

6.0 FUTURE DEMAND

6.1 Factors Affecting Demand

There are a number of other factors that influence demand for the wastewater asset within the Taupo District. These are described below and include:

- Growth in the number of houses / connections.
- Increasing standards requiring a higher level of treatment
- Climate change and increase rainfall.

Other factors which influence the demand on the wastewater asset however not described in detail are: usage efficiency, tourism/events, and leisure trends.

Council has a network model for the Taupo catchment and growth projections are modelled to identify where upgrade works might be required to meet demand.

Council has not undertaken modelling of the other smaller network due to the cost and minimal or no growth in these towns. Kinloch is experiencing growth and a network model should be considered in the future.

Network demand can be affected by things such as climate change; this has led Council to change its code of practice for land development in regards to future network provision to include wet weather flow. The large portion of Councils network is appropriately sized, to meet wet weather conditions. Council has smoke testing machine to carry out inflow and infiltration studies and also to identify illegal roof (rain water) connection to sewerage system. High inflow response to rainfall in the eastern truck main has been identified and investigation is underway to identify the source.

6.2 Management

Demand management is:

".....the modification of customer demands for services in order to maximise use of existing assets or to reduce or defer the need for new assets."

A unique feature of demand management in Taupo District is the managing of the fluctuating demand. Taupo has a large percentage of unoccupied dwellings which means that the base demand as compared to dwelling numbers is low. However this demand increases significantly during peak holiday periods, tourist seasons and when there are large events in town.

6.3 Plans Related to Growth

In addition to general council planning documents such as the District Plan there are other planning documents that relate to demand in relation to the wastewater asset. These include: Growth Management Taupo 2050 - The Council's asset management plans need to be aligned with the strategy to ensure more efficient and affordable provision of infrastructure for the identified growth areas.

- Growth Management Taupo 2050 - The Council's asset management plans need to align with the Growth strategy to ensure efficient and affordable provision of infrastructure for the identified growth areas. Taupo Urban Structure Plan

- Taupo District Demographic snapshot
- Commercial & Industrial Structure Plan
- Taupo Town Structure Plan
- Kinloch Structure Plan
- Taupo West Structure Plan
- Mapara Valley Structure Plan
- Southern Structure Plan

6.4 Growth

6.4.1 GROWTH MANAGEMENT STRATEGY

In June 2006 the Council adopted Taupo District 2050 (TD2050), the Growth Management Strategy for the District. The growth management strategy identifies where urban growth is anticipated so that land use and infrastructure planning can be aligned. TD2050 has been incorporated into the District Plan by way of plan changes, particularly Plan Change 21 which identifies the future urban growth areas.

This strategic approach to integrating land use and infrastructure is intended to be supported by subsequent structure planning of the urban growth areas to identify the detailed settlement pattern and infrastructure servicing. Council has prepared structure plans for:

- Kinloch
- Mapara Valley
- South-western Bays Settlements (including Turangi); and
- Commercial and industrial areas within Taupō Township

6.4.2 GROWTH MODEL REVIEW (2017)

A growth model was developed based on the anticipated population increase and associated residential lot increases in TD2050. The growth model is reviewed and updated every three years prior to the review of the asset management plans and development of the long term plan. The review of the growth model is based on census data estimates, feedback from developers and analysis of resource consents. TDC has also developed a document called the Demographic Snapshot that provides long term growth information about our communities.

Decisions on development works consider the short and long-term effects of growth when determining what is required. Council's method for determining growth is outlined in detail in its *Development Contributions (DC) Policy*. This is determined in conjunction Council's decision making processes and planning documents such as the *10-Year Plan*, the *Asset Management Plans*, and others.

Taupō District is home to 30,000+ people who usually live here as well as the 43 percent of the district's ratepayers who live outside the district, many with holiday homes. Residents live mainly in the towns of Taupō (~20,850), Turangi (~2,952) and Mangakino (~741), although about 8,361 also live in surrounding rural areas and lake and river settlements. We are also the holiday destination for hundreds of thousands of visitors each year.

Taupō District has seen continued growth; slower during the Global Financial Crisis and accelerating more recently. Many of the residential developments that were started prior to the GFC have led to a high level of vacant residential sites. This backlog of empty sections has largely been consumed and new developments are occurring.

Demand is affected by a mixture of economic and population growth factors, including:

- Demographics – The 2013 census has seen Taupō's population grow by 2% since 2006. Taupō's population is likely to continue to grow with it peaking at 2035¹. Taupō is

¹ Jackson, N., "Taupō District, Demographic Trends and Projections, National Institute of Demographic and Economic Analysis", June 2014.

continuing to see a significant drop in at the ages between 20-35 years of age as this group leaves the district to pursue education and other opportunities. Taupo is seeing an aging population that has a significant impact on the levels of service required. This occurrence is likely to see the need for smaller houses with less people per dwelling.

