

Date of Project Sheet Creation: 2017	
Project sheet completed by: Brent Aitken	
Position: Asset Manager Solid Waste / Stormwater	
Project Name: Paenoa Rd pipe diversion single barrel to southern gully	
Asset Location: Acacia bay at Paenoa Rd	
Why we are doing to Project: Currently the private property at the end of Paenoa road is impacted by the Stormwater runoff from the 500ha catchment above. Flooding has occurred on numerous occasions and threatened housing, as well as being a health and safety issue for the residents as the flow down the road is significant and could up to 9 cubic metres per second.	
Implications of not doing to Project: There is currently a health and safety risk to the residents and Council has already had to evacuate the residents from the properties due to the chance of a large storm impacting the properties.	
Project Scope: Agreement first has to be reached with the landowners to allow flow down the gully. Once this is achieved then the existing three barrels can flow into a detention pond where the levels can be altered to divert a portion of the flow down the southern gully. Historically this is where the flow used to go as there is an alluvial fan at the beach outlet. The project would entail placing a large culvert to divert flow down the southern gully	
Alignment with Council Policy/Plans: Eg stormwater strategy	
Summary of Options Considered: There has been a number of options put to the landowners to provide a better outcome than what is currently happening. A pipe to the southern gully A pipe to a northern gully (landowner would need to agree and possibly fund) Designing the flow path down Paenoa road to take all of the flow (not acceptable to the community at the end of Paenoa) Block the upstream culverts (not acceptable to Council as this would have H&S implications for Acacia bay road).	
Option / Project Risk Assessment: Currently council does not have landowner agreement to undertake this project as the landowners to date have been reluctant to divert water back down the southern gully. Without this agreement the project cannot proceed.	
Option Lifecycle Analysis: 100yr	

Recommended Option:

The southern gully option would divert a portion of the flow away from the houses at the end of Paenoa. Council is also discussing with the developer of the adjacent land the possibility of them diverting flow to a northern gully on their land. This has also not been agreed by the developer of the regional council.

Consultation:

Significant consultation with the Iwi landowners as well as the regional Council to come up with a solution that mitigates the current risks to property and person.

Relationship with other Projects:

Not related to any other Council project

Consent Requirements:

Would require a consent to divert a catchment

Land Purchase / Land Designation Requirements:

Would need an easement over new infrastructure

Renewal Component of Project: no renewal component

Growth Component of Project: not growth related, backlog

Operational Cost Implications: no long term operational cost apart from depreciation

Communication Requirements:

Communication with landowners and local community

Project Implementation Considerations:

No real issues around timing of this project

Significant Assumptions:

That both landowners, and regional council provide support for the project

Funding Sources: loan,

Time lines and costs for proposed project phases: Give the total cost of the project and attach a breakdown of the estimate or reference to any relevant reports.

Year	18/19	19/20	20/21	21/22	22/23	23/24	24/25	25/26	26/27	27/28	PHASE TOTAL
Scoping / Feasibility											
Investigation											
Consenting											
Designation											
Land purchase											
Consultation			5k								

Design			20k	297k							
Construction											
Commissioning and Handover											
ANNUAL TOTAL											

Local Government Act Funding Consideration Requirements.

UPDATE TO REFLECT ASSET

*s101 (3) the funding needs of the local authority must be met from those sources that the local authority determines to be appropriate, following consideration of,-
(a) in relation to each activity to be funded,-*

s101(3)(a)(i) community outcomes to which the activity primarily contributes

Lakes, rivers and landscapes –places we are proud of:

- recognising the special cultural relationships Ngati Tuwharetoa and its Hapu have with Land and Water
- Looking after lakes, rivers and streams
- Respecting, understanding and managing natural resources and features
- Balancing growth and keeping the social character of our district

Healthy people, healthy communities

- Acknowledging the diverse communities which make up our district and their needs
- Providing access to affordable, quality facilities and services
- Promoting healthy, active lifestyles
- Promoting well-being through tikanga Maori

Safe and Secure

- Designing spaces, buildings and roads with community safety in mind

Thriving and prosperous

- Encouraging new business start-up and business growth
- Ensuring that infrastructure and operational services keep pace with growth.

Vibrant and diverse

- Raising awareness and celebrating our culture and heritage

s101(3)(a)(ii) distribution of benefits between the community as a whole, any identifiable part of the community, and individuals

The whole community will benefit as diverting the pipe will lessen the impact of the over land flow which has previously caused erosion to the flow path that has impacted the Lake. The community at the end of Paenoa road will benefit from a health and safety aspect as the risk of flooding is minimised.

s101(3)(a)(iii) period in or over which those benefits are expected to occur

The benefits of the project are expected to occur from 2022 through to another 100yrs of design life.

s101(3)(a)(iv) extent to which the actions or inaction of particular individuals or a group contribute to the need to undertake the activity

The project has both health and capacity implications. Delaying the time for its implementation would have ramifications on compliance requirements to resource Consents as well as public health risk.

Council has had to evacuate residents from the end of Paenoa road due to large storm flows and it only a matter time before the next large storm event

s101(3)(a)(v) costs/benefits, including transparency and accountability consequences, of funding activity distinctly from other activities

Stormwater services are general rated so that Council can achieve the required level of service level across the district. Currently the erosion of property at the end of Paenoa road does not meet the level of service

s101(3)(b) impact of allocation of liability for revenue needs on the current & future social, economic, environmental & cultural community well-being

Social: The community will benefit from the healthy lifestyle that the improved Stormwater service will provide. It will provide the Taupo community with the feeling of safe/protected healthy well-being and sense of pride for having a healthy lake for tourism and recreational purposes and water supply.

Economic: The community relies on a clean lake.

Environmental: Minimising erosion and sediment deposit into the lake is beneficial for lake water quality

Cultural: There will be cultural implications since the increase level of service will be provided to the local community.

Approval sign off from group manager:

Name: Denis Lewis

Division: INFRASTRUCTURE SERVICES

Signature: _____

Date:

Date	Description of Change	Changed by	Approved by

Date of Project Sheet Creation: 2017	
Project sheet completed by: Brent Aitken	
Position: Asset Manager	
Project Name: Brentwood Gully Culvert lakeshore contribution	
Asset Location: Acacia Bay road at the Taupo Lakeshore	
Why we are doing to Project: Currently the Brentwood north gully acts as a detention pond, but the amount of water depth means that it Tomo's are developing in the base of the gully near residential housing. So Council is funding a culvert under Acacia Bay road and this project will provide some proportional funding for the Lake outfall works. This proportion funding will link in with the developers funding as they will be using the gully for storm water disposal and so will need to undertake Lake outlet works.	
Implications of not doing to Project: If the pipe under the Acacia Bay road is constructed then the flow will erode the lakeshore where its exits the gully	
Project Scope: Design has not been completed but there will need to be some armouring of the outlets to the lake	
Alignment with Council Policy/Plans: Councils Stormwater strategy identifies that Council will fund erosion control works	
Summary of Options Considered: Continue to hold water in the detention pond on the other side of Acacia Bay Rd Pipe the water under the road and armour the outlet to the lake	
Option / Project Risk Assessment: This gully is currently held in private ownership so council will have to negotiate with the landowner to gain access to the gully and around what value to pay for the outlet structure / armouring	
Option Lifecycle Analysis: 50ys	
Recommended Option: Provide a contribution towards the outlets structure so that storm flows do not erode the gully sides or lake shore	
Consultation: Consultation will need to be undertaken with Iwi as well as regional council and the landowner	
Relationship with other Projects: This project is directly linked to the Brentwood gully culvert project. Both projects will also be linked to the timing of the development of the land adjacent to the gully	

