submission
15.4 Flood Plain Management Area and Flood Ponding Areas	15.4.1 Permitted Activities P2	Additions to an existing building that does not increase the ground floor area of the building by more than 15m <sup>2</sup> .	Manage extensions under rule revised 15.4.1 as above.	Amend as per submission

Section reference	Paragraph/ Provision	PWDP wording including any changes recommended in s42A reports		Relief Sought in Mercury Submission	Mercury position as result of s42A recommendations
15.4 Flood Plain Management Area and Flood Ponding Areas	15.4.1 Permitted Activities P6	Earthworks associated with construction, replacement, repair, maintenance, minor upgrading or upgrading of utilities, including the formation and maintenance of access tracks.		Suggest inclusion of condition to manage scale:  <u>A maximum volume of filling above natural ground level of 10m<sup>3</sup> per site, and a maximum cumulative volume of filling and excavation of 20m<sup>3</sup>;</u>	Amend as per submission
15.4 Flood Plain Management Area and Flood Ponding Areas	15.4.1 Permitted Activities P8	P8	<u>Earthworks</u> not provided for under Rule 15.4.1 P6 or P7.  (a) In the Residential, Village and Country Living Zones –a maximum volume of filling above natural ground level of 10m <sup>3</sup> per site, and a maximum cumulative volume of filling and excavation of 20m <sup>3</sup> ; or  (b) In the Rural Zone – a maximum volume of filling above natural ground level of 100m <sup>3</sup> per site, and a maximum cumulative volume of filling and excavation of 200m <sup>3</sup> per site; or  (c) All other zones – a maximum volume of filling above natural ground level of 20m <sup>3</sup> per site, and a maximum cumulative volume of filling and excavation of 50m <sup>3</sup> per site; and  (d) Height and depth of earthworks in all zones	Mercury seeks that infill earthworks volumes within the flood plain below relevant 1% RL levels protect the storage capacity of the Lower Waikato Flood Protection Scheme. Policies need to manage cumulative effects on derogation of storage capacity and should be agnostic to land use. It is important consent information is provided to managers of flood risk data at Regional Council upon approval.  Mercury also seek earthworks provisions relevant to the Flood Plain take precedence over any land use zone provision.	Amend as per submission

Section reference	Paragraph/ Provision	PWDP wording including any changes recommended in s42A reports	Relief Sought in Mercury Submission	Mercury position as result of s42A recommendations
		<p>(i) a maximum height of 0.2m of filling above natural ground level; and</p> <p>(ii) a maximum depth of excavation of 0.5m below natural ground level.</p> <p><u>Where a site is located partly within the Flood Plain Management Area or Flood Ponding Area this rule only applies to that part of the site within the Flood Plain Management Area or Flood Ponding Area.</u><sup>10</sup></p>		
15.4 Flood Plain Management Area and Flood Ponding Areas	15.4.2 Restricted Discretionary Activities RD1	<p><b>15.4.2 Restricted Discretionary Activities</b></p> <p>(a) The activities listed below are restricted discretionary activities within the <u>Flood Plain Management Area</u> shown on the Planning Maps or in a <u>Flood Ponding Area</u>.</p> <p>(b) Discretion to grant or decline consent and impose conditions is restricted to the matters of discretion set out in the following table.</p> <p>(c) <del>Any application arising from this rule shall not be limited or publicly notified.</del><sup>11</sup></p>	<p>Mercury notes the exclusion of Lake Waikare and the surrounding catchment from the Floodplain Management Area and requests the inclusion of this area in the overlay as per previous comments.</p> <p><u>Delete (c) Any application arising from this rule shall not be limited or publicly notified.</u></p>	Support changes as recommended in Legarth s42A Report