- Community expectations – Council sets the communities levels of service has part of its *10-Year Plan* process based on community feedback and the decision making processes.
- Employment – Taupō is driven primarily by its unique characteristics, which is determined generally by tourism (labour intensive with lowly paid jobs), and conversely forestry and the energy generation (fewer opportunities and better paid);
- Land use changes – Residential development in Taupō has continued, however at a more cautious level since the GFC. Taupō continues to be in a good position to react to any upturn in the residential market given the amount of consented residential development and level of infrastructure built over the past 10 years. Of particular note is the Kinloch settlement where land prices have dropped dramatically to meet the market and it is now an affordable location for family homes. This has had the effect of increasing the permanent population by some 50% in the 2013 census data and this trend is expected to continue;
- Commercial and industrial activity – Taupō has also seen the completion of some large scale development projects, including the East Taupo Arterial (ETA), Mighty River Power's new Nga Tamariki Geothermal Power Plant, Te Mihi Geothermal Plant, major Transpower upgrades and Miraka's Milk Processing and UHT Plant at Mokai. Taupō has also seen a slight increase in further commercial and industrial developments, including, Mitre 10 Mega and Ashwood Park industrial development;
- National and regional policy and legislative requirements – National policy, government spending, and the management of tax structures, provides an important direction and can either encourage or place constraints on the ability of areas to develop. Regional policy, through the management of natural resources impacts significantly on the ability of an area to grow. Taupō see's some prohibitive costs on development for certain areas that can be significant particularly when in close proximity to lakes and waterways²;
- External factors – Global economic conditions have a significant impact on the ability of individuals to invest in and drive development, as seen with the GFC.

Council needs to take consideration of this growth when determining demand and levels of service. For a copy of the old and updated Taupo District Council Growth Model 2010 – 2050 refer to the end of this section.

6.4.3 GROWTH MODEL- ESTIMATES FOR LTP 2018-2028

A *Taupō District Growth Model* has been in place since 1 July 2004 and was initially developed with the projected growth identified in TD2050. The *Taupō District Growth Model* and *Growth Model Review* have been updated and included in the current *Development Contributions Policy*, to reflect changes in the economy and the timing of key infrastructure.

The 2017 changes to the growth figures show a significant change in growth in the Taupō region. The projections are based on actual development numbers and realistic estimates of growth outlined in the DC Policy and 2018 Growth Model.

² Variation 5 seeks to protect water quality within near lakeshore areas. Strict guidelines for nitrogen disposal systems are mandatory. Compliance imposes significant costs on any development near lakeshore areas where Council reticulated wastewater networks are not available.

It is dangerous from a financial aspect to over estimate the level of future growth. Where growth is overestimated the requirement for capital expenditure is overstated, essentially elevating costs to the ratepayer with limited ability to collect development contributions.

Under the *DC Policy* the cost of growth related infrastructure is the responsibility of the developer. If the development does not occur as projected but the project still proceeds, the cost of the growth related capital expenditure is transferred onto the rate payer, therefore ultimately increasing rates.

Growth in the number of lots and dwellings in the district has impacts on infrastructure demand. Growth also increases the number of rating units, and therefore has a revenue impact.

6.4.4 NEW LOTS TO BE CREATED

Consideration has been given to the optimistic discussions with developers, actual consent numbers over the past three years, demographic considerations³ and officers' estimates when estimating the potential lot numbers outlined in the *DC Policy* and the *Growth Model*.

The table below outlines those estimates for the next ten years. The areas that are not predicted to have any growth are not shown.

RESIDENTIAL AREA	2018-2028 LTP									
	18/19	19/20	20/21	21/22	22/23	23/24	24/25	25/26	26/27	27/28
Financial Year Starting										
Taupo South	25	55	55	55	55	55	55	55	30	30
Taupo North West	25	35	55	35	30	30	30	30	30	30
Taupo Town	20	20	20	20	20	20	20	20	20	20
Total Lots Created	70	110	130	110	105	105	105	105	80	80
Building Consents Issued	70	110	130	110	105	105	105	105	80	80
Mapara Rd)										
Total Lots Created	2	2	2	2	2	2	2	2	2	2
Building Consents Issued	2	2	2	2	2	2	2	2	2	2
Kinloch Area										
Total Lots Created	10	22	0	12	0	7	0	0	0	0
Building Consents Issued	10	22	0	12	0	7	0	0	0	0
Turangi										
Total Lots Created	2	2	2	2	2	2	2	2	2	2
Building Consents Issued	2	2	2	2	2	2	2	2	2	2
Pukawa/Omori/Kuratau										
Total Lots Created	18	15	18	0	3	0	3	0	3	0
Building Consents Issued	18	15	18	0	3	0	3	0	3	0
Whareroa										
Total Lots Created	0	0	0	15	0	0	0	15	0	0
Building Consents Issued	0	0	0	15	0	0	0	15	0	0

Table: Estimated lots created over the period 2018-28 from the Taupō growth model

The estimated growth of the district; and water, wastewater, and transportation catchments; models are found in the *DC Policy* and *Taupō Growth Model*.

