INTRODUCTION

This Infrastructure Strategy, alongside the Financial Strategy, demonstrates how Tauranga City Council (TCC) plans to manage its assets prudently and sustainably through future periods of growth and other pressures. A 30 year strategy provides long term thinking to significant decisions around investment in infrastructure.

TCC's Infrastructure Strategy focuses on the following:

- Providing the infrastructure required for resilience and growth in a manner that aligns with our Financial Strategy;
- Ensuring we are able to maintain current levels of service through growth and other pressures; and
- Maintaining our assets in a prudent and sustainable manner.

WHAT IS ‘INFRASTRUCTURE’?

Infrastructure, in this strategy, is defined as the ‘hardware’ delivered by TCC which is required to deliver core services. This includes structures, pipes, pumps, treatment plants, reservoirs, roads, footpaths, bridges, drains etc.

TOPOGRAPHY OF TAURANGA

Tauranga City can be considered as two distinctive areas, separated by the Tauranga Harbour. The city is within the Bay of Plenty region and forms the most populated portion of the Western Bay of Plenty subregion.

The southern/western side of the harbour (commonly referred to as Tauranga) is rolling country of volcanic origin. It consists of ridges and peninsulas comprised from volcanic ash that generally run north-south from the hills to the harbour. Between the ridges are deep, low lying gullies which have been eroded into the ash by streams. Urban development in this part of the city generally takes place on the volcanic ridges rather than in the gullies.

On the other side of the harbour lies the Coastal Strip, extending 25km from Mount Maunganui through Omanu, Papamoa, Wairakei and Te Tumu to the Kaituna River at the eastern end.

The Coastal Strip consists of a series of long relic sand dunes extending inland about 1km to 1.5km from the coast. Between the dunes are low lying swales. Inland of the relic dune system lies an old peat swamp which has been drained for agricultural purposes. In general, urban development on the Coastal Strip is confined to the relic dune system, leading to a long ribbon type of development along the coast.

NATURAL HAZARDS

The City is located on land that is geologically sensitive and partly in a coastal environment which is hydrologically dynamic. It is also located within a volcanically active region which may present localised effects.

Natural hazards are defined in the Resource Management Act. Natural hazards identified within the Tauranga City environs include, but are not limited to:

   a) Earthquake induced subsidence and/or flooding, including liquefaction;
   b) Peat deposits and other highly compressible soils;
   c) Erosion and land slippage associated with relic land slips and slip debris or overly steep topography;
   d) Flooding associated with stormwater overland flow paths and/or ponding;
   e) Flooding associated with sea-level rise;
   f) Tsunami or storm-induced flooding and coastal erosion along and within the open and harbour coastlines.

The emphasis in the management of natural hazards is to encourage people to avoid situations in which they, or their property, could be at risk. Subdivision, use and development, and the protection of natural and physical resources contained within an area subject to or likely to be subject to, a natural hazard are subject to the provisions of the Operative City Plan.

TCC addresses climate change in the development of its infrastructure in three ways:

1. Development of stormwater infrastructure within greenfield areas. This is designed using rainfall data which has been adjusted for climate-change as a requirement of our Infrastructure Development Code.

2. Storm Surge and Coastal Erosion. Provision is ensured through planning requirements when infrastructure is considered for installation within these at risk areas.

3. Existing Brownfields areas. TCC has no set policy position on considering the effects of climate change on existing infrastructure within Tauranga. However, during the first 3 years of the 2015-25 Long Term Plan the Council is undertaking some minor research to better understand the risks of climate change, especially in regard to stormwater infrastructure design and implementation.

The effects of sea level rise include (but are not limited to):

   - Inundation of land and infrastructure from storm surge;
INFRASTRUCTURE STRATEGY

- Inundation of land and infrastructure rising sea levels (as a result of sea waters overtopping the existing ground level in low lying locations of the City);
- Rising groundwater table;
- Inundation of infrastructure assets

The first stage of work is a pilot study on the effects of the above (excluding effects of inundation from storm surge which is a matter provided for in the Operative City Plan) to determine the wider effects, specifically in regard to groundwater table rise.

The outcomes of this work will determine whether a wider research program is required in potentially affected areas of the City and what additional planning considerations are necessary to undertake long term planning for infrastructure provision within the City.

RESILIENCE

The fragmented, spread-out nature of the city, and its location in a hydrologically and volcanically active region, presents a number of resilience issues for infrastructure provision. More detail on the specific approaches taken for each infrastructure type is set out within later sections of this strategy.

KEY CITY GROWTH ASSUMPTIONS, OPPORTUNITIES AND UNCERTAINTIES

Tauranga has been one of New Zealand’s fastest growing cities for the last 30 years. It is one of the few cities in New Zealand that is still growing and expected to grow over the next 30 years. This growth puts significant pressure on the need to build and maintain infrastructure.

Based upon information produced by the National Institute of Demographic and Economic Analysis (NIDEA), by 2045 there is predicted to be another 60,000 people living in Tauranga.

This growth is attributed to Tauranga’s location, nationally strategic assets, climate and geography which combine to make the City and its hinterland a desirable area to live, work, learn and play. A slowing of growth is anticipated from around 2039, but the city is expected to reach around 200,000 people by 2065.

As a growing city, a main driver for TCC infrastructure development is ensuring that there is sufficient infrastructure to provide for population growth. TCC also aims to maintain current levels of service and ensure that assets are resilient and well-maintained during this growth period.

GROWTH PROJECTIONS FOR TAURANGA CITY

Predicted Growth (Source: NIDEA projection, Tauranga City, April 2014)
### INFRASTRUCTURE STRATEGY

<table>
<thead>
<tr>
<th></th>
<th>2015</th>
<th>2045</th>
</tr>
</thead>
<tbody>
<tr>
<td>Area</td>
<td>13,000</td>
<td>13,000</td>
</tr>
<tr>
<td>Population</td>
<td>120,800</td>
<td>181,100</td>
</tr>
<tr>
<td>Proportion of people over 65</td>
<td>20%</td>
<td>40%</td>
</tr>
<tr>
<td>Number of dwellings</td>
<td>52,100</td>
<td>88,400</td>
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<tr>
<td>Number of one person Households</td>
<td>12,950</td>
<td>28,197</td>
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</table>

### PLANNING FOR THE FUTURE

In response to growth issues, TCC, Western Bay of Plenty District Council and Bay of Plenty Regional Council, along with Tangata Whenua, developed SmartGrowth in 2004. SmartGrowth is a 50 year, subregional growth strategy based on population, household and employment forecasting out to 2051. The strategy was reviewed in 2013 and is currently being extended to 2065.

