

## 4.0 ASSET DATA

### 4.1 Asset Summary and Valuation

Taupo District Council (TDC) is responsible for the management of wastewater assets with a replacement value (excluding land and buildings) of approximately \$182 million as at August 2017.

The wastewater asset consists of a number of components:

- Network reticulation (Sewer manholes, Pump stations, septic tanks and pipes)
- Treatment plants (including land disposal sites)

The central wastewater high level asset valuation record is currently maintained in spreadsheet format (TDC Wastewater 2016-2017.xlsx).

Specific assets are managed in different ways. Reticulation assets are being managed through Asset Finda asset management software, with pump station, treatment plant assets being managed by spreadsheet. In the future the intent is to use Asset Finda as the sole source of asset data and management for the three waters; including asset valuation.

The various asset databases are manipulated to identify renewal and maintenance requirements; these are overlaid by service request information and the annual compliance reports to determine future work priorities. Condition assessment and engineering review determines the maintenance and renewals budget.

The following table gives a summary of the asset valuation as at August 2017.

Type	Depreciated Replacement Value	Replacement Value
<b>Treatment</b>	\$ 54,490,465.59	\$ 80,061,246.16
<b>Reticulation Network</b>	\$ 53,365,091.76	\$ 102,403,015.27
<b>TOTAL</b>	<b>\$ 107,855,557.35</b>	<b>\$ 182,464,261.43</b>

**Table 4-1: Wastewater Asset Valuation Summary**

#### 4.1.1 VALUATION PROCESS

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.

## 4.2 Asset Component

### 4.2.1 TREATMENT PLANTS

#### 4.2.1.1 Description

Taupo District Council manages 11 treatment plants and associated disposal systems with a replacement value of \$ 80,061,246.16 at August 2017. A description of each of the Treatment Plants is included in Appendix D.

<b>Wastewater Treatment Plant</b>	<b>Replacement Value</b>
Acacia Bay	\$ 2,004,967.16
Atiamuri	\$ 280,639.56
Kinloch	\$ 3,583,228.19
Mangakino	\$ 4,223,771.54
Motuoapa	\$ 3,784,880.48
Motutere	\$ 1,065,140.83
Omori	\$ 2,119,331.47
Taupo	\$ 50,995,478.82
Turangi	\$ 9,381,711.89
Waitahanui	\$ 1,151,912.28
Whakamaru	\$ 535,466.74
Whareroa	\$ 934,717.20
<b>TOTAL</b>	<b>\$ 80,061,246.16</b>

**Table 4-2: Treatment Plant Replacement Value**

The Waitahanui WWTP is in the process of being decommissioned and the updated value represents the equipment that is salvaged and can be reallocated to other plants in time.

#### 4.2.1.2 Condition

The conditions assessment of the Wastewater Treatment Plants is a live document and is being updated continuously the operation team. The asset register is also reviewed by the network maintenance staff to determine the condition of above ground assets such as wastewater pump station/ Telemetry. Based on condition assessment and network failure history the maintenance and renewal plans are prepared.

The condition rating is stored on an excel spreadsheet, which is generally derived from the asset register or condition assessment records. These condition assessment and engineering review by Asset Manager determines the maintenance and renewals budget. The asset condition assessment database is manipulated to identify renewal and maintenance requirements, these are overlaid by service request information and the annual compliance reports to determine future work priorities. Ultimately this data will be stored in the fully developed AMS.

The revaluation of these assets is done by external consultants every three year.

A copy of this data as of Aug 2017 is held in objective (Ref A1309895).

### 4.2.1.3 Capacity/Performance

The performance of the wastewater treatment plants is generally assessed via resource consent compliance. Annual Reports are prepared for WRC on each plant detailing the performance of the plant for that year, effluent quality and volume results and environmental monitoring results. The type of tests carried out is governed by the resource consent conditions.

The capacity of each plant and land disposal system is governed by the capacity at the “pinch” of each system. In some cases this is controlled by hydraulic capacity and in others by resource consent conditions. Additional information is contained in the appendices.

