



SUPPLEMENTARY AGENDA

**Council Workshop
Thursday, 26 February 2026**

Date: Thursday, 26 February 2026

Time: 9:00 am

**Location: TCC Council Chamber
Level 1, 90 Devonport Road
Tauranga**

Please note that this meeting will be livestreamed and the recording will be publicly available on Tauranga City Council's website: www.tauranga.govt.nz.

**Marty Grenfell
Chief Executive**

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1 BUSINESS

1.1 Annual Plan Workshop Transport Bulk Programmes

File Number: A19828109

Author: Mike Seabourne, Head of Transport

Authoriser: Reneke van Soest, General Manager: Operations & Infrastructure

Presenter(s): Reneke van Soest, Mike Seabourne

External presenter(s):

Workshop information

Purpose of workshop

1. Annual Plan Workshop;

This item is to cover Transport Bulk Programmes as per request on agenda

Attachments

1. **Minor Safety and Accessibility Pipeline for 26.02 Workshop - A19828008** [↓](#) 
2. **Minor Safety and Accessibility Programme_ (002) - A19828078** [↓](#) 

Attachment 1 – Minor Safety and Accessibility Pipeline

Project/Charter name	Project description	Total Cost	Cumulative Total	Rank
62 Welcome Bay Rd - signalised crossing	Upgrade refuge island to signalised crossing - high crossing demand to support access to bus stops and local area	\$ 580,000	\$ 580,000	1
Pyes Pa Rd Signalised crossing (in vicinity of 78 Pyes Pa Rd)	Support retirement village and access to shops with lack of crossings and high traffic flow	\$ 625,000	\$ 1,205,000	2
Bethlehem Road near Westmoreland Rise - Zebra crossing	New zebra crossing to support access to the shopping centre and school in vicinity of 36 Bethlehem Road	\$ 162,500	\$ 1,367,500	3
Oceanbeach Road Zebra crossing (in vicinity of 269 Oceanbeach Road)	New Zebra crossing, bus stop and footpath upgrades to access beach and passenger transport Not required if Concord Oceanbeach Intersection progresses and approved for implementation	\$ 180,000	\$ 1,547,500	3
Papamoa Beach Rd / Parton Rd crossing - convert refuge to zebra	Convert pedestrian refuge island to dual zebra crossing to access shops and the beach. Supports visits for students from local school	\$ 173,000	\$ 1,720,500	5
Welcome Bay Road Improvement – Temporary Delineation Measures between Kaitemako Road & Waikite Road	Install and upgrade intersection markings to highlight presence of cycle use at five intersection, delineation at some bends	\$ 70,000	\$ 1,790,500	5
Waihi Road Bayview Retirement Village Signalised Crossing in vicinity of 171 Waihi Road	New Signalised crossing to access bus stops and support retirement village	\$ 525,000	\$ 2,315,500	5
Te Ranga Memorial Drive - Pedestrian refuge	Provision of a pedestrian refuge to support access for students to bus stops and local area	\$ 68,000	\$ 2,383,500	9
Tahatai Coast School - zebra crossing (Evans Road near Thoroughbred Place)	Convert Kea Crossing to zebra crossing to support access to school.	\$ 162,500	\$ 2,546,000	11
Tweed Street zebra crossing (between Orkney and Campbell)	New Zebra crossing to support access to buses and schools	\$ 145,000	\$ 2,691,000	15
Otumoetai Primary school pedestrian crossing (in vicinity of 215 Otumoetai Road)	Current zebra crossing upgraded to a signalised crossing to improve access and safety for students accessing the primary school.	\$ 625,000	\$ 3,316,000	15
Tweed Street zebra crossing (between Orkney and Campbell)	New Zebra crossing to support access to buses and schools	\$ 145,000	\$ 3,461,000	15
Vale Street shared path between Landscape Rd and Bureta Rd	Tactical urbanism - installation of delineators on existing road to provide 2.3 shared path on the golf course side. With isolated areas of off-road concrete shared path facilities. A pedestrian refuge island to support access to the path	\$ 497,000	\$ 3,958,000	18
Montiicola Drive (near Te Okuroa Dr.) pram crossings and pedestrian refuge	Installation of pram crossing and provision of a pedestrian refuge island with potential to ammend the existing splitter island	\$ 68,000	\$ 4,026,000	19
Marine Parade zebra crossing in the vicinity of 162 Marine Parade	Install zebra crossing on Marine Parade in vicinity of walkway on Lee Street	\$ 170,000	\$ 4,196,000	19
Papamoa College Safety Improvement (Doncaster Drive)	2 shared crossing facilities, in vicinity of Tara Road and on Doncaster Road north of the college.	\$ 300,000	\$ 4,496,000	20

Project/Charter name	Project description	Total Cost	Cumulative Total	Rank
Seaspray Drive at Grenada Street - improve crossing	Upgrade existing pedestrian refuge island to a zebra crossing	\$ 170,000	\$ 4,666,000	21
Tahatai Coast School zebra crossing at the Gravatt / Gloucester / Evans Road Roundabout	Existing zebra crossing to be raised on a speed platform - not progressing	\$ 142,000	\$ 4,808,000	22
Sandhurst Drive/Grenada Street roundabout - zebra crossings	Install zebras on western and northern legs of roundabout, lack of deflection and high speed. High cycle demand	\$ 680,000	\$ 5,488,000	23
Gravatt Road/ Beachwater Dr zebra crossing	Provision of a zebra crossing to connect the Wairakei shared paths and improve access to shopping centre	\$ 145,000	\$ 5,633,000	24
129 Lakes Boulevard - new pedestrian refuge	New pedestrian refuge to support access to bus stops and reserve	\$ 68,000	\$ 5,701,000	25
Bethlehem Road zebra crossing in vicinity of Sandalwood Way	Upgrade existing pedestrian refuge island to a zebra crossing	\$ 145,000	\$ 5,846,000	26
Waihi Road and Birch Avenue intersection provision of a cross walk at the signalised intersection	Provision of a staggered pedestrian and cycling crosswalk at the signalised intersection to access K Valley, the City Centre and the path along Takitimu Drive. Upgrade 80m of footpath to shared path	\$ 450,000	\$ 6,296,000	27
Devonport Rd footpath (16th to 18th)	Install 18.m footpath on south side of Devonport Rd, between 16th and 18th Ave (total 410m)	\$ 607,200	\$ 6,903,200	28
Pillans Point School zebra crossing (vicinity of number 108 Pillans Road)	Upgrade existing speed table to a zebra crossing to support access to the school	\$ 162,000	\$ 7,065,200	29
Waikari Marae to the Kura footpath along Hungahungatoroa Road	Provision of a 150m of footpath connecting Marae to the School along	\$ 64,800	\$ 7,130,000	29
Welcome Bay Road zebra crossing in vicinity of 166 Welcome Bay Road	Conversion of existing non-raised pedestrian refuge to a zebra crossing that meets intervention standards of increased pedestrian and traffic volumes to support access to the shops and kindergarten	\$ 162,500	\$ 7,292,500	31
Fairway Avenue on the corner of Golf Road	New pedestrian refuge, kerb let downs and footpath improvements. Minor widening required to accommodate delivery vehicles to Golf Course	\$ 83,000	\$ 7,375,500	33

Project/Charter name	Project description	Total Cost	Cumulative Total	Rank
22nd Ave zebra crossing (near Courtney Rd)	Install zebra crossing on 22nd Ave, near Courtney Rd	\$ 170,000	\$ 7,545,500	34
Monowai St zebra crossing - at Grenada St	Upgrade of existing pedestrian refuge to a zebra crossing to support access to schools and Arataki Park	\$ 170,000	\$ 7,715,500	34
Alice Lane Footpath	Provision of a missing footpath connection between Parton Road and Gordon Spratt Reserve	\$ 122,040	\$ 7,837,540	35
17th Avenue (between Devonport Road and Fraser Street)	Install new 280m footpath (1.8m wide) on 17th Ave	\$ 496,320	\$ 8,333,860	36
Tauranga Waldorf School and Rose Ring Kindergartens Speed Platform	Provision of a speed table at existing pedestrian refuge	\$ 20,000	\$ 8,353,860	37
Joyce Road footpath between Hanlow Place and St Thomas Ave	152m of missing footpath on Joyce Road to connect Hanlow Place and St Thomas Avenue. No alternative available.	\$ 97,080	\$ 8,450,940	38
Monmouth Street / The Strand footpath improvements to city centre	Shared path is below min footpath standards, provides a key connection to the city centre. Off road path requires widening to improve accessibility and safety improvements	\$ 160,000	\$ 8,610,940	39
Marine Parade zebra crossing (in vicinity of 116 Marine Parade)	New zebra crossing that meets intervention standards of increased pedestrian and traffic volumes to support access to the beach and shared path .	\$ 151,000	\$ 8,761,940	40
Marine Parade zebra crossing in vicinity of 180 Marine Parade	New zebra crossing that meets intervention standards of increased pedestrian and traffic volumes to support access to the beach and shared path .	\$ 151,000	\$ 8,912,940	40
Grenada Street zebra crossing - near Lotus Ave	Upgrade of existing pedestrian refuge to a zebra crossing to support access to Reilly Ave Reserve	\$ 170,000	\$ 9,082,940	42
17th Ave footpath, shared path and crossing	Installation of footpath (1.8m wide) on south side of 17th Ave from Clarke St to skate park (280m) to Historic Village western entrance, installation of 2.5m shared path from Cameron Rd to Historic Villane eastern entrance (140m) and	\$ 1,359,600	\$ 10,442,540	43
Argyll Rd crossing (at Carlisle St)	Pedestrian refuge island on Argyll Rd, near Carlisle St	\$ 70,000	\$ 10,512,540	44
Waikite Road Pedestrian zebra crossing in the vicinity of Welcome Bay Road intersection	New Zebra Crossing across Waikite Road, intersection geometric radii adjustments and footpath improvements in close proximity of the intersection.	\$ 250,000	\$ 10,762,540	45
Yatton St zebra crossing, at Roys Rd	Install zebra crossing on Yatton St, west of Roys Rd	\$ 170,000	\$ 10,932,540	46
20th Ave footpath (Cameron Rd to Clarke St)	Install 1.8m footpath on north side of 20th Ave, between Cameron Rd and Clarke St (distance 200m)	\$ 435,600	\$ 11,368,140	46
Alverstokey Rd zebra crossing	Install zebra crossing on Alverstokey Rd at Fraser St	\$ 170,000	\$ 11,538,140	48
Edgecumbe Rd footpath (11th to 13th Ave)	Install new 320m footpath (1.8m wide) on west side of Edgecumbe Rd, between 11th and 13th Ave. Install a courtesy crossing at 12th Ave and a zebra crossing at 13th Ave.	\$ 778,800	\$ 12,316,940	48
16th Ave footpath (Cameron Rd to Fraser St)	Install 1.8m footpath on north side of 16th Ave, between Cameron Rd and Fraser St	\$ 913,440	\$ 13,230,380	48

Project/Charter name	Project description	Total Cost	Cumulative Total	Rank
Mansells Rd footpath (Chadwick Rd to Yatton St) and zebra crossing (near Chadwick Rd)	New 1.8m footpath on east side of Mansells Rd (380m length), and zebra crossing at Chadwick Rd	\$ 884,400	\$ 14,114,780	51
Grace Rd footpath (16th Ave to 18th Ave) and 16th Ave footpath (Grace Rd to end of cul-de-sac)	Install 1.8m footpath on Grace Rd (18th to 16th Ave), and along cul-de-sac to end of 16th Ave (total 500m), and a pedestrian refuge on Kaka St	\$ 1,127,280	\$ 15,242,060	51
Watling St zebra crossing	Install zebra crossing on Watling St, 30m north of Pohutukawa Way	\$ 170,000	\$ 15,412,060	53
Anzac Rd/21st Ave zebra crossing	Install zebra crossing on Anzac Rd at 21st Ave	\$ 170,000	\$ 15,582,060	53
13th Ave shared path (Edgecumbe Rd to Cameron Rd)	4m shared path (220m length) on north side of 13th Ave, two zebra crossings at Edgecumbe Rd, and two zebra crossings at Christopher St	\$ 1,531,200	\$ 17,113,260	55
20th Ave footpath (Cameron Rd to end of cul-de-sac)	Install 1.8m footpath on south side of 20th Ave, between Cameron Rd and end of cul-de-sac (distance 130m)	\$ 356,400	\$ 17,469,660	55
Large Standalone projects for consideration through the annual plan process				
Harbour Drive shared path and amenity improvements between Bureta Road and Maxwells Road	Provision of a shared path, chicanes, picnic tables and seating to support access and high use of the shared path	\$ 2,306,609	\$ 19,776,269	
Concord Ave and Oceanbeach Road Intersection (zebra crossing)	Install a mini roundabout and zebra crossing facilities on Concord Ave and one on Oceanbeach Road to address a high risk intersection	\$ 1,850,000	\$ 21,626,269	



Minor safety and accessibility pipeline



Agenda

- Purpose
- Community demand
- Risk assessment
- Prioritisation
- Current programme state

Transport Minor Safety & Accessibility Programme (Minor Safety Programme)