The main purpose of SmartGrowth (in a sub-regional context) was to identify the level of long-term growth and respond by guiding planning decisions on areas for: greenfield development, residential intensification, industrial and business growth (including new commercial centres) and space for reserves, schools, community facilities and support infrastructure such as stormwater. SmartGrowth has provided a holistic approach which includes optimum (cost effective and timely) locations for new roads, pipes and parks, and underpins many of the projected infrastructure developments in this Infrastructure Strategy.

An important step that has anchored the sub-regional growth management approach has been to embed SmartGrowth settlement pattern policies into the Bay of Plenty Regional Policy Statement and hence down into the Operative City Plan. This ensures that the infrastructure development proposed is grounded in all relevant planning documents.


### INVESTMENT IN URBAN GROWTH AREAS

Tauranga has a number of new or ‘greenfield’ growth areas. These include Bethlehem, Pyes Pa, Pyes Pa West, Tauriko Business Estate, Ohauti, Welcome Bay, Papamoa and Wairakei. In addition there are housing development opportunities in older, more established, city suburbs.

Building infrastructure in main greenfield growth areas is a continuing balancing act. TCC’s focus is on providing housing and business/employment choice while managing the timing and scale of infrastructure projects to support the development of land.

The principle followed is to plan ahead (by way of identifying and structure planning growth areas) and then to deliver ‘just in time’ infrastructure to these areas in order to minimise TCC’s debt loading.

As much as possible the growth-related costs of infrastructure developments have been transferred to developers through development contributions (more information can be found within the TCC Development Contributions Policy at [http://www.tauranga.govt.nz/documents-reports/councils-lead-documents/development-contributions.aspx](http://www.tauranga.govt.nz/documents-reports/councils-lead-documents/development-contributions.aspx)).

In recent history TCC has reached financial agreements with developers, resulting in them directly funding infrastructure for new greenfield urban growth areas to minimise TCC debt. TCC intends to continue and extend this approach to the funding of growth related infrastructure.

Major growth areas currently under development and still requiring major infrastructure investment include:

- Tauriko Business Estate
- Wairakei
- Pyes Pa West.
TCC does have options to amend the growth-related infrastructure programme but each carries significant financial or community risk. These are detailed in the table below.

<table>
<thead>
<tr>
<th>Option</th>
<th>Risk</th>
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</thead>
<tbody>
<tr>
<td>Stop infrastructure investment in Wairakei and/or Pyes Pa.</td>
<td>Reduced land supply. Central government pressure to meet housing needs. Increased house prices.</td>
</tr>
<tr>
<td>Stop infrastructure investment in Tauriko.</td>
<td>Constraints in industrial land supply which would limit economic development opportunities.</td>
</tr>
</tbody>
</table>

Over the next 30 years SmartGrowth indicates a number of new growth areas within Tauranga:

- Tauriko Business Estate southern expansion
- Keenan Road
- Te Tumu
- Wairoa
These new growth areas will have an impact on infrastructure spending. Some of these projects have been included in the major projects section of the key infrastructure areas in this strategy. Other projects are yet to be identified as more investigation needs to be done in terms of the costs and implications of opening up these corridors.

UNCERTAINTY: HOW WILL TAURANGA CITY COUNCIL REACT TO FUTURE CHANGE?

TCC needs to be responsive to changes outside its direct control. This could include any of the following:

- Legislative, regulatory or funding changes
- Fluctuations in the world’s economy in terms of cycles of growth and recession
- Responding to natural or unexpected events
- Changes in political climate
- Changes in organisational structure e.g. amalgamation
- Changes in technology impacting on infrastructure

While it is impossible to accurately predict the timing, frequency or severity of these events, it is accepted that these will occur multiple times over the timeframe of this infrastructure plan. TCC would form a view on the challenge or change and participate in the right way at the appropriate time.

TCC monitors changes in the economic environment to understand when any deferred investment should be brought back into the programme to match changes in the city once the economy picks up again. TCC also:
INFRASTRUCTURE STRATEGY

- provides for infrastructure solutions that are adaptable (are planned/constructed in stages and giving consideration to unexpected changes)
- allows for financial flexibility to ensure capacity is available and impacts are minimised from external events
- has built, or is building, infrastructure that can cope with potential natural disasters
- undertakes its renewals and maintenance programme based on the principle of ‘looking after what we already have’.

A recent example of adapting to external change was TCC’s response to the 2008-13 economic slowdown and the associated slowing of local population growth. A large amount of growth-related infrastructure that was initially budgeted to occur in the 2006-16, 2009-19 and 2012-22 Long Term Plans was deferred. Examples include:
- The Southern Pipeline (in total c.$100M) was originally projected to be open by 2010 but is now planned to be completed in 2016.
- The Waiari water supply project (also in total c.$100M) has been moved out in successive Long Term Plans from the original planned completion date of 2013 to the current proposed commissioning in 2022. Charging for water use also played a part in reducing the need for the Waiari project in the original planned timeframe (see more on this in the section on Water Supply).

As growth within the city did not fully stop during the 2008-2013 economic slowdown, the effect of deferral of capital projects was that a larger proportion of available capacity within infrastructure systems was utilised. The knock-on effect post-2013 is that there is a need to both invest to keep up with recent growth, but to also deliver projects that were deferred between 2008 and 2013 to restore resilience within infrastructure systems. By way of example:
- Construction of Te Okuroa Drive (in total c.$25M) is triggered within the Operative City Plan by the occupation of 1,000 dwellings in the Wairakei Urban Growth Area. It provides capacity relief for Papamoa Beach Road and a second exit from the southern end of Papamoa in the event of a natural event. As a result of accelerated residential growth, and the introduction of Special Housing Areas, construction is now planned to commence in 2016 rather than 2022.

