4.0 ASSET DATA

4.1 Asset Summary and Valuation

Taupō District Council (TDC) is responsible for the management of Stormwater assets with a replacement value (excluding land value) of approximately $85 million (June 2017).

The SWAMP encompasses TDC's stormwater assets, which transport stormwater from developed urban catchment areas as well as from undeveloped rural areas.

Stormwater assets allocated to Roading (Transportation) assets

Introduction

Last year we realised that there had been either a duplication of assets between RAMM and Assetfinda in the following asset classes:

- Stormwater Cesspits (catchpits in RAMM); and
- Stormwater Culverts; or

that some Roading assets had been entered into Assetfinda only either due to RAMM not managing that asset class or in error in historical processing:

- Stormwater Mains that were actually cesspit leads and therefore roading assets;
- Culverts that had been entered as Stormwater_Main (refer to "Culverts" section below.

What's the problem?

Multiple:

- Roading assets had been incorrectly allocated to Stormwater and valued as such;
- Some roading assets that are in Assetfinda are not in RAMM and need to be created in RAMM to obtain the NZTA subsidy for their maintenance;
- Some assets have been accounted for twice – once in RAMM and once in Stormwater.

Cesspits & Cesspit leads

Council has reviewed all cesspits presented via Geocortex (which are those cesspits in Assetfinda as Stormwater assets) in road corridors (spreadsheet of roads and cesspit numbers obtained from RAMM) to determine which cesspits were actually roading assets and which were Stormwater assets. Spreadsheets were updated to show how many cesspits had been identified per road versus those in RAMM on the same road. An evaluation of those findings has yet to be undertaken, however, it is likely that the following scenarios will be uncovered:

1. There will be cesspits recorded in Assetfinda that are not in RAMM
2. There are cesspits in RAMM that are not in Assetfinda

The second scenario is not such an issue as the first. The second scenario simply means that the cesspits are not displayed in Geocortex or MAPI but are accounted for in RAMM. The first scenario involves more work as we need to identify cesspits missing in RAMM and create

those assets in RAMM.

All Roading cesspits in Assetfinda were allocated a newly created Assetfinda owner of "Road" so that these could be easily identified and not included in any Stormwater valuation and/or planning. There are a total of 4,656 cesspits in Assetfinda that are now recorded as being roading assets, 40 cesspits that have been allocated the owner of "NZTA" as they are on the ETA or within the ETA road corridor. There remains 857 cesspits that are Stormwater assets.

Council has also changed the asset type of the associated Stormwater Main records that were actually cesspit leads to "Cesspit Lead", updated the address field with the road that the assets are on and changed the owner to 'Road". In addition, those cesspit leads that are on the ETA were allocated the owner of "NZTA" (.67km). These measures resulted in the following allocation of Stormwater Main assets:

Pipe Type	Road	Stormwater	Private	NZTA	Treatment	Total
Cesspit Lead (km)	42.01	16.55	0.72	0.67	0.01	59.96
Gravity Main (km)	0.00	192.22	2.22	0.71	0.02	195.17
Perforated drainage	0.00	0.54	0.00	0.00	0.00	0.54
Rising Main	0.00	0.60	0.00	0.00	0.00	0.60
Stormwater Service	0.17	5.10	6.54	0.00	0.00	11.81
	42.18	215.01	9.48	1.38	0.03	268.08

Displaying cesspits and cesspit leads

Geocortex displays cesspits and cesspit leads from Assetfinda Stormwater data. This provides an almost seamless view of drainage assets – especially those in the roading corridor where Stormwater infrastructure has been installed and where the cesspits and cesspit leads link up with the stormwater infrastructure. However, catchpits that are in RAMM and are not in Assetfinda are not displayed in Geocortex.

At the current point in time there is no integration between RAMM and Geocortex although that could be achieved via the use of the relatively new RAMM API. The need to display as holistic a view of the stormwater infrastructure as possible may have led to the above situation where assets were created in both systems.

Culverts

Culverts across roads had been allocated the asset class of Stormwater_Main at Assetfinda conversion time (the assumption being that these were stormwater pipes not road culverts). An analysis of these assets has identified the following:

- 8 culverts that have been allocated the owner of "NZTA" (these are the ones across the ETA);
- 61 culverts in Assetfinda that have been allocated "Road" owner (i.e. they are not stormwater assets);
- Of the above 61 culverts, 16 (with an approximate length of a

little over half a kilometre) are not in RAMM and need to be entered into RAMM – none of these are over 2m in diameter;

- There are now no culverts considered to be stormwater assets.

Stormwater summary of assets

The following table provides a summary of Stormwater assets at the current point in time (30th May 2017) from Assetfinda after all of the above data cleansing. A comparison of current asset numbers versus numbers in the 2015-2016 AMP is provided below.

Asset function	Asset Type	Quantity 2015-2016	Quantity now	difference
Reticulation	Pipes	262 km	215 km	(47 km)
	Catchpits / Cesspits	4305	856	(3449)
	Standard Manholes	3091	3562	+471
	Catchpit manholes		31	+31
	Lamphole		8	+8
	Inlets	119	24	(95)
	Raised Manhole - Pond Inlet with debris screen	13	13	-
Stormwater quality improvements	Attenuation / detention ponds	3	32	+29
	CDS Units	1	3	+2
	Enviropods	160	207	+47
Disposal	Unknown Outlet type		369	
	Pond outlet with debris screen		30	+30
	Pond outlet with wingwall & debris screen		11	+11
	Lake Outlet		68	
	River Outlet		24	
	Gully Outlet		37	

Notes:
The large increase in Standard Manholes may need analysis at a later stage to determine how many of these are actually manholes and how many have been entered historically with an incorrect asset type. A brief review shows that many of the inlets and outlets relating to pipes have been incorrectly recorded as manholes – a project will be set up to analyse and correct these at a later stage.
The reduction in the inlet numbers also needs to be analysed. Some reduction will have been generated as a result of the culverts transferring from Stormwater to Roading (a culvert has both an inlet and an outlet therefore 61 inlets will have been transferred to roading which reduces the overall shortfall to 34. There has historically been a confusion as to what constitutes an inlet and an outlet within detention pond structures and this can be further analysed and corrected.