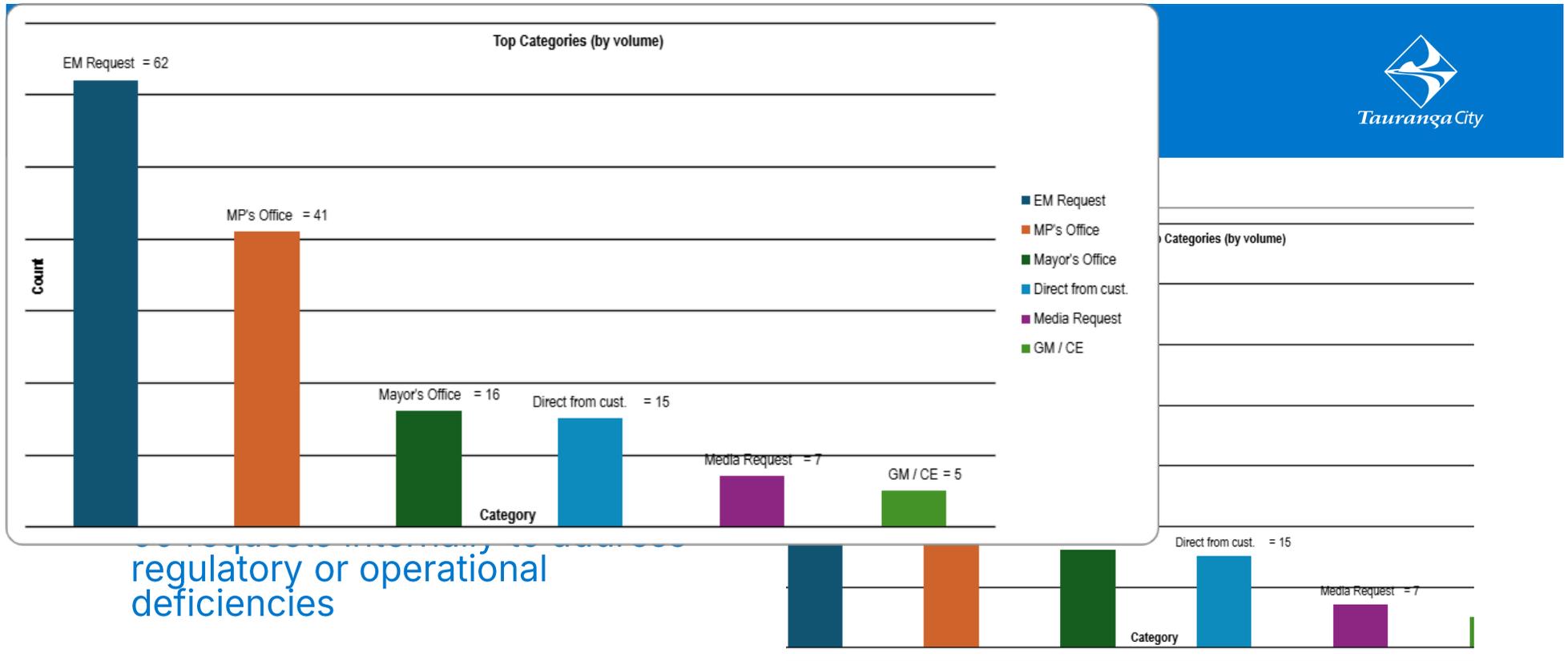
Purpose

To respond to community and safety risks on the transport network

Scope

- Delivers small, high-impact safety and accessibility improvements across the transport network
- Focuses on minor projects, typically under \$2M (most under \$1M)
- Targets specific, localised safety issues identified through data and community demand
- Includes crossings, refuge islands, footpaths, traffic calming, school safety measures, and signage, marking and minor parking changes





We consider

Community demand and risk

- Provide an evidenced and equitable approach to ensure fairness and consistency, transparency

Demand and accessibility issues

- The network changes as growth/intensification occurs with new challenges presented for how people move around
- The higher the demand the higher the score

Micro Road Safety Network performance

- Utilise crash data to identify emerging trends and localised issues

Macro Road Safety network performance

- Collective Risk – the number of fatal and serious injury crashes per kilometre along a road segment.
- Personal Risk – the level of danger faced by each individual using a part of the network, measured by exposure.

Active mode crashes 2021-2025



Crash severity	Number	%	Social cost (\$m)
Fatal	5	1.84%	91.56
Serious	66	24.26%	105.20
Minor-injury	201	73.90%	50.35
Non-injury	0	0.00%	0.00
TOTAL	272	100.00%	247.12

Prioritisation

- Bulk funds are allocated through annual plan prioritisation processes
- Project prioritised annually using the matrices and associated weightings
- Annual review ensures responsiveness to emerging risks and community needs

Criteria	Weight	Description
Safety exposure	45%	Assessed using a risk-based approach that draws on historic crash data, near-miss reports, and an understanding of traffic volumes, speed against user demand.
Active Road User Demand	35%	Looks at how many people would benefit from the proposed changes, with a particular focus on those most at risk—such as students, older adults, and people who walk, cycle, or use mobility devices.
Community risk	10%	The likelihood that there will be high or significant community pushback based on delivery of projects of a similar nature. An example is loss of parking.
Ease of delivery	10%	How practical the proposed changes are to implement. This includes construction risks, timeframes, complexity, and the value the changes offer.

Annual prioritisation of projects delivered within fiscal envelope



Reactive work programme – delivers projects in response to service requests e.g signs, markings, mobility parking, or minor geometric adjustments. 92 projects delivered in FY25

Minor Safety and Accessibility Programme – community demand and network performance (Safety and Accessibility)

Rapidly Deployable – those projects which can be expedited using savins



Current programme state

- 52 minor safety and accessibility improvements projects in the pipeline ~\$17.5M
- 2 larger projects for consideration in LTP programme ~\$4.1M
 - Harbour Drive
 - Oceanbeach Road and Concorde Avenue intersection
- With current resource and capacity delivery of ~\$6M per year
- The upcoming annual plan and LTP will assume sole funded.
- A bid will however be submitted to NZTA through the NLTF process to determine if partner funding is available between FY28 and FY30.





Thank you

Supplementary slides



1.2 Annual Plan Workshop Stormwater bulk funds agenda item

File Number: A19828197

Author: Wally Potts, Head of City Waters

Authoriser: Reneke van Soest, General Manager: Operations & Infrastructure

Presenter(s): Reneke van Soest, Wally Potts

External presenter(s):

Workshop information

Purpose of workshop

1. What is the purpose of the workshop? Annual Plan Workshop

This information is to cover the Stormwater bulk funds agenda item

Attachments

1. **2026 February Integrated Stormwater Project - DxV LoS and SWRRF Overview Workshop 26.02.26 - A19828027** [↓](#) 
2. **2026 February Integrated Stormwater Project - DxV LoS and SWRRF Overview (002) - A19828161** [↓](#) 

BACKGROUND

Flooding of localised residential, commercial and industrial areas within parts of the City that were first developed more than 20 years ago has been an ongoing issue for many years. In older established areas of the City stormwater infrastructure provision varies and in many cases only a 2 year or 5 year ARI piped network exists. Generally in areas developed prior to the 1990's no overland flowpath, ponding network or piped network (catering to above the 5 year ARI) was provided.

In greenfield areas/urban growth areas (being developments post 1990) a stormwater network catering for a minimum 50 year Annual Return Interval (ARI) through overland flowpaths for larger storm events and a 10 year ARI piped network catering for more frequent events is provided for. This can be defined as the current greenfield level of service and is provided through the structure planning process and delivery of the new greenfield areas as required through the Operative Tauranga City Plan and Infrastructure Development Code.

Prior to 2015, Council had never set a level of service in regard to stormwater network provision in brownfields areas or formally considered the methods on which to provide an agreed LoS to its community within existing developed areas of the City that are subject to flooding resulting in damage as a result of intense rainfall events.

Significant Flooding Events

Tauranga has experienced a range of intense rainfall events, the most notable being in May 2005 and to a lesser extent in 2010, 2011 and April 2013 (assessed as between a 5 year and 20 year ARI event within localised catchments primarily affecting the Matua, Mount Maunganui and Papamoa areas). In June 2014 flooding also occurred in the Waimapu Catchment as a result of the Waimapu River over topping its banks and flooding Roxanne Place and parts of Glen Lyon Avenue.

The 2005 event is considered the most extreme event that Tauranga has experienced in recent memory. This storm event caused significant damage through landslips and flooding to properties across the City.

Over the period 2005 - 2015 approximately \$89M was spent by Council on flood mitigation works across the city in response to these flood events, focussing on those catchments most affected (Matua, Mount Maunganui, Pillans/Bureta and to a lesser extent Papamoa).

A New Flood Risk Approach (2015)

Through the 2014/2015 Annual Plan, Council adopted a strategic approach to addressing stormwater flooding issues across the City. This arose following the 2013 flood event and a desire to adopt a wider approach to how stormwater flooding was to be managed. The context was high stormwater activity debt levels and the need for wider integration to improve the current situation across Council departments (planning/engineering /building/emergency management and civil defence).

The Integrated Stormwater Programme consisted of the following two funds plus the elements in bullet points below:

Through the 2015/25 LTP Council adopted a Depth x Velocity (DxV, Safety to Persons) focussed Level of Service (LoS) as part of its approach to flood risk management. This approach provided for a reduction in risk to persons up to and including the 100-year Average Recurrence Interval (ARI), generally the "bulk fund".

The Reactive Reserve Fund relates to where the property in question has a recorded history of flooding of more than once in the last 10 years.

Other key components of the new approach included the following:

- Reactive response capacity, to aid flood affected landowners following flood events (*subsequently implemented through the Stormwater Reactive Reserve Fund (SWRRF) and associated Policy*);
- Regulation and policy amendment to ensure no increased risk occurs, and over time risk is reduced (*subsequently implemented through Plan Change 27 Flooding from Intense Rainfall Events*);
- Education to enable private individuals to make informed decisions; and,

- Residual risk and emergency management to ensure an appropriate service is provided to flood affected landowners following flood events.

To support Council's approach to flood risk management, funding of \$10.5M / annum for the first 3 years of the 2015-2025 LTP was confirmed. This comprised:

- \$7.1M in Y1, \$8.2M in Y2 and 3 for capital works;
- \$1.4M in Y1 and \$0.3M in Y2 and 3 to implement the programme of 2D-hydraulic modelling; and,
- \$2M for Y1 – 3 to provide for relief support to flood affected landowners following intense rainfall events that result in damage to buildings and property through the SWRRF.

Depth x Velocity (DxV, Safety to Persons) Level of Service

Priority for implementation of the 'safety to persons' focussed LoS was determined by the number of at-risk properties (habitable floors) within a sub-catchment, with sub-catchments having a higher number correspondingly having a higher priority. Properties within residential and rural-residential zoned zones are also afforded a higher priority as compared to those within non-residential / non-rural residential zones.

At-risk properties were those where a DxV threshold of $\geq 0.4\text{m}^2/\text{s}$ was exceeded within 8m of a building with a habitable floor for residential and rural-residential zoned private property, and $\geq 0.6\text{m}^2/\text{s}$ for non-residential and non-rural residential zoned private property.

Level of Service: Draft 'Decision-Making Intervention Framework'

Due to the large number of DxV affected properties and to assist in prioritisation, a 'decision-making intervention framework' was developed by staff (and subsequently endorsed by the then Environment Committee prior to adoption of the 2018/28 LTP in November 2017). The framework, depicted in **Attachment 1**, facilitated transparency in decision-making around the LoS and ultimately ensured consistency in approach across the city. It described the key factors which would be considered when undertaking 'assessments' to determine if physical intervention is warranted (such as the ability or not to egress safely from a dwelling), or alternatively where education or advice regarding the DxV risk may be more appropriate. The framework also depicted a potential linkage between DxV management approach and Civil Defence and Emergency Management (CDEM). **Note:** The advice pathway has not been implemented to date but remains a recommendation for outstanding Tranche 2 sites as set out below.

Level of Service Review

A review of the LoS occurred prior to the adoption of the 2018/28 LTP. Key findings of this review were that:

- The LoS operated well with the exception of the minor issues below for which amendments were recommended (and subsequently endorsed).
- The adoption of the SWRRF and Policy in 2015 is a key factor in the efficient operation of the LoS. The fund is complementary to the LoS, in that it provides a mechanism for Council to intervene in flood mitigation for those areas that are not subject to DxV risk. The policy provides a means for the public to apply for assistance for a wide range of interventions, and delegations within the policy enable staff to act quickly and decisively when applications to the fund are received and assessed as compliant.
- For those areas subject to extensive non-DxV/conventional flooding (i.e. outside the LoS) and which do not qualify for intervention under the SWRRF, staff would continue to seek direction from Council with regard to investigating and or implementing works, such as in the case of Mount North. Implementation of any non-LoS project will be considered against relative LoS project priorities and 'priority catchments'.
- Development and implementation of a regulatory framework would further support all components of the flood risk approach and LoS.

Through the LoS review the following amendments were endorsed by the Environment Committee in November 2017.

- **To allow for Non-Infrastructure Interventions:** The LoS previously referred to only infrastructure improvements for intervention. An amendment allowing non-infrastructure measures e.g. the provision of 'general' or 'site specific advisories' was included as a means to mitigate flood risk.
- **To allow for Non-Infrastructure Interventions Regardless of Flood History:** The LoS applied *'where there has been a recorded history of flooding of more than once in the last 10 years'*. An amendment was made to enable 'general' and 'site specific advisories' to be issued where there has been no recorded flood history but relying instead on modelled DxV flood risk.
- **Recorded History of Flooding:** An amendment to enable consideration of 'staff knowledge' in addition to/or in lieu of 'confirmed reports/documentated evidence' in recognition of gaps in documented/historical Council records. Prioritisation reflects a count of the number of affected buildings. If flooding reports could not be substantiated (and therefore counted) the area may be afforded a lower priority than is actually warranted.
- **Depth x Velocity Intervention Framework (Attachment 1):** The framework as described above was endorsed to guide intervention.

Stormwater Reactive Reserve Fund (SWRRF) and Policy

As part of the new approach to flood risk management Council established a \$2M p.a rates funded reserve which is managed via the [Stormwater Reactive Reserve Fund Policy](#). The policy guides the effective utilisation of the fund and provides guidelines for the Council in its administration and implementation. The policy was adopted following community consultation in early December 2015.

As set out in the Policy, the fund covers emergency response and recovery, clean-up costs, initiatives on private and public land to enable stormwater to be conveyed away from at risk areas, infrastructure delivery and potential property purchase (in certain circumstances).

The SWRRF is complementary to the LoS, in that it provides a mechanism for Council to intervene in flood mitigation for those areas that are not subject to DxV risk. This is the case in areas such as Mount Maunganui and Papamoa, where the topography is much flatter and the DxV thresholds (for LoS intervention) are not met.

In these areas, the policy provides a mechanism for the public to apply for assistance for a wide range of interventions, with the allocation and distribution of funds being prescribed by criteria within the policy. The CE or his/her delegate has responsibility for the implementation of the policy within their delegated financial authority, excluding decisions on property purchase which remain with the CE.

The policy and delegations enable staff to act quickly and decisively when applications to the fund are received and assessed as compliant.

An application and assessment process has been developed and continues to be implemented by staff as and when applications are received from the public (refer to [Stormwater Reactive Reserve Application Form](#)).

Modelling Programme to Inform Flood Risk Approach

Council's programme of 2D-hydraulic modelling was used to identify which properties across the city were likely to be affected during an extreme (100-year ARI) rainfall, existing development (ED) scenario. These models were used to inform all aspects of the flood risk approach, but specifically the 'safety to persons' focussed LoS by identifying those properties that are subject to DxV risk. By the end of 2017 all areas of the city were modelled, flood hazard mailout to affected property owners completed and information placed on property files and LIMs.

LIM and Property File Disclosures

The following sets out the nature of and timing of flood risk disclosures to property owners.

1% AEP Flood Risk	Mailout to affected properties (citywide) disclosing flood hazard modelling. Placement on property files and inclusion in LIMs. Public availability on Councils map viewer Mapi	2014-2018
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Plan Change 27 – Flooding from Intense Rainfall Events 1% AEP, 2130 flood risk	Adopted for notification: LIM notices added to affected properties include reference to Plan Change 27. A map is included showing the type of flooding (i.e. floodplain, overland flowpath or flood prone area) on the property Public availability on Councils map viewer Mapi	13 October 2020
	Mailout advising affected landowners of Plan Change 27 with a link to the plan change webpage and information open days. The webpage includes a link to a web viewer. https://www.tauranga.govt.nz/council/council-documents/tauranga-city-plan/proposed-plan-changes/plan-change-27-flooding-from-intense-rainfall	9-13 November
	Notification of Plan Change 27	16 November 2020

Simpson Grierson Legal Opinion: Disclosure of DxV Flood Hazard in Property Files and LIMs

In July 2021, as funding for the DxV programme was reduced, legal advice was sought from Simpson Grierson as to whether:"

Flood modelling information that the Council holds in relation to "DxV" flood risk should be disclosed on property files and in Land Information Memoranda (LIMs) for affected properties?

