

Zero Based Review Covering Report



[THE CITY OF CALGARY, WATER RESOURCES]



Version 1 9 September 2016

The City of Calgary, Water Resources

Zero Based Review

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Contents Page

1	Title page
2	Contents page
3	SECTION 1 – SCOTTISH WATER INTRODUCTION
4	SECTION 2 – APPROACH TO WATER RESOURCES ZERO BASED REVIEW
5–7	SECTION 3 – STRENGTHS OF WATER RESOURCES
8-12	SECTION 4 – IN-DEPTH ANALYSIS OF WATER RESOURCES
13–20	SECTION 5 – CUSTOMER ENGAGEMENT STRATEGY
21-31	SECTION 6 – LEVELS OF SERVICE FRAMEWORK
32-44	SECTION 7 – INVESTMENT PORTFOLIO MANAGEMENT
45-58	SECTION 8 – CAPITAL DELIVERY MODELS
59-60	SECTION 9 – SCALABILITY
61-67	SECTION 10 – CHANGE MANAGEMENT STRATEGY
68-77	SECTION 11 – IMPLEMENTATION PLANNING
78-80	SECTION 12 – CAPABILITY GAPS
81-84	SECTION 13 – APPENDICES
81-82	Appendix 1 - Water Utility Existing Performance Measures
83-84	Appendix 2 – Assessment of Portfolio Development

SECTION 1 – SCOTTISH WATER INTRODUCTION

SCOTTISH WATER & SCOTTISH WATER INTERNATIONAL



Scottish Water - Introduction

In 2001, the Scottish Government decided to create a single government-owned entity to manage the water and wastewater networks for the whole of Scotland, named Scottish Water (SW). SW is a unique public organisation, based in Scotland, and owned by the people of Scotland.

SW provides clean, safe drinking water and disposes of waste water from homes and businesses across Scotland. SW operates and maintains over 48,000 kilometres of water pipes, 51,500 kilometres of sewer pipes, 1,826 waste water treatment works (including 1,206 septic tanks) and 249 water treatment works plus pumping stations, sludge treatment centres and reservoirs. SW has around 5 million customers in 2.5 million households.

This creation of SW focused on a number of key ambitions, to deliver efficiencies, both in terms of operational and capital costs, and an improvement in its effectiveness delivery, in particular the raising of customer service standards.

During the first four years of SW's existence it delivered a **40%** efficiency reduction in operating cost improvements in the delivery of its service, whilst at the same time increasing the experience that customers received from SW. SW improved its overall customer service satisfaction across all areas of its service, with customer service scores more than doubling since 2002 to 2014, meaning customers receive a better service now than ever before.

Scottish Water International - Introduction

Scottish Water International (SWI) is a wholly owned subsidiary of Scottish Water, Scotland's publicly-owned water and sewerage authority, and uses SW's resources and expertise to deliver services for its international clients. SWI has access to the breadth of experience from the 3,500 employees of SW. All employees engaged by SWI for its clients are employed by SW and seconded to SWI.

A project team from SWI has been the consultant working on the Water Resources Zero Based Review in conjunction with The City of Calgary (The City).

SECTION 2 – APPROACH TO WATER RESOURCES ZERO BASED REVIEW

WATER RESOURCES: ZERO BASED REVIEW



Background to Water Resources Zero Based Review

The Zero Based Review (ZBR) process is a systematic evaluation process with the objective of assessing the service efficiency and effectiveness of Water Resources. The outcome being the provision of options and recommendations to identify:

- ✓ changes to the service level or delivery that would reduce costs or mitigate future costs increases (efficiency improvements), and
- ✓ changes to the service level or delivery that would achieve greater results within currently available resources (effectiveness improvements)

This report summarises the approach taken during the phases of the ZBR on Water Services, and the recommendations arising:

- ✓ **High Level Analysis** – this phase was the identification of the services and sub-services that are efficient and effective, and to identify those with the greatest potential for efficiency and effectiveness improvements for in-depth analysis in the following phase
- ✓ **In-Depth Analysis** - the results of the in-depth analysis undertaken on the services and sub-services of Water Resources and an outline of the key recommendations, including the efficiency and effectiveness benefits associated with the implementation of these recommendations

SECTION 3 – STRENGTHS OF WATER RESOURCES

STRENGTHS OF WATER RESOURCES



STRENGTHS OF WATER RESOURCES

Although the ZBR process is focused on the improvements that can be made in enhancing the efficiency and effectiveness of the services provided, it is worth noting the strengths that have been observed by the SWI consultants during the ZBR process, as outlined below.