Figure 2.3 shows the approximate extent and location of the infrastructure listed in Table 4.1.

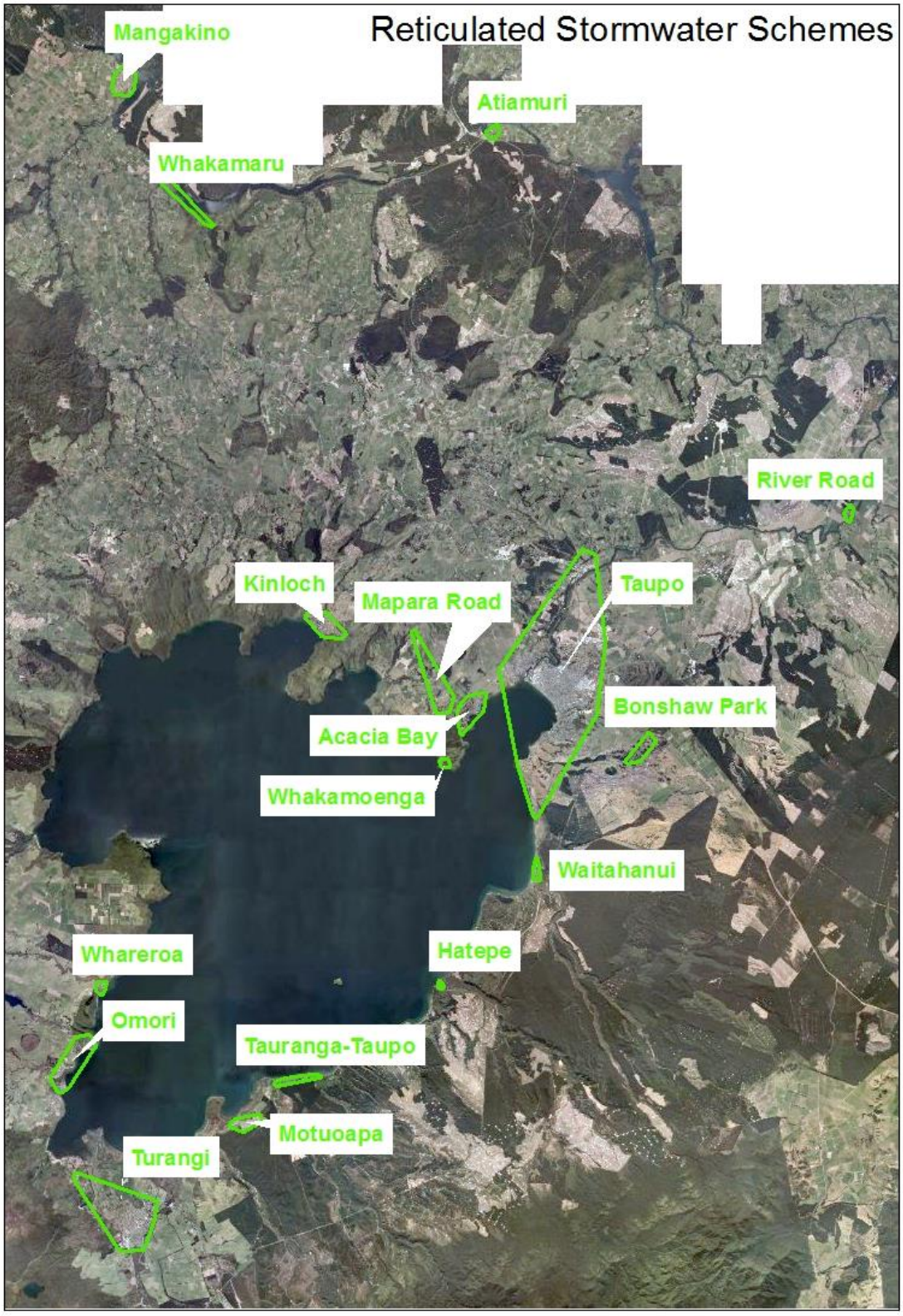

Figure 4.1.2 – Location of TDC Reticulated Stormwater Systems

4.2 Physical parameters

Figure 4.2.1 shows a draft hierarchy of assets.