In this advice, Simpson Grierson noted that:

- *TCC holds flood modelling information in relation to "DxV" flood risk. The information is held by the Council as part of its approach to flood risk management, and may be used by the Council's building control team (with caution, due to concerns about accuracy).*
- *The information can be applied at a property-specific level by generating visuals which impose a depth x velocity layer on aerial photographs.*
- *The Council uses DxV thresholds to identify buildings with "risk to persons" The Council then prioritises stormwater improvements in sub-catchments with a higher number of at-risk buildings, to increase levels of service in those sub-catchments. A key output of this process is the mapping and identification of a "Level of Service Intervention Area" across the City.*
- *The DxV modelling is distinct from the Council's "2D" modelling (which models flood depth and extent for a 1% AEP event), and more recent modelling prepared in conjunction with Plan Change 27 (the flood maps prepared through that process sit outside the district plan, but are effectively used by default).*
- *The DxV modelling is derived from, and based upon, the Council's 2D modelling of flood depth and extent (and the relevant parameters and assumptions).*
- *We consider that there is a good argument that identification of flood risk as mapped in conjunction with proposed Plan Change 27 (or other relevant modelling, for example the modelling for Mount North) is sufficient to satisfy the Council's mandatory obligation under section 44A(2)(a) of the Local Government Official Information and Meetings Act 1987 (LGOIMA) to identify in LIMs any "special feature or characteristic" of the land concerned, including potential inundation.*
- *However, if no mention is made of the DxV modelling at all in LIMs, an adverse Court finding could not be entirely discounted. We therefore suggest inclusion in the LIM notation for properties identified as being subject to potential inundation, a statement referencing the availability of the DxV modelling, and how that modelling can be obtained (as opposed to including an additional map of DxV for each affected property).*
- *Alternatively, the Council may choose to include further DxV flood modelling information as a "relevant discretionary matter" under section 44A(3).*
- *There is no mandatory legal requirement for DxV modelling information to be placed on property files, although the Council may choose to do so.*

In response Council implemented the DxV LIM notation on affected properties as follows:

*Tauranga City Council model for Depth & Velocity of flood water. This gives us important information about where flood waters flow during a 1 in 100-year rainfall event. "Depth x Velocity 100yr event" * information with respect to this property is viewable on the Council's mapping website, Mapi <https://www.tauranga.govt.nz/exploring/maps/council-map-viewer-mapi>.*

CAPITAL WORKS PROGRAMME

Level of Service DxV: Capital Works Programme – 2015-2021

A range of 'physical intervention' LoS DxV projects or scoping studies were completed over the period 2015-2021 with expenditure around \$26M (Refer to **Attachment 2** for table, schematic and project summaries). Studies initially focussed on the priority catchments of Matua and Waimapu before extending to other DxV areas across the city. Scoping studies were carried out to determine what if any intervention was appropriate and prioritisation was carried out in accordance with the intervention framework discussed earlier. In 2021 the DxV programme budget reduced significantly. At this time, capital projects and scoping studies underway were completed, however some scoping studies (and any decision-making regarding the potential for upgrades) remain outstanding. Those outstanding are noted below and in the Attachment 2 table in red (where the upgrade option is selected) or orange (scoping study completed but no decision-making on upgrade).

Close Out of Depth x Velocity Programme (2021) – Remaining Work

As the DxV programme was drawing to a close in 2021, a 'close out' report <https://objective-prod.tauranga.govt.nz/documents/A12395403/details> was prepared to document the status of the programme and the site(s) still to be scoped or mitigation to be carried out. As noted within the report, sites were categorised as First or Second Tranche depending on how progressed they were at the time.

First Tranche Sites: Remaining first tranche sites, and current progress on these, are:

- Awaiti Place: *Currently, design and consenting for this project is largely completed in readiness for construction (shown as red in Attachment 2 table)*
- Esmeralda Street: *This project is now complete, no further action required*
- Resolution Road / James Cook Drive: *This project remains outstanding with mitigation likely to involve property purchase (red in Attachment 2 table)*

Remaining first tranche sites that have been scoped but no decision-making on upgrade (and are all denoted orange in Attachment 2 table) include:

- 2 locations on Welcome Bay Road
- 2 locations in Gate Pa: Neil Place and Church/Wellesley Street
- 3 locations within Brookfield: Darraghs Road, Heronvale Way and Barossa Way
- 3 locations within CBD: 18th Avenue, Sheath Street and Lower Elizabeth Street

Second Tranche: Second tranche sites are set out in the table below. Those for which scoping studies should commence are in Category A and B: Those in Category C would not be individually investigated further unless part of a cluster or if stormwater works are carried out in that area. For Category E sites, a site specific advisory should be considered.

Table 4: Second tranche clusters

	Catchment	Number of sites per category				
		A	B	C	D	E
Osprey Dr / Bateleur Cl / Hawk Pl / Farrow Way	Welcome Bay	-	8	-	3	8
Cheyne Rd / Fairfax Crs	Waimapu	1	-	19	-	6
Jonathon St / Otumoetai Road	Bethlehem	2	3	-	-	3
Lakes Boulevard	Kopurererua	-	-	11	-	4
Beaumaris Boulevard	Bethlehem	-	-	6	2	2
Glenorchy Pl / Merriman Pl	Waimapu	-	-	7	-	1
Peppertree Way / Jonathon St	Bethlehem	-	2	-	-	-
Maungatapu Rd	Kaitemako	-	2	-	-	-
Condor Dr / Veda Pl	Waimapu	-	-	2	3	1
Roger Guy Pl/ Waitaha Rd / Kaitemako Rd	Welcome Bay	-	1	-	-	3
Rosella Dr	Welcome Bay	-	1	-	-	2
Matapihi Rd	Mt Maunganui South	1	-	-	-	-
Moiri Pl	Kaitemako	-	1	-	-	1
Rovesdale Dr	Kaitemako	-	1	-	-	1
Parmwell Pl	Kaitemako	-	1	-	-	1
Castlewold Drive	Bethlehem	-	1	-	-	1
Caermarvon Rise	Bethlehem	-	1	-	-	-
Autumn Pl	Kaitemako	-	1	-	-	-
Pengary Ln	Kopurererua	-	-	2	-	1
Oropi Rd	Waimapu	-	-	1	-	-
	TOTAL	4	23	48	8	35

Non-Level of Service Projects or Projects Commenced Prior to Level of Service (- to 2021)

Some projects completed were initiated prior to the LoS being implemented in June 2015 or were implemented outside of the LoS in recognition of their significant flood risk history (non-DxV/conventional flood risk). Those projects implemented outside of the LoS were the subject of reports to Council seeking approval for staff to deviate from the LoS (refer to **Attachment 3** for table, schematic and project summaries). Approximately \$25.5M was expended in this category.

Of these projects, the most significant in cost and scale were within the Mount Industrial and latterly in the Mount North area.

In the Mount Industrial area, upgrades to address non-DxV flooding included a box culvert, pipeline and new outlet through the Port of Tauranga at Maui Street, and land purchase (landbank for potential new stormwater pump station) totalling \$15.5M. *Complete*

The Mount North area was identified by Elected Members, at the time the LoS was endorsed, as a priority for intervention given its high social, economic and recreational value, its probable future intensification and its vulnerability to the expected consequences of climate change (storm surge, sea level rise and rising groundwater). This priority was afforded in spite of the area not exhibiting DxV flooding. Over this period key interventions in Mount North area total just under \$9M and include:

- Purchase of a residential property to landbank as a potential future site for a large stormwater pumpstation (property is currently tenanted). A pump station is likely to be a part of a future potential flood response for the area (in conjunction with other yet to be identified infrastructure and non-infrastructure mitigation measures) *Landbank complete, no pumpstation construction planned currently;*
- Construction of a stormwater outlet by carrying out construction works on Port of Tauranga land extending to Nikau Crescent and Maunganui Road, sized and constructed to receive a pumped discharge *Complete;* and,
- Development of an adaptable long term strategy to address flooding and climate change effects using Dynamic Adaptive Pathways Planning (part-complete, on-hold due to funding constraints). This would consider the range of potential responses available to Council including both infrastructure (e.g. pumping, piped upgrades etc.) and non-infrastructure (e.g. policy, regulation, retreat etc.). *Project on hold due to operational funding constraints*

A further intervention in this category was the purchase of a severely flood affected property in Pengary Lane (\$1.1M). The dwelling was demolished and the land retained as part of a major overland flow path. *Complete*

Stormwater Reactive Reserve Fund Projects (2015 – Current, Ongoing)

A total of 17 applications have been received and assessed for intervention against the SWRRF Policy to date. Refer to **Attachment 4** for a summary of all, and below for those successful in receiving funding/intervention (totalling *approx \$6M*):

- July 2016: Sylvania Drive 1x in Matua (incl. 4 adjacent properties) - upgrade completed *\$<600K*
- 2017-8: Sherwood Street 1x and Oriana Crescent (x3) in Brookfield – 4x property purchase, minor upgrades then disposal of Oriana properties, demolition of dwelling and readying for disposal of Sherwood property *circa \$3.2M*
- January 2018: Hart Street (1x) in Mount Maunganui – upgrade *complete \$<100K*
- February 2019: Esmeralda Street (1x) in Welcome Bay – upgrade completed *\$<100K*
- September 2020: Ngatai Road (1x) in Pillans Bureta – *property purchase complete \$<900K* with potential for *further expenditure* in FY26/7 (*circa \$1.2M*) if property negotiations favourable and construction of overland flowpath proceeds
- March 2023: Chevron Drive (1x) in Pillans Bureta – property purchase *\$<900K* with *further investigations (and expenditure est. \$50K)* underway to determine ability for disposal
- March/April 2023: Levers Road (x3) and Mahoe Street (x1) in Matua – site specific measures on two *\$<200K currently underway*

ATTACHMENTS:

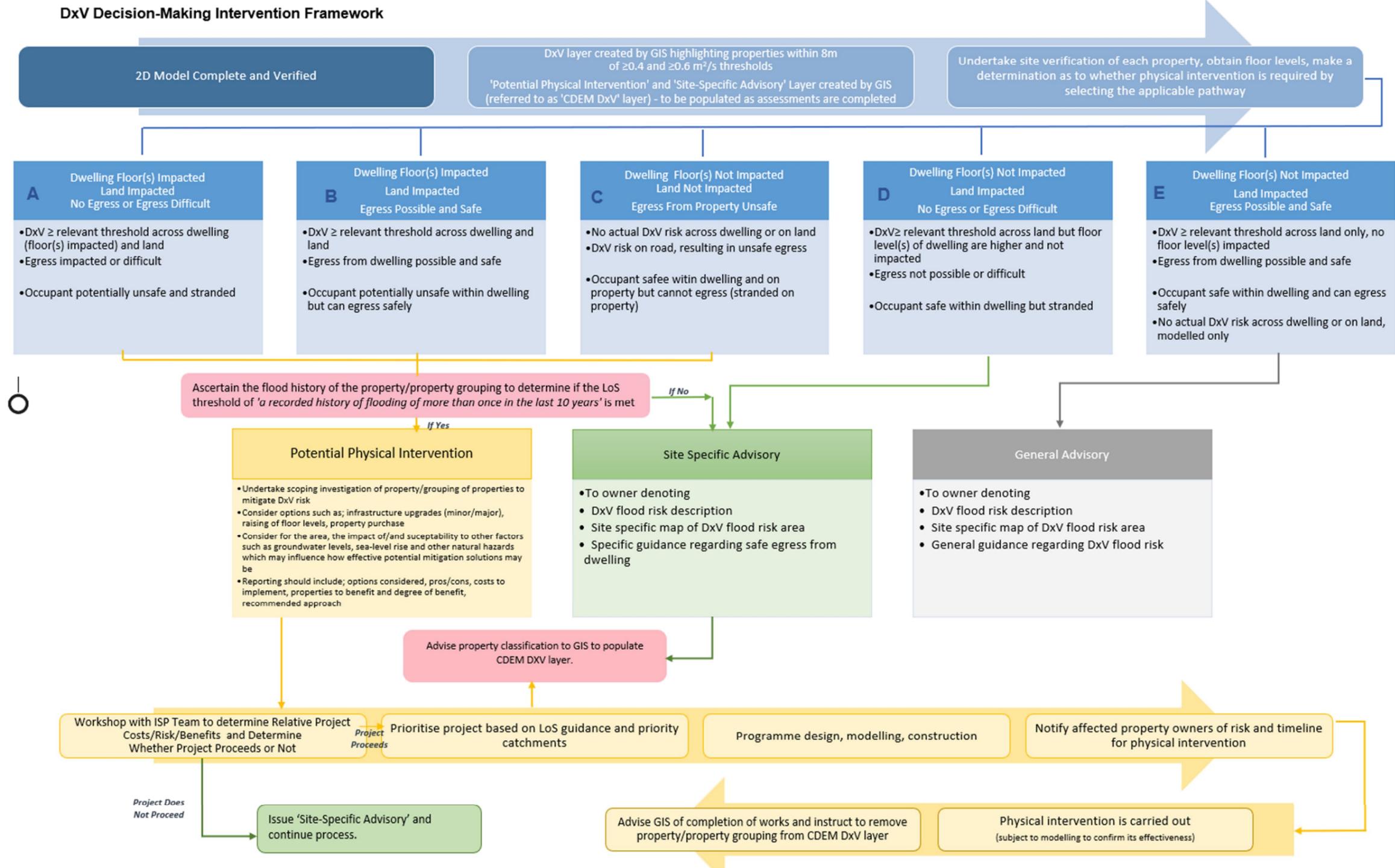
1: DxV Decision Making Framework

2: Level of Service DxV: Capital Works Programme – 2015-2021

3: Non-Level of Service Projects or Projects Commenced Prior to Level of Service (to 2021)