Consent Requirements: Consent will need to be provided by, EW, landowner, Council, iwi											
Land Purchase / Land Designation Requirements: The gully will be vested in Council as LP reserve Stormwater											
Renewal Component of Project: no renewal component											
Growth Component of Project: a portion of this project relates to the development up stream and the increase in Stormwater flows down the gully											
Operational Cost Implications: The gully will require ongoing plant and erosion maintenance, but this cost would come to council any way as the gully vests as LP Reserve											
Communication Requirements: Limited communication requirements as Lakeshore is predominantly surrounded by private land but there will be some public access down											
Project Implementation Considerations: E.g. construction needs to be in summer or can't construct prior to completion of project z, events occurring (e.g. ironman), other council projects											
Significant Assumptions: E.g. assumed land purchase cost is X (could rise if in the future) Consent time period will be y Land designation successful											
Funding Sources: e.g. loan, depreciation, DC's, rates (input from SPM DC model)											
Time lines and costs for proposed project phases: <i>Give the total cost of the project and attach a breakdown of the estimate or reference to any relevant reports.</i>											
Year	18/19	19/20	20/21	21/22	22/23	23/24	24/25	25/26	26/27	27/28	PHASE TOTAL
Scoping / Feasibility											
Investigation											
Consenting											
Designation			10								
Land purchase											
Consultation											
Design			10								
Construction			90								
Commissioning and Handover											
ANNUAL TOTAL											
Local Government Act Funding Consideration Requirements. UPDATE TO REFLECT ASSET <i>s101 (3) the funding needs of the local authority must be met from those sources that the local authority determines to be appropriate, following consideration of,-</i>											

(a) in relation to each activity to be funded,-

s101(3)(a)(i) community outcomes to which the activity primarily contributes

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Vibrant and diverse

- Raising awareness and celebrating our culture and heritage

s101(3)(a)(ii) distribution of benefits between the community as a whole, any identifiable part of the community, and individuals

this project will benefit mainly the residents in Nukuhau as they will be protected from flooding and erosion

s101(3)(a)(iii) period in or over which those benefits are expected to occur

The benefits of the project are expected to occur from 2020 through to another 50yrs of design life.

s101(3)(a)(iv) extent to which the actions or inaction of particular individuals or a group contribute to the need to undertake the activity

The project has both health and capacity implications. Delaying the time for its implementation would have ramifications on compliance requirements to resource Consents as well as public health risk.

s101(3)(a)(v) costs/benefits, including transparency and accountability consequences, of funding activity distinctly from other activities

Stormwater is funded through the general rate

s101(3)(b) impact of allocation of liability for revenue needs on the current & future social, economic, environmental & cultural community well-being

Social: The community will benefit from the healthy lifestyle that the improved stormwater service will provide to the customers. It will provide the Taupo community with the feeling of safe/protected healthy well-being and sense of pride for having a healthy lake for tourism and recreational purposes.

Economic: properties will be protected from erosion

Environmental: reduce the levels of sediment into lake Taupo

Cultural: Water will travel safely to the lake

Approval sign off from group manager:

Name: Denis Lewis

Division: INFRASTRUCTURE MANAGER

Signature: _____

Date:

Date	Description of Change	Changed by	Approved by

Date of Project Sheet Creation: September 2017	
Project sheet completed by: Brent Aitken	
Position: Asset Manager Asset Manager Solid Waste / Stormwater	
Project Name: Brentwood Gully Culvert	
Asset Location: Stormwater Acacia Bay	
<p>Why we are doing the Project: A risk to private property with the Brentwood Gully experiencing significant damage from Tomo’s developing in the gully floor, as this had undermined the side of the Gully and could lead to loss of private property.</p> <p>With the development of the catchment below and towards the Lake, the overland flow path for this gully can be secured and the water from this catchment can be piped under the road and be discharged downstream. There have been discussions with Council regarding the development of this site.</p> <p>A number of seal failures possibly caused by Tomo’s under the carriageway have developed and needed repair in the past, if left this could cause the failure of the seal surface.</p> <p>Option 2. The property below Acacia Bay Rd is looking to subdivide and this will allow public access along the gully floor or sides to the Western Lake edge just up stream from the River mouth. Council has the opportunity to provide a box culvert to allow egress from the upstream side of Acacia Bay Rd. This is important as the sub divider is suggesting that their would be no road access from Acacia Bay Rd to sections, this would see the road speed stay at 70Km/h which possess a H&S risk to people trying to get to the lake with their blow up whale. By placing a box culvert under Acacia Bay rd Council would cater for cycling and walking for a large section of the Western side Taupo.</p>	
<p>Implications of not doing the Project: Tomo’s will continue to develop in the gully above Acacia Bay Rd, undermining Acacia Bay Rd and possibly private property. When the lower catchment is developed then the overland flow path can be secured, if the flow path is not secured then the area could be fully developed and Council would lose the opportunity to discharge stormwater.</p> <p>The catchment above is likely to develop further in the future creating increased flow into this gully system and thus exacerbating the Tomo potential.</p> <p>Option 2. Community members will have to try and cross Acacia Bay Rd in a 70Km/h area when going to the Lake</p>	
<p>Project Scope: The placement of a 2m dia Culvert under Acacia Bay Rd to allow for water to discharge from the catchment above.</p>	

<p>Option 2. The placement of a box culvert to allow for cycling and walking access to the Lake at the bottom of the stormwater gully. Culvert size 3x3</p>
<p>Alignment with Council Policy/Plans: Councils Stormwater strategy identifies that Council will implement industry best practise to manage and treat stormwater within the network this is underpinned by Council's code of Practise.</p>
<p>Summary of Options Considered: Do nothing; this will lead to further undermining of the gully floor and potential damage to private property and the road surface. Trenching the 2m Culvert under the road Thrusting the 2m culvert under the road. Option2. Would entail open trenching for the placement of the box culvert.</p>
<p>Option / Project Risk Assessment: Negotiations with the downstream property owners are unsuccessful and the downstream flow path is not secured. Lake discharge to the lake may require strengthening work on the lake foreshore. There is the possibility for the developer to combine both the flow path from the Docherty drive gully and this gully to have one discharge point to the lake.</p>
<p>Option Lifecycle Analysis: Expected life of new asset is 80yrs</p>
<p>Recommended Option: Trenching the Culvert would less expensive than trying to thrust the culvert underneath Acacia Bay Rd. Option 2. Open trenching of the box culvert, a traffic detour can be provided around Lake wood Drive during the construction phase of the project</p>
<p>Consultation: Consultation and negotiations will be needed with the downstream property owner. Consultation will be needed with WRC regarding the requirement for a resource Consent. Possible consultation with Iwi regarding a Lake discharge</p>
<p>Relationship with other Projects: This project is linked to the development of the downstream property as the overland flow path will need to vested as stormwater reserve</p>
<p>Consent Requirements: Possible WRC consent, to be determined by the size of the upstream catchment Landowner consent regarding flow path</p>
<p>Land Purchase / Land Designation Requirements: Vesting of flow path as stormwater LP reserve stormwater</p>
<p>Renewal Component of Project: N/A</p>

Growth Component of Project:
N/A

Operational Cost Implications: No ongoing operational costs are envisaged, the culvert will be condition rated on a three yearly basis.

Communication Requirements:
 This project will effect users of Acacia Bay Rd so will need a newspaper article to advise users of delay or of re-routing of traffic.

Project Implementation Considerations:
 As traffic could be re-routed around Lakewood Drive and Lochaber Drive the project should have very little impact on the community

Significant Assumptions:
 Land designation successful
 WRC Consent application will be successful
 Timing of project

Funding Sources: Loan

Time lines and costs for proposed project phases: Pipe and wing walls etc come to close to 70k with the rest of the cost made up K has been allowed for consent, consultation and design, the remaining 263K is for construction. This project will be dependant on the downstream property being developed to allow Council to obtain the downstream gully system.