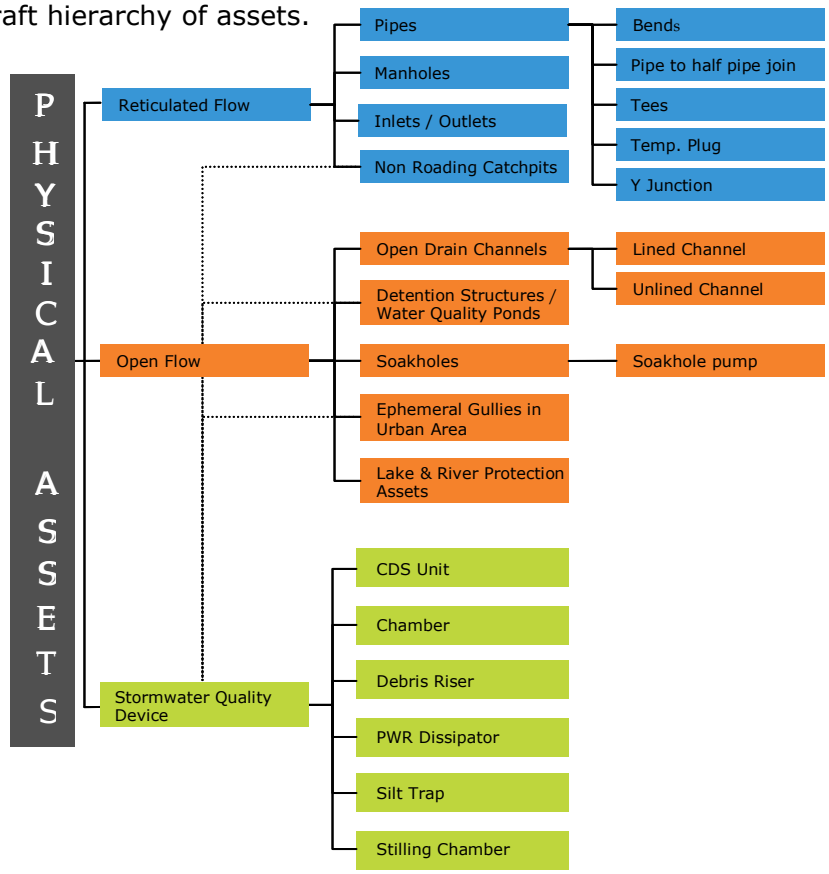

Figure 4.2.1 – Hierarchy of Stormwater Assets

The asset categories depicted in Figure 6.1 are further described in Table 6.1

Asset Type	Component	Description
Open Flow	Open Drains/ Channels	The purpose of open drains is to accept discharge from outlets, confine water flows within its banks, and convey the flows to receiving water bodies. In this asset management plan, open drains refer to lined channels, unlined channels and natural watercourses through which stormwater flows, whether continuously or intermittently
	Flow Paths / Flow Routes	Generally there are two paths available to flood waters; a primary path and a secondary path. ▪ The primary path is usually a piped system, but may be an open channel, or drainage gully. ▪ The secondary path is the route taken by floodwaters when the primary system is unable to cope, either because of blockage or because the hydraulic capacity of the primary path is exceeded.

Asset Type	Component	Description
	Attenuation or Soak hole areas	These will reduce peak flows and/or dispose of stormwater through soakage. They provide water quality improvement through silt depositions soakage.
Reticulated Flow	Pipelines	The purpose of the pipes is to convey the flow received from the catchpits directly to the receiving environment, generally water bodies or land.
Stormwater Quality Devices	Continuous Deflection Separator (CDS)	Based on a simple combination of non-blocking screens and flow management, CDS is a gravity driven, low maintenance device to prevent gross pollutants, such as street litter, vegetation and coarser sediments from entering the receiving environment

Table 4.2.2 – Description of Asset Categories

Councils AMS holds all of the Stormwater asset data and is used as the primary source for asset management planning.
Council has undertaken condition assessments on the inlets and outlet structures as well as the manholes within the network. CCTV condition assessment of the piped network is also being undertaken with at least 10% of the network being done annually.

The relative proportion (by value) of pipes, catchpits, manholes, inlets and outlets is generally the same for each of the wards in the District, and is illustrated in Figure 4.3.3 Clearly pipes make up the majority of the value of stormwater assets.

The three waters asset data base can be manipulated to identify assets that are of greatest value. The value of assets is also considered as part of the maintenance and renewal strategy. When undertaking the condition assessment of the piped network, Council has identified the network that has a renewal requirement of ten years and less, then has put together a program where a range of pipe capacities and locations can be assessed. Council has also considered issues such as trees placed over pipes and the criticality of the asset.

The renewal and maintenance requirements are also overlaid by service request information to determine future work priorities. These priorities can be broken to down to component level such as outlet, pipe, inlet as well as asset values to enable future funding priorities

Works orders and service requests are analysed to determine if maintenance issues are determining the need for future renewal or capex expenditure, contract reports provide details of works as well as preventative maintenance such as outlet unblocking. Expenditure is then compared with renewal and condition assessments which then form planned expenditure and projects.

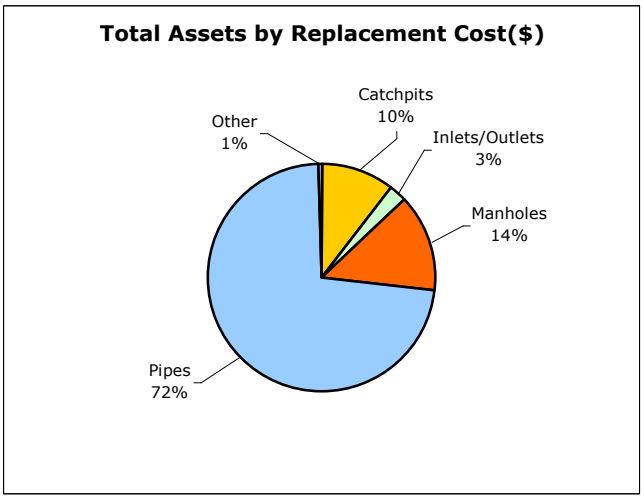

Figure 4.2.3 - Stormwater Components Shown by Percentage of Total Replacement Cost

All recorded components have been valued in terms of their replacement and depreciated replacement value. The valuation process has been performed in accordance with generally accepting accounting standards (NZ IAS16 Property, Plant and Equipment) and with NZ local authority asset valuation practices (NZ Infrastructure Valuation and Depreciation Guidelines).