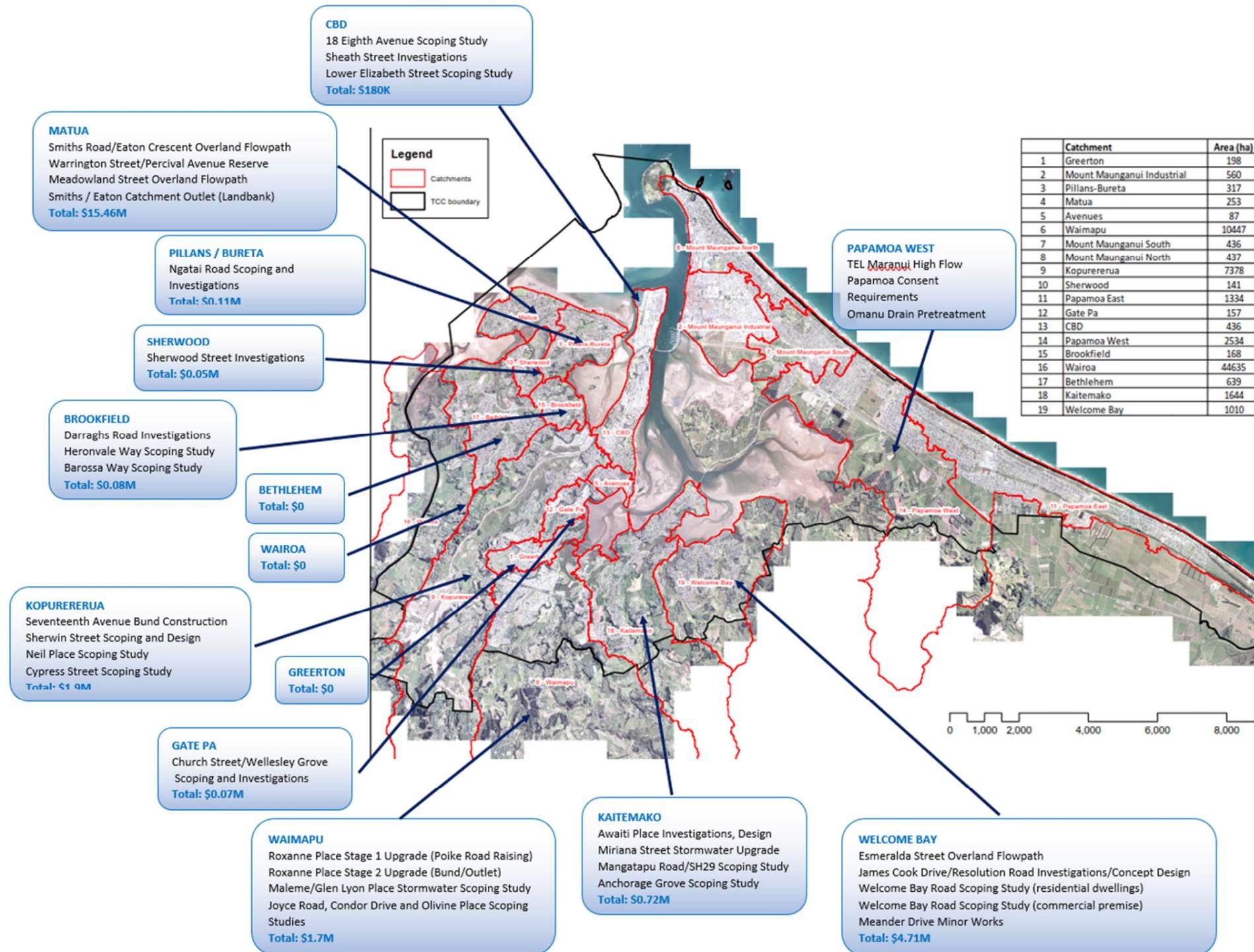
4: Stormwater Reactive Reserve Fund Application

ATTACHMENT 1:



ATTACHMENT 2: Level of Service DxV: Capital Works Programme – 2015-2021

Project	Type	Detail	Cost (as at 2020)	Further Work Required?
MATUA				
Smiths Rd/ Eaton Cres SW Reserve + Overland Flowpath	DxV Upgrade Complete	Acquired 6 properties to create an overland flow path to convey stormwater from Eaton Crescent to Matua Road and reduce flood risk on adjacent and downstream land. Sale and relocation of all dwellings <i>See project summary schematic below</i>	\$15.5M	No
Warrington St/Percival Ave SW Reserve	DxV Upgrade Complete	Acquired 9 properties, sale and relocation of dwellings and construction of a reserve to convey and attenuate stormwater reducing flood risk on adjacent and downstream properties <i>See project summary schematic below</i>		No
Meadowland Street Overland Flowpath	DxV Upgrade Complete	Acquired 5 properties and a portion of a 6th to mitigate DxV on these and adjacent properties. Remove 1 dwelling and relocate others to adjacent land to create a formed overland flow path <i>See project summary schematic below</i>		No
Smiths/Eaton Catchment Outlet (Landbank)	DxV Landbank	For potential future outlet. Landbank, property being tenanted.		Only if higher LoS required
WELCOME BAY				
Esmeralda Street Overland Flowpath	DxV Upgrade Complete	14 residential dwellings impacted by DxV at levels exceeding the intervention threshold for residential zoned land. Project comprised acquisition of 5 DxV affected properties and a small portion of a 6th. 3 dwellings removed, ground lowered to create conveyance/storage, flood retaining fencing constructed to protect remaining houses and excess land and dwellings sold to offset project costs. <i>See project summary schematic below</i>	\$4.71M	No
James Cook Drive/Resolution Road	DxV: Scoping	32 residential dwellings are impacted by DxV exceeding the intervention threshold for residential zoned land. All affected properties were surveyed to determine floor levels and these were then compared against modelled flood levels. This comparison indicates that 23 of the 32 dwellings and 8 attached garages have <u>flood levels exceeding floor levels</u> (to depths of up to 1.6 m). Upgrade likely to include property purchase. <i>See project summary schematic below</i>		Yes – upgrade
Welcome Bay Road Scoping Studies x 2	DxV: Scoping	Scoping study complete, still to confirm preferred option, potential upgrade to come		Potential upgrade
Meander Drive Upgrade	DxV Upgrade Complete	Minor DxV issue adjacent to Johnson Reserve. Shaping of the northern side of the overland flowpath resulted in flow extending into 52C Langstone Street. Works at this location involved minor recontouring to direct overland flow away from the property <i>See project summary schematic below</i>		No
KAITEMAKO				
Awaiti Place Stormwater Upgrade	DxV Scoping	105 properties and Awaiti Place, McFetridge Lane and Poike Road corridors impacted by DxV at levels exceeding the intervention threshold for residential zoned land. Significant flood depths/flows for extended durations (hours) on roads and at road crossings which would render the roads impassable to vehicles even in <10 yr events. Upgrade likely to include dam upgrade and property purchase. <i>See project summary schematic below</i>	\$0.72M	Yes - upgrade
Miriana Street Stormwater Upgrade	DxV Upgrade Complete	DxV in excess of the intervention threshold for residential zoned land is exceeded along the road corridor and affects five properties, predominantly 11, 13A and 13B which are located at the head of the cul-de-sac. <i>See project summary schematic below</i>		No
Mangatapu Road/SH29 and Anchorage Grove Scoping	DxV Scoping	Scoping study complete, still to confirm preferred option, potential upgrade to come		Potential upgrade
WAIMAPU				
Roxanne Place – Poike Road Rasing, bunding, pumpstation	DxV Upgrade Complete	Complete <i>See project summary schematic below</i>	\$1.7M	No
Maleme Street /Glen Lyon Scoping	DxV: Scoping	Scoping study complete – no viable upgrade option identified		No
KOPURERERUA				
Seventh Avenue Bund (Historic Village and Adjacent Land)	DxV Upgrade Complete	Construction of an earth bund to mitigate river influenced (and depth x velocity) flood risk of the Historic Village, a number of commercial properties and the St Johns Ambulance base located on the corner of Clarke Street and Seventeenth Avenue <i>See project summary schematic below</i>	\$1.9M	No
Sherwin Street	DxV Upgrade Complete	Addressed DxV at one property by securing the overland flowpath immediately adjacent. Works also rehabilitated the upstream pipework which was at risk of failure and which received all of catchment stormwater discharges <i>See project summary schematic below</i>		No
Neil Place Scoping	DxV: Scoping	Scoping study complete, still to confirm preferred option, potential upgrade to come		Potential upgrade
Cypress Street Scoping	DxV: Scoping	Scoping study complete – no viable upgrade option identified		No
OTHER CATCHMENTS: DxV SCOPING STUDIES				
Gate Pa: Church St/ Wellesley St Scoping	DxV: Scoping	Scoping study complete, still to confirm preferred option, potential upgrade to come	\$0.07M	Potential upgrade
Brookfield: Darraghs Road, Heronvale Way, Barrosa Way	DxV: Scoping	Scoping studies complete, still to confirm preferred options, potential upgrades to come	\$0.08M	Potential upgrade
Sherwood: Sherwood Street/Mitchell Park	DxV: Scoping	Scoping study complete, no viable option identified. Property purchase at 4 locations and minor site specific measures implemented through SWRRF. Refer Attachment 4.	\$0.05M	Implemented as SWRRF projects
Pillans Bureta: Ngatai Road	DxV: Scoping	1 property is impacted by DxV at levels exceeding the intervention threshold for residential zoned land together with extensive and frequent non-DxV flooding of this and neighbouring properties (estimate current level of protection is 1 in 1 year event). Given DxV risk and frequency and severity of flooding consideration is being given to intervention. Project now being progressed through SWRRF	\$0.11M	Implemented as SWRRF projects
CBD: 18 th Eighth Avenue, Sheath Street and Lower Elizabeth Street optioneering	DxV: Scoping	Scoping studies complete, still to confirm preferred options, potential upgrades to come	\$0.18M	Potential upgrade
Papamoa West: Omanu Drain, TEL Maranui High Flow, Papamoa CSC requirements	DxV: Scoping	Scoping study complete, no further works required	\$1.17M	No
Programme Total (including \$700K allowance for Project/Programme Management) and Property/Staff Time			\$26.3M	



MATUA

Meadowland Street, Matua – Level of Service (DxV)
 Acquired 5 properties and a portion of a 6th to mitigate DxV on these and adjacent properties. Removed 1 dwelling and relocated others to adjacent land to create a formed overland flow path. Project has resulted in 3 freehold properties, free of DxV flood risk, which are currently used for community housing.

Above) 1 in 100-year Flood Hazard (flood depths (metre) in key to bottom right). Red dot/dash indicate properties/land purchased. Overland flow path extent roughly denoted by yellow dashed lines

Right) DxV Flood Hazard (yellow/orange/red indicate flows in excess of Council's threshold for intervention of $\geq 0.4m^2/s$)

Above) Subdivision layout plan depicting 3 new freehold lots (Lots 2-4). Fourth property sold at 34 Meadowland Street (less a portion of the back yard which was retained by Council as part of the overland flow path).

Above Left) Prior to work **Above Middle) Schematic** **Above Right) Overland flow path** nearing completion – looking from driveway to 36E Meadowland Street to Matua Saltmarsh

Above Left) Completed driveway/fencing leading to 36E Meadowland Street – yellow dash is direction of overland flow discharging via grate to swale

Above Right and Below Left) 3x properties relocated out of swale footprint.

Project	Type	Cost (as at 2020)	Further Work Required?
Smith's Rd/ Eaton Cres SW Reserve + Overland Flow path	DxV Upgrade Complete	\$15.5M	No
Warrington St/Percival Ave SW Reserve	DxV Upgrade Complete		No
Meadowland Street Overland Flow path	DxV Upgrade Complete		No
Smith's/Eaton Catchment Outlet (Landbank)	DxV Landbank		Only if higher LoS required

Smiths/ Eaton, Matua – Level of Service (DxV)
 Acquired 6 properties to create an overland flow path to convey stormwater from Eaton Crescent to Matua Road and reduce flood risk on adjacent and downstream land. Sale and relocation of all dwellings.

Left) Orange dots indicate properties purchased, sold and relocated, blue dots previously flood prone properties

Above) Artists impression of overland flow path prior to construction commencing

Top) Looking down completed swale from Eaton Crescent
Bottom) Looking up completed swale from Smiths Road

Warrington/Percival, Matua – Level of Service (DxV)
 Acquired 9 properties, sale and relocation of dwellings and construction of a reserve to convey and attenuate stormwater reducing flood risk on adjacent and downstream properties.

Above left) Flood hazard mapping for Warrington/Percival. Red/orange dots indicate properties purchased. **Above right):** At July 2017 – house relocation complete

Left) Completed reserve (August 2020) – looking from Warrington Street

WELCOME BAY

Esmeralda Street, Welcome Bay – Level of Service (DxV)

14 residential dwellings impacted by DxV at levels exceeding the intervention threshold for residential zoned land. Project comprised acquisition of 5 DxV affected properties and a small portion of a 6th. 3 dwellings were removed, the ground lowered to create conveyance/storage, flood retaining fencing constructed to protect remaining houses and excess land and dwellings sold to offset project costs. Project also included minor realignment of adjacent stream to manage flood flows.

Upper) White house (no. 47), no. 45 to rear and grey roof (no. 49A) all purchased and dwellings sold/relocated – this is the location of ground lowered, and flood fencing constructed. Direction of flood flow (yellow dash)

Lower) Direction of flood flow (yellow dash). Childcare centre in blue circle

Above) Green shading is ground lowered, yellow line is flood fencing 45, 47, 49A, 53D + 59D purchased. All dwellings except 53D sold and relocated off-site. Rear of 53D + 59C retained.

Left): 1 in 100-year Flood Hazard (flood depths (metre) indicated in key to bottom right)

Right) Depth x Velocity Flood Hazard (yellow/orange/red indicate flows in excess of Council's threshold for intervention of $\geq 0.4m^2/s$)

James Cook Drive/Resolution Road, Welcome Bay – Level of Service (DxV)

Modelling reveals 32 residential dwellings are impacted by DxV exceeding the intervention threshold for residential zoned land. It is also evident that the Waitaha Road corridor would be severely impacted during the 1 in 100-year event. During this event, approximately 200-300m of road is flooded on both sides and an area at the bottom of Waitaha Road has flood depths likely to exceed 1m which would render it impassable. Current proposal for mitigation involves property purchase.

Figure 2: DxV flood hazard (yellow, orange and red all indicate flows in excess of Council's LoS threshold for intervention – yellow $\geq 0.4m^2/s$, orange between 0.6 - 0.8m²/s, and pink $\geq 0.8 m^2/s$)

Project	Type	Cost (as at 2020)	Further Work Required?
Esmeralda Street Overland Flow path	DxV Upgrade Complete	\$4.71M	No
James Cook Drive/Resolution Road	DxV: Scoping		Yes – upgrade
Welcome Bay Road Scoping Studies x 2	DxV: Scoping		Potential upgrade
Meander Drive Upgrade	DxV Upgrade Complete		No

52C Langstone Street/Meander Drive – Level of Service (DxV)

Minor DxV issue located adjacent to Johnson Reserve. Shaping of the northern side of the overland flow path results in flow extending into 52C Langstone Street. Works involved minor recontouring to direct overland flow away from the property.