RENEWALS

TCC owns assets to a total value of $1.09 billion. TCC prepares comprehensive asset management plans to ensure the best maintenance and decision making around these assets.

Information relating to asset age, physical description, condition and performance is contained in the Asset Management Plans developed for each of the asset types considered within this Infrastructure Strategy. These are available on request from TCC.

TCC’s asset management approach comprises day to day operations, monitoring and planning. With the exception of Transportation this is all managed in-house by TCC staff. For Transportation, an external network management consultant is employed to undertake pavement condition monitoring, network use (traffic count) data and develop a draft maintenance and renewal programme for TCC assessment.

Renewing existing infrastructure may be through a) replacing what is there or b) rehabilitation (fixing what is broken). A renewal strategy provides a progressive programme that maintains the overall standards and value of all assets. This programme includes proactive inspections to monitor the condition of assets.

When planning a renewal programme TCC considers the financial and customer risks of having sufficient ongoing funds to deal with demand and increases in maintenance or operational costs, balanced against the cost of renewal. This is called optimised decision making and is recognised as best practice.

Most of the TCC infrastructure types are mature in the sense that the oldest parts of the network have reached the end of their useful lives and are being renewed on an ongoing basis. The exception is the stormwater infrastructure, which generally has a 100 year predicted life and the oldest pipes are only part way through their useful lives.

TCC’s Lifecycle Management approach is to manage assets through the various lifecycle stages or phases from conceptual phase to disposal whilst meeting the required level of service, maximising benefits and minimising whole of life costs. Elements of lifecycle are:

- Requirements Definition
- Asset Planning
- Asset Creation
- Operations and Maintenance
- Asset Monitoring
- Renewal/Rehabilitation
- Disposal
LEVELS OF SERVICE

Levels of service for each activity at TCC are regularly reviewed to ensure they remain up to date and in alignment with community demand, expectation and ability to pay.

The relationship between levels of service and the cost of the service (the price/quality relationship) is agreed through consultation with the community to determine the levels of service they are prepared to pay for.

Decisions to significantly increase or decrease the current levels of service will also go through this process.

The Water Supply and Wastewater activities have generally met their target level of service, and consequently there is little expenditure planned for these activities over the 30 years to address level of service issues. By contrast, Stormwater, Transportation and Parks & Recreation are not currently complying with their target levels of service in some areas, and as a consequence there are significant capital projects planned to address the level of service deficit. More details can be found within later sections of this document.

HOW IS INFRASTRUCTURE FUNDED?

TCC’s current approach to the funding of most growth related infrastructure is that where possible, ‘growth pays for growth’. New city-wide and urban growth area infrastructure projects are funded by loans, and the costs of the loans are funded by development contributions (DCs).

New infrastructure, once in place and being used, brings additional operating costs and depreciation charges which are charged to the general ratepayer.

As new infrastructure is not fully used until a growth area is full, or until the population has grown large enough to fully cover these additional costs, existing ratepayers pick up a portion of these ‘growth costs’.

The following tables set out estimates of overall capital expenditure for the next 30 years. These figures have been adjusted for inflation.
TOTAL CAPITAL EXPENDITURE (CAPEX) BY TYPE 2015-2045

Total Capital Expenditure by Project Type (Inflation Adjusted)
KEY INFRASTRUCTURE AREAS

WATER SUPPLY

Tauranga City uses an average of 36,000 m³ of water per day and in summer this can rise to 54,000 m³ per day.

Tauranga’s water supply comes from the Tautau and Waiorohi Streams and is treated at two processing plants - Oropi and Joyce Road. Both the Oropi and Joyce Road water treatment plants using microfiltration to provide a Grade “Aa” product to customers.

TCC is committed to supplying a resilient and sustainable water supply. TCC focuses on providing a resilient water supply in a number of ways, including protecting against contamination and providing storage reservoirs to increase resilience against network outages.

Water supply consumption influences the volume of wastewater requiring treatment, and as such these two infrastructure/asset types are interconnected. A reduction in wastewater inflow was observed at the treatment plants following universal metering and water conservation education initiatives.

TOPOGRAPHY

The main effect of the topography on the water supply is the need for more pressure zones in steeper parts of the city in the south. This complicates the management of the system and could become more of an issue as development moves further south into higher ground in the future.

An earlier issue of finding suitable reservoir sites at the appropriate height above sea level has now been resolved with sites secured for all of the storage that will be required for the next 30 years and beyond. The raw water intakes are sited in low lying streams to the south of the city. The water is pumped up to treatment facilities positioned on the ridges and then gravitates to service storage sites around the city.

INFORMATION ON COUNCIL ASSETS – WATER SUPPLY

- 13,000,000 m³ of water per year (or about 36,000 m³ per day)
- two treatment plants with a peak load capacity of 67,000 m³ per day
- average total water supply consumption of 245 litres per person per day
- average residential consumption of 175 litres per person per day
- catchment 2,500 ha
- length of pipes 1,210 km
- 21 reservoirs
- hydrants 4,750
- metered water connections 50,000

RESILIENCE

TCC provides Water Supply resilience in the following ways:

- Catchment management and protection to reduce the risk of water supply contamination.
- Providing service storage reservoirs to increase resilience against network outages. 48 hour storage at average flow.
- Network flexibility to manage outages through Interconnected trunk mains.

- Utilises more than one surface water source (stream).
- Upgrading a number of reservoirs for resilience against seismic events.
- Mitigating the risk of contamination through a backflow prevention programme
- Ongoing maintenance of assets which prevents failure.
- Standby generation at the treatment plants.
- Telemetry system to improve reaction time and to prevent issues arising.
- Obtained 35 year consents for water takes

PROTECTION OF PUBLIC HEALTH

TCC undertakes a number of tasks to protect public health. These include:

- providing “Aa” Grade water quality as defined by the MoH Drinking Water Standards for New Zealand (2008) and the Public Health Grading of Community Drinking Water Supplies (2003) guideline.
- using micro-filtration as leading international technology at treatment plants, to produce high quality water
- preventing cross contamination of the supply system through a backflow protection programme
- mitigating the risks of contamination to the water supply through Water Safety Plans.
FUTURE DEMAND AND OPTIONS CONSIDERED

In order to meet demand for drinkable water, TCC has undertaken a number of initiatives to slow down the need for major investment in new infrastructure. A public education program was implemented in 1997 to provide assistance and education to promote the efficient use of water and water meters were installed on all residential and business properties by 2002.