Section reference	Paragraph/ Provision	PWDP wording including any changes recommended in s42A reports		Relief Sought in Mercury Submission	Mercury position as result of s42A recommendations				
15.5 High Risk Flood Area		The High Risk Flood Area is located within the Flood Plain Management Area. The rules in this section are to be read in conjunction with the rules for the Flood Plain Management Area and Flood Ponding Areas (Rule 15.4).		Mercury notes the exclusion of Lake Waikare and the surrounding catchment from the Floodplain Management Area and requests the inclusion of this area in the overlay as per previous comments.	Amend as per submission.				
15.5 High Risk Flood Area	15.5.1 Permitted Activities P1		<table border="1"> <thead> <tr> <th data-bbox="568 491 647 598">Activity</th> <th data-bbox="647 491 1301 598">Activity-specific conditions</th> </tr> </thead> <tbody> <tr> <td data-bbox="568 598 647 1082">P1</td> <td data-bbox="647 598 1301 1082">           1. Repair, maintenance or <u>minor upgrading</u> of existing <u>utilities</u>.            2. <u>New-Construction, replacement or upgrading of</u> <sup>12</sup>telecommunication lines, poles, cabinets and masts/poles supporting antennas.            3. <u>Construction, replacement or upgrading of electricity lines, poles, cabinets, and supporting structures.</u><sup>13</sup> </td> </tr> </tbody> </table>	Activity	Activity-specific conditions	P1	1. Repair, maintenance or <u>minor upgrading</u> of existing <u>utilities</u> . 2. <u>New-Construction, replacement or upgrading of</u> <sup>12</sup> telecommunication lines, poles, cabinets and masts/poles supporting antennas. 3. <u>Construction, replacement or upgrading of electricity lines, poles, cabinets, and supporting structures.</u> <sup>13</sup>	None	Support changes as recommended in Legarth s42A Report
Activity	Activity-specific conditions								
P1	1. Repair, maintenance or <u>minor upgrading</u> of existing <u>utilities</u> . 2. <u>New-Construction, replacement or upgrading of</u> <sup>12</sup> telecommunication lines, poles, cabinets and masts/poles supporting antennas. 3. <u>Construction, replacement or upgrading of electricity lines, poles, cabinets, and supporting structures.</u> <sup>13</sup>								
15.5 High Risk Flood Area	15.5.2 Restricted Discretionary Activities RD1		<table border="1"> <thead> <tr> <th data-bbox="568 1082 808 1182">Activity</th> <th data-bbox="808 1082 1301 1182">Activity-specific conditions</th> </tr> </thead> <tbody> <tr> <td data-bbox="568 1182 808 1380">RD1</td> <td data-bbox="808 1182 1301 1380"> <b>Discretion is restricted to:</b>            1. New <u>utilities</u> not provided for in Rule 15.5.1 P1(2) or <u>P1(3)</u><sup>14</sup>.            1. Functional and operational requirements to be located in the <u>High Risk Flood Area</u>;         </td> </tr> </tbody> </table>	Activity	Activity-specific conditions	RD1	<b>Discretion is restricted to:</b> 1. New <u>utilities</u> not provided for in Rule 15.5.1 P1(2) or <u>P1(3)</u> <sup>14</sup> . 1. Functional and operational requirements to be located in the <u>High Risk Flood Area</u> ;	Add a new matter of discretion  f) cumulative effect on the storage capacity of the Lower Waikato Flood Protection Scheme.	Amend as per submission
Activity	Activity-specific conditions								
RD1	<b>Discretion is restricted to:</b> 1. New <u>utilities</u> not provided for in Rule 15.5.1 P1(2) or <u>P1(3)</u> <sup>14</sup> . 1. Functional and operational requirements to be located in the <u>High Risk Flood Area</u> ;								



Section reference	Paragraph/ Provision	PWDP wording including any changes recommended in s42A reports		Relief Sought in Mercury Submission	Mercury position as result of s42A recommendations
			<p>2. Upgrading of existing utilities not provided for in Rule 15.5.1 P1(1).</p>	<p>2. The adverse effects on people and property from establishing or upgrading the <u>utility</u> in the <u>High Risk Flood Area</u>;</p> <p>3. The potential for the development to transfer/increase flood risk to neighbouring properties;</p> <p>4. Consideration of alternative locations;</p> <p>5. Consideration of the projected effects of climate change;</p> <p>6. Any mitigation measures to reduce the risk to people's safety, well-being and property.</p>	