Left) Meander 1 in 100 year DxV flood hazard – yellow and red above 0.4m²/s threshold

Right) Direction of flow (yellow dash) and location of minor recontouring (blue dash)

KOPURERERUA

Seventeenth Avenue Bund, Kopurererua – Level of Service (DxV)

Construction of an earth bund (location 1 below right) to mitigate river influenced (and DxV) flood risk at the Historic Village, a number of commercial properties and the St Johns Ambulance base located on the corner of Clarke Street and Seventeenth Avenue. Works were carried out in conjunction with an adjacent bund which funded by the owner of adjacent commercial land.

Left) Extent of Proposed Works (1=TCC, 2=Private)

Below and Right) Work site during construction (2019)

Above) Site Location
 Blue shading– 4.2ha of privately owned commercially zoned land
 Orange shading (to the south of Clarke Street) - St Johns Ambulance base
 Yellow shading – northern portion of the TCC owned Historic Village
 Road reserves – lower reaches of Clarke Street and Seventeenth Avenue facilitating access to and from the above

Sherwin Street, Kopurererua – Level of Service (DxV)

Project addressed severely affected DxV at 1 property on Sherwin Street by securing the overland flow path immediately adjacent. Works also rehabilitated the upstream pipework at risk of failure which receives all of catchment stormwater discharges.

Left) Sherwin Street 1 in 100-year DxV flood hazard – yellow and red above 0.4m²/s threshold.

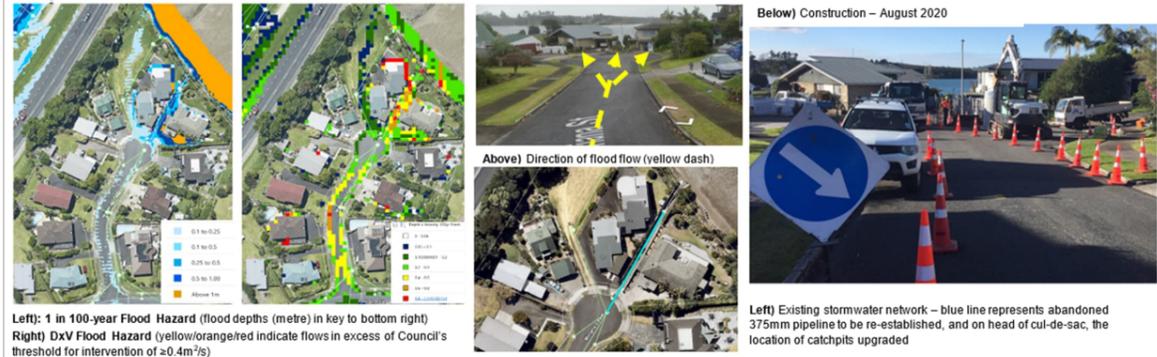
Right) Location of work site, direction of flood flow - yellow dash

Project	Type	Cost (as at 2020)	Further Work Required?
Seventh Avenue Bund (Historic Village and Adjacent Land)	DxV Upgrade Complete	\$1.9M	No
Sherwin Street	DxV Upgrade Complete		No
Neil Place Scoping	DxV: Scoping		Potential upgrade
Cypress Street Scoping	DxV: Scoping		No

KAITEMAKO

Miriana Street, Kaitemako – Level of Service (DxV)

DxV in excess of the intervention threshold for residential zoned land exceeded along the road corridor affecting 5 properties located at the head of the cul-de-sac. Flood depths above 1m in the 100-year rainfall event for 3 properties. Works included pipeline, catchpit and outlet upgrades.



Left) 1 in 100-year Flood Hazard (flood depths (metre) in key to bottom right)
 Right) DxV Flood Hazard (yellow/orange/red indicate flows in excess of Council's threshold for intervention of $\geq 0.4m^2/s$)

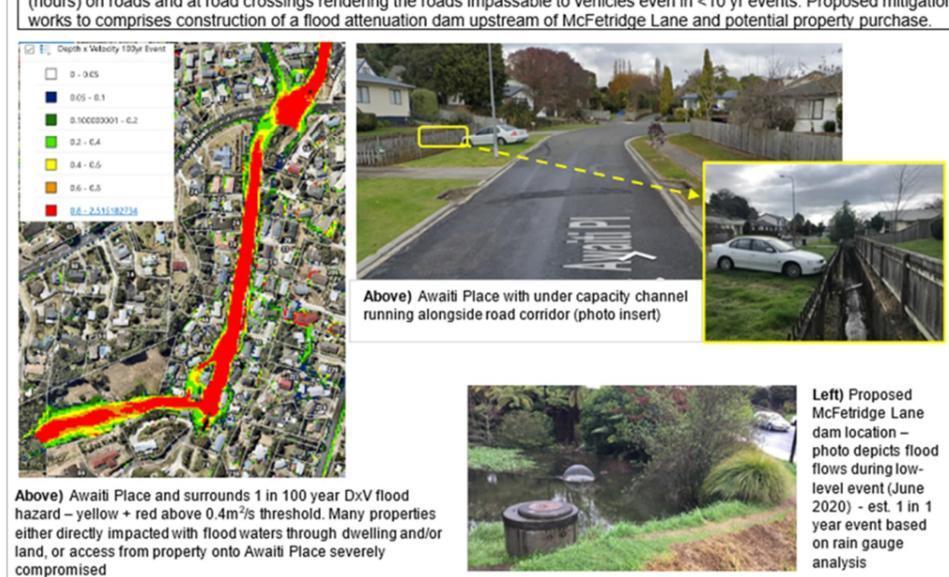
Above) Direction of flood flow (yellow dash)

Below) Construction – August 2020

Left) Existing stormwater network – blue line represents abandoned 375mm pipeline to be re-established, and on head of cul-de-sac, the location of catchpits upgraded

Awaiti Place, Kaitemako – Level of Service (DxV)

Many properties and Awaiti Place, McFetridge Lane and Poike Road corridors impacted by DxV at levels exceeding the intervention threshold for residential zoned land. Modelling confirms significant flood depths/flows for extended durations (hours) on roads and at road crossings rendering the roads impassable to vehicles even in <10 yr events. Proposed mitigation works to comprises construction of a flood attenuation dam upstream of McFetridge Lane and potential property purchase.



Left) Proposed McFetridge Lane dam location – photo depicts flood flows during low-level event (June 2020) - est. 1 in 1 year event based on rain gauge analysis

Above) Awaiti Place with under capacity channel running alongside road corridor (photo insert)

Above) Awaiti Place and surrounds 1 in 100 year DxV flood hazard – yellow + red above $0.4m^2/s$ threshold. Many properties either directly impacted with flood waters through dwelling and/or land, or access from property onto Awaiti Place severely compromised

Project	Type	Cost (as at 2020)	Further Work Required?
Awaiti Place Stormwater Upgrade	DxV Scoping	\$0.72M	Yes - upgrade
Miriana Street Stormwater Upgrade	DxV Upgrade Complete		No
Mangatapu Road/SH29 and Anchorage Grove Scoping	DxV Scoping		Potential upgrade

WAIMAPU

Roxanne Place – Level of Service

Works to address flooding of Roxanne Place commercial subdivision, involving constructing an access bund across a wetland area, raising the western end of Poike Road and constructing a culvert and outfall at the western end of Poike Road to discharge stormwater into the Waimapu Stream.



Proposed culvert and outlet

Raised Road Formation

Existing Drains (Indicative)

Access Track (Indicative)

200 Poike Road

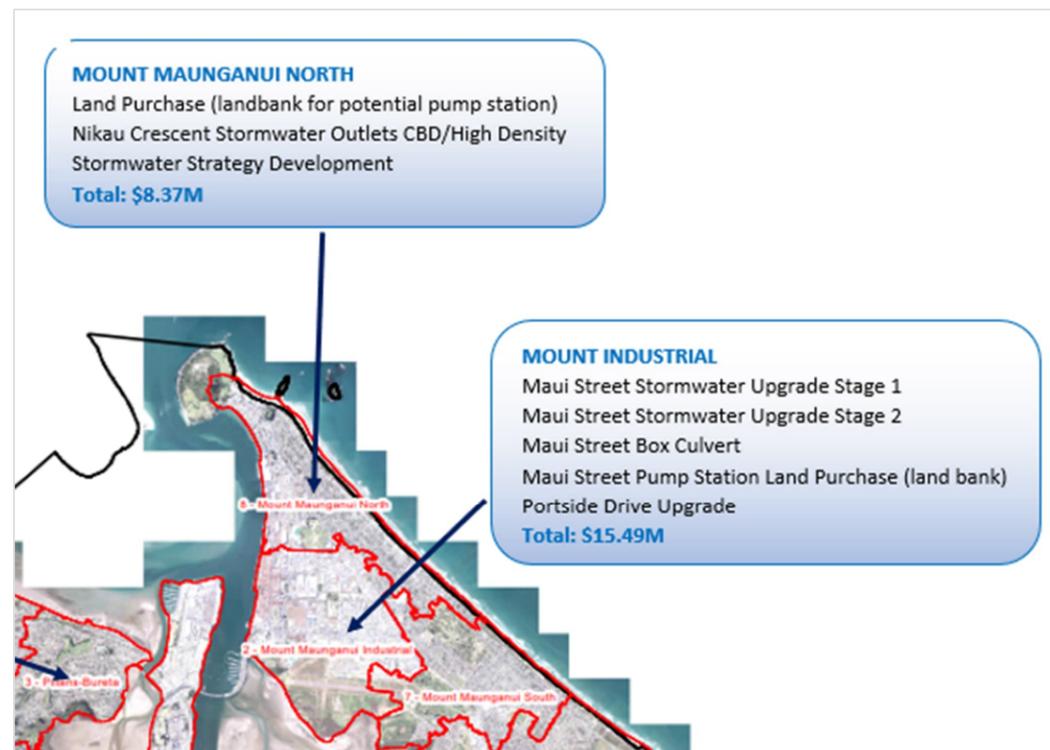
State Highway 29

Waimapu Stream

Project	Type	Cost (as at 2020)	Further Work Required?
Roxanne Place – Poike Road Rasing, bunding, pumpstation	DxV Upgrade Complete	\$1.7M	No
Maleme Street /Glen Lyon Scoping	DxV: Scoping		No

ATTACHMENT 3: Non-Level of Service Projects or Projects Commenced Prior to Level of Service (to 2021)

Project	Type	Detail	Cost (as at 2020)	Further Work Required to Complete?
MOUNT NORTH				
Land Purchase – landbank for future potential pumpstation	Non-DxV Landbank	For potential future outlet	\$8.4M	Dep. outcome of Flooding/ Climate Study
Nikau Crescent Outlet (through Port)	Non-DxV Upgrade Complete	Construction to secure a stormwater outlet for the Mount North by carrying out construction works on Port of Tauranga land extending to Nikau Crescent and Maunganui Road		No
Flooding and Climate Adaptation Planning	Non-DxV Study	To develop a robust, adaptable long-term strategy to address the flooding + climate change effects for this catchment. The catchment extends roughly from Adams Avenue to Salisbury Avenue and encompasses the Mount CBD	Say \$500K	Yes – study on hold
MOUNT INDUSTRIAL				
Maui Street Box Culvert, Outlet (through Port), Landbank for future potential pumpstation	Non-DxV Upgrade Complete	Complete	\$15.5M	No
Portside Drive Overland Flowpath Improvements	Non-DxV Upgrade Complete	Complete		No
WAIMAPU				
Pengary Lane	Non-DxV Upgrade	Properly purchase, demolition of dwelling and retention of land as part of wider major overland flowpath	\$1.1M	No
TOTAL			\$25.5M	



Mount North Flood Mitigation – Non-Level of Service (Non-DxV)
Construction of a stormwater outlet for the Mount North area by carrying out construction works on Port of Tauranga land extending to Nikau Crescent and Maunganui Road

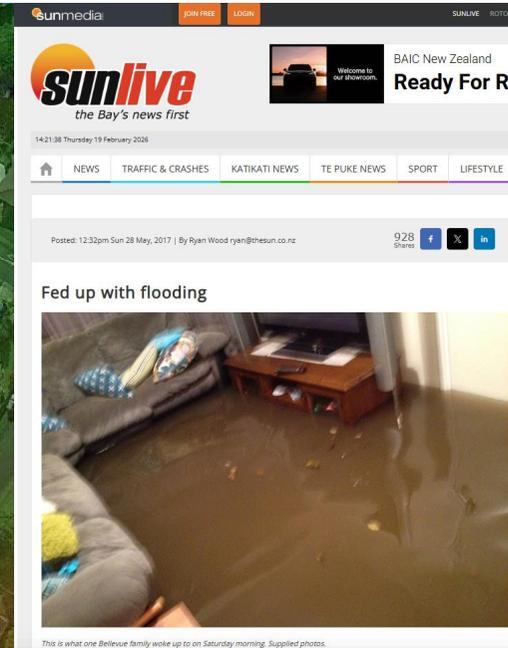
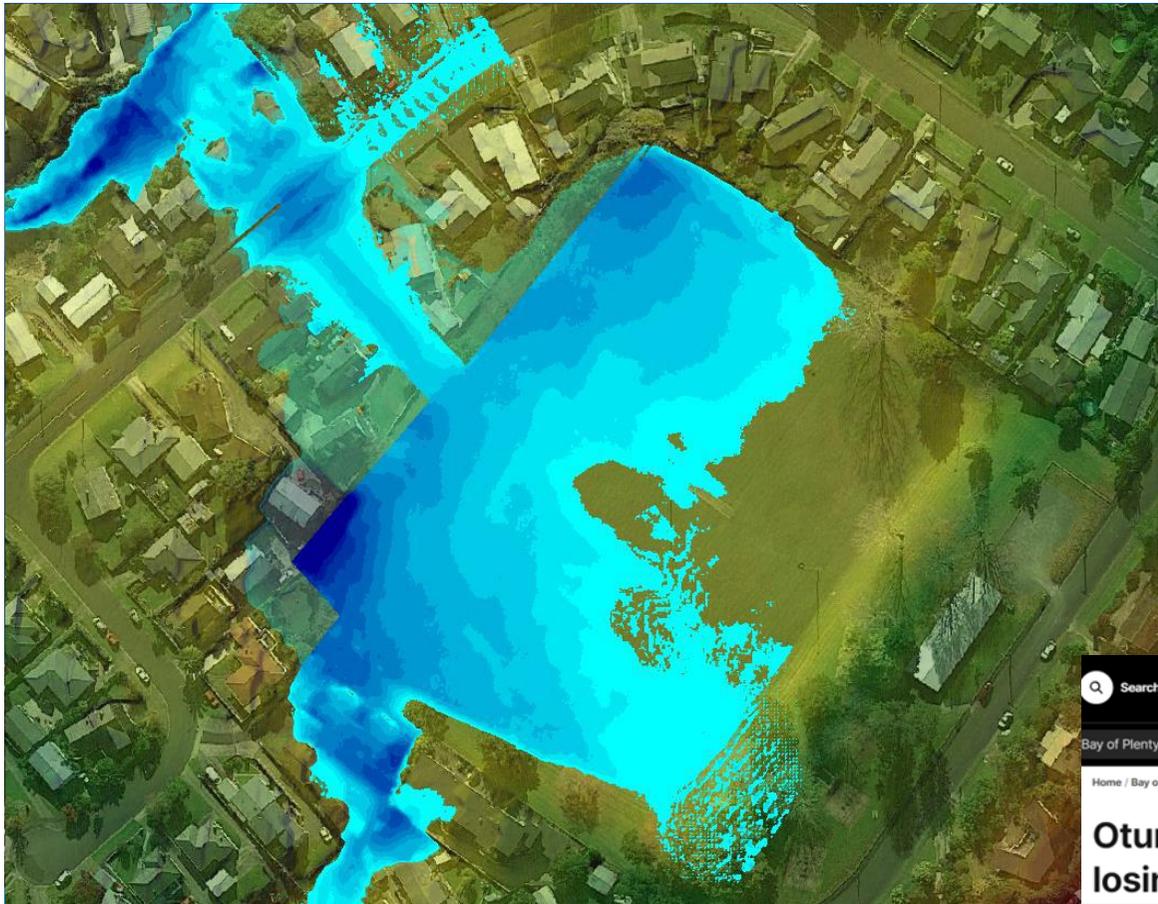
Left): Flood hazard map for Mount North in vicinity of outlet (indicative location in red)
Right top): 3 sub-catchments which can be serviced by the new outlet
Centre) During outlet construction (late 2017/2018)
Right bottom): Outlet alignment through Port of Tauranga