Total project cost of option 2 is \$288,000

Year	18/19	19/20	20/21	21/22	22/23	23/24	24/25	25/26	26/27	27/28	PHASE TOTAL
Scoping / Feasibility											
Investigation											
Consenting	15										
Designation											
Land purchase											
Consultation		5									
Design		5									
Construction			263								
Commissioning and Handover											
ANNUAL TOTAL											

Local Government Act Funding Consideration Requirements.
UPDATE TO REFLECT ASSET
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 (a) in relation to each activity to be funded,-

s101(3)(a)(i) community outcomes to which the activity primarily contributes

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Vibrant and diverse

- Raising awareness and celebrating our culture and heritage

s101(3)(a)(ii) distribution of benefits between the community as a whole, any identifiable part of the community, and individuals

This project will benefit all residents in the taupo township as Acacia Bay road is a major roading link and the provision of a culvert will provide ongoing protection to it. Also by passing water through the culvert and having control of the down stream gully system Council will be able to influence the water quality prior to it reaching the receiving environment.

s101(3)(a)(iii) period in or over which those benefits are expected to occur

The benefits of the project are expected to occur from 2020 through to another 100yrs of design life.

s101(3)(a)(iv) extent to which the actions or inaction of particular individuals or a group contribute to the need to undertake the activity

Climate change has major stormwater implications, which are showing increases in short term high intensity storm events which place additional pressure on the stormwater infrastructure. The gully system where it meets Acacia Bay Rd has shown a tendency to Tomo and this also places risk onto the road and surrounding houses.

s101(3)(a)(v) costs/benefits, including transparency and accountability consequences, of funding activity distinctly from other activities

Stormwater infrastructure is funded from the general rate and thus the whole community assists in funding the culvert construction.

s101(3)(b) impact of allocation of liability for revenue needs on the current & future social, economic, environmental & cultural community well-being

Social: The community will benefit from the healthy lifestyle that the improved stormwater flow to the lake will provide to the customers. It will provide the Taupo community with the feeling of safe/protected healthy well-being and sense of pride for having a healthy lake for tourism and recreational purposes.

Economic: There is the possibility that the Tono effects could cause erosion issues at Acacia Bay road; the provision of the culvert will significantly reduce this risk.

Environmental: The opportunity to provide additional storm water quality improvement will have positive results on lake water quality.

Cultural: Lake water quality has significant cultural implications.

Date	Description of Change	Changed by	Approved by

Date of Project Sheet Creation: 2017	
Project sheet completed by: Brent Aitken	
Position: Asset Manager Solid Waste / Stormwater	
Project Name: Kohineheke Crescent Reserve Stormwater Quality Improvement device	
Asset Location: Stormwater Network Crescent Reserve in Turangi	
<p>Why we are doing the Project:</p> <p>This stormwater outlet incorporates a large upland commercial catchment which covers the Turangi CBD and has a large traffic volume. Councils Stormwater Management Plan and Comprehensive Discharge Consent reflect the need to improve stormwater quality into the receiving environments, the receiving environment being the old arm of the Tongariro River(Hirangi Stream).</p> <p>A report compiled by Harrison and Grierson consultants identified that the recommended treatment options taking into account cost and performance of stormwater treatment devices was to have a two stage approach. The first stage was to treat stormwater at source with the installation of Enviropods into the cess pits, which has been done in part in this catchment; the second stage was installation of a CDS unit upstream of the outlet which is what this project entails.</p> <p>The monitoring data reflects that this outlet is over the NIWA trigger levels on 5 of the monitoring parameters. The provision of the Enviropod CDS train is recommended as the most cost effective solution to increase stormwater quality.</p> <p>The Crescent Reserve site recorded the highest reading for E.COLI of all the sites monitored in the monitoring program.</p> <p>While Council is undertaking first flush monitoring and comparing the results with flow proportionate data, these exceedances are still significant and reflect the high use catchment.</p> <p>Council has been approached by concerned Iwi regarding this stormwater outlet and contaminants affecting the Hirangi Stream.</p>	
<p>Implications of not doing the Project:</p> <p>While some of the upstream catchment has had Enviropods installed this particular catchment still can deposit gross pollutants and hydrocarbons into the receiving environment (Hirangi Stream). To achieve a relatively high level of treatment a secondary treatment device should be installed.</p>	
<p>Project Scope:</p> <p>The placement of a CDS unit and ancillary works above the stormwater outlet at Crescent Reserve In Turangi.</p>	

<p>Project Drivers: This project is triggered by a level of service, Council's stormwater monitoring data identifies a high containment load at this outlet. This outlet is the main outlet from the catchment which incorporates the Turangi CBD so is most likely to produce the highest contaminant load from the Township and so is the target for a stormwater quality device. This catchment is also listed in Councils stormwater Management plan as high risk.</p>
<p>Alignment with Council Policy/Plans: Stormwater Management Plan, Code of Practise, Comprehensive Discharge Consent and Councils stormwater strategy</p>
<p>Summary of Options Considered: The H&G report (Contaminant Modelling and Treatment Options) has undertaken a comprehensive comparison of Stormwater treatment devices and their ability to treat stormwater and the comparative cost of treatment devices and their location in the stormwater network, the report considered 7 off the shelf treatment devices.</p>
<p>Option Technical Evaluation: The option of combined Enviropod and CDS Unit train provides relatively high efficiencies for relatively low cost in comparison to other treatment device options considered.</p>
<p>Option / Project Risk Assessment: The detailed planning phase will identify the need for appropriate sizing of the unit to eliminate and loss of capacity in the up stream network, which could affect the unit cost.</p> <p>This Unit would have to be placed on the Doc Reserve so negotiations with Doc would have to be successful.</p>
<p>Option Lifecycle Analysis: CDS units are identified as having a 80 yr life.</p>
<p>Recommended Option: The placement of a CDS unit in this location was one of the recommendations from the 2008 H&G report after considering a number of treatment options.</p>
<p>Consultation: As this asset will be placed on a Doc reserve, Doc will need to provide authorisation prior to construction.</p>
<p>Relationship with other Projects: The project could stand alone from a timeframe perspective as the location of the works is away from other services.</p>
<p>Consent Requirements: Landowner consent will required for this Project</p>
<p>Land Purchase Requirements: N/A</p>
<p>Renewal Component of Project: N/A</p>

Growth Component of Project: N/A										
Operational Cost Implications: It is envisaged that this device will need to be maintained initially on a quarterly basis and once Gross pollutant levels are understood the maintenance program be refined. It is estimated that the additional maintenance cost will be 2k per year.										
Communication Requirements: Information on the Council web page and in the paper as this is a good news story for stormwater and receiving environment water quality.										
Project Implementation Considerations: This project is best suited to be undertaken in times of low rainfall so as to minimise the risk of damage to the asset during construction. A end of February construction period is recommended.										
Significant Assumptions: That final design will enable the unit to be installed with out affecting upstream network capacity.										
Funding Sources: Loan										
Time lines and costs for proposed project phases: The project allows for final design 6K, the CDS unit at 80K, and enabling works of 34K which will allow for reconfiguring the pipe network. See the H& G report for unit costs. Consultation with Doc would be undertaken in the 11/12 yr. Total project cost \$120K										
Year Ending	17/18	18/19	19/20	20/21	21/22	22/23	23/24	24/25	25/26	26/27
Scoping / Feasibility										
Consenting										
Investigation										
Designation (NOR)										
Land purchase										
Design										
Construction	133K									
Commissioning and Handover										
Local Government Act Funding Consideration Requirements. <i>s101 (3) the funding needs of the local authority must be met from those sources that the local authority determines to be appropriate, following consideration of,-</i> <i>(a) in relation to each activity to be funded,-</i>										
s101(3)(a)(i) community outcomes to which the activity primarily contributes Lakes, rivers and landscapes –places we are proud of:										
<ul style="list-style-type: none"> recognising the special cultural relationships Ngati Tuwharetoa and its Hapu have with Land and Water 										

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s101(3)(a)(ii) distribution of benefits between the community as a whole, any identifiable part of the community, and individuals

The Turangi community as well as the district is concerned about water quality, with this project an improvement in the receiving environment water quality will be achieved.

s101(3)(a)(iii) period in or over which those benefits are expected to occur

The benefits of the project are expected to occur from 2019 through to another 100yrs of design life.

s101(3)(a)(iv) extent to which the actions or inaction of particular individuals or a group contribute to the need to undertake the activity

The CDS unit will be installed down stream of the Turangi CBD and will collect gross pollutants from that area. This project provides a community and district benefit as it provides positive environmental outcomes for all uses of the Turangi CBD.

s101(3)(a)(v) costs/benefits, including transparency and accountability consequences, of funding activity distinctly from other activities

Stormwater infrastructure provision is general rated as the benefits of the service delivery provide positive outcomes to the whole community.

s101(3)(b) impact of allocation of liability for revenue needs on the current & future social, economic, environmental & cultural community well-being

Social: The community will benefit from the healthy lifestyle that the improved stormwater service will provide to the environment. It will provide the Taupo community with the feeling of safe/protected healthy well-being and sense of pride for having a healthy lake for tourism and recreational purposes.

Economic: The community will benefit from improved Lake water quality.

Environmental: The project will improve the quality of stormwater being disposed into the receiving environment.