Section reference	Paragraph/ Provision	PWDP wording including any changes recommended in s42A reports	Relief Sought in Mercury Submission	Mercury position as result of s42A recommendations
15.5 High Risk Flood Area	15.5.2 Restricted Discretionary Activities RD2	<p>One addition to a lawfully established building existing at [the date this rule becomes operative ], where the addition does not increase the ground floor area of the existing building by more than 15m<sup>2</sup>, unless provided for in Rule 15.5.2 RD1.</p> <p>Discretion is restricted to:</p> <p>a) The ability to manage flood risk through appropriate building materials, structural or design work or other engineering solutions;</p> <p>(b) The setting of an appropriate floor level for the addition, taking into consideration the location of the addition and the floor level of the existing building;</p> <p>(c) Any mitigation measures to reduce the risk to people’s safety, wellbeing and property.</p>	Delete the provision. Any extension should be assessed as a discretionary activity.	Amend as per submission
15.5 High Risk Flood Area	15.5.3 Discretionary Activities D1	<p>Subdivision that creates one or more additional vacant lot(s) where:</p> <p>(a) The additional lot(s) are located entirely outside the High Risk Flood Area; or</p> <p>The additional lot(s) are partially within the High Risk Flood Area and each additional lot(s) contains <del>a net site</del> <sup>an</sup> area capable of containing a complying building platform_entirely outside the High Risk Flood Area.</p> <p>This rule does not apply to subdivision for a utility allotment, access allotment or subdivision to create a reserve allotment.</p>	None	Support changes as recommended in Legarth s42A Report

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4 [2143.3]

Section reference	Paragraph/ Provision	PWDP wording including any changes recommended in s42A reports	Relief Sought in Mercury Submission	Mercury position as result of s42A recommendations
15.6 Defended Area (Residual Risk)	15.6.2 Restricted Discretionary Activities	(a) The activities listed below are restricted discretionary activities within the Defended Area shown on the Planning Maps. (b) Discretion to grant or decline consent and impose conditions is restricted to the matters of discretion set out in the following table. (c) Activities may also be discretionary activities, as specified in Rule 15.6.3.	Remove from the plan, defer to Discretionary Activity	Remove as per submission

Section reference	Paragraph/ Provision	PWDP wording including any changes recommended in s42A reports	Relief Sought in Mercury Submission	Mercury position as result of s42A recommendations
15.6 Defended Area (Residual Risk)	15.6.2 Restricted Discretionary Activities RD1	<p>(1) Subdivision that creates one or more additional vacant lot(s).</p> <p>(2) Rule 15.6.2 RD1(1) does not apply to subdivision for a utility allotment, an access allotment or subdivision to create a reserve allotment. Discretion is limited to:</p> <p>(d) (a) The actual level of service provided by the structural defence and associated flood protection works, including any change in the level of service anticipated due to climate change and sea level rise;</p> <p>(b) The impact of any planned improvements, maintenance or upgrading on the residual risk;</p> <p>(c) The effect of groundwater levels and variability in ground conditions on stop-bank security at and adjacent to the site to be subdivided;</p> <p>(d) the likely depth and duration of flooding as a result of a breach or overtopping event or flood ponding;</p> <p>(e) the location of the subdivision, including services such as wastewater, water supply and roading/access (including escape routes), in relation to potential breakout points (failure zone);</p> <p>(f) The adverse effects <del>to</del> <u>on</u>:</p> <ul style="list-style-type: none"> <li>i. people and property,</li> <li>ii. <u>historic heritage and Sites and Areas of Significance to Maori</u>, <sup>5</sup>and iii. overall vulnerability</li> </ul> <p>from potential failure or overwhelming of the structural defences and associated flood protection works relevant to the proposed new lot(s);</p> <p>(g) Potential for the development to transfer/increase flood risk/residual risk to neighbouring properties;</p> <p>(h) Any additional mitigation measures proposed or site features which reduce residual risk (e.g. natural high ground; evacuation plan).</p>	<p><u>Request that subdivision be made a discretionary activity under 15.6.3</u></p> <p><u>Include (a) to (h) as assessment criteria</u></p>	Amend as per submission

5 [2107.19]