Mount North – Flooding and Climate Adaptation Planning – Non-Level of Service (non-DxV)
To develop a robust, adaptable long-term strategy to address the flooding and climate change effects using Dynamic Adaptive Pathways Planning. Catchment extends roughly from Adams Avenue to Salisbury Avenue and encompasses the Mount CBD

Mount North (CBD/High Density) 1 in 100-year flood hazard map with photo overlay

ATTACHMENT 4: Stormwater Reactive Reserve Fund Application

Application (residential properties)	Application Date	Detail	Decision and Intervention	Cost	Further Work Required?
Taylor Road (x1)	July 2016	2 applications received on behalf of 6 properties – 2 subject to habitable floor flooding, the remaining land and road flooding	Only 2 of 6 properties were compliant with Policy. Optioneering completed, all having very high costs/marginal benefit. No intervention	Optioneering	No
Sylvania Drive (x1, incl. adjacent 4 properties)	July 2016	1 application received for habitable floor flooding on behalf of subject property and 4 neighbouring properties	Compliant with Policy. Upgrade completed involving road and outlet upgrade	\$<600K	No
Residential properties surrounding Mitchell Park: o Sherwood Street (x1) o Oriana Street (x3)	2017-2018	Following extensive DxV optioneering which resulted in unfavourable cost benefit, 4 applications were received each seeking property purchase in response to frequent and severe habitable floor flooding	All compliant with Policy. Minor works to address flooding carried out on 3 properties. Properties were then resold. For the Sherwood St property no site specific mitigation was possible and the property was demolished.	\$<3.2M	Readiness of land for disposal of Sherwood Street property (land only)
Hart Street (x1, incl. adjacent 4 properties)	January 2018	1 x application to address flooding of habitable floor and land of applicant property. 4 adjacent properties also subject to habitable floor flooding	Compliant with Policy. Upgrade completed.	\$<100K	No
Esmeralda Street (x1)	February 2019	1x application seeking intervention to mitigate flooding	Compliant with Policy. Works completed on site to address flooding	\$<100K	No
Ngatai Road (x1), incl. adjacent 2 properties subject to land flooding. Extensive road flooding in vicinity	September 2020	1x application for severe and ongoing habitable floor flooding seeking property purchase	Compliant with Policy. Following extensive optioneering, proceeded with property purchase	<\$900K. to date. Poss. For further \$1.2M	Property negotiations with adjacent property owners underway for land purchase to enable construction of overland flowpath. If works able to proceed, this property (less portion within overland flowpath) would be sold
Pengary Lane (x1))		1x application seeking property purchase in relation to land only flooding	Not compliant with policy as no dwelling on property (therefore no habitable floor flooding). Other factors for consideration including securing major overland flowpath for area. Decision to negotiate on purchase, however agreement on price not reached. No further invention considered.	NA	No
Chevron Drive (x1)	March 2023	1x application for severe and ongoing habitable floor flooding seeking property purchase	Compliant with Policy. Following extensive optioneering, proceeded with property purchase	<\$900K Poss of further legal/property costs for disposal est. \$50K	Assessing options to enable disposal of property
Livers Road/Mahoe Street (x5) o 1 x Mahoe Street o 4x Livers Road	March/April 2023	5x applications, assessed together as one package, to address flooding of land and habitable floors.	Compliant with Policy. Catchment upgrade did not proceed due to poor cost benefit. Site specific measures instead on 2 properties most severely affected by habitable floor flooding. Measures include site bunding, recontouring etc.	<\$200K	Complete on 1x Mahoe Street property In progress on 1x Livers Road property
Warrington Street (x1)	August 2023	1x application seeking property purchase. 2 instances of flooding, one in 2005 and the other 2013. Both events sit outside the ten year window as required by the SWRRF policy.	Not compliant with Policy. No intervention	NA	No
SWRRF TOTAL				\$6.3M Potential for further \$1.25-1.5M in FY26/27	



Integrated Stormwater Programme

Depth x Velocity Level of Service
Stormwater Reactive Reserve Fund



Background

Flooding of localised residential, commercial and industrial areas within parts of the City that were first developed more than 20 years ago has been an ongoing issue

In older established areas stormwater infrastructure provision varies and in many cases only a 2-yr or 5-yr ARI piped network exists

Generally in areas developed prior to the 1990's no overland flow path, ponding network or piped network (for above the 5-yr ARI) was provided

In greenfield areas/urban growth areas (developments post-1990) a stormwater network catering for a minimum 50-yr ARI through overland flow paths (for larger storm events) and a 10-yr ARI piped network (for more frequent events) is provided for

This is the current greenfield level of service (LoS) and is provided through the structure planning process and delivery of the new greenfield areas through the City Plan and Infrastructure Development Code

Prior to 2015, Council had never set a LoS in regard to stormwater network provision in brownfields areas or formally considered the methods on which to provide an agreed LoS within existing developed areas of the City that are subject to flooding resulting in damage as a result of intense rainfall events

Significant Flooding Events

Tauranga has experienced a range of intense rainfall events, notably May 2005, and lesser events in 2010, 2011 & April 2013 (5-20 yr ARI). Effects were localised primarily affecting Matua, Mount Maunganui and Papamoa

In June 2014 flooding also occurred in the Waimapu catchment as a result of the Waimapu River over topping its banks and flooding Roxanne Place and parts of Glen Lyon Avenue

The 2005 event is considered the most extreme event that Tauranga has experienced in recent memory, causing significant damage through landslips and flooding to properties

Over the period 2005 - 2015 circa \$90M was spent by Council on flood mitigation works across the city in response to these flood events, focussing on these most affected catchments



Tauranga City Council

A New Flood Risk Approach (2015)

A new approach to flood risk management was adopted through 2014/2015 AP. This arose following the 2013 flood event and a desire to adopt a more holistic approach

The context was high stormwater debt levels and a need for wider integration across Council departments (planning/engineering/building/emergency management and civil defence)

Through the 2015/25 LTP a Depth x Velocity (DxV,) 'Safety to Persons' focussed LoS was adopted as part of the new approach, funded through a **Stormwater Bulk Fund** for infrastructure and non-infrastructure interventions

Other components of the new approach included:

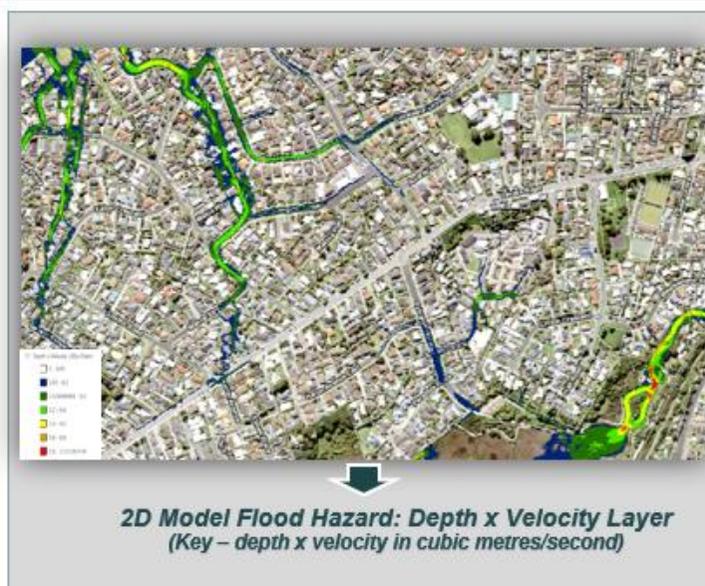
- **Reactive response capacity** implemented through the **Stormwater Reactive Reserve Fund (SWRRF) and Policy**;
- **Regulation and policy changes** to ensure no increased risk occurs, and over time risk is reduced implemented through **Plan Change 27 'Flooding from Intense Rainfall Events'**
- **Education**; and,
- **Residual risk & emergency management** services for flood affected landowners following events



Tauranga City Council

2D Stormwater Models: To Support Integrated Stormwater Programme

- These 2D models are now superseded by 2130 flood modelling carried out for Plan Change 27 'Flooding for Intense Rainfall Events'
- Informed all aspects of the flood risk approach, but particularly the DxV programme of infrastructure and non-infrastructure interventions
- 100% of city was modelled: 100-year extreme event, existing development scenario
- Mail-out to affected property owners advising of flood risk (also on property file/LIMs)
- Depth x Velocity layer created to inform areas for intervention under the 'Safety to Persons' LoS

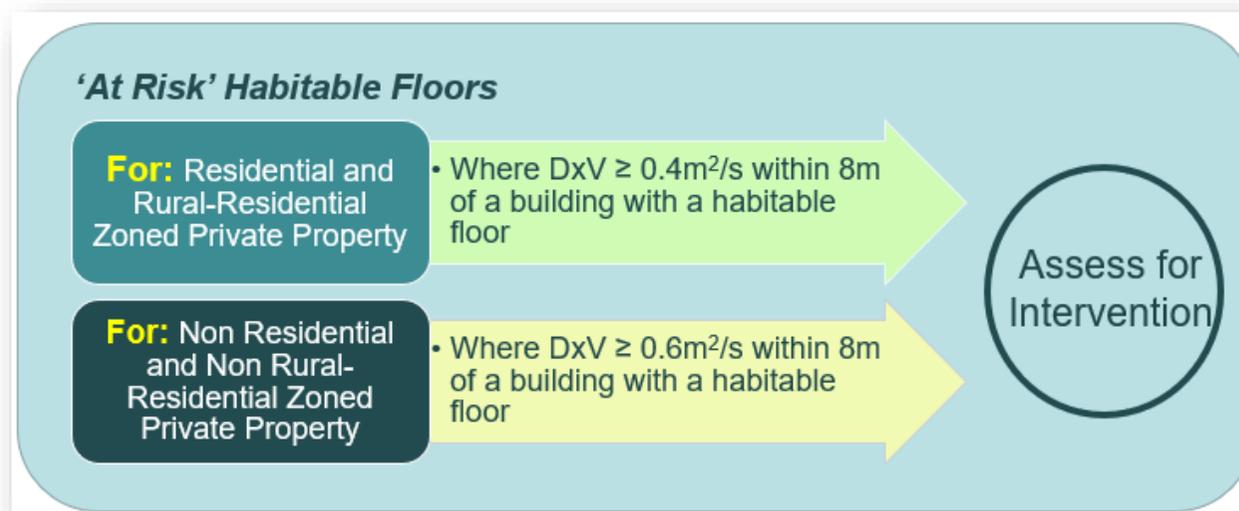


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DxV 'Safety to Persons' Focussed Level of Service

For Infrastructure and Non-Infrastructure Interventions - funded from Stormwater Bulk Fund

- 'Safety to persons' rather than traditional 'risk to property'



- Priority for implementation governed by:
 - ✓ Number of 'at-risk' habitable floors - higher number have a higher priority ('count' of properties)
 - ✓ Residential and rural-residential zoned zones over non-residential / non-rural residential zones

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What is Depth x Velocity?

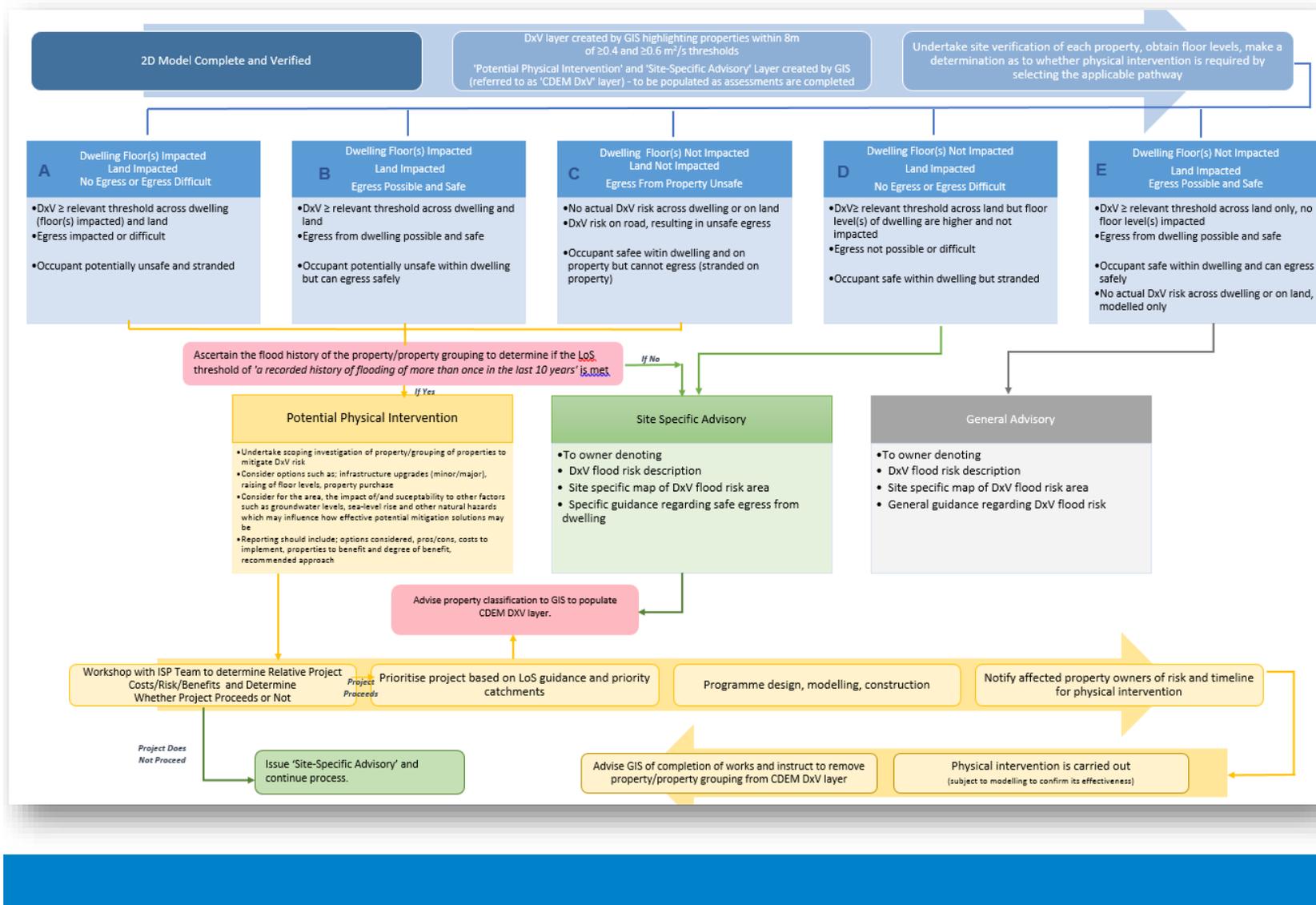
Depth (cm)	Velocity (m/s)	Depth x Velocity (m ³ /s)	Effect on People and Property
0-10	Any		<ul style="list-style-type: none"> • Unlikely to be hazard to people • Unlikely to cause damage to property
10-50	<1.0		<ul style="list-style-type: none"> • People can usually stand but vulnerable people can be affected (children, elderly, injured, disabled) • Traversable by emergency vehicles • Damage to property is minor to moderate • Scour/erosion of building foundations unlikely
50-100	<2		<ul style="list-style-type: none"> • Stability of people in floodwater is at risk • Damage to property can be significant
>100	>2	>1	<ul style="list-style-type: none"> • Depths >1m risk to life • Significant building damage very likely