The impact of universal metering and education on water demand resulted in the reduction in peak demand of approximately 30%, with average demand reducing by about 25%. Such water demand management initiatives have enabled TCC to delay investment in a new $65 million water supply facility by 15 years.

However, growth predictions show that by 2022 the capacity of the two existing treatment plants will be exceeded.

A Water Source Strategy Review was undertaken in 2010 in which the following options were considered:

- new water sources including groundwater sources and surface water sources such as the Wairoa, Kaituna and Mangorewa rivers
- expansion of existing treatment plants
- increased demand management methods.

After significant assessment and consideration, the preferred infrastructure development option was selected. This is to build a new water treatment plant in three stages to source water from the Waiari Stream in order to service growth in the east of Tauranga.

Based on this option, a 50 year, staged, Network Development Plan and Waiari Water Treatment Plant Plan was prepared, which included the stream intake, treatment plant and associated facilities and distribution network requirements such as the bulk mains and service reservoirs.

Consents for this project were obtained with construction for stage 1 to start no later than 2019.

The Oropi Water Treatment Plant is also planned to be expanded in around 2040 to provide additional water for growth.

WATER SUPPLY CAPITAL EXPENDITURE:

Water Supply Capital Expenditure by Project Type (Inflation Adjusted)
INFRASTRUCTURE STRATEGY

PROJECT HIGHLIGHTS – WATER SUPPLY

<table>
<thead>
<tr>
<th>Delivery Year</th>
<th>Large Projects</th>
<th>Total Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>2017-21</td>
<td>Waiari Project incl intake, treatment plant, reservoir, trunk mains</td>
<td>$65M</td>
</tr>
<tr>
<td>2019-22</td>
<td>Trunk Main Projects to Support Growth in the Coastal Strip</td>
<td>$22M</td>
</tr>
<tr>
<td>2026-28</td>
<td>Waiari Water Supply Project Stage 2</td>
<td>$22M</td>
</tr>
<tr>
<td>2028-29</td>
<td>New UGA Trunk Mains</td>
<td>$18M</td>
</tr>
<tr>
<td>2030</td>
<td>Central Tauranga Trunk Mains</td>
<td>$9M</td>
</tr>
<tr>
<td>2030-36</td>
<td>Three new reservoirs</td>
<td>$13M</td>
</tr>
<tr>
<td>2038-39</td>
<td>Coastal Strip Trunk Mains</td>
<td>$13M</td>
</tr>
<tr>
<td>2040</td>
<td>Waiari and Oropi WTP Upgrades</td>
<td>$9M</td>
</tr>
<tr>
<td>2042-45</td>
<td>Waiari Trunk Mains</td>
<td>$24M</td>
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</table>

RISKS

There are a number of serious short and long term risks that the City would face if we did not proceed with this new infrastructure. These include:

- inadequate future water supply to service population growth or industrial growth
- inadequate pressure and flow to supply water and fight fires
- public health would not be protected
- inability to provide a safe and resilient water supply.

WHAT WILL THIS MEAN IN 30 YEARS?

We will have:

- Provided new infrastructure for new urban growth areas, including the Waiari Water Supply scheme, reservoirs, bulk mains and upgrades to existing plant.
- Implemented initiatives to further extend the life of water resources and existing infrastructure.
- Improved network resilience and security of supply.

WASTEWATER

Wastewater from the south and western parts of the city is treated at the Chapel St WWTP. The eastern part of the city (the Coastal Strip) is served by the Te Maunga WWTP. Treated effluent from both WWTPs is directed through wetlands and ponds at Te Maunga before being pumped out to sea through a 950m long marine outfall off Papamoa Beach. A new UV facility is under construction to disinfect effluent pumped through the outfall pipeline. Biosolids from the Chapel St WWTP are reused as fertiliser.

As with water supply, TCC is committed to supplying a resilient wastewater network. Building the Southern Pipeline will provide network flexibility for flows between treatment plants, while the large TCC site at Te Maunga will provide for future growth expansion. TCC has also been granted 35 year consent for wastewater discharge.

Topography

In the rolling country on the Tauranga side of the harbour, wastewater reticulation generally consists of gravity wastewater pipes flowing downhill around the land contour to a small number of pump stations located in gullies or alongside the harbour. By contrast, the flat nature of the Coastal Strip means only short lengths of gravity pipe are possible before the pipe reaches maximum depth, resulting in a large number of pump stations. As a result the city has one of the largest fleets of pump stations in the country.

INFORMATION ON COUNCIL ASSETS – WASTEWATER

- There are two advanced treatment plants
- These plants service over 50,000 properties
- All effluent passes through wetlands after advanced treatment
- 9,750,214 m3 was treated in 2014
- 210 litres is the average amount of wastewater produced per person per day
- There are 821 km of public wastewater mains
- There are 149 pumping stations.

RESILIENCE

TCC provides Wastewater resilience in the following ways:

- Southern Pipeline project provides network flexibility for flows between treatment plants.
- Telemetry system to improve reaction time and to and prevention of issues.
- Acquired large site at Te Maunga to provide for future growth expansion
- Ongoing maintenance of assets which prevents failure.
- Standby generation at the treatment plants.
- Acquired 35 year consents for wastewater discharge
FUTURE DEMAND AND OPTIONS CONSIDERED

Facing a growing city, and in recognition that Chapel St WWTP was reaching capacity, investigations began in the early 1990s to look at solutions for future wastewater provision. The Southern Pipeline project was the result of these investigations and was approved by the Council in 2008.

Once up and running, the Southern Pipeline will allow flow to Chapel St to be capped. All future increases in flow resulting from growth will then be diverted to Te Maunga. The total estimated capital cost for the Southern Pipeline is currently $99 million and it is expected to be operational in 2016/17.

The Te Maunga WWTP will be expanded stage by stage over the 30 years to treat the increase in wastewater flow as the city’s population grows at a cost of around $65 million.