Section reference	Paragraph/ Provision	PWDP wording including any changes recommended in s42A reports	Relief Sought in Mercury Submission	Mercury position as result of s42A recommendations				
15.6 Defended Area (Residual Risk)	15.6.3 Discretionary Activities D2	<p>(a) The activities listed below are discretionary activities within the <u>Defended Area</u>.</p> <table border="1" data-bbox="548 311 1243 890"> <tr> <td data-bbox="548 311 698 555">D1</td> <td data-bbox="698 311 1243 555">Construction of a new <u>building</u> or new <u>accessory building</u>, located within 50m of the toe of a stop-bank where the stop-bank is under the responsibility of the Council, the Waikato Regional Council or the Crown.</td> </tr> <tr> <td data-bbox="548 555 698 890">D2</td> <td data-bbox="698 555 1243 890">i. <u>Earthworks</u> located within 50m of the toe of a stop-bank where the stopbank is under the responsibility of the Council, the Waikato Regional Council or the Crown. ii. <u>This rule does not apply to earthworks associated with utilities where the written approval of the authority managing the stopbank has been obtained.</u></td> </tr> </table>	D1	Construction of a new <u>building</u> or new <u>accessory building</u> , located within 50m of the toe of a stop-bank where the stop-bank is under the responsibility of the Council, the Waikato Regional Council or the Crown.	D2	i. <u>Earthworks</u> located within 50m of the toe of a stop-bank where the stopbank is under the responsibility of the Council, the Waikato Regional Council or the Crown. ii. <u>This rule does not apply to earthworks associated with utilities where the written approval of the authority managing the stopbank has been obtained.</u>	None (supported)	Accept changes as recommended in Carter s42A Report
D1	Construction of a new <u>building</u> or new <u>accessory building</u> , located within 50m of the toe of a stop-bank where the stop-bank is under the responsibility of the Council, the Waikato Regional Council or the Crown.							
D2	i. <u>Earthworks</u> located within 50m of the toe of a stop-bank where the stopbank is under the responsibility of the Council, the Waikato Regional Council or the Crown. ii. <u>This rule does not apply to earthworks associated with utilities where the written approval of the authority managing the stopbank has been obtained.</u>							

Section reference	Paragraph/ Provision	PWDP wording including any changes recommended in s42A reports	Relief Sought in Mercury Submission	Mercury position as result of s42A recommendations
15.13 Information requirements for all resource consent applications addressing natural hazards	15.13.1 General	<p>(1) The following documents, to the extent relevant to the proposal:</p> <p>(a) Geotechnical assessment, including identification and assessment of any potentially liquefaction prone land and land subject to slope instability;</p> <p>(b) An assessment of natural hazard risk, including the type of natural hazards present, such as flooding, slope stability, liquefaction, subsidence and coastal hazards. The assessment shall include the level of risk and any increase in risk as a result of the proposal associated with each hazard. Where applicable, the projected effects of climate change over the period to 2120 must be included;</p> <p>(c) Remediation and mitigation measures necessary to make the site and any proposed buildings suitable for the proposed use, such as minimum floor levels, foundation design for relocatability, and appropriate time limits and/or triggers for the removal of any building and onsite wastewater disposal systems.</p> <p>(2) Plans identifying:</p> <p>(a) Topographical features within the site and surrounding area;</p> <p>(b) The location of natural hazards on all or part of the site.</p> <p><u>(3) Consideration of the information contained in the following stormwater catchment management plans where relevant:</u></p> <p>(a) <u>Ngaruawahia Catchment Management Plan, March 2015;</u></p> <p>(b) <u>Tamahere Stormwater Catchment Management Plan and Report, 2011</u></p> <p>(c) <u>Port Waikato Stormwater Catchment Management Plan and Report, 2004;</u></p> <p>(d) <u>Pokeno Catchment Management Plan, 2010;</u></p> <p>(e) <u>Te Kauwhata Catchment Management Plan, 2009;</u></p> <p>(f) <u>Tuakau Catchment Management Plan, Draft 2014.</u><sup>6</sup></p>	None	Accept changes as recommended in Legarth s42A Report

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6 [2147.4]

Section reference	Paragraph/ Provision	PWDP wording including any changes recommended in s42A reports	Relief Sought in Mercury Submission	Mercury position as result of s42A recommendations
15.13 Information requirements for all resource consent applications addressing natural hazards	15.13.4 Defended Areas	For any Restricted Discretionary Activity land use and subdivision applications within the Defended Area, the following information is required to the extent relevant to the scale of the proposal: a risk assessment, carried out by a suitably qualified and experienced risk assessment practitioner, which identifies the nature and level of residual risk, and details of appropriate methods to further reduce residual risk, where appropriate.	See comment 15.6.2	Remove as per submission
15.14 Definitions	Flood plain management area	Means an area identified on the planning maps which is at risk of flooding in a 1% AEP flood event and is otherwise described <a href="#">in this District Plan<sup>7</sup></a> as the 1% AEP floodplain.	Mercury seeks that a risk assessment be undertaken to ensure correct attributes are mapped.	Amend as per submission
15.14 Definitions	Flood ponding area	Means an area shown on the planning maps as an identified flood ponding area or an area that experiences floodwater ponding in a 1% AEP rainfall event.	As above	As above
15.14 Definitions	High risk flood area	Means an area identified on the planning maps, located within the Flood Plain Management Area, which is subject to river or surface flooding during an event with an annual exceedance probability of no more than 1%, and during such an event:	Mercury seeks risk assessment is undertaken to ensure correct attributes are mapped.	Amend as per submission