TCC Residential & Rural-Residential Threshold for Intervention (≥0.4m²/s)

Table and Figure Reference: <http://www.hamilton.govt.nz/our-council/council-publications/districtplans/flood/Pages/Flood-FAQ.aspx>



Depth x Velocity Decision-Making Intervention Framework



Matua: DxV Level of Service Interventions - *Examples*

Meadowland Street, Matua – Level of Service (DxV)
 Acquired 5 properties and a portion of a 6th to mitigate DxV on these and adjacent properties. Removed 1 dwelling and relocated others to adjacent land to create a formed overland flow path. Project has resulted in 3 threshold properties, free of DxV flood risk, which are currently used for community housing.

Above Left 1 in 100-year Flood Hazard (Flood depths (metres) in key to bottom right). Flood (dashed) indicates properties/land purchased (Overland flow path extent roughly demarcated by yellow dashed lines).

Above Right DxV Flood Hazard (yellow/orange/red indicate those in excess of Council's threshold for intervention of $10.4m^3/s$).

Above Subdivision layout plan depicting 3 new freehold lots (lots 2-4). Fourth property sits at 34 Meadowland Street (area a portion of the back yard which was retained by Council as part of the overland flow path).

Above Left Prior to work **Above Middle** Schematic **Above Right** Overland flow path nearing completion – looking from driveway to 36E Meadowland Street to Matua Saltmarsh

Above Left Completed driveway/fencing leading to 36E Meadowland Street – yellow dash is direction of overland flow discharging via grate to swale

Above Right and Below Left 3x properties relocated out of swale footprint

Project	Type	Cost (as at 2020)	Further Work Required?
Smith's Rd/ Eaton Cres SW Reserve + Overland Flow path	DxV Upgrade Complete	\$15.5M	No
Warrington St/Percival Ave SW Reserve	DxV Upgrade Complete		No
Meadowland Street Overland Flow path	DxV Upgrade Complete		No
Smith's/Eaton Catchment Outlet (Landbank)	DxV Landbank		Only if higher LoS required

Smiths/ Eaton, Matua – Level of Service (DxV)
 Acquired 6 properties to create an overland flow path to convey stormwater from Eaton Crescent to Matua Road and reduce flood risk on adjacent and downstream land. Sale and relocation of all dwellings.

Left Orange dots indicate properties purchased, sold and relocated, blue dots previously flood prone properties

Above Artists impression of overland flow path prior to construction commencing

Top Looking down completed swale from Eaton Crescent
Bottom Looking up completed swale from Smiths Road

Warrington/Percival, Matua – Level of Service (DxV)
 Acquired 9 properties, sale and relocation of dwellings and construction of a reserve to convey and attenuate stormwater reducing flood risk on adjacent and downstream properties.

Above left Flood hazard mapping for Warrington/Percival. Red/orange dots indicate properties purchased. **Above right:** At July 2017 – house relocation complete

Left Completed reserve (August 2020) – looking from Warrington Street

Welcome Bay: DxV Level of Service Interventions - *Examples*

WELCOME BAY

Esmeralda Street, Welcome Bay – Level of Service (DxV)

14 residential dwellings impacted by DxV at levels exceeding the intervention threshold for residential zoned land. Project comprised acquisition of 5 DxV affected properties and a small portion of a 6th. 3 dwellings were removed, the ground lowered to create conveyance/storage, flood retaining fencing constructed to protect remaining houses and excess land and dwellings sold to offset project costs. Project also included minor realignment of adjacent stream to manage flood flows.



Left): 1 in 100-year Flood Hazard (flood depths (metre) indicated in key to bottom right)

Right) Depth x Velocity Flood Hazard (yellow/orange/red indicate flows in excess of Council's threshold for intervention of >0.4m³/s)

52C Langstone Street/Meander Drive – Level of Service (DxV)

Minor DxV issue located adjacent to Johnson Reserve. Shaping of the northern side of the overland flow path results in flow extending into 52C Langstone Street. Works involved minor recontouring to direct overland flow away from the property.



James Cook Drive/Resolution Road, Welcome Bay – Level of Service (DxV)

Modelling reveals 32 residential dwellings are impacted by DxV exceeding the intervention threshold for residential zoned land. It is also evident that the Waitaha Road corridor would be severely impacted during the 1 in 100-year event. During this event, approximately 200-300m of road is flooded on both sides and an area at the bottom of Waitaha Road has flood depths likely to exceed 1m which would render it impassable. Current proposal for mitigation involves property purchase.



Project	Type	Cost (as at 2020)	Further Work Required?
Esmeralda Street Overland Flow path	DxV Upgrade Complete	\$4.71M	No
James Cook Drive/Resolution Road	DxV Scoping		Yes – upgrade
Welcome Bay Road Scoping Studies x 2	DxV Scoping		Potential upgrade
Meander Drive Upgrade	DxV Upgrade Complete		No

DxV ‘Safety to Persons’ Focussed Level of Service Programme: Outstanding Work

Priority 1: DxV risk to habitable floor + land - mitigation identified but yet to be implemented:

- **Awaiti Place: Est. \$12.3M** [\$2.5M land purchase, \$9.8M dam construction, 2024 est.], sufficient funding across 30-33FY
- **Resolution Road / James Cook Drive: Est. \$900K**, sufficient funding in 28 and 29FY

Requires budget bring forward and stormwater reprioritisation to progress

Priority 2: DxV sites that have been scoped but no decision-making on upgrade:

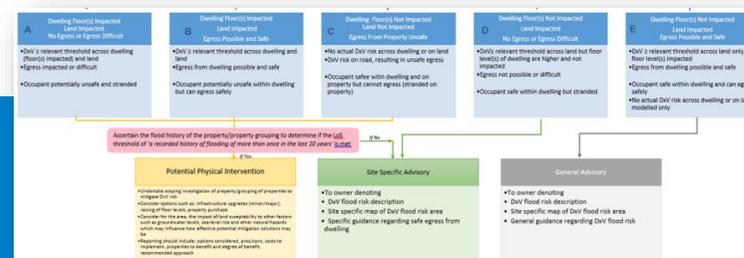
- 2 locations on Welcome Bay Road
- 2 locations in Gate Pa: Neil Place and Church/Wellesley Street
- 3 locations within Brookfield: Darraghs Road, Heronvale Way and Barossa Way
- 3 locations within CBD: 18th Avenue, Sheath Street and Lower Elizabeth Street

Priority 3: DxV sites/clusters that warrant scoping assessment and consideration for intervention but not yet started:

- 14 sites/clusters (including 4x Category A, 23 Category B)

Priority 4: Site specific advisory where some DxV risk exists but an infrastructure upgrade is not warranted (numerous across city)

Budget requirements for Priority 2-4 yet to be assessed – however no funding within current LTP Stormwater Bulk Fund



Priority 1: DxV risk to habitable floor + land

Mitigation identified but yet to be implemented

Est. \$12.3M [\$2.5M land purchase, \$9.8M dam construction, 2024 est.], sufficient funding across 30-33FY

Awaiti Place, Kaitemako – Level of Service (DxV)

Many properties and Awaiti Place, McFetridge Lane and ~~Roke~~ Road corridors impacted by DxV at levels exceeding the intervention threshold for residential zoned land. Modelling confirms significant flood depths/flows for extended durations (hours) on roads and at road crossings rendering the roads impassable to vehicles even in <10 yr events. Proposed mitigation works to comprises construction of a flood attenuation dam upstream of McFetridge Lane and potential property purchase.

Depth x Velocity 100yr Event

- Hazard Class
- < 0.4
 - 0.4 - 0.6
 - 0.6 - 0.8
 - > 0.8



Above) Awaiti Place with under capacity channel running alongside road corridor (photo insert)

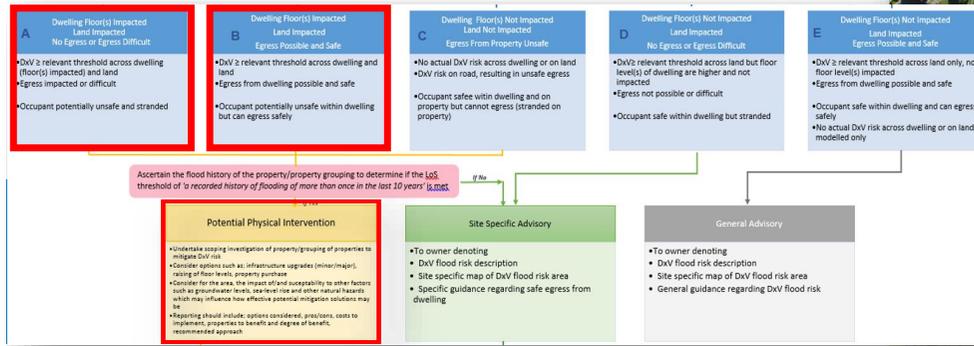


Left) Proposed McFetridge Lane dam location – photo depicts flood flows during low-level event (June 2020) - est. 1 in 1 year event based on rain gauge analysis

Above) Awaiti Place and surrounds 1 in 100 year DxV flood hazard – yellow + red above 0.4m²/s threshold. Many properties either directly impacted with flood waters through dwelling and/or land, or access from property onto Awaiti Place severely compromised



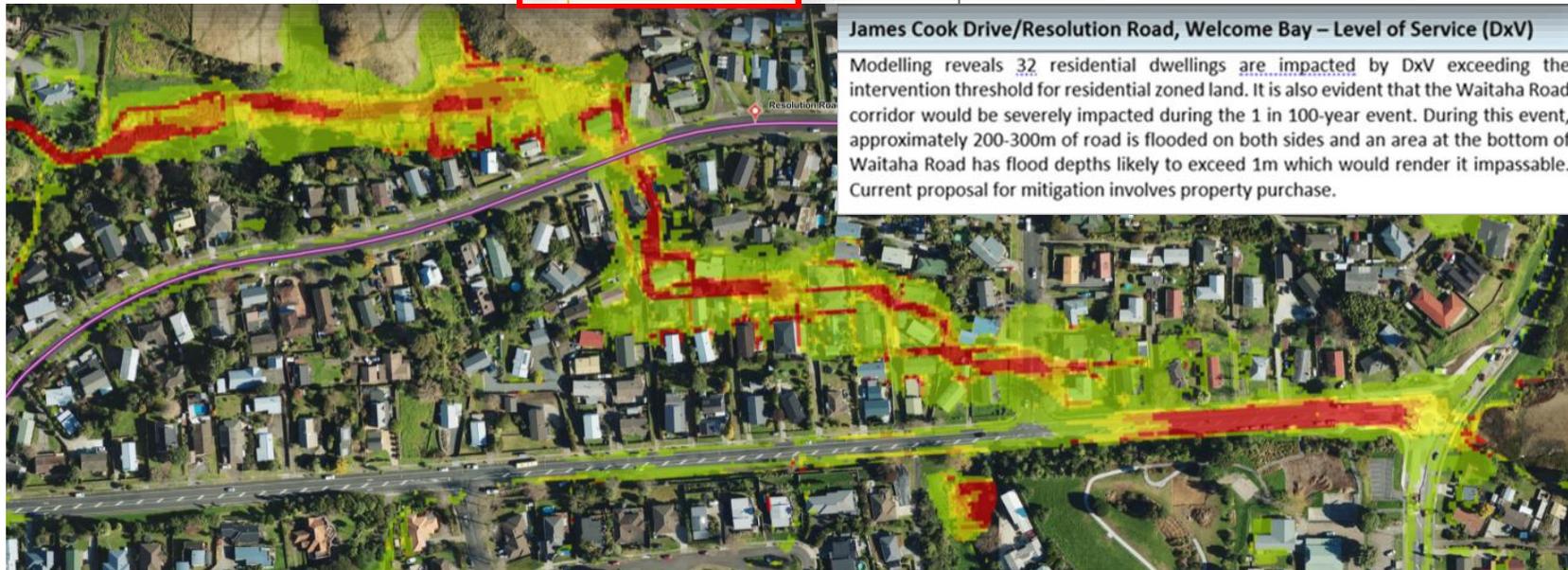
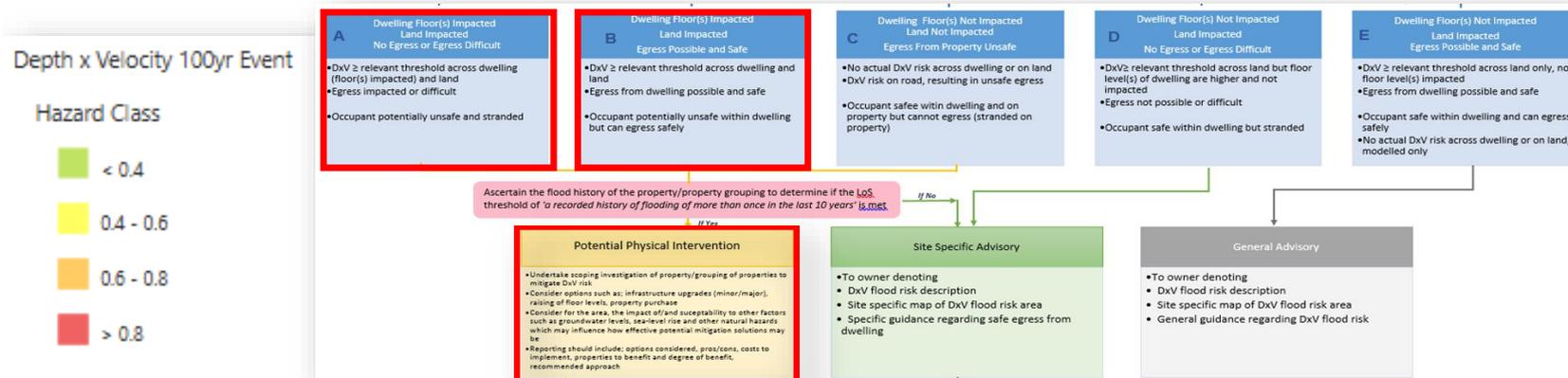
Yellow, orange and red shading all indicate DxV flows in excess of Council's LoS threshold for intervention



Priority 1: DxV risk to habitable floor + land

Mitigation identified but yet to be implemented

Est. \$900K, sufficient funding in 28 and 29FY



Yellow , orange and red shading all indicate DxV flows in excess of Council's LoS threshold for intervention

Stormwater Reactive Reserve Fund (SWRRF) and Policy (2015)

Is complementary to DxV LoS as provides mechanism for Council to intervene even when DxV doesn't exist (e.g. in Mount Maunganui & Papamoa where topography is flatter and DxV thresholds are not met)

Public applications are made, with allocation/ distributions of funds being prescribed by criteria in policy

CE or delegate has responsibility for implementation of policy within their DFA, excluding decisions on property purchase which remain with the CE

An application and assessment process has been developed and continues to be implemented by staff as and when applications are received from the public

Applications can be received and assessed at any time.