The basic approach has involved:

a) Preparation of the valuation databases from the various sources of information supplied by TDC.
b) Adjustment of asset quantities, materials and techniques to reflect an optimum (least cost) modern equivalent replacement that offers the same level of service as that currently provided.
c) Calculation of optimum replacement cost (ORC) by multiplying asset quantities by appropriate unit construction cost rates and including an allowance for other costs (site establishment, professional fees and financial charges).
d) Prediction and assignment of economic and remaining lives.
e) Calculation of Optimised Depreciated Replacement Costs (ODRC) by deducting an allowance for depreciation, taking into account age, remaining life and residual value.

4.3 Open flow network

4.3.1 Description

Drainage gullies in urban areas are the responsibility of TDC and are Local Purpose Reserves. TDC's Tree and Vegetation Policy, code of practice and stormwater strategy identifies the importance of these areas for drainage conveyance and natural disposal and Council has also identified that drainage gullies in the district form an integral part of the stormwater network.

Council's comprehensive stormwater consent promotes the integration of the natural environment with the treatment and disposal of stormwater in the district. Council has promoted this concept through the code of Practice to enable gully systems to be incorporated into the design for stormwater in future developments

Gullies in the Taupō Region can serve several purposes depending on their level of development. Gullies may be undeveloped or developed. If undeveloped, they will continue to serve their natural overland flow purpose. If developed, they may currently be used for reserves purposes and/or stormwater purposes.

Private property owners do have a requirement to keep overland flow paths clear and mown regularly to avoid erosion and sediment loss.

Council will continue to work with community groups such as Bike Taupō to enable enhancement and recreational opportunities to be maximised where appropriate. Council will try where possible to maximise the dual usage potential of overland flow paths for passive transport usage i.e. walking and cycling to enable "off road" linkages throughout the urban area.

The drainage gullies are not included on the asset register at present. However there is maintenance expenditure involved in weed control to allow effective stormwater flow and ensure the geographical features are preserved. The planting of gullies and ongoing maintenance of the planting is a requirement of the comprehensive stormwater consents.

4.3.1.2 Capacity / Performance

Recent new developments in the district that have been providing gully disposal for stormwater have provided capacity information that shows that they are able to provide for the requirements of Councils code of practice.

Existing gully capacity has been identified by way of Lidar survey that can identify overland flow paths up to a 1 /100 year event.

Where gully systems are on private land, Council will look to work with property owners to make sure that obstructions to flow paths are removed.

The overall capacity and performance of the gully networks in the district are in the process of being analysed and this information will be placed into the asset data system.

4.3.1.3 Condition

The condition of the district gully systems will require ongoing assessment, with inspections undertaken in areas where overland flow velocities have scoured or damaged the flow paths. Remedial works are then undertaken under the maintenance contract.

As Taupō's Pumice soils are particularly prone to erosion from high velocity water movement, Council has a planned gully planting program that targets those gullies that have high stormwater velocity, and this planting program not only strengthens the gully walls but also places small planting barriers in the flow paths to slow water down to enable containments and sediment to drop out as well as to avoid erosion.

4.3.1.4 Age

To date no specific age assessment has been undertaken in the gully networks apart from the knowledge built up from the existing planting programs and any developments that have been placed into Councils ownership.

4.3.1.5 Overland Flow Paths / Network Capacity

Council has undertaken Lidar modeling to determine stormwater flows in a 1/100 storm event. It is Council's intention to place this information onto property files in the future. The work to date does not incorporate the piped network, so the data on effects of flooding on private property still needs to be improved before being released to the public.

Council needs to undertake network modeling to fully understand the effects from overland flow paths, and also to allow Council to have an up to date model of the network to be able to understand the implications of increased development upstream. Currently no network model of the stormwater system exists, so areas where overland flow is shown to directly affect property would be modelled to firstly provide validation to the Lidar data as well as to provide data for solution identification.

4.4 OUTLETS & RETICULATION

4.4.1 STORMWATER

Description
Stormwater discharges from the stormwater system into Lake Taupō, gullies, streams and channels, and the Waikato River. The number of outlets discharging into each is given in Table 4.4

Township	Number of Outlet Systems				
	Land/Gulley	Lake	Stream/ Channel	River	Total
Taupō	73	49	0	20	141
Acacia Bay	4	8	0	0	12
Kinloch	31	9	8	0	48
Tokaanu	0	0	0	9	9
Waitahanui	0	3	0	3	6
Motuoapa	5	5	0	0	10
Tauranga-Taupō	0	3	0	0	3
5 Mile Bay	1	6	0	0	7
Mangakino	8	0	0	4	12
Turangi	3	0	15	9	27
Pukawa	3	0	5	0	8
Atiamuri	1	0	0	1	2
Acacia Heights	5	0	0	0	5
Hatepe	2	1	0	0	3
Wairakei	2	0	1	0	3
Kuratau	2	5	0	0	7
River Road	1	0	0	2	3
Whakamaru	1	0	0	0	1
Omori	0	2	2	0	4
Whareroa	0	1	0	0	1
TOTALS	105	92	31	48	312

Table 4.4 – Summary of Stormwater Outlet Assets

4.4.1.2 Capacity / performance

The capacity and performance of Stormwater outlets has been graded (see 4.3.1.2) this grading is ongoing as the network has 92 outlets that feed straight into Lake Taupō. These lake outlets have been affected with high lake levels as a large majority are situated in the foreshore.