Cultural: There will be cultural implications since the increase level of service will be provided to the local community.

Date	Description of Change	Changed by	Approved by

Date of Project Sheet Creation: September 2017	
Project sheet completed by: Brent Aitken	
Position: Asset Manager Solid Waste / Stormwater	
Project Name: District Stormwater Quality improvement Devices	
Asset Location: throughout the district: Turanga Place Mobile station Taupo lake front Puataata Rd The Ritukehu street Norman Smith street Redoubt street	
Why we are doing the Project: These Stormwater outlets incorporate large upland catchments which have a large traffic volumes and foot traffic and may also be from catchments that have commercial and industrial businesses. These locations are also where the discharge from the pie is directly into the receiving environment, be it Lake or river, or wetland. Councils Stormwater Management Plan and Comprehensive Discharge Consent reflect the need to improve stormwater quality into the receiving environments. A report compiled by Harrison and Grierson consultants identified that the recommended treatment options taking into account cost and performance of stormwater treatment devices was to have a two stage approach. The first stage was to treat stormwater at source with the installation of Enviropods into the cess pits, the second stage was installation of a CDS unit upstream of the outlet which is what this project entails. Council's ongoing installation of enviropods, 5 per year provides the outcome for stage 1.	
Implications of not doing the Project: While some of the upstream catchment has had Enviropods installed these catchments still can deposit gross pollutants and hydrocarbons into the receiving environment. To achieve a relatively high level of treatment a secondary treatment device should be installed.	
Project Scope: The placement of a CDS unit and ancillary works above the Stormwater outlets.	
Project Drivers: Remove contaminants from the Stormwater flow before they reach the receiving environment	
Alignment with Council Policy/Plans: Councils Stormwater strategy identifies that Council will implement industry best practise to manage and treat stormwater within the network. Council's Comprehensive stormwater discharge consent identifies the need to improve stormwater quality and requires a stormwater quality improvement program.	

Summary of Options Considered:

The H&G report (Contaminant Modelling and Treatment Options) has undertaken a comprehensive comparison of Stormwater treatment devices and their ability to treat stormwater and the comparative cost of treatment devices and their location in the stormwater network, the report considered 7 off the shelf treatment devices.

Option Technical Evaluation:

The option of combined Enviropod and CDS Unit train provides relatively high efficiencies for relatively low cost in comparison to other treatment device options considered.

Option / Project Risk Assessment:

There will be some disruption to the roading infrastructure around where the device will be installed during the construction phase.

The detailed planning phase will identify the need for appropriate sizing of the unit to eliminate and loss of capacity in the up stream network.

The location of the unit may need the existing pipe work to be altered.

Option Lifecycle Analysis:

CDS units are identified as having a 100 yr life.

Recommended Option:

The placement of a CDS unit in this location was recommended by the 2008 H&G report as having the best contaminant removal outcome after considering a number of treatment options.

Consultation:

Local community consultation will be undertaken with each device. These devices will improve Stormwater discharge quality and is a good news story for Council

Relationship with other Projects:

These projects are all stand-alone projects.

Consent Requirements:

No consent is required

Land Purchase Requirements:

It is not envisaged that any land purchase is required

Renewal Component of Project:

N/A

Growth Component of Project:

N/A

Operational Cost Implications:

It is envisaged that this device will need to be maintained initially on a quarterly basis and once Gross pollutant levels are understood the maintenance program be refined. It is estimated that the additional maintenance cost will be 2k per year.

Communication Requirements:

Information on the Council web page and in the paper as this is a good news story for Stormwater and receiving environment water quality.

Project Implementation Considerations:

Project timing will vary for each project due to their location and impact on the local roading infrastructure. The timing of events will be taken into consideration

Significant Assumptions:

That final design will enable the unit to be installed with out affecting upstream network capacity.

Funding Sources:

Loan

Time lines and costs for proposed project phases: funding for each device is set out in the capex program of the AMP

Year Ending	18-19	19/20	20/21	21/22	22/23	23/24	24/25	25/26	26/27	27/28
Scoping / Feasibility										
Consenting										
Investigation										
Designation (NOR)										
Land purchase										
Design										
Construction			137k	145k		160k	160k	150k	150k	
Commissioning and Handover										

Local Government Act Funding Consideration Requirements.

s101 (3) the funding needs of the local authority must be met from those sources that the local authority determines to be appropriate, following consideration of,-

(a) in relation to each activity to be funded,-

**s101(3)(a)(i) community outcomes to which the activity primarily contributes
Lakes, rivers and landscapes –places we are proud of:**

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- Balancing growth and keeping the social character of our district

Healthy people, healthy communities

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Safe and Secure

- Designing spaces, buildings and roads with community safety in mind

Thriving and prosperous

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Vibrant and diverse

- Raising awareness and celebrating our culture and heritage

s101(3)(a)(ii) distribution of benefits between the community as a whole, any identifiable part of the community, and individuals

The Taupo community as well as the district is concerned about water quality, with this project an improvement in the receiving environment water quality will be achieved.

s101(3)(a)(iii) period in or over which those benefits are expected to occur

The benefits of the project are expected to occur from 2018 through to another 50yrs of design life.

s101(3)(a)(iv) extent to which the actions or inaction of particular individuals or a group contribute to the need to undertake the activity

The CDS units will be installed in various locations throughout the district and will increase the quality of storm water discharge to the receiving environments which benefits the whole community.

s101(3)(a)(v) costs/benefits, including transparency and accountability consequences, of funding activity distinctly from other activities

Stormwater infrastructure provision is general rated as the benefits of the service delivery provide positive outcomes to the whole community.

s101(3)(b) impact of allocation of liability for revenue needs on the current & future social, economic, environmental & cultural community well-being

Social: The community will benefit from the healthy lifestyle that the improved stormwater service will provide to the environment. It will provide the Taupo district community with the feeling of safe/protected healthy well-being and sense of pride for having a healthy lake for tourism and recreational purposes.

Economic: The community will benefit from improved Stormwater quality.

Environmental: The project will improve the quality of stormwater being disposed into the receiving environment.

Cultural: There will be cultural implications since the increase level of service will be provided to the local community.

Date	Description of Change	Changed by	Approved by

Date of Project Sheet Creation: 2017	
Project sheet completed by: Brent Aitken	
Position: Asset Manager Asset Manager Solid Waste / Stormwater	
Project Name: Extension of Enviropod	
Asset Location: Stormwater Taupo	
Why we are doing the Project: This project extends the Enviropod protection to other high trafficked areas and areas of high foot traffic. The locations will be chosen to maximise contaminant capture.	
Implications of not doing the Project: Gross pollutants will continue to be disposed into the receiving environment	
Project Scope: Increase the Enviropod coverage by 5 device's per year in areas where there are high contaminant loads	
Alignment with Council Policy/Plans: Aligns with Councils Stormwater strategy and Councils Comprehensive Stormwater Consent.	
Summary of Options Considered: Installation of Enviropods Installation of Enviropod with smart sponge	
Option / Project Risk Assessment: N/a	
Option Lifecycle Analysis: 8yrs	
Recommended Option: Enviropods are the accepted gross pollutant device for this outcome as the smart sponge option is not fully tested and verified to date. I further site testing identify that the Smart sponge option provides for the reduction of Hydrocarbons into the receiving environment then these could be installed for around the same price, there may be an additional operational cost for the smart sponge depending on their ability to capture Hydrocarbons.	
Consultation: Discussions internally with the roading division and inclusion of the devices on the Ramm data base to ensure that they are programmed for maintenance.	
Relationship with other Projects: Can be a stand alone project as the budget would allow for 5 per year and they can be placed into the network fairly easily.	