The other significant planned project over the 30 years is the replacement of the ocean outfall pipeline when the current outfall reaches capacity. This is currently forecasted to occur in 2026 at an estimated cost of around $46 million, but investigations are proceeding to optimise the performance of the existing outfall and thereby enable the new project to be deferred for a number of years.

TCC holds a range of consents from Bay of Plenty Regional Council associated with the operation of the WWTPs. The most significant is the consent to discharge treated effluent to the ocean (BOPRC No 62878) which has a 35 year term and expires in April 2041.
# INFRASTRUCTURE STRATEGY

## PROJECT HIGHLIGHTS – WASTEWATER

<table>
<thead>
<tr>
<th>Delivery Year</th>
<th>Large Projects</th>
<th>Total Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015-17</td>
<td>Southern Pipeline</td>
<td>$36M</td>
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<tr>
<td></td>
<td>completion</td>
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<td>2015-25</td>
<td>Te Maunga Stage 4</td>
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<td>upgrade</td>
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<tr>
<td>2025-35</td>
<td>Te Maunga Stage 5</td>
<td>$3M</td>
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<td></td>
<td>upgrade</td>
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<tr>
<td>2028</td>
<td>Te Maunga ocean outfall</td>
<td>$46M</td>
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<td></td>
<td>and diffuser</td>
<td></td>
</tr>
<tr>
<td>2035-45</td>
<td>Te Maunga Stage 6</td>
<td>$12M</td>
</tr>
<tr>
<td></td>
<td>upgrade</td>
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</tbody>
</table>

## RISKS

There are a number of serious short and long term risks that TCC would face if we did not proceed down this infrastructure development path.

These include:

- economic impact on the city as a whole and its ability to grow
- businesses and industry would not be supported
- consent compliance unable to be maintained – this would lead to abatement notices, fines, and ‘reputation damage’
- increased blockages
- overflows into the environment.

## WHAT WILL THIS MEAN IN 30 YEARS?

We will have:

- Provided new infrastructure of provide for new urban growth areas; including the southern pipeline, a new ocean outfall pipeline and Te Maunga WWTP staged expansion.

## STORMWATER

Stormwater is the water that runs off surfaces such as houses, roads, driveways, footpaths during rain events.

In the city it runs down drains into stormwater pipes or channels and is carried to the sea.

The main flooding and stormwater issues have tended to occur within older, established areas of the city constructed prior to 1990 where a low level of service has been provided. Also, changing weather patterns and the effects of climate change are leading to longer and heavier bursts of rain that can overwhelm these systems and further increase the risk of flooding.

TCC has three 35 year consents to authorise existing stormwater structures and discharges from across the city. TCC has also developed city-wide catchment management plans that outline the management of likely stormwater and stormwater quality issues. These have been approved by the Regional Council and provide a programme of renewals and maintenance of existing stormwater infrastructure.

## TOPOGRAPHY

A number of legacy flooding issues have arisen where inappropriate residential development occurred in low lying parts of the city prior to 1989. This particularly applies to houses that were built in the bottom of gullies in Tauranga, to houses built in the base of swales between dunes on the Coastal Strip, or to buildings on old swampy harbourside sites that have been filled in Mount Maunganui (residential and industrial) and Tauranga (mainly industrial).

## INFORMATION ON COUNCIL ASSETS – STORMWATER

- 53,230 properties are serviced
- 512km of stormwater mains
- 2 stormwater pump stations
- 43ha of ponds and wetlands
- 122 stormwater ponds
- 71km of identified overland flowpaths in public and private ownership.

## FUTURE DEMAND AND OPTIONS CONSIDERED

The Annual Return Interval (ARI) is the likelihood of a flood event occurring. In brownfield areas, the current infrastructure (unless recently upgraded) only provides for, at best, a 2 year or 5 year ARI. This means that those parts of the city suffer from frequent flooding, resulting in safety risks and damage to buildings.

Greenfield areas have a much higher level of service, as they are required to provide for a 50 year ARI in order for these new growth areas to open up.

TCC focuses its capital expenditure in two main areas.

The first is in existing urban areas where flooding has recently been experienced, also known as brownfield areas. In these areas, TCC has established a level of service to reduce the risk of safety to persons where the depth and
velocity are significant enough to warrant intervention. This will be achieved by improving the existing stormwater system through building new infrastructure, implementing other risk reduction measures and by potentially purchasing land. These areas are identified through risk-based assessment and a prioritised process. The brownfield areas, and therefore areas which are identified for intervention, are outlined in the Level of Service Intervention Area Map. It is recognised that the level of service only applies where the risk is from stormwater depth and flow, however it does not apply where the risk is generated from harbour or river inundation. Where no safety risk to persons is present, no upgrades will be undertaken and the existing level of service will remain.

The second focus area for TCC when considering investment in stormwater infrastructure is to ensure future flood risk is minimised when developing new urban growth areas, or greenfield areas. When developing these areas, the land is re-contoured to direct flows away from building areas, pond construction is undertaken to detain stormwater and overland flow paths are created to cater for a 50 year ARI. Implementation is executed through the structure plan processes.

A clear example of provision of investment in greenfield areas is the Wairakei Stream to Kaituna Overflow project, which has been identified as being necessary for opening up of Te Tumu growth area. Other infrastructure for this new urban growth area is yet to be identified and will occur through the Council future structure planning for this area.

TCC is ensuring resilience against a changing climate in three ways:

1. Development of stormwater infrastructure within greenfield areas. This is designed using rainfall data which has been adjusted for climate-change;

2. Provision of planning requirements when infrastructure is considered for installation within at risk areas for storm surge and coastal erosion (as per the City Plan); and

3. TCC has no set policy position on considering the effects of climate change on existing brownfield areas within Tauranga. However, during the first 3 years of the Long Term Plan, TCC is undertaking minor research to better understand the risks of climate change, especially in regard to stormwater infrastructure design and implementation.

There is some work being done around predicted sea level rise and the effects this will have on TCC stormwater infrastructure. Storm surges are already provided for in the City Plan, so this is excluded from the work.