The location of the outlets in the foreshore means that at times of high Lake Level and high winds, outlets can be covered over and blocked by sand.

Council's maintenance contractors are required to inspect these structures prior to high rainfall events to avoid the potential for flooding.

Outlets located on the foreshore may in the future need to be either extended into the lake or moved back away from any chance of blocking. These outlets are also in some places being undermined as wave action and high lake levels remove structures supporting material. Allowance in the renewal budget has been made to enable the ongoing renewal of outlet structures affected by lake conditions.

Capacity of outlets in general is considered satisfactory, with most of the infrastructure designed to provide for at least a 5 year return period rain event.

The performance of the Stormwater infrastructure is generally assessed via resource consent compliance. An Annual Report is prepared for EW on the whole of the network detailing its performance against specific conditions as listed in the Consent. All of the annual reports provided under the comprehensive consent have been given full compliance from EW.

Extending of Stormwater Outlets further into the Lake could become problematic as Iwi ownership of the Lake bed means that further intrusion may trigger the need for charging and applications for extension will require extensive consultation and may in the end be unsuccessful.

There are number of large outlets that discharge directly from the urban environment to the Lake and rivers which carry significant containments in the first flush which exceed the parameters identified in Councils monitoring program. A number of these outlets have been selected to have quality improvement devices upstream.
Recent inspections of beach areas after rainfall events that have been proceeded by periods of no rainfall has shown that the beach areas around these outlets have a considerable build-up of floatable contaminants, mainly plastics that end up washed up on the beach leading to contamination of the area and eyesore for our Tourist community.

4.4.1.3 Condition

The condition of the network outlets has greatly improved due to regular inspection and maintenance performed under the maintenance contract.
Condition rating information has been compiled and is being added to the Asset data system.

Council has implemented an annual CCTV program to assess the condition of stormwater assets. This condition assessment is compared with age of the assets and any maintenance records to determine the remaining life.

4.4.1.4 Age

Figure 4.5 shows the age of the Stormwater pipe network in the district, with majority of the networking, including outlets falling 36 to 50 year range.

The Stormwater reticulation is shown as only half way through its useful life with Stormwater pipes having an expected life of some 80-100 years. This has been reflected in the renewals program for Stormwater.

To date Council has not had an extensive renewal program as the age of the assets does not at this time warrant the expenditure.

The condition assessment program has identified a number of assets that have had faults and or have shown ware. The criticality program has been included in determining the short term 10 year renewal program.

Pipes that have been found to be poor with a high criticality are programed into the first three years of this program with poor quality pipes with lower criticality pushed further out. Some smoothing of the expenditure has been undertaken to remove yearly spikes.

The CCTV program will continue to assess at least 10% of the network going forward and faults will be prioritised as they are identified. From 23/24 onwards the age of the network suggests that the renewal program will need significant funding. Council will not rely on the age only to determine renewal spend as the information gathered through the CCTV program will overlay the age data to provide accurate condition assessment to enable Council to refine the renewal expenditure going forward.

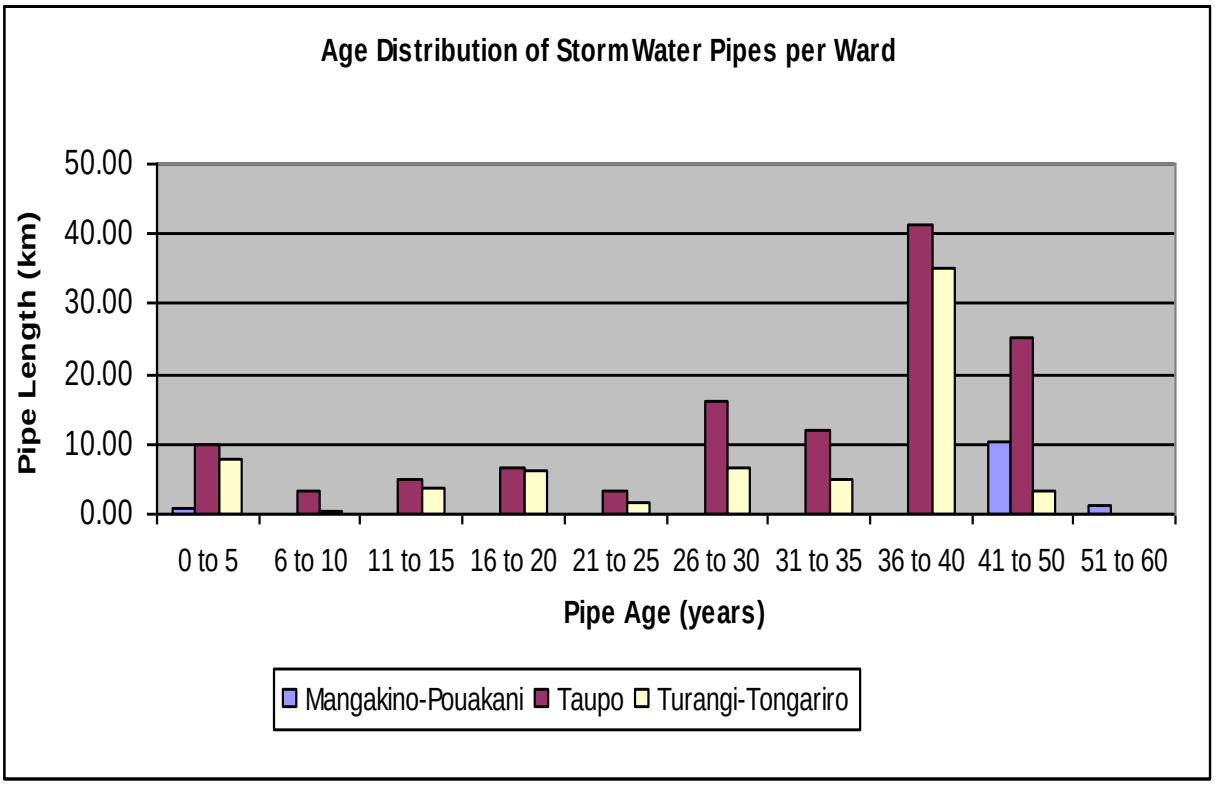

Figure 4.5 - Age of Stormwater Pipes

4.4.1.5 Description (RETICULATION)

Figure 4.5 shows that most of the stormwater pipe assets are constructed using reinforced concrete rubber ring jointed pipes.