Consent Requirements: N/a, but the provision of quality improvement of stormwater into receiving environment is a requirement of Councils Comprehensive Stormwater Consent.											
Land Purchase / Land Designation Requirements: N/a											
Renewal Component of Project: Existing service delivery											
Growth Component of Project: N/a											
Operational Cost Implications: The cleaning of cess pits is already provided by the roading dept, they could continue with this program for these additional Enviropod locations.											
Communication Requirements: Good news story, Council Web Page and in the local paper.											
Project Implementation Considerations: N/a											
Significant Assumptions: No Changes to resource consent conditions											
Funding Sources: Loan											
Time lines and costs for proposed project phases: Enviropods cost around \$750 plus \$150 each to install them. The program would provide for 5 new Enviropods per year. Total cost of the program is \$50,000.											
Year	17/18	18/19	19/20	20/21	21/22	22/23	23/24	24/25	25/26	26/27	27/28
Scoping / Feasibility											
Investigation											
Consenting											
Designation											
Land purchase											
Consultation	5k	5k	5k	5k	5k	5k	5k	5k	5k	5k	5k
Design											
Construction											
Commissioning and Handover											
ANNUAL TOTAL											
Local Government Act Funding Consideration Requirements. UPDATE TO REFLECT ASSET <i>s101 (3) the funding needs of the local authority must be met from those sources that the local authority determines to be appropriate, following consideration of,-</i> <i>(a) in relation to each activity to be funded,-</i> s101(3)(a)(i) community outcomes to which the activity primarily											

contributes

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Vibrant and diverse

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s101(3)(a)(ii) distribution of benefits between the community as a whole, any identifiable part of the community, and individuals

This project will benefit all residents in the Taupo district as all members of the community are concerned about Lake water quality.

s101(3)(a)(iii) period in or over which those benefits are expected to occur

The benefits of the project are expected to occur from 2018 through to 2030.

s101(3)(a)(iv) extent to which the actions or inaction of particular individuals or a group contribute to the need to undertake the activity

The high use roads are used by a significant portion of the district community so a reduction of environmental effects from the road benefits the whole community.

s101(3)(a)(v) costs/benefits, including transparency and accountability consequences, of funding activity distinctly from other activities

Stormwater infrastructure provision is general rated as the benefits of the service delivery provide positive outcomes to the whole community.

s101(3)(b) impact of allocation of liability for revenue needs on the current & future social, economic, environmental & cultural community well-being

Social: The community will benefit from the healthy lifestyle that the improved stormwater service will provide to the environment. It will provide the Taupo community with the feeling of safe/protected healthy well-being and sense of pride for having a healthy lake for tourism and recreational purposes.

Economic: The community will benefit from improved Lake water quality.

Environmental: The opportunity to provide additional storm water quality improvement will have positive results on lake water quality.

Cultural: There will be cultural implications since the increase level of service will be provided to the local community.

Date	Description of Change	Changed by	Approved by

Date of Project Sheet Creation:	
Project sheet completed by:	
Position: Asset Manager	
Project Name: Hawaii Street detention pond	
Asset Location: Hawaii Street reserve	
<p>Why we are doing to Project: Drivers for doing the project E.g. Growth Levels of Service Legislative Requirements</p> <p>This is a levels of service project. The over land flow path model shows that the properties on the lake front at the end of Hawaii street will be impacted by flooding due to the size of the upstream catchment. There is room on the reserve to provide a flat space and a bund to contain flood waters, in the form of a shallow detention pond</p>	
<p>Implications of not doing to Project: e.g. will not meet resource consent conditions, flooding may occur in rain events</p>	
<p>Project Scope: The current reserve profile has the reserve sloping down to the lake front, this project would create a flat area where water could be detained. The flat area could be multi-purpose and used for a playing field</p>	
<p>Alignment with Council Policy/Plans: Eg stormwater strategy</p>	
<p>Summary of Options Considered: Increasing the size of the pipe infrastructure to cope with increased rainfall. Provide a detention area to hold water</p>	
<p>Option / Project Risk Assessment: The building of a detention pond would be far less expensive than increasing the size of the pipes. The community may not like an area that held water due to the risk to children but the pond would be designed to have low sloping sides so that you could not fall into it .</p>	
<p>Option Lifecycle Analysis: E.g. Expected life of new asset etc</p> <p>Expected life is 20ys</p>	
<p>Recommended Option: A detention area would cost effectively lessen the risk to property from flooding</p>	
<p>Consultation: Council would need to consult with the local community regarding the dentition pond design and placement</p>	

Relationship with other Projects: A standalone project											
Consent Requirements: An earthworks consent maybe required from Council											
Land Purchase / Land Designation Requirements:											
Renewal Component of Project: no renewal component											
Growth Component of Project: no growth component											
Operational Cost Implications: no ongoing cost implications											
Communication Requirements: Consultation with the focal community											
Project Implementation Considerations: Preferably undertaken when the finished works could get could grass growth to avoid dust and erosion											
Significant Assumptions: That the local community will be supportive of having a detention pond on the reserve. The reserve management plan can accommodate Stormwater detention											
Funding Sources: e.g. loan, depreciation, DC's, rates (input from SPM DC model)											
Time lines and costs for proposed project phases: <i>Give the total cost of the project and attach a breakdown of the estimate or reference to any relevant reports.</i>											
Year	18/19	19/20	20/21	21/22	22/23	23/24	24/25	25/26	26/27	27/28	PHASE TOTAL
Scoping / Feasibility											
Investigation			10k								
Consenting											
Designation											
Land purchase											
Consultation				50k							
Design											
Construction											
Commissioning and Handover											
ANNUAL TOTAL											

Local Government Act Funding Consideration Requirements.

UPDATE TO REFLECT ASSET

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(a) in relation to each activity to be funded,-

s101(3)(a)(i) community outcomes to which the activity primarily contributes

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Vibrant and diverse

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s101(3)(a)(ii) distribution of benefits between the community as a whole, any identifiable part of the community, and individuals

This project will benefit all residents using the Lake front road, and the properties at the lakefront at the end of Hawaii street that can experience flooding

s101(3)(a)(iii) period in or over which those benefits are expected to occur

The benefits of the project are expected to occur from 2020 through to another 40yrs of design life.

s101(3)(a)(iv) extent to which the actions or inaction of particular individuals or a group contribute to the need to undertake the activity

The project has both health and capacity implications. Delaying the time for its implementation would have ramifications on compliance requirements to resource Consents as well as public health risk from the impacts of flooding.

s101(3)(a)(v) costs/benefits, including transparency and accountability consequences, of funding activity distinctly from other activities

The over land flow path modelling has enabled council to understand which properties are at risk of flooding. Council's level of service is that Council prevent flooding of properties where possible. The prevention of flooding will minimise the cost of flooding to the community.

s101(3)(b) impact of allocation of liability for revenue needs on the current & future social, economic, environmental & cultural community well-being

Social: The community will benefit from the healthy lifestyle that the improved Stormwater control will provide to the community. It will provide the Taupo community with the feeling of safe/protected healthy well-being and sense of pride for having a healthy lake for tourism and recreational purposes.

Economic: The community does not have to pay for the consequences of flooding

Environmental: Flooding invariably washes contaminants into the receiving environment. The construction of a detention pond will enable some contaminant capture.

Cultural: There will be cultural implications since the increase level of service will be provided to the local community.

Approval sign off from group manager:

Name: Denis Lewis

Division: INFRASTRUCTURE SERVICES

Signature: _____

Date:

Date	Description of Change	Changed by	Approved by

Date of Project Sheet Creation: August 2017	
Project sheet completed by: Brent Aitken	
Position: Asset Manager Stormwater / Solid Waste	
Project Name: Kahu street Stormwater network provision	
Asset Location: Mangakino Stormwater	
Why we are doing the Project: Kahu street has been programmed by the roading division to be reconstructed for some time and they have gone through the priority matrix but have been awaiting stormwater funding to complete the project. Currently Kahu street has no stormwater infrastructure, has a number of potholes and water ponds along the street.	
Implications of not doing to Project: Residents would have to continue to put up with flooding and pot holes developing in their streets. This project has funding allocated in the roading Asset Management plan but needs the Stormwater section to be funded so that the street can be fully reconstructed	
Project Scope: Laying of stormwater pipes and cess pits along Kahu and connecting through the walkway at the Southern end of Kahu to Hinau street.	
Project Drivers: The project drivers for this project are the level of service provided to the property owners in the street as is un-serviced.	
Alignment with Council Policy/Plans: The upgrade aligns with Taupo's CSDC (Consent) as well as the code of practice and Councils stormwater management plan, as it provides for capacity in an area that regularly floods.	
Summary of Options Considered: Council could do nothing, but the street would continue to pond water and would continue to require ongoing maintenance. The installation of Kerb and channel will require the provision of stormwater infrastructure and it is considered the best solution.	
Option Technical Evaluation: The provision of stormwater infrastructure in district urban streets to collect stormwater would meet Councils desired level of service	
Option / Project Risk Assessment: This project is a fairly straight forward process of pipe upgrade and so the Risks involved are considered to be low.	
Option Lifecycle Analysis: The new infrastructure will have a life expectancy of 100yrs and due to a lack of growth currently in this area the pipes are expected to easily reach this time frame with the pipe sizes provided.	