Firstly, the strengths below which were observed during the Water Services ZBR were also observed and apply equally to Water Resources:



**Knowledgeable,
committed and proud
work force**



**Modern and efficient
asset base**



**Service culture,
passionate about
their assets**

However, there are a number of specific strengths within Water Resources that provide a firm foundation from any change arising from the service review, as highlighted over.

Wastewater Levels of Service

- ✓ The City has developed Corporate Standards for the Levels of Service Framework (LOSF) and Integrated Infrastructure Risk Management Framework (IIRM). These documents provide Water Resources with an overview of the road map of the LOSF
- ✓ Corporate guidance documents are available to provide guidance for a consistent, corporate wide approach to developing and implementing the LOS and IIRM framework. The strategies within these documents are aligned to Deming's Cycle of Continuous Improvement i.e. Plan - Do - Check - Act (- Review)
- ✓ These corporate frameworks provide an excellent basis for Water Resources to develop specific levels of service for wastewater and a customer engagement strategy
- ✓ A Gap Analysis Report for LOSF and IIRMF for Water Resources and Water Services has been produced by Associated Engineering on behalf of Corporate Asset Management. This (draft) report identifies areas for improvement and recommendations for LOSF and IIRMF
- ✓ There is evidence of initiatives within Corporate Asset Management to develop the risk management and levels of service framework documents and that "Champions" have been nominated throughout The City's business units including the Water Utility
- ✓ It was evident from the SWI visit to Water Resources in November 2015 that staff are enthusiastic and passionate in their desire to deliver the best standard of service possible and take great pride in what they do

Capital Delivery

- ✓ Produces a strong 4 year Action Plan for Council review and approval which is supported by a more detailed rolling 10 year investment plan
- ✓ Has implemented the principles and governance requirements of the Corporate Project Management Framework (CPMF) as set by The City
- ✓ Employs the resource and skills of the Central Procurement and Supply team within The City which delivers benefits in terms of standardised approach, skills based and single point of contact for all City suppliers
- ✓ Is conscious of its impact on the local economy and supply chain and works towards distributing work in an effective manner
- ✓ Is forward thinking and has initiated work plans and internal business projects to deliver the controls and reporting capability associated with an investment portfolio - "Delivery of Infrastructure Investments"
- ✓ Has produced impressive results in the development of Business Object reporting which will provide invaluable information to the management team and project managers

Data and Information

- ✓ The Water Resources business unit currently follows best practice in terms of Asset Management Policy, Strategy and Processes. The Asset Management approach is focused on delivering levels of service to the citizens of Calgary in a cost effective way.
- ✓ The SWI consultants were particularly impressed with the number, range and ambition of projects and initiatives that are currently being undertaken by staff across Water Resources in conjunction with the wider UEP Function, to improve data and information management.
- ✓ In all cases it was found that staff collaborate and work well across business units, building from the bottom-up to meet business demands.
- ✓ Project charters exist for these initiatives including success criteria and dependencies with other projects and initiatives.
- ✓ The Water Management Team has identified the top strategic risks to the business unit from the lack of data integration and poor information management. Much of the change activity being undertaken by Water Resources teams is required to reduce these risks.

Summary

It is these strengths that provide a solid foundation for continuous improvement, including the delivery of the ZBR recommendations that are driven through this process for implementation.

The SWI consultants' view of Water Resources, gained throughout the ZBR process, is that in terms of maturity, Water Resources are more mature than SW was in 2002 but the regulatory environment in the United Kingdom (UK) meant SW had to mature quickly in terms of levels of service and capital efficiency. Whilst this is a journey that Water Resources is ready for, there is still a long way to go but the business is well prepared and has skilled resource to meet the future challenges.

SECTION 4 – IN-DEPTH ANALYSIS

OVERVIEW OF IN-DEPTH ANALYSIS



IN-DEPTH ANALYSIS

Recommendations from the High-Level Analysis

The conclusion of the high-level analysis summarised that the opportunities to be assessed in the in-depth analysis phase by SWI were:

1. Wastewater levels of service
2. Capital delivery efficiency
3. Data management and analytics

In order to ensure that the in-depth analysis was comprehensive and robust, the