### 4.2.1.4 Treatment Plant Age

The wastewater treatment plants have been constructed at different times as required. In some cases upgrades have occurred. This information is shown in the table below. The age and useful lives of the WWTP components are given in the condition assessment sheets contained in the appendices.

Treatment Plant	Plant Type	Construction Year	Upgrade Year	Upgrade Type
Acacia Bay	SBR	1986	-	-
Atiamuri	Imhoff Tank		-	-
Kinloch	SBR	1988	2003 2009	Inlet works Decant system improvements
Mangakino	SAF	2006	2007-08 2013-14	WWTP upgrade (SAF) Tertiary filter upgrade
Motuoapa	SBR	1987	2002 2016	Addition of second SBR tank Inlet Balance Tank
Motutere	SAF	1992	2006	SAF tanks
Omori	Oxidation Ponds	1970's	-	-
Taupo	Trickling Filters / Anaerobic Digesters	1975	1993 2009 2010-11	Rakaunui Road land disposal View Rd Land disposal site Additional trickling filter and digester
Turangi	MBR	2006	2014/15	Design and construction of lined ponds. The remediation plan for unused ponds will be done as scheduled in TYP.
Whakamaru	Imhoff Tank		2009	Disposal Field
Whareroa	Oxidation Ponds	1986	2008-09	Aeration and step screen

**Table 4-3: Treatment Plant Type and Ages**

## Reticulation

### 4.2.1.5 Reticulation Description

Reticulation includes network pipes, manholes and lampholes and pump stations. An inventory of all reticulation is contained within the Asset Finda system and valuation spreadsheets.

Scheme	Total Value
Acacia Bay	\$ 7,047,574.14
Atiamuri	\$ 250,674.68
Kinloch	\$ 6,664,972.91
Mangakino	\$ 4,568,997.65
Motuoapa	\$ 2,709,312.59
Motutere	\$ 496,002.38
Omori	\$ 6,310,627.62
Taupo	\$ 60,159,739.90
Turangi	\$ 12,551,329.38
Whakamaru	\$ 358,538.27
Whareroa	\$ 1,285,245.76
<b>Total</b>	<b>\$ 102,403,015.27</b>

**Table 4-4: Scheme Reticulation Value**

### 4.2.1.6 Reticulation Condition

Condition assessments on the pump stations occur as part of the current maintenance contract and are completed every six months. From these assessments key renewals works can be identified.

CCTV investigation has been completed on some sections of pipe work where we know there are issues. We have completed extensive CCTV condition assessment in Mangakino, Whakamaru and parts of Taupo. We have undertaken significant renewal work in Whakamaru and now have a forward work plan for Mangakino renewals. Further condition assessment in Turangi is planned.

Manhole inspections and improvement are a programmed. There is current evidence that infiltration is occurring in some manholes. Recent smoke testing has proved that sewerage system at Mangakino requires attention. Reducing this infiltration will reduce the volume of water entering the wastewater reticulation that ultimately needs to be treated. Condition information will be held in Asset Finda once collected.