Recommended Option:

The provision of stormwater infrastructure at the same time as the road is reconstructed is the preferred option for this project.

Consultation:

Consultation with local residents will be undertaken prior and during the construction phases of the project as there will be some disruption to traffic using the road

Relationship with other Projects:

This project is directly linked with the reconstruction of the road. The infrastructure joins into the network that runs down Rangatira Drive. The work is programmed to coincide with the roading program.

Consent Requirements:

N/A

Land Purchase Requirements:

N/A

Renewal Component of Project:

This project entails the placement of new infrastructure into a currently un-serviced street so there is no renewal component to this project.

Growth Component of Project:

Nil growth component to this project it is 100% backlog

Operational Cost Implications:

No additional operational costs are envisaged

Communication Requirements:

Provision of a mail drop to properties adjacent to where works are being undertaken, and information in the local Mangakino paper identifying the project timelines.

Project Implementation Considerations:

This project could be undertaken at any time of the year but a summer construction time could minimise the risk of a heavy rainfall event damaging project works.

Significant Assumptions:

That funding for the roading reconstruction program will be approved

Funding Sources:

Loan

Time lines and costs for proposed project phases: The project cost for the stormwater section of the reconstruction works is \$80,000. The work is programmed to coincide with the roading upgrade.

Year Ending	18/19	19/20	20/21	21/22	22/23	23/24	24/25	25/26	26/27	27/28
Scoping / Feasibility										
Consenting										
Investigation										
Designation (NOR)										
Land purchase										

Design										
Construction	80k									
Commissioning and Handover										

Local Government Act Funding Consideration Requirements.

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Vibrant and diverse

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s101(3)(a)(ii) distribution of benefits between the community as a whole, any identifiable part of the community, and individuals

This project will benefit all residents living on Kahu road, but the level of service after the completion of the works will be the same as the rest of the community.

s101(3)(a)(iii) period in or over which those benefits are expected to occur

The benefits of the project are expected to occur from 2018 through to another 100yrs of design life.

s101(3)(a)(iv) extent to which the actions or inaction of particular individuals or a group contribute to the need to undertake the activity

Currently Kahu road has no kerb and channel and no Stormwater infrastructure, so the road has numerous pot holes and ponding issues which impacts on the residents ability to enjoy their street scape.

s101(3)(a)(v) costs/benefits, including transparency and accountability consequences, of funding activity distinctly from other activities

The completion of works will provide the level of service enjoyed by the rest of the community

s101(3)(b) impact of allocation of liability for revenue needs on the current & future social, economic, environmental & cultural community well-being

Social: The community will benefit from the healthy lifestyle that the improved roading and Stormwater control will provide

Economic: Less maintenance cost on repair pot holes in the street in the long term

Environmental: Less ponding of water on the frontage of properties will provide healthier environment for the community

Cultural: There will be cultural implications since the increase level of service will be provided to the local community.

Approval sign off from group manager:

Name: Denis Lewis

Division: INFRASTRUCTURE SERVICES

Signature: _____

Date:

Date	Description of Change	Changed by	Approved by

Date of Project Sheet Creation: 2017	
Project sheet completed by: Brent Aitken	
Position: Asset Manager Asset Manager Solid Waste / Stormwater	
Project Name: Kimberly reserve detention pond and retic solution	
Asset Location: Stormwater Taupo	
<p>Why we are doing to Project: The Kimberly Reserve acts as a major overland flow path for a catchment that includes a part of the industrial area and goes around to Kiddle Drive and further. The pipe network in this area is designed to cater for less than a 10yr event. Manhole lids are continually popping and this is a major health and safety risk to our community.</p> <p>There is a property at the bottom of the catchment that has been flooded and will continue to be as it sits within the overland flow path. It is listed on Councils hazards database as being in a flood zone.</p> <p>The second option is to create a ponding area within the Kimberly reserve to provide for at least a 10yr event in the short term and purchase the house when it next comes on the market. This property will still flood in a high rainfall event, but instead of manholes lids popping we can bring the water to the surface to pond until the intensity of the event diminishes and the water can feed back into the piped network.</p>	
<p>Implications of not doing to Project: Manhole lids will continue to lift creating a major health and safety issue for council, also the house at number 33 Henry Hill Rd will still flood in high rainfall events.</p>	
<p>Project Scope: The initial phase of the project is to build retention into the Kimberly reserve to act as buffer and to provide storage up to a ten year event, this will involve earth works in the reserve to create a detention area. The second long term phase is to purchase the house and remove it from the flooding zone</p>	
<p>Alignment with Council Policy/Plans: Councils stormwater strategy identifies a number of polices that relate to this project, health and safety, protection of overland flow paths protection of private property from the effects from flooding, Councils code of practise requires networks to provide for at least a 10yr rainfall event.</p>	
<p>Summary of Options Considered: Diverting a portion of the upstream flow, building storage into the reserve, upgrading the downstream reticulation, lifting the dwelling at 33 Henry Hill Rd, obtain the property and convert into reserve/ flood zone.</p>	
<p>Option / Project Risk Assessment: The cost of purchasing this property is based on the current capital value, the exact cost can only be determined after offer and acceptance.</p>	

Earthworks on the reserve may draw some opposition from surrounding dwellings although all sites except number 33 are well above the current food zone.

Option Lifecycle Analysis:

The provision of flood control systems are identified as having a life span of 18yrs, in reality the earths to allow for retention should provide a useful life of some 50yrs.

The removal of the dwelling at number 33 is permanent, this area would form part of the Kimberley reserve.

Recommended Option:

The recommended option has two phases. 1. Build retention into the Kimberly reserve to provide for 10yr rain event this will take care of the lids popping and the resultant health and safety issue.
2. Purchase and remove the dwelling from number 33 Henry Hill rd as this property will still have flooding issues in anything above a 10yr event.

Consultation:

Consultation with property owners adjacent to the Kimberly reserve will need to be undertaken.
Discussions with the Councils reserves department regarding the reconfiguring of the footpath that runs through the reserve.

Relationship with other Projects:

This project is based in the Kimberly reserve so is not effected by other assets, but this project should proceed prior to the servicing of Zone 4 of the industrial area as zone four is part of the contributing catchment

Consent Requirements:

Consent requirement will depend on final design and location of detention area relative to property boundaries.
Possible earthworks requirements

May need to look at reserve management plan requirements

Land Purchase / Land Designation Requirements:

The second phase of this project will require the purchase of the property at number 33 Henry Hill Rd.

Renewal Component of Project: N/A

Growth Component of Project: this project is related to back log as the flooding as some history

Operational Cost Implications: Apart from the occasional collection of silt , this project will not generate any increase in operational expenditure.

Communication Requirements:

web, paper, letter, possible public meeting,

Project Implementation Considerations:

As the first phase of this project is predominantly earthworks this could be done in early spring to enable a good grass strike.

The removal of the house could be done at any time during the year.

Significant Assumptions:

Land purchase cost is based on current Capital value which could rise in future. The return on selling the building from the site will cover dwelling removal and sale costs as well as some minor site works

Funding Sources: Both phases of the project would be funded by loan as they are back log related.

Time lines and costs for proposed project phases: The total project cost is inclusive of both stages of the project being **630K**.