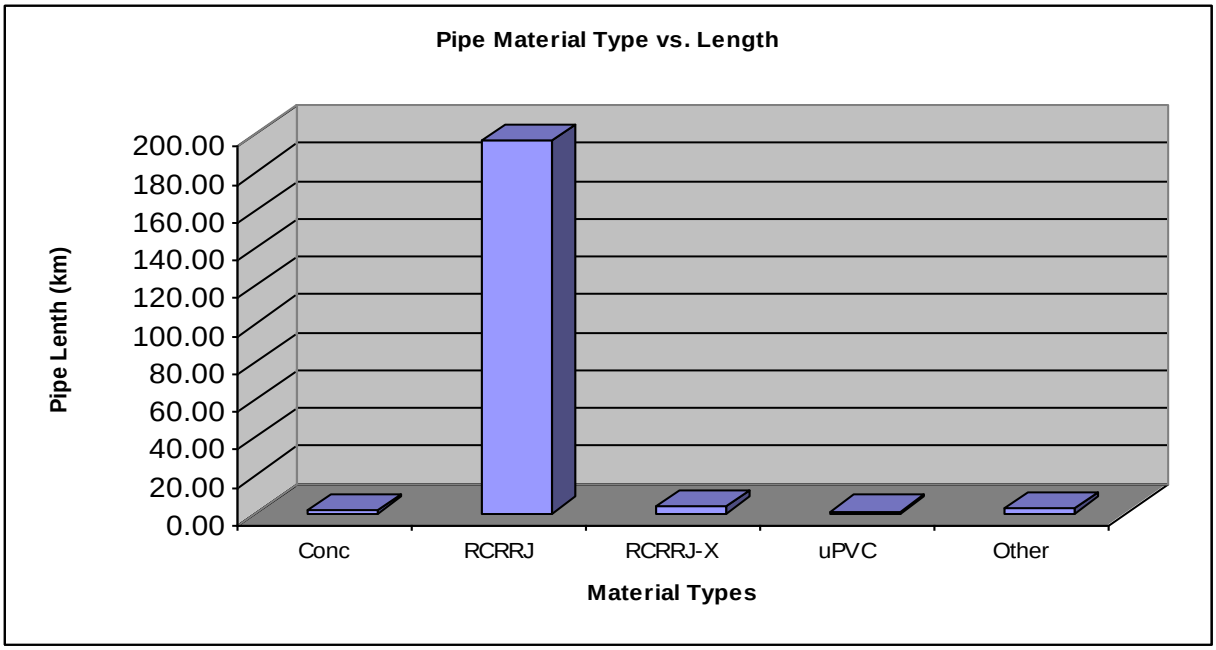

Figure 4.6 Pipe materials

4.4.1.6 Asset Capacity / Performance

Performance is regarded as "the capability of the asset to meet defined service criteria". A subjective desktop assessment of current stormwater asset performance was carried out in 2007, with some modelling work also undertaken and the result is shown in Table 4.7.

Rank	Description of Performance
1	**Very good**
2	**Good**
3	**Moderate**
4	**Poor**
5	**Very poor**

Table 4.7 - Performance Grading System

(Zones A - D refer to overall performance A = very poor, D = Good)

Stormwater Asset Type	Performance Grade assigned to each Township																			
	ACACIA BAY	ACACIA HEIGHTS DRIVE	5 MILE BAY	KINLOCH	RIVER ROAD	TAUPO	WAIRAKEI	WAITAHANUI	HATEPE	KURATAU	MOTUOAPA	OMORI	PUKAWA	TAURANGA-TAUPO	TOKANNU	TURANGI	WHAREROA	ATIAMURI	MANGAKINO	WHAKAMARU
Zone assigned by TDC for Performance Grading	D	D	D	D	D	E	A	E	C	B	D	B	B	C	C	C	B	A	A	A
Pipeline	2	2	2	2	2	3	5	3	4	3	2	3	3	4	4	4	3	5	5	5
Manholes	2	2	2	2	2	3	5	3	4	3	2	3	3	4	4	4	3	5	5	5
Catchpits	2	2	2	2	2	3	5	3	4	3	2	3	3	4	4	4	3	5	5	5
Inlets / Outlets	2	2	2	2	2	3	5	3	4	3	2	3	3	4	4	4	3	5	5	5
Open Drains	2	2	2	2	2	3	5	3	4	3	2	3	3	4	4	4	3	5	5	5
Channels	2	2	2	2	2	3	-	3	4	3	2	3	3	4	4	4	3	-	-	-
Flow Paths / Flow Routes	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Soakholes	-	-	-	-	-	3	-	-	-	-	2	-	-	-	-	-	-	-	-	-
CDS Unit	-	-	-	-	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chamber	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Debris Riser	2	2	2	2	2	3	5	3	4	-	2	-	-	4	4	4	3	-	-	-
PWR Dissipator	-	-	-	-	-	-	-	-	-	3	-	3	3	-	-	-	-	-	-	-
Reducer	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Silt Trap	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Stilling Chamber	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 4.8 Network Performance Grading

4.5.1.2 Condition

Asset condition reflects the physical state of the asset, which may or may not affect the performance. The performance of the asset is the ability to provide the required level of service to customers. At present, TDC have very little documented knowledge or record of asset performance except for assets that are obviously underperforming or in such a condition that they are likely to fail.