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7 [2093.4]

Section reference	Paragraph/ Provision	PWDP wording including any changes recommended in s42A reports	Relief Sought in Mercury Submission	Mercury position as result of s42A recommendations
s32 Natural Hazards and Climate Change	36	<p>For those hazards that do need a district plan response, the district plan will need to follow the direction set out in the WRPS, including:</p> <ul style="list-style-type: none"> <li>• identifying the areas potentially affected by flooding during a 1% AEP flood event and coastal hazards, prioritising the areas at high risk;</li> <li>• controlling subdivision in areas identified as high risk flood zones and high risk coastal hazard areas to avoid the demand for new protection structures;</li> <li>• controlling the use and development (including habitable structures, significant community infrastructure such as hospitals and emergency services, and lifeline utilities) in high risk flood zones and high risk coastal hazards risk areas;</li> <li>• ensuring risk to development within the floodplain or a coastal hazard area is appropriately assessed and any adverse effects either avoided, remedied or mitigated;</li> <li>• allowing for essential infrastructure where it cannot be located elsewhere or where it will not increase natural hazard risk;</li> <li>• identifying key hazard areas on the planning maps including: <ul style="list-style-type: none"> <li>- 1% AEP Floodplain</li> <li>- High risk flood zones</li> <li>- Residual risk zones</li> <li>- Coastal hazard areas</li> <li>- Areas at high risk of coastal hazards;</li> </ul> </li> <li>• deciding how the council will manage 'residual risk' in areas where there are existing defences against flooding;</li> <li>• making provision for managed retreat in areas where the risk is 'intolerable';</li> <li>• focusing on community resilience; and</li> <li>• considering the potential effects of high impact, low probability natural hazard events.</li> </ul>	<p>For those hazards that do need a district plan response, the district plan will need to follow the direction set out in the WRPS, including:</p> <ul style="list-style-type: none"> <li>• identifying the areas potentially affected by flooding during a 1% AEP flood event and coastal hazards, prioritising the areas at high risk, <u>which are subject to development pressure</u>;</li> <li>• <u>manage risk to ensure tolerable land use outcomes associated with all land use development and</u> controlling subdivision in areas identified as within <u>the flood plain</u>, high risk flood zones and high risk coastal hazard areas to avoid the demand for new protection structures;</li> <li>• controlling the use and development (including habitable structures, significant community infrastructure such as hospitals and emergency services, and lifeline utilities) in <u>flood plain</u>, high risk flood zones and high risk coastal hazards risk areas;</li> <li>• ensuring risk to <u>people and</u> development within the floodplain or a coastal hazard area is appropriately assessed and any adverse effects either avoided, remedied or mitigated;</li> <li>• allowing for essential infrastructure where it cannot be located elsewhere or where it will not increase natural hazard risk;</li> <li>• identifying key hazard areas on the planning maps including: <ul style="list-style-type: none"> <li>- 1% AEP Floodplain</li> <li>- High risk flood zones</li> <li>- Residual risk zones</li> <li>- Coastal hazard areas</li> <li>- Areas at high risk of coastal hazards;</li> </ul> </li> <li>• deciding how the council will manage</li> </ul>	Amend as per submission



Section reference	Paragraph/ Provision	PWDP wording including any changes recommended in s42A reports	Relief Sought in Mercury Submission	Mercury position as result of s42A recommendations
			<p>'residual risk' in areas where there are existing defences against flooding;</p> <ul style="list-style-type: none"> <li>• making provision for managed retreat in areas where the risk is 'intolerable';</li> <li>• focusing on community resilience; and</li> <li>• considering the potential effects of high impact, low probability natural hazard events.</li> </ul>	
PWDP maps	All affected maps	N/A	That Lake Waikare and its surrounding catchment, where ground levels are below 8m RL (Moturiki datum) is included as a Floodplain Management Area overlay within the District Plan.	Amend as per submission