

6.0 FUTURE DEMAND

6.1 Factors Affecting Demand

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

- Growth in development and therefore population
- Community expectations

Other factors which influence the demand on the water asset however not described in detail are:

- Created but vacant lots
- Usage Efficiency
- Tourism/Events
- Leisure trends

Council has developed a network model for Taupō. Council has not undertaken modelling of the other smaller network due to the cost and the simplicity of these networks.

The Council uses its service request system as well as contract reports for the three waters contract to determine network utilisation, main breaks and capacity issues. These sites are then further investigated to determine solutions. Network demand can be affected change of use patterns or growth.

The large portion of Councils urban network is appropriately sized to meet FW2 class of fire fighting water flows, to ensure this council undertakes testing of hydrants annually during peak season. If inadequate flow or pressure is recorded in urban network, then either upgrade is planned or if the cost of upgrade is significant/ prohibitive, the Fire services are reported the limitation to manage the emergency.

All treatment plants, reservoirs and pump stations are inspected by council's skilled staff and the maintenance contractors regularly. The pumps, other rotary equipment like air compressors, generators, flow meters and UV system are checked by external specialist contractors by an independent consultant and the condition of these assets are assessed. All of these are listed in Risk Management Section.

6.2 Demand 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 Taupō District is the managing of the fluctuating demand. Taupō 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.

Council is regularly participating in Water NZ benchmarking surveys to assess efficiency across the other councils however we have not yet undertaken comprehensive water loss analysis. The first towns we will look at are Taupo and Turangi in 2018.

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 water asset. These include:

- TDC growth model 2018.
- Growth Management Taupō 2050
- Commercial & Industrial Structure Plan
- Taupō Town Structure Plan
- Kinloch Structure Plan
- Taupō 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 Taupō 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 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*

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

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.

Future Demand

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.

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 considerations 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 due to current capacity levels have been removed from the table.

RESIDENTIAL AREA	2018-2028 LTP									
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
Acacia Bay (including lower Mapara										
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
Hatepe										
Total Lots Created	23	0	0	0	0	0	0	0	0	0
Building Consents Issued	23	0	0	0	0	0	0	0	0	0
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 2015-25 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*.

Future Demand

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.

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%³ 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 were estimated on a development basis and then aggregated into catchments⁴. The data was then reviewed and amended in an officer discussion process which moderated the estimates.

Further out years becomes difficult to project with any accuracy. The impacts are most serious over the first three years of any TYP, or in any year when the projections are substantially greater than in any of the two preceding or following years. For that reason, the scaled data was then smoothed for years 1-4 (2018-2021). The final figures, by catchment, are outlined in the *DC Policy* and *Taupō Growth Model*.

6.4.7 RESIDENTIAL GROWTH PREDICTIONS

The total estimated residential yield for the District over the next TYP for the 10 year period (2018-2021) 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 water conservation.
- Capital Expenditure – building new assets e.g. upgrading pump station, reservoir 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 Taupō District is the managing of the fluctuating demand. Taupō has a large percentage of unoccupied dwellings which means that the base

³ Statistics NZ data

⁴ Water, Wastewater and Transportation, Taupō Growth Model.

Future Demand

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 restrictions using Water Demand Management Plan

Other areas which may be used in future are:

- Education through increased customer consultation.
- User charges.

6.5.2 CAPITAL EXPENDITURE DUE TO CHANGES IN DEMAND

The development of additional water connections in the district in the coming ten years will require new infrastructure as well as necessitating the upgrading of the current network/reservoir to cater for the additional demand and security of supply. 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
Taupo water Taupo WTP capacity upgrade to 30 MLD	1,750,000	2018
Taupo water Tauhara Ridge Falling main to WEL	760,000	2019
Taupo water Brentwood reservoir - land purchase	500,000	2019
Taupo water reticulation of Five Mile Bay	500,000	2020
Taupo water Pohipi reservoir - land purchase	500,000	2021
Taupo water Pohipi reservoir	4,100,000	2023
Taupo water Tauhara Ridge reservoir	1,800,000	2024
Taupo water Tauhara Ridge reservoir - land purchase	500,000	2024
Mapara water upgrade of Blue ridge rising main	200,000	2025
Mapara water pump station capacity increase	15,000	2025

TABLE 1: CAPITAL PROJECTS REQUIRED TO SERVICE TAUPŌ DISTRICT

6.5.3 OPERATIONAL EXPENDITURE DUE TO CHANGES IN DEMAND OR LOS

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
- Adequate flow and pressure
- Cost of service

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

Future Demand

6.7 Tourism

The effect of tourism is to increase the population and perceived growth over short periods. The 2013 census indicated that the Taupō District had a population of 32,418. However, the number of people staying in the Taupō district during the peak tourism season of the Christmas/New Year school holiday period has been estimated to be 1.68 times that number. Hence we design assets for peak demand based on historical data and we base this on lots rather than permanent population.

Future Demand