17 applications have been received and assessed against the Policy to date with 14 approved for intervention

Potential for further \$1.2-1.5M expenditure on existing projects in 27FY

- Emergency response/recovery
- Clean-up costs
- Initiatives on private & public land
- Infrastructure delivery
- Property purchase (in certain circumstances)

COUNCIL LEAD POLICY	
POLICY TITLE:	STORMWATER REACTIVE RESERVE FUND POLICY
Lead Policy	LEAD POLICY
Minute Ref:	M15/89.3
Date of adoption:	7 December 2015
1. BACKGROUND	
<p>The Council has established a Stormwater Reactive Reserve Fund. The purpose of the fund is to support the community in a variety of risk reduction methods and responses following intense rainfall events that result in flooding.</p> <p>The Stormwater Reactive Reserve Fund is complementary to the implementation of the Council's safety level of service to stormwater infrastructure provision/flood risk management, but is not a fund to implement that level of service.</p> <p>The adopted approach to flood risk management includes the following:</p> <ul style="list-style-type: none"> • Providing comprehensive flood information, and technical advice to aid in on-site risk reduction. • Undertaking infrastructure improvements to reduce the risk to the community's safety, where such a risk exists on private property. • Incorporating risk-based considerations into any new planning policies and plans, including the implications of rare but very damaging floods. • Building up a fund to aid the community in post-flood response and recovery. 	
2. POLICY OBJECTIVES	
<ul style="list-style-type: none"> • To enable the effective utilisation of the Stormwater Reactive Reserve Fund following intense rainfall events that result in flooding. • To provide guidelines for the Council in administering the Stormwater Reactive Reserve Fund and its implementation. 	
3. PRINCIPLES FOR USE OF THE FUND	
<p>The general application of the Stormwater Reactive Reserve Fund is to provide funding for:</p> <ul style="list-style-type: none"> • Emergency response and recovery; • Clean-up costs (whether private or publicly owned); • Initiatives on private and public land to enable stormwater to be conveyed away from at risk areas; • Reducing the risk of flooding; 	

Tauranga City Council

Ngatai Road: SWRRF Intervention - *Example*



Upper and Lower: 247B Ngatai Road, yellow hatch and arrows show ponding and direction of overland flow from Freyberg Street and Ngatai Road overtopping driveway and passing down side of property

Figure 2: Overland flowpath

Application received September 2020

- 1 residential property – significant /recurrent flooding of habitable floor
- 2 neighbouring properties land flooding and frequent flooding of road corridor impassable to traffic at times

Application assessed as compliant resulting in property purchase of one dwelling (\$<900K)

Proposal: construct overland flow path down western property boundary to address flooding and convey to detention adjacent railway line, then sell Council owned property to offset project costs

Further expenditure \$1.2M 27FY anticipated for land purchase and overland flow path construction. This will enable sale of dwelling still at risk of habitable floor flooding

Tauranga City Council

Sherwood and Oriana Properties: SWRRF Intervention - *Example*

- 4 applications received from 1x Sherwood Street and 3 x Oriana Crescent properties
- All compliant with policy as recurrent and severe flooding
- Optioneering to try and mitigate wider catchment (including of properties) flooding however cost /benefit not favourable
- Property purchase of all 4 properties
 - Site specific upgrades on 3 properties prior to their sale
 - Optioneering for Sherwood Street property, none viable. Dwelling demolished and land will be sold with flooding LIM annotation. Future building must comply with City Plan rules (PC27)

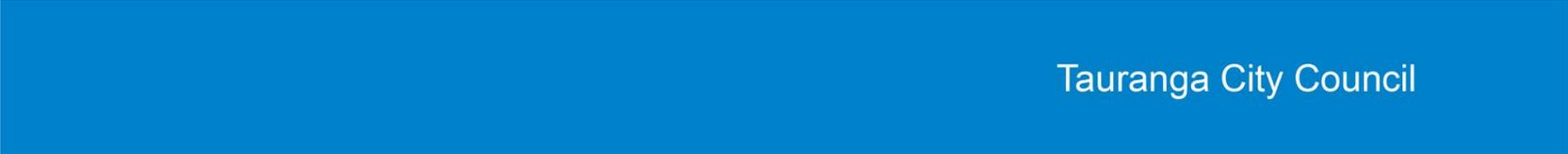


Tauranga City Council

SWRRF Applications Received to Date – Status

Application (residential properties)	Application Date	Detail	Decision and Intervention	Cost	Further Work Required?
Taylor Road (x1)	July 2016	2 applications received on behalf of 6 properties – 2 <u>subject</u> to habitable floor flooding, the remaining land and road flooding	Only 2 of 6 properties were compliant with Policy. Optioneering completed, all having very high costs/marginal benefit. No intervention	Optioneering	No
Sylvania Drive (x1, incl. adjacent 4 properties)	July 2016	1 application received for habitable floor flooding on behalf of subject property and 4 neighbouring properties	Compliant with Policy. Upgrade completed involving road and outlet upgrade	\$<600K	No
Residential properties surrounding Mitchell Park: o Sherwood Street (x1) o Oriana Street (x3)	2017-2018	Following extensive DxV optioneering which resulted in unfavourable cost benefit, 4 applications were received each seeking property purchase in response to frequent and severe habitable floor flooding	All compliant with Policy. Minor works to address flooding carried out on 3 properties. Properties were then resold. For the Sherwood St property no site specific mitigation was possible and the property was demolished.	\$<3.2M	Readiness of land for disposal of Sherwood Street property (land only)
Hart Street (x1, incl. adjacent 4 properties)	January 2018	1 x application to address flooding of habitable floor and land of applicant property. 4 adjacent properties also subject to habitable floor flooding	Compliant with Policy. Upgrade completed.	\$<100K	No
Esmeralda Street (x1)	February 2019	1x application seeking intervention to mitigate flooding	Compliant with Policy. Works completed on site to address flooding	\$<100K	No
Ngatai Road (x1), incl. adjacent 2 properties subject to land flooding. Extensive road flooding in vicinity	September 2020	1x application for severe and ongoing habitable floor flooding seeking property purchase	Compliant with Policy. Following extensive optioneering, proceeded with property purchase	<\$900K. to date. Poss. For further \$1.2M	Property negotiations with adjacent property owners underway for land purchase to enable construction of overland flowpath. If works able to proceed, this property (less portion within overland flowpath) would be sold
Pengau Lane (x1))		1x application seeking property purchase in relation to land only flooding	Not compliant with policy as no dwelling on property (therefore no habitable floor flooding). Other factors for consideration including securing major overland flowpath for area. Decision to negotiate on purchase however agreement on price not reached. No further intervention considered.	NA	No
Chevron Drive (x1)	March 2023	1x application for severe and ongoing habitable floor flooding seeking property purchase	Compliant with Policy. Following extensive optioneering, proceeded with property purchase	<\$900K Poss of further legal/property costs for disposal est. \$50K	Assessing options to enable disposal of property
Lavers Road/Mahoe Street (x5) o 1 x Mahoe Street o 4x Lavers Road	March/April 2023	5x applications, assessed together as one package, to address flooding of land and habitable floors.	Compliant with Policy. Catchment upgrade did not proceed due to poor cost benefit. Site specific measures instead on 2 properties most severely affected by habitable floor flooding. Measures include site bunding, recontouring etc.	<\$200K	Complete on 1x Mahoe Street property In progress on 1x Lavers Road property
Warrington Street (x1)	August 2023	1x application seeking property purchase. 2 instances of flooding, one in 2005 and the other 2013. Both events sit outside the ten year window as required by the SWRRF policy.	Not compliant with Policy. No intervention	NA	No

Potential for further \$1.2-1.5M expenditure on existing projects in 27FY



DxV LoS and SWRRF Programme Oversight

Memorandum

To: Steve Burton: Infrastructure General Manager (Acting) Integrated Stormwater Project Team

From: Jane Groves: Stormwater Programme Leader

Subject: DEPTH X VELOCITY (STORMWATER LEVEL OF SERVICE) MITIGATION – ESMERALDA STREET, WELCOME BAY

Date: 20 June 2019

1. Purpose

This memorandum follows a 11 December 2018 report (refer Attachment 1 A9554286) to the Integrated Stormwater Project (ISP) Governance Team and then General Manager Growth and Infrastructure in which approval was sought and gained for a range of recommendations in relation to a proposed upgrade (Option 1b) to mitigate depth x velocity (DxV) flood hazard at Esmeralda Street, Welcome Bay.

This memorandum provides an update on the December 2018 recommendations and seeks approval for additional recommendations to progress a revised version of the upgrade (referred to as ESM05B) implementation under Council's Stormwater Level of Service (LoS) in the 2019/2021 financial years.

Based on the work completed to date, approval to proceed with the following is requested:

1. Conclude negotiations with the owner of 49C Esmeralda Street (as per 'approved' December 2018 recommendation b)) to acquire the property in accordance with the Public Works Act 1991 (PWA). An acquisition by agreement under the PWA requires the purchase price for the property to be negotiated based on a valuation report compiled by a registered valuer and for a solatium payment of no more than \$50,000 to be included as part of the purchase price for the property.

Note: On completion of ESM05B work (including the dwelling) be readied for

2. Concurrently with 1, commence negotiations with the owner of the property in accordance with the PWA with payment of any solatium being acquisition.

Note: ESM05B works necessitate the relocation of the land – it is intended that the

3. Upon completion of 1 and 2 above:
 - a. seek required approvals for relocation off-site, or if not Esmeralda Street
 - b. seek required approvals/new owners (as cross-leasees) 1 53D and 59C Esmeralda St
 - c. seek required approvals in Esmeralda Street (and associated boundary adjustment
4. Liaise with the owner of the site location and nature of floodwalls and impact of flooding to this facility

DEPTH X VELOCITY SCOPING STUDY: PROJECT OVERVIEW

Purpose: This document forms the basis of an internal briefing to the Tauranga City Council Integrated Stormwater Project Team in relation to the outcome and recommendations of a project depth x velocity (DxV) scoping study. It documents endorsement or otherwise of these recommendations by Council and proposed next steps, if any.

Subject Area: 133 - 138 Welcome Bay Road, Welcome Bay

Report: 133-138 Welcome Bay Road, November 2019 (13/05/2021), GH4

10 March 2020

1.0 Flood Hazard

Figure 1: 1 in 100 year ARI left: flood hazard right: depth x velocity hazard

Properties 133, 135 and 139 Welcome Bay Road lie below road level and will be prone to within the natural overland drainage for the catchment. There is little ponding depth and water spills into driveways. The road side point links up with the 135 Welcome Bay Road and overland drainage from the road through the 133 and 139 Welcome Bay properties. In 138 Welcome Bay Road properties will be subject to flooding depths up to 1.0 m.

2.0 Depth X Velocity Impact on Property

No Dwellings (within or affected by DxV)	Number	Properties Impacted by
6	1	133 V
	2	135 V
	4	139 V

3.0 Existing Stormwater Infrastructure

There is an attenuation pond located on the southern side of Welcome Bay Road. It through the private property of 139 Welcome Bay Road before discharging to the net pipe is expected to be treated by its flat grade (approx. 0.1%). There is a simple cross-section that is located near the road side point and trees occupy outside 133 West

4.0 Flood History

There are no TDC records of flooding at 133, 135 or 139 Welcome Bay Road.

4.1 Options Considered

Option	Description	Cost Estimate (inclusive GST)
1. No works		\$0
2. Pipe replacement	Replace the 450mm dia 1000mm deep stormwater pipe with 450mm dia 1200mm deep stormwater pipe. This option also includes the replacement of the stormwater pipe with 450mm dia 1200mm deep stormwater pipe.	\$100,000
3. Stormwater Pond	Construct a stormwater pond on the southern side of the property between 133 and 139 Welcome Bay Road to allow water to be stored before being discharged to the stormwater pipe. This option also includes the replacement of the stormwater pipe with 450mm dia 1200mm deep stormwater pipe.	\$100,000
4. Pipe relocation	Relocate the stormwater pipe to the southern side of the property between 133 and 139 Welcome Bay Road to allow water to be stored before being discharged to the stormwater pipe. This option also includes the replacement of the stormwater pipe with 450mm dia 1200mm deep stormwater pipe.	\$100,000

4.2 Report Recommendations

There is a high risk (DxV) is considered by the model.

1. Recommend Option 3 (Stormwater Pond) as the preferred option for the upgrade of the stormwater infrastructure.

2. Option 4 is not preferred, further investigation feasibility of Option 4 and 5, separately or combined, and review of the stormwater infrastructure.

7.0 Council Endorsement / Next Steps

10 March 2020: Prepared by Jane Groves: Stormwater Programme Leader

Endorse GMD recommendations as above.

ISP TEAM ENDORSEMENT COMMENTS/SIGNOFF

Name: _____ Date: _____

- Oversight
 - Manager City Waters
 - Team Leader Waters Strategy and Planning
 - Team Leader Drainage Services
 - Programme Management Lead: Water Outcomes
- Fortnightly meetings – reporting of project updates, risk, budgets, timelines, endorse or otherwise recommendations, gateway reporting
- For high risk, large budget, highly complex projects – approvals at GM level sought