---

**Stormwater Capital Expenditure by Project Type (Inflation Adjusted)**

- **Growth**
- **Level of Service**
- **Renewal**

<table>
<thead>
<tr>
<th>Year</th>
<th>Growth</th>
<th>Level of Service</th>
<th>Renewal</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td></td>
<td></td>
<td></td>
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<tr>
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<td>2018</td>
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<td>2019</td>
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<td>2020</td>
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<td>2044</td>
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</tbody>
</table>
PROJECT HIGHLIGHTS – STORMWATER

Large projects include:

Brownfield:
Over the first three years TCC will invest $23.5M in the following safety priority projects:
- Initial Priority – Matua Modelled Catchment
- Second Priority – Mount North Properties
- Third Priority – Waimapu Industrial.

Following the completion of the above works, which may take longer than the initial 3 years, TCC will focus on maintaining the current network, undertaking minor improvements and monitoring and managing stormwater quality. $6M per annum is provided in years 4 – 10 to deliver these services.

Over the first ten years, $2M per annum will be set aside in a stormwater reactive fund for future use. The stormwater reactive fund will be utilised to provide for relief support to flood affected landowners following intense rainfall events resulting in damage to buildings and property. The stormwater reactive fund is 100% rate funded.

Urban Growth/Greenfield:

<table>
<thead>
<tr>
<th>Delivery Year</th>
<th>Large Projects</th>
<th>Total Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>2022</td>
<td>Wairakei Stream to Kaituna Overflow</td>
<td>$7.2M</td>
</tr>
<tr>
<td>2034</td>
<td>New Reticulation for Future Urban Growth Area</td>
<td>$6.7M</td>
</tr>
<tr>
<td>2039</td>
<td>New Reticulation Future Urban Growth Area</td>
<td>$11M</td>
</tr>
<tr>
<td>2044</td>
<td>New Reticulation Future Urban Growth Area</td>
<td>$12M</td>
</tr>
</tbody>
</table>

Please note these projects are debt funded, but costs are recovered through development contributions.

RISKS

There are a number of risks that the City will face if stormwater improvement works do not proceed. These include:
- continued and increased risk to peoples safety within specific overland flowpaths that are in proximity to private buildings
- increased pollutants entering waterways.

The stormwater upgrade programme to deliver the level of service has a moderate level of uncertainty due to the need for further investigations into the extent of the necessary upgrades. The implications of this are relatively low, however, because of the limited extent of safety risks present on private property.

WHAT WILL THIS MEAN IN 30 YEARS?

We will have:
- Reduced the current flood safety risks to persons on private property in the City
- Provided a high level of service in greenfield areas, catering for a 50 year ARI.

TRANSPORTATION

Tauranga has a high quality transport network. Aside from investment in order to improve congested intersections over the last 20 years, there has been a significant focus on making the road network attractive and ensuring it is well cared for. TCC is committed to ensuring that travel around the city is safe, easy and pleasant.

A nationally high proportion of heavy commercial vehicles using the Tauranga transport network relate to port and industrial activity.

Some key routes on the network include:
- Cameron Road – 26,000 vehicles per day including 800 heavy commercial vehicles
- Girven Road – 20,500 vehicles per day including 800 heavy commercial vehicles
- Waihi Road – 18,500 vehicles per day including 550 heavy commercial vehicles
- Totara Street - 17,900 vehicles per day including 1,800 heavy commercial vehicles
- Maunganui Road - 15,500 vehicles per day including 775 heavy commercial vehicles

As a growing city, Tauranga has a growing road network (8-10km per year). Whilst this creates more infrastructure to maintain, it also results in a relatively young network where some maintenance needs – particularly related to pavements – have not yet arisen.

As a compact urban network, there are high turning movements and maneuvers relative to more rural authorities, and more control measures, kerb and channel, street furniture and road markings to maintain.

Tauranga’s strategic transport network has been developed through a joint TCC and New Zealand Transport Authority (NZTA) transport investment programme since 1988. This investment has supported the efficient movement of freight, in turn supporting the economic growth of the city and in particular the Port of Tauranga and associated industries.

TCC continues to work closely with NZTA and Bay of Plenty Regional Council to ensure co-ordination and
delivery of a shared approach to management and investment in the transport network.

The jointly developed Tauranga Transport Strategy 2012-2042 identified the benefits of delivering an integrated, safe, efficient and effective transport network as:

- A thriving and sustainable regional and national economy
- More efficient use of the Tauranga transport network
- Improved road safety across the Tauranga transport network
- People get healthier
- People enjoy easy and cost effective access to key local services, independent of travel mode.

The Tauranga Transport Strategy follows four sequential stages to achieve its desired outcomes.

1. Integration of land-use and transport planning.
2. Managing demand – improvement to choices available and encouragement to use alternatives.
3. Optimisation of the network – managing use of the existing infrastructure; encouraging efficiency and improving safety.
4. Delaying significant infrastructure investment until it is needed.


PUBLIC HEALTH AND ENVIRONMENT

The Tauranga Transport Strategy identifies one of the key benefits of delivering an integrated, safe, efficient and effective transport network as, “people get healthier”.

The provision of a balanced and optimised transport network where active modes (walking, jogging, cycling and public transport) are enabled and promoted is the key to achieving personal and community health outcomes as well as reduced emissions and environmental benefits.

There is an ongoing focus on reducing the number and severity of road crashes, and annual gains have been made since the early 2000s.

TOPOGRAPHY

The disparate nature of the city creates a number of network constraints and limits availability of alternative routes. These constraints have led to choke points at water crossings, rail crossings and State Highway intersections. These have to be shared by everyone and there is little ability to differentiate between long distance freight trips and local journeys at these locations.

RESILIENCE

A number of high risk locations on the NZTA and TCC networks have been identified using the NZTA risk identification and scoring process. A strategic assessment was also undertaken to examine the effects of network closures on key state highway routes. The vulnerability of the rail network also presents a risk to the road network. Closures of the rail network could see freight transferred to road network, significantly increasing HCV volumes. Particular risks to the rail network which have been identified in the operational risk assessment include the Kaimai Rail tunnel, and the Matapihi Rail Bridge.