Council has previously undertaken CCTVs for at least 5% of the piped network annually to provide condition assessment his has now moved to 10%. The outlets and inlet structures were all done in 2010 and are inspected during ongoing maintenance work.

The assessment of the asset's condition is aligned to its "structural integrity" – what shape is it in? Whereas it may be performing adequately and the customer is not aware of a reduced level of service, there could still be significant maintenance and repair work or costs associated with the asset due to its poor physical condition.

Council's maintenance contractor is now collecting condition information regarding the stormwater assets and this information is being downloaded into the asset management system.

The CCTV inspection records coupled with the criticality rating requires that there is funding allocated to cater for the faults that have been found during the condition assessment program.

It is envisaged that as the CCTV program is rolled out, that additional network faults will be located. The Mangakino assessment identified that there is parts of the piped network located under houses. These pipes have been identified as high criticality due to

the risk of failure and impacts on private property. The condition assessment data will be adjusted as repairs are undertaken.

As the network age is only averaging 60 years old the bulk of the network renewal funding requirement won't be needed until 2050 onwards.

Rank	Description of Condition
1	**Perfect/Excellent Condition** Only normal maintenance required
2	**Minor Defects Only** Minor maintenance required (5%)
3	**Backlog Maintenance Required** Significant maintenance required (10-20%)
4	**Requires Major Renewal** Significant renewal/upgrade required (20-40%)
5	**Asset Unserviceable** Over 50% of asset requires replacement

Table 4.9 - Condition Assessment Guidelines

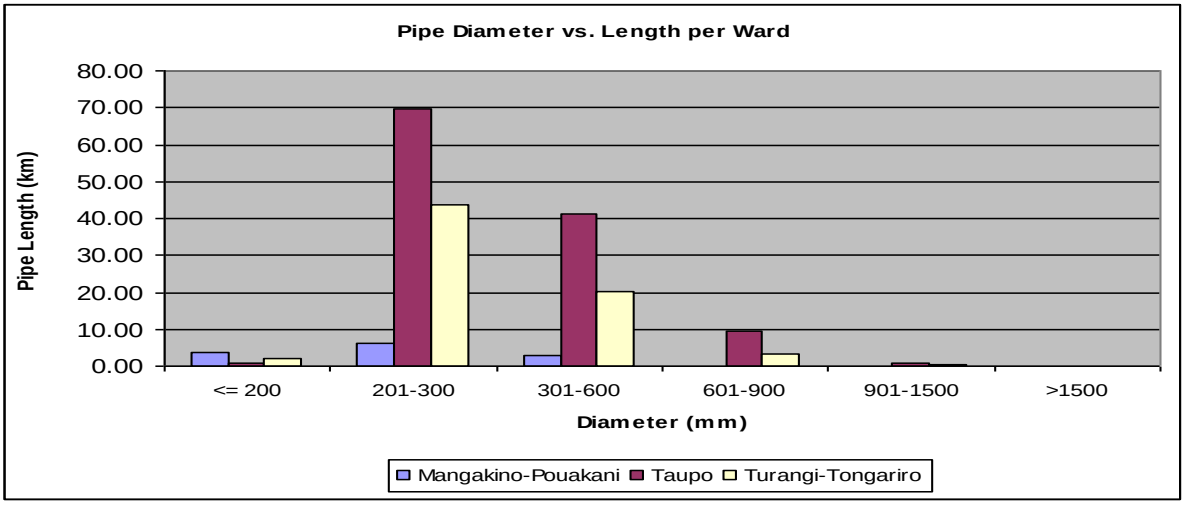

Figure 4.10 - Size of Stormwater Pipes

4.5 ASSET LIVES

Table 4.11 summarizes the asset lives that were used in the calculation of asset depreciation. Asset lives have been determined by TDC asset management staff, based on information in the NAMS guideline, but modified to better reflect the actual situation being experienced in Taupō district.

Asset Type	Expected Life
Pipes	80 - 100
Manholes / cesspits	80 - 100
Flood control systems	15 - 18

Table 4.11 – Asset Lives

The anticipated life of assets is dependent on material type and operational circumstances.

4.6 QUALITY DEVICES

4.6.1 DESCRIPTION

With the adoption of Councils stormwater strategy and the granting of Councils comprehensive stormwater consents, there is more emphasis placed on the quality of the discharges from council's stormwater network, be it from overland flow or the reticulated network.

The Comprehensive consent has a monitoring program that compares receiving water quality with a national data set that enables Council to identify areas where stormwater quality is an issue.

Currently there are a number of capital programs for the inclusion of quality improvement devices into the network. These devices will be located in areas where stormwater drains from the central CBD areas as well as large outlets from the urban area straight to the Lake shore. Provision of these devices will be determined after Council has undertaken the consultation process.

Currently council has Four CDS devices within the reticulated network in Taupō as well as 180 Enviropods located in Taupō and Turangi.

Council's comprehensive consent requires any new cesspits installed under the consent to include sediment and floatable contaminant capture, this is a signal from the Regional Council that Enviropods are a desirable asset for new networks. But for an urban residential street the level of contaminates is low and the extra cost of maintenance of additional Enviropods is not seen as cost effective. For areas such as commercial and light industrial, the capture of pollutants with Enviropods is seen as cost effective.