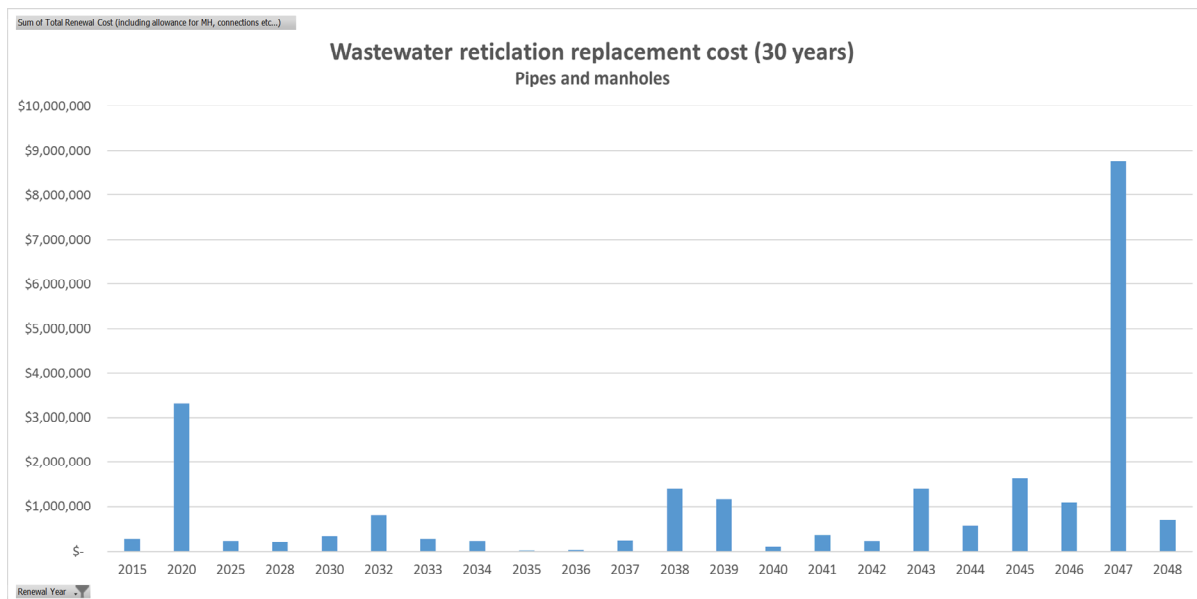
### 4.2.1.7 Reticulation Performance

Reticulation performance is assessed through the number of services requests received on the particular asset, how many failures that occur and if any overflows occur.

The main problems within the reticulation are generally occur due to fat blockages or root intrusion. In 2010-2011 an investigation was undertaken as part of the implementation of the Trade Waste Bylaw into the grease traps within the Taupo town area. This process highlighted the extent of the grease traps and enabled controls to be placed on emptying them via a Trade Waste Consent. Enforcement of the trade waste bylaw is developing.

### 4.2.1.8 Reticulation Age

The approximate life expectancy of the pipe work and fitting is shown on the graphs below. Individual scheme profiles are shown in the appendices.



**Figure 4-1: Pipe Renewal Profile**

(Ref: A1996852)

## 4.2.2 PUMP STATIONS

### 4.2.2.1 Pump Station Condition

Each pump station condition is assessed formally every six months by the maintenance contractors. This includes looking at the condition of the following; pumps, valves, structural condition, ladder, platform, electrical and telemetry.

Overall the pumps within Taupo District are getting near to their expected life and in some cases have exceeded expected life. There is a gradual replacement programme currently in place. The pumps in the worst condition and in the more critical areas are being replaced first.

Some of the electrical installations for wastewater pump station are approaching end of life and are due to be replaced with the most critical to be replaced first. The telemetry standards for WWPS has changed and with electrical upgrades comes the migration to the new telemetry network.

### 4.2.2.2 Pump Station Performance

Overall the pump stations are performing as expected. As pumps are replaced it is expected that more efficient pumps can be used which will improve the pumping performance and reduce the operational costs through reduced power requirements.

### 4.2.2.3 Pump Station Age

The varying components of the pump stations have different ages and life expectancies. (Reference Objective –A1255105 & A1233224).

### 4.3 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 wastewater asset is **B-**, it is regarding to the Pipe Size, Materials, Age data that we collected in recently validation.

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%

**Table 4-5: Key to Asset Confidence Rating**

Attribute	Confidence Grade			
	D	C	B	A
<b>Asset data</b>				
Physical properties (length/size/materials)				
Location				
Age				
Condition				
Performance				
Deterioration rate				
<b>Financial data</b>				
<u>Opex</u>				
Operation costs				
Maintenance costs				
Asset management costs				
Interest rates				
Depreciation				
<u>Renewals</u>				
Unit rates				
Project scope				
Cost estimates				
<u>Capital works</u>				
Demand forecast				
Project timing				
Project scope				
Project costs				
<u>Project prioritisation</u>				

**Table 4-6: Summary of Asset Confidence Ratings**