6.4.5 OCCUPANCY PER DWELLING

The long term trend for more than fifty years has been for a decrease in the number of people per dwelling. This is true across all ages. Occupancy among aging populations is especially low, with widowed partners typically living alone.

³ Jackson, N., "Taupō District, Demographic Trends and Projections, National Institute of Demographic and Economic Analysis", June 2014.

Council uses a Household Equivalent Unit (HEU) to convert between population figures and the number of dwellings. Current Census data shows the HEU is approximately 2.6 people per household. Statistics New Zealand projects the average occupancy rate will decrease to 2.1 by 2021 due to an aging population and changes in family structures.

In Taupō District, this figure is complicated by holiday homes which form approximately 30%⁴ of the district's dwellings. This figure is difficult to fully determine due to the difference between out-of-town ratepayers and what is likely to be deemed a holiday home.

However, as a consequence of this high number of possibly empty homes for a significant part of the year Council needs to consider peak usage and populations when determining demand. This peak demand is particularly relevant when considering demand on infrastructure, such as water and wastewater outlined in detail in the *DC Policy* and *Taupō Growth Model*.

6.4.6 ESTIMATE - SCALE - SMOOTH

New lot projections are estimated on a development basis and then aggregated into catchments⁵. The data was then reviewed and amended in an officer discussion process which moderated the estimates with the aim to avoid reactive to the unpredictable upturns and downturns is growth.

6.4.7 RESIDENTIAL GROWTH PREDICTIONS

The total estimated residential yield for the District over the next TYP for the 10 year period (2018-2028) is estimated at 1,181 lots.

6.5 Meeting increased/changing demand

Increased/changing demand can be met by using a number of methods including;

- Other non asset based methods e.g. education for the business community regarding Grease Trap maintenance and safe disposal, water conservation to reduce daily discharge volumes.
- Capital Expenditure – building new assets e.g. upgrading pump station, telemetry control system and pipes to cater for growth.
- Operational/maintenance expenditure – there may be a change to the cost to operate or maintain due to growth or to changes in demand. There may also be increased operations and maintenance due to new assets created e.g. increased maintenance costs of planned maintenance, CCTV, Telemetry, instruments for continuous monitoring, new AMS systems, and new water pipes built to cater for growth.

6.5.1 OTHER NON ASSET BASED SOLUTIONS DEMAND MANAGEMENT TOOLS TO MANAGE CHANGES IN DEMAND

A unique feature of demand management in Taupo District is the managing of the fluctuating demand. Taupo has a large percentage of unoccupied dwellings which means that the base demand as compared to dwelling numbers is low. However this demand increases significantly during peak holiday periods, tourist seasons and when there are large events in town.

TDC currently uses the following techniques to manage demand for water:

- Bylaws and legislation (including the District Plan).
- Water supply restriction using WDMP

Other areas which may be used in future are:

⁴ Statistics NZ data

⁵ Water, Wastewater and Transportation, Taupō Growth Model.

- Education through increased customer consultation.
- User charges.

6.5.2 CAPITAL EXPENDITURE DUE TO CHANGES IN DEMAND

The development of new connections in the district in the coming ten years will require new infrastructure as well as necessitating the upgrading of the treatment plants. The table below outlines the infrastructure required, the cost of this infrastructure and the timing of the provision of components with a Council cost share.

Project	Project Cost	Construction timing
Kinloch wastewater land disposal system	2,200,000	2018
Kinloch wastewater TP balance tank	1,800,000	2019
Kinloch wastewater TP capacity upgrade	2,750,000	2022
Motutere wastewater TP capacity upgrade.	700,000	2021
Taupo wastewater Control gate bridge siphon	650,000	2021
Taupo wastewater Eastern trunk main capacity upgrade (stage 1)	1,200,000	2025
Taupo wastewater Eastern trunk main capacity upgrade (stage 2)	600,000	2027
Taupo wastewater Southern trunk main upgrade (stage 1)	850,000	2020
Taupo wastewater Southern trunk main upgrade (stage 2)	850,000	2022
Taupo wastewater Southern trunk main upgrade (stage 3)	480,000	2025

Table 6-1: Capital Projects Required to Service Taupo District Growth

6.5.3 OPERATIONAL EXPENDITURE DUE TO CHANGES IN DEMAND

Operational budgets are increased in order to operate and maintain new assets. Funding of this expenditure is discussed in the financial section of this asset management plan (section 9) and strategies for operation and maintenance of assets in Section 4.

6.6 Community Expectations

Customers are primarily concerned with expansion of existing network services such as:

- Ability to connect to the current network
- No odour
- Cost of service

Customer opinion is to be gauged more thoroughly as part of increased consultation, as detailed in the improvement plan.

6.7 Tourism

The effect of tourism is to increase the population and perceived growth over short periods. The 2013 census indicated that the Taupo District had a population of 35,850. However, the number of people staying in the Taupo district during the peak tourism season of the Christmas/New Year school holiday period has been estimated to be 1.68 times that number. To account for this the assets are designed on lots rather than permanent population thereby catering for the peak demand.