A report undertaken by Opus International regarding the effectiveness of stormwater quality devices for the Taupō and Turangi CBDS, recommended an initial protection of Enviropods followed by CDS units at or close to major outlets. This philosophy will underpin Councils quality improvement program going forward.

Council will look to provide quality improvement by way of CDS or similar devices for the major outlets which drain directly to receiving environments.

Council will continue to work with developers and the regional Council to provide the best and most cost effective stormwater quality improvement devices for Councils

network. Recently this has been achieved by more open pond based systems where pollutant traps are above ground and easily maintained.

4.6.2 CAPACITY / PERFORMANCE

The existing CDS units have been sized for a 1 in 5 year storm event. With rainfall events over this return period the CDS units are able to bypass and thus avoid localised flooding. Any new quality improvement devices will be designed taking into account the new rainfall data but practise will generally be sized to deal with the first flush.

CDS units are regularly inspected and are cleaned under the Stormwater maintenance contract and the optimum time between cleans is around four months, but this clean time will vary depending on the size of the catchment and contaminant loadings.

The Enviropods located throughout the district are maintained under the roading maintenance contract and also regularly inspected and cleaned.
Road cesspit capacity can quickly be reduced if Enviropods are not maintained on a regular basis and this does incur some additional maintenance expenditure for the roading division.

Open pond based systems have been designed either under the old code of practise that required the 1 in 5 storm event or more recently developments have designed to meet a 1 in 10 storm event.

Access to the pond systems for maintenance is easy and the removal of sediment and pollutants is regularly undertaken.

4.6.3 CONDITION

The district quality improvement devices are now included into Councils three waters contract for inspection and maintenance. These devices are regularly inspected as to there condition and are maintained when necessary.
The current condition rating for the quality improvement devices shows that they are in good condition.

4.6.4 AGE

Two of the CDS devices are 13yrs old, well within their asset life and the third CDS device is 5 years old, so relatively new devices providing good stormwater quality improvement. 130 of the 160 Enviropods are less then two years old with another fifteen devices less than four years old. Renewal funding for catch bag and enviropods have been allowed for.

4.7 Resource consents

TDC have acquired numerous resource consents for the discharge of stormwater. Table 4.7.1 summarises the consented stormwater discharges, together with the date that the consent expires.

Site	Resource Consent number	Renewal date
Taupō Urban Areas Taupō (& Eastern Bays) Waitahanui Acacia Bay Kinloch	105048	15 June 2027
Turangi Urban Areas Turangi Tokaanu Motuoapa Omori/Pukawa/Kuratau Whareroa Tauranga-Taupō Hatepe	105049	15 June 2027
Waikato Urban Areas Wairakei River Road Atiamuri Whakamaru Mangakino	105050	15 June 2027
Taupō - Poihipi Road (Vaucluse Subdivision) 4 x detention dams	102594	
SH5/Kiddle Road Onekeneke detention dams	104043	1/01/3000
Flood Control works Kowhai chad gullies	793558	1/01/3000
Divert and discharge Bonshaw park Subdiv	840413	1/10/2021
Detention pond Kenrigg Rd	109323	30/11/38
2.4m culvert SH1 Wharewaka	110714	25/03/39
Kuratau/Omori/Pukawa – discharge	732380	2028
Weir Kathleen stream spa rd	114276	8/10/42
Kenrigg Rd, Kinloch – dam to create detention pond	109322	30/11/2038

Table 4.7.1 – Summary of Resource Consents Relating to the Discharge of Stormwater

The primary consents that will affect the management of the stormwater activity into the future are the three comprehensive discharge consents (105048, 105049, and 105050). TDC has now surrendered existing consents on sites covered by the Comprehensive Discharge Consents.

4.8 Asset Confidence Rating

The asset valuation assigns confidence ratings to the source data and unit cost rates and to other items as appropriate. The overall confidence rating for the Stormwater Asset is B**-.**

Grade Score	Grade	Description	Accuracy
1-2	A	High Accuracies, data based on reliable documents	±5%
2-3	B	Data based on some supporting documentation	±10%
3-4	C	50% Estimated, data based on local knowledge	±15%
4-5	D	Significant Data Estimated / No Data, data based on best estimate of experienced person	±30%

Key to Asset Confidence Rating

Attribute	Confidence Grade							
	D		C		B		A	
Asset data								
Physical properties								
Location								
Age								
Condition								
Performance								
Deterioration rate								
Financial data								
Opex								
Operation costs								
Maintenance costs								
Asset management costs								
Interest rates								
Depreciation								
Renewals								
Unit rates								
Project scope								
Cost estimates								
Capital works								
Demand forecast								
Project timing								
Project scope								

Attribute	Confidence Grade							
	D		C		B		A	
Project costs								
Project prioritisation								

Storm Water Assets	Average of Data Confidence Score		Confidence Grade
Size	2.5	2.43	C+
Material	2.6		
Length	2.2		
Location	2.20	2.20	B+
Age	2.25	2.25	B+

Summary of Asset Confidence Ratings

Councils knowledge of its asset has increased from the last AMP due to processes put in place around asset and maintenance data capture and storage.

Council has made a significant effort to process and store data records that have been "sitting in boxes" as well as recording data from CCTV records. Council has had additional staff employed soley to bring the data to a level to enable asset staff to provide robust renewal porograms.

Councils "Three Waters" maintenance contractor is also required to check the validity of asset data while undertaking maintenance and update the data if necessary.