Resilience projects currently planned include seismic retrofit of bridges and coastal protection projects. Tsunami evacuation routes are planned for existing areas with key areas of high ground identified. Tsunami evacuation will be a key aspect of planning for the future growth area of Te Tumu.

INFORMATION ON COUNCIL ASSETS – TRANSPORTATION

- Around 515 million vehicle kilometres are travelled on the Tauranga transport network annually - this excludes additional trips on State Highways
- 536km of roads
- 12,106 streetlights
- 12 bridges
- 705km of footpaths
- 35 sets of traffic signals
- 10,080 stormwater sumps
- 115.4ha of mown grass
- 143 bus shelters
- 160 pay and display machines
- 222 speed humps
- 74 pedestrian refuges
- 90 roundabouts.

FUTURE DEMAND AND OPTIONS CONSIDERED

The approach currently being taken is to monitor performance and use of the network and maintain, optimise or upgrade when and where it becomes necessary at lowest cost. This investment is mainly a result of the growth identified within SmartGrowth.
Significant future demand for traffic and transport use is based on growth projections and modelling contained within the SmartGrowth strategy. Previous investment has made private car travel both attractive and easy. In turn, this has resulted in low uptake of walking, cycling and public transport and allowed the distance between key local destinations to grow. TCC will address this by enabling alternative modes of travel, and making the best use of our existing network before making major infrastructure investments. Even so, based on the modelled impacts of SmartGrowth, there is a need to continue investment in the transport network at the appropriate time. This is to enable the city to grow and maintain the efficiency of freight movements.

Continuing the partnership with central government is a key factor in determining where major infrastructure investment is needed. NZTA projects (not included within this document) include:

- completion of the Tauranga Eastern Link
- upgrade of the Maunganui / Girven intersection
- upgrade of the Te Maunga SH2 / SH29 intersection
- Hairini Link
- The Tauranga Northern Link
- The Tauriko Improvement.

From a maintenance and renewal perspective, the focus is on delivering the best outcomes at the lowest cost. An updated pavement management strategy is being used to ensure appropriate maintenance and renewal is undertaken on a ‘fit for purpose’ basis. This means chip seal will be used in place of asphalt where appropriate in order to make maintenance of the network more affordable.

This activity also manages parking within the city. The demand for city centre parking has steadily increased over the last 3 years. In many parts of the network, demand now exceeds supply. There are a number of factors contributing to this, including an increase in the number of businesses seeking leased parking from the public supply, an increase in on-street demand – particularly at peak times in the middle of the day – and an increase in the use of the parking buildings and off-street parking.

Over the next few years a number of developments in the City Centre will put further pressure on the demand. These include:

- The redevelopment of the Tauranga Waterfront
- The development of the Tertiary precinct on Durham St.

For these reasons Council is bringing forward investment in new parking stock in the Long Term Plan.

LEVELS OF SERVICE

A significant planned project over the 30 years is the four-laning of Turret Road / 15th Avenue. The timing of this project is set by data from the Tauranga Transportation Model which forecasts that this corridor will perform below agreed performance standards (LOS E at peaks) at or around 2025. This project is currently estimated at around $60 million. It is identified as a Level of Service project but much of the traffic growth which will create congestion will be as a result of population growth across the city. The project will be delivered on a ‘just in time’ basis potentially some years after 2025.

Transportation level of service projects are allowed for throughout the 30 year period. This is not due to proposed increases in levels of service but due to the nature of the transportation activity. For example, growth funded transportation projects that are citywide (i.e. not providing access to the network within individual growth areas) typically expand and extend critical parts of the network to allow greater numbers of residents to access existing parts of the city. This benefits new households and businesses across the city but in the short term also reduces congestion on critical parts of the network and benefits existing households and businesses – making them part level of service and part growth projects. Similarly, safety issues can arise on the transport network at any time and need to be addressed through LoS projects as they do not relate to growth or to replacing or maintaining existing assets. Managing demand and optimising the network also have level of service benefits similar to the citywide growth projects.
TRANSPORTATION CAPITAL EXPENDITURE (EXCLUDES NZTA FUNDED STATE HIGHWAY PROJECTS):

<table>
<thead>
<tr>
<th>Delivery Year</th>
<th>Large Projects</th>
<th>Total Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016-18</td>
<td>New CBD parking building</td>
<td>$24M</td>
</tr>
<tr>
<td>2016-23</td>
<td>Te Okuroa Drive</td>
<td>$26M</td>
</tr>
<tr>
<td>2019-20</td>
<td>Eastern Corridor</td>
<td>$8M</td>
</tr>
<tr>
<td>2019-28</td>
<td>LED streetlighting upgrade</td>
<td>$8M</td>
</tr>
<tr>
<td>2021-22</td>
<td>Elizabeth St Carpark extension</td>
<td>$5M</td>
</tr>
<tr>
<td>2023</td>
<td>Belk Road upgrade (plus SH29 intersection)</td>
<td>$9M</td>
</tr>
<tr>
<td>2024-29</td>
<td>Te Tumu Road Network (vested)</td>
<td>$12M</td>
</tr>
<tr>
<td>2025</td>
<td>Papamoa East Interchange</td>
<td>$25M</td>
</tr>
<tr>
<td>2026</td>
<td>15th Ave/Turret Road four laning</td>
<td>$60M</td>
</tr>
<tr>
<td>2028</td>
<td>Girven Road upgrade</td>
<td>$7M</td>
</tr>
<tr>
<td>2029</td>
<td>Poike/SH29 junction</td>
<td>$26M</td>
</tr>
<tr>
<td>2035</td>
<td>Oropi/SH29 Junction and 4-lane Oropi Road</td>
<td>$60M</td>
</tr>
<tr>
<td>2032-37</td>
<td>Southern Arterial (Welcome Bay to Tauriko)</td>
<td>$45M</td>
</tr>
<tr>
<td>2044</td>
<td>Kaituna Link Road</td>
<td>$22M</td>
</tr>
<tr>
<td>2045</td>
<td>Rangiuru Interchange</td>
<td>$22M</td>
</tr>
</tbody>
</table>
**RISKS**

There are a number of risks that the City would face if we did not proceed with the Tauranga Transport Strategy and other planned roading network activities. These include:

- Increase in congestion, impacting the city economically, its ability to grow and undermining efficient access to the Port of Tauranga and other commercial centres
- Businesses and industry would not be supported
- Increase in road crashes
- Lack of uptake in alternative modes of transport
- Vulnerability at high risk locations.