Year	18/19	19/20	20/21	21/22	22/23	23/24	24/25	25/26	26/27	27/28	PHASE TOTAL
Scoping / Feasibility											
Investigation											
Consenting											
Designation											
Land purchase										575k	
Consultation											
Design								25k			
Construction									80K		
Commissioning and Handover											
ANNUAL TOTAL											

Local Government Act Funding Consideration Requirements.**UPDATE TO REFLECT ASSET**

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s101(3)(a)(ii) distribution of benefits between the community as a whole, any identifiable part of the community, and individuals

The project will reduce the risk of flooding from the Kimberley Reserve over land flow path

s101(3)(a)(iii) period in or over which those benefits are expected to occur

The benefits of the project are expected to occur from 2025 through to another 50yrs of design life.

s101(3)(a)(iv) extent to which the actions or inaction of particular individuals or a group contribute to the need to undertake the activity

The project has both health and capacity implications. Delaying the time for its implementation would have ramifications on compliance requirements to resource Consents as well as public health risk.

s101(3)(a)(v) costs/benefits, including transparency and accountability consequences, of funding activity distinctly from other activities

This flow path has flooding implications not only to this house but further properties down the catchment

s101(3)(b) impact of allocation of liability for revenue needs on the current & future social, economic, environmental & cultural community well-being

Social: The community will benefit from the healthy lifestyle that the improved stormwater control will provide

Economic: The risk of flooding to properties in the flow path will be reduced

Environmental: the effects of erosion will be reduced

Cultural: People can live in their properties with a reduced flood risk

Approval sign off from group manager:

Name: Denis Lewis
Division: INFRASTRUCTURE SERVICES
Signature: _____
Date:

Date	Description of Change	Changed by	Approved by

Date of Project Sheet Creation: 2017	
Project sheet completed by: Brent Aitken	
Position: Asset Manager Asset Manager Solid Waste Stormwater	
Project Name: Koha Rd Flooding prevention	
Asset Location: Stormwater detention on Tamatea Reserve	
Why we are doing to Project: Properties at Koha and Taupo View are regularly flooding in less than a two year event.	
Implications of not doing to Project: Properties will continue to be inundated in less then a 2yr rainfall event	
Project Scope: Upgrading pipe sizes as well as creating a detention area on the Tamatea reserve to restrict flow into the network in a high rainfall event.	
Alignment with Council Policy/Plans: Stormwater strategy identifies as a policy action that Council will where flooding issues are identified Council will include upgrades in future work programs.	
Summary of Options Considered: An Opus report identified a series of pipe upgrades at a rough order cost of 1.3 million dollars. AWT have provided the option of providing storage on the Tamatea reserve as well as some localised pipe size increase at high order cost of 850k.	
Option / Project Risk Assessment: The community members living adjacent to the Tamatea Reserve which connects Hinekura Ave to Tamatea Rd North of Gillies Ave may not be supportive of having a stormwater detention area on the reserve.	
Option Lifecycle Analysis: 80yrs	
Recommended Option: The option of providing storage on the Tamatea Reserve is the cheaper option and links with Council using industry best practise in stormwater design.	
Consultation: Parks staff in regards to use of the reserve to detain stormwater as well as local community members.	
Relationship with other Projects: As a good portion of the works would be on the reserve it is not envisaged this project would connect to other infrastructure projects unless there was upgrades works upon the reserve itself.	

Consent Requirements: This work may require an earth works Consent.											
Land Purchase / Land Designation Requirements:											
Renewal Component of Project: This project is back log related											
Growth Component of Project: This project is back log related											
Operational Cost Implications: It is not envisaged that this project will require ongoing operational cost as the retention area mowing is already costed under the existing reserve maintenance costs.											
Communication Requirements: May require some consultation with adjacent property owners.											
Project Implementation Considerations: N/a											
Significant Assumptions: That use of the reserve for Stormwater detention is acceptable to the local community.											
Funding Sources: as this is a back log issue the project will be general rate funded											
Time lines and costs for proposed project phases. The total project cost is estimated to be \$806K.											
Year	18/19	19/20	20/21	21/22	22/23	23/24	24/25	25/26	26/27	27/28	PHASE TOTAL
Scoping / Feasibility											
Investigation				10							
Consenting											
Designation											
Land purchase											
Consultation											
Design					80						
Construction						760					
Commissioning and Handover											
ANNUAL TOTAL											
Local Government Act Funding Consideration Requirements. UPDATE TO REFLECT ASSET <i>s101 (3) the funding needs of the local authority must be met from those sources that the local authority determines to be appropriate, following consideration of,-</i> <i>(a) in relation to each activity to be funded,-</i> s101(3)(a)(i) community outcomes to which the activity primarily											

contributes

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s101(3)(a)(ii) distribution of benefits between the community as a whole, any identifiable part of the community, and individuals

Currently the Stormwater network is undersized in comparison with the current code of practice and is unable to convey the required flow during heavy rain. The overland flow path impacts a number of downstream properties.

s101(3)(a)(iii) period in or over which those benefits are expected to occur

the provision of detention would have a life of 40yr with any pipe work expected to have a 100yr

s101(3)(a)(iv) extent to which the actions or inaction of particular individuals or a group contribute to the need to undertake the activity

Downstream properties experience flooding over their properties in high rainfall events, this will continue if the works are not undertaken.

s101(3)(a)(v) costs/benefits, including transparency and accountability consequences, of funding activity distinctly from other activities

Councils level of service level is for council to prevent flooding of property.

s101(3)(b) impact of allocation of liability for revenue needs on the current & future social, economic, environmental & cultural community well-being

Social: The community will benefit from not having properties flood

Economic: Council can avoid the cost of properties flooding

Environmental: Pond will enable sediment to be captured

Cultural: There will be cultural implications since the increase level of service will be provided to the local community.

Approval sign off from group manager:

Name: Denis Lewis

Division: INFRASTRUCTURE SERVICES

Signature: _____

Date:

Date	Description of Change	Changed by	Approved by

Date of Project Sheet Creation: 2017	
Project sheet completed by: Brent Aitken	
Position: Asset Manager Stormwater/ Solid Waste	
Project Name: Mangakino Stormwater detention Pond and retic upgrade	
Asset Location: Mangakino Stormwater/ Mangakino Golf Course	
<p>Why we are doing the Project: Council has retic capacity problems adjacent to the Golf Course in Mangakino where Manhole lids have been popping with major flooding at some nodes in a 5 year rainfall event which has the ability to regularly and cause damage to property. This Project takes pressure off the retic and improves stormwater quality into Lake Maraetai by utilising an old sewerage sludge hole that has been remediated and enlarged for this purpose.</p> <p>The hole, now the stormwater soakage and attenuation pond has already been formed and is awaiting the pipe work to be installed.</p> <p>An overland flow out of the pond to flow across the Golf Course will also be created to cater for high rainfall events.</p> <p>The improvements reflect the requirements of Councils Stormwater Strategy and will also meet the requirements of the Comprehensive Stormwater Consent as it will improve quality of the stormwater prior to it reaching the receiving environment.</p>	
<p>Implications of not doing to Project: In high rainfall events, manhole lids will continue to pop causing property damage. Gross pollutants will continue to be deposited into Lake Maraetai from the stormwater outlet.</p> <p>This is also a health and safety Risk to the local community.</p>	
<p>Project Scope:</p> <p>Laying pipe from the existing infrastructure into and out of the pond and connection to the network, planting around the pond edge and the creation of an overland flow path out of the pond to the Lake.</p>	
<p>Project Drivers:</p> <p>The network at this point is significantly under capacity at less than 5% AEP and regularly causes manhole lids to pop and causes property damage. The code of practice identifies that the network should be designed to allow for AEP of 10%.</p> <p>The stormwater entering Lake Maraetai from this catchment has no stormwater quality improvement and does deposit gross pollutants to the receiving environment, the piping of the stormwater to the detention and attenuation pond would allow for these materials to drop out and remain in the pond.</p>	
<p>Alignment with Council Policy/Plans: The upgrade aligns with Taupo's CSDC (Consent) as well as the code of practise and Councils Stormwater Management Plan, it provides for capacity as well as for stormwater quality improvement.</p>	

Summary of Options Considered: Council had CPG Consultants undertake an assessment of options for the upgrading of the Mangakino stormwater infrastructure to eliminate some of the existing capacity issues that were causing localised flooding in the township, this project reflects the recommendations of this assessment.

Option Technical Evaluation: Council would be utilising an existing pond that was previously used for sludge holding and has been remediated and enlarged for this purpose. Its location next to the Mangakino Golf Course allows for an overland flow path out of the pond onto the Course and into Lake Maraetai so is well situated to provide this network solution.

Option / Project Risk Assessment: Risks from this project are considered to be low, as the Golf Course Committee have been involved with this project from initial concept phase and are supportive of the project, ongoing risk of the pond being in the location will be negated by fencing and planting.