**WHAT WILL THIS MEAN IN 30 YEARS?**

We will have:

- Provided new infrastructure to provide for new urban growth areas
- Provided an efficient network which promotes economic growth and productivity
- Provided an effective network which supports transport integration, environmental sustainability, access and mobility
- Provided a safe network for road users.

**PARKS AND RECREATION**

The parks and recreation activity provides an attractive, engaging, safe and accessible environment for our communities. The benefits delivered are:

- Community, social and cultural spaces
- Enhancement of natural areas and landscapes
- Desirable amenities
- Economic growth through contributing to the 'lifestyle' that attracts people and adds value to properties.

The parks and recreation ‘assets’ include parks, playgrounds, facilities and sportsfields across the city. Trees and gardens in the streets, the margins of streams and rivers, cycle ways and walkways, beaches, harbour areas and historic sites are also part of our ‘parks and recreation’ network.

TCC views the provision of parks and recreation in two ways:

- Land that is ‘reserved’ due to the topography and cultural history of the City; and
- Land that has been secured by the Council to respond to growth.

Levels of service for new urban growth areas have determined TCC’s requirements for land purchase over the past 15 years. The focus has mainly been on the purchase of neighbourhood reserves along with securing of over 100 hectares of land set aside for future sportsfield development. These levels of service have been driven by population growth.

**INFORMATION ON COUNCIL ASSETS – PARKS AND RECREATION**

- 1,450 hectares of public open space
- 19 parks for organised sports use
- 18.5km of coastal reserve (224 hectares)
- 20,477 street trees
- 595 reserve gardens
- 1770 street gardens
- 78 playgrounds
- 194 hectares of native plantings
- 60km of walkways
- More than 1 million trips around Mauao base track each year.

**FUTURE DEMAND AND OPTIONS CONSIDERED**

Levels of service for parks and recreation were reviewed in 2009 and 2012.

The Open Space Level of Service Policy and the Active Reserves Levels of Service Policy provide clear direction on TCC’s approach to the provision and management of the network. The levels of service are primarily driven by quality, accessibility and function of open spaces, and in the case of active reserves, the demand for sportsfields by sporting codes. The implementation of these policies signalled a shift away from a pure population based level of service (i.e. more people = more parks).

Many councils traditionally use a level of service driven by population growth to ensure adequate provision of parks and recreation opportunities. While this reflects that a growing city should continue to provide amenity...
and recreational opportunities, it is not necessarily the most efficient and effective way of providing an open space network that best meets the needs of the growing community.

For example, active reserves where the primary users are sports codes such as rugby and football, TCC and Sport Bay of Plenty have undertaken work to determine the actual and projected demand from sports codes. This information is reviewed every three years so that it is kept up to date and allows for consideration of changing trends which have major influences on the provision of parks and recreation opportunities.

Understanding demand is the best way to determine whether there are enough sportsfields in the city. Demand and supply is measured by the required and available field hours per week. The supply of sportsfields can be achieved in two ways; maximising use of existing sportsfields through projects such as floodlighting, and development of new sportsfields.

New growth areas will continue to provide new parks for the local community and an ongoing programme of maintenance and development will ensure that parks within existing urban areas continue to be quality, accessible, safe and engaging for our community.

The Open Space Level of Service Policy and the Active Reserves Levels of Service Policy have significantly reduced future planning costs to TCC for parks and recreation facilities without compromising the lifestyle expectations that a growing city has.

Future planning now focuses on:

- maximising capacity and efficiencies of use of the existing open space network
- providing an accessible open space network

There is an option to further reduce costs related to development and maintenance of existing and future reserves. This option is still available to TCC if costs for development and maintenance are considered too great. The trade-off, however, would be a reduction in the quality of ‘lifestyle’ experience that Tauranga is highly regarded for, and potentially make the city less attractive as a place to live and do business. This would also create an inconsistent approach with TCC’s level of service for the open spaces and active reserve network.

![Parks & Recreation Capital Expenditure by Project Type (Inflation Adjusted)](chart)
PROJECT HIGHLIGHTS – PARKS & RECREATION

<table>
<thead>
<tr>
<th>Delivery Year</th>
<th>Large Projects</th>
<th>Total Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016-2024</td>
<td>Parau Farms Active Reserve</td>
<td>$14M</td>
</tr>
<tr>
<td>2019</td>
<td>Te Tumu Reserve land purchase</td>
<td>$4.5M</td>
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<tr>
<td>2029</td>
<td>Te Tumu Active reserve development</td>
<td>$10M</td>
</tr>
<tr>
<td>2044</td>
<td>Wairakei Community Centre</td>
<td>$4M</td>
</tr>
</tbody>
</table>

WHAT ELSE ARE WE PLANNING TO DO:

- Continue development of active reserves including getting more from existing sites through improving sports field lighting and irrigation.
- New neighbourhood reserves will join the network of reserves in growth areas, and TCC will continue with improvements to existing neighbourhood & passive reserves, including playgrounds and boardwalks over the planning period to provide for a growing city.
- Continue development of TCC’s premier and sub-regional parks: Memorial Park, McLaren Falls Park, TECT All-terrain Park (owned jointly with Western Bay of Plenty District Council).

RISKS

The cumulative effect of not delivering high quality parks and recreation facilities will impact on the quality of life and enjoyment of the city that is experienced by Tauranga residents and visitors.

The parks and recreation network is a highly visible and valued activity of TCC. Reductions in levels of service for this activity are often not received well by Tauranga residents.

WHAT WILL THIS MEAN IN 30 YEARS?

We will have:

- Maintained a network of high quality parks and recreation opportunities that is accessible and provides a variety of opportunities to our growing community
- Ensured premier and subregional parks are used, recognised, and promoted at a local, regional, national and international level
- Created a history of proactively supporting recreational and sporting opportunities through the provision of parks and recreation infrastructure such as sportsfields and through an excellent understanding of community needs in this area.