Option Lifecycle Analysis: Stormwater pipes have an expected life of some 80yrs while the flood control systems are in the range of 15-18 yrs. These timeframes are reflective of the life expectancy of these new assets.

Recommended Option:

As the pond was already formed the recommend option is the utilisation of the pond to provide for Stormwater quality improvement as well as provide for the needed extra capacity in the network.

Consultation:

Consultation with the Mangakino Golf Course has already been undertaken regarding this project so consultation will be based around identifying the timeline around when the final works will be completed.

As this work is within the existing infrastructure and is actually an improvement to stormwater quality no consultation with Environment Waikato is envisaged, the project will be included in an annual update of assets provided to Environment Waikato through the Stormwater Management Plan update.

Relationship with other Projects:

This project is located mostly on the Mangakino Golf Course so it is not envisaged that there would be any linkages with other Council projects, the waste water disposal trench may be extended in the future but this some distance from this location that already has sewer retic in place.

Consent Requirements:

Council is the Landowner in this case and consent has been given by the Mangakino Golf Course Committee.

Land Purchase Requirements:

Not required

Renewal Component of Project:

No Renewal

Growth Component of Project:

No growth component, it is all backlog

Operational Cost Implications:

Apart from cleaning the pond out periodically, there would be little or no cost implications as Council staff were already cleaning material away from the outlet structure at Lake

Maraetai. No Cost Implications

Communication Requirements:

Do to the location of the works the only communication needs would be with the Mangakino Golf Course committee.

Project Implementation Considerations:

I am sure the Golf Club Committee would like Council to avoid the main playing time of the middle of summer and this could be achieved but the project construction time would be short so would have relatively little impact on the users of the course.

Significant Assumptions:

No Significant assumptions have been made for this project

Funding Sources:

Loan (Capex)

Time lines and costs for proposed project phases:

The total project cost is \$110,000.00 a portion of which is to provide final design and drawings then the rest is construction and portion for planting around the pond to hide it from view.

Year Ending	18-19	19-20	20-21	21-22	22-23	23-24	24-25	25-26	26-27	
Scoping / Feasibility										
Consenting										
Investigation										
Designation (NOR)										
Land purchase										
Design				18k						
Construction					127k					
Commissioning and Handover										

Local Government Act Funding Consideration Requirements.

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(a) in relation to each activity to be funded,-

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s101(3)(a)(ii) distribution of benefits between the community as a whole, any identifiable part of the community, and individuals

This project will benefit all residents connected to the Mangakino Stormwater network as it will reduce the incidents of flooding within the township.

s101(3)(a)(iii) period in or over which those benefits are expected to occur

The benefits of the project are expected to occur from 2018 through to another 40yrs of design life.

s101(3)(a)(iv) extent to which the actions or inaction of particular individuals or a group contribute to the need to undertake the activity

The project has both stormwater quality and capacity implications. Delaying the time for its implementation would have ramifications on compliance requirements to resource Consents as well as flooding and erosion issues.

s101(3)(a)(v) costs/benefits, including transparency and accountability consequences, of funding activity distinctly from other activities

Stormwater infrastructure provision is generally rated as the benefits of the service delivery provide positive outcomes to the whole community.

s101(3)(b) impact of allocation of liability for revenue needs on the current & future social, economic, environmental & cultural community well-being

Social: The community will benefit from the healthy lifestyle that the improved stormwater service will provide to the environment. It will provide the Mangakino community with the feeling of safe/protected healthy well-being and sense of pride for having a healthy lake for tourism and recreational purposes.

Economic: The community doesn't have to opt for on-site treatment of wastewater. There may be additional costs of upgrade to the existing community and there will be costs incurred for service connections to the growth community.

Environmental: The community will benefit from improved Lake water quality.

Cultural: There will be cultural implications since the increase level of service will be provided to the local community.

Date	Description of Change	Changed by	Approved by

Date of Project Sheet Creation: 2017	
Project sheet completed by: Brent Aitken	
Position: Asset Manager Asset Manager Solid Waste / Stormwater	
Project Name: Overland flow path modelling	
Asset Location: District / Stormwater	
<p>Why we are doing the Project: Council has undertaken to identify overland flow paths throughout the district to enable Council to better understand where stormwater will flow in high rainfall events and to enable Council to undertake remedial actions in some instances to prevent damage to property and to also protect overland flow paths to allow for the safe flow of water to receiving environments.</p> <p>The identification of overland flow paths has been achieved by Lidar survey; the second step is to provide truthing of the Lidar survey which being currently undertaken.</p> <p>The third step is to undertake a capital works program where, the overall outcomes of the identification process are achieved, Protect overland flow paths through ownership or legal means, remediation of over land flow paths and redirection of flow paths away from private property.</p> <p>Listing of the confirmed flow paths on Councils GIS database and on property files if needed.</p>	
<p>Implications of not doing the Project: Overland flow paths will continue to be impeded, property will be allowed to be built within the flow path, and property will continue to be damaged from overland flow of Stormwater in high rainfall events.</p>	
<p>Project Scope: Council staff have been progressively working through the district identifying areas where remedial works can be undertaken to divert overland flow away from property, these area's (list is still being compiled) will need remedial works on the ground.</p>	
<p>Alignment with Council Policy/Plans: Council's stormwater strategy identifies that Council will where necessary avoid or mitigate obstructions in overland flow paths by alternative infrastructure.</p>	
<p>Summary of Options Considered: Each individual site will require its own solution to prevent over land flow affecting property.</p>	

Option / Project Risk Assessment: In some instances Council may have to undertake works on private property to achieve an out come.											
Option Lifecycle Analysis: Flood control systems have a life expectancy of up to 20 yrs											
Recommended Option: Undertake remedial action on flow paths as required.											
Consultation: This will require liaison with private property owners in some cases.											
Relationship with other Projects: Will need to review other AMPs to identify connectivity											
Consent Requirements: May require landowner consent in some instances											
Land Purchase / Land Designation Requirements: May require Council to place easements over private property.											
Renewal Component of Project: N/a											
Growth Component of Project: N/a											
Operational Cost Implications: N/a											
Communication Requirements: May need to write to private property owners regarding flow paths on private property											
Project Implementation Considerations: N/a											
Significant Assumptions: No changes to code of practise for the requirement of overland flow paths (currently 1:100). No Resource Consent changes.											
Funding Sources: Loan											
Time lines and costs for proposed project phases: The project funding is provided to enable council to firstly field truth the impacts of the flood study and then undertake changes to the flood model to determine if the model is impacted by the provision of the piped network.											
Year	18-19	19-20	20-21	21-22	22-23	23-24	24-25	25-26	26-27	27-28	PHASE TOTAL

Scoping / Feasibility											
Investigation											
Consenting											
Designation											
Land purchase											
Consultation											
Design											
Construction	20	20	20	10	10						
Commissioning and Handover											
ANNUAL TOTAL											

Local Government Act Funding Consideration Requirements.

UPDATE TO REFLECT ASSET

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s101(3)(a)(ii) distribution of benefits between the community as a whole, any identifiable part of the community, and individuals

This project will benefit all residents in the Taupo township as the provision of appropriate overland flow paths will protect private property and public health.

s101(3)(a)(iii) period in or over which those benefits are expected to occur

The benefits of the project are expected to occur from 2018 through to another 18yrs of design life.

s101(3)(a)(iv) extent to which the actions or inaction of particular individuals or a group contribute to the need to undertake the activity

The project has both health and capacity implications. Delaying the time for its implementation would have ramifications on compliance requirements to resource Consents as well as public health risk.

s101(3)(a)(v) costs/benefits, including transparency and accountability consequences, of funding activity distinctly from other activities

Stormwater infrastructure provision is general rated as the benefits of the service delivery provide positive outcomes to the whole community.

s101(3)(b) impact of allocation of liability for revenue needs on the current & future social, economic, environmental & cultural community well-being

Social: The community will benefit from the healthy lifestyle that the improved stormwater service will provide. It will provide the Taupo community with the feeling of safe/protected healthy well-being as over land flow will be adequately provided for.

Economic: The community will benefit for the reduced risk to public health and property.

Environmental: Stormwater can be controlled and channelled appropriately.

Cultural: There will be cultural implications since the increase level of service will be provided to the local community.

Date	Description of Change	Changed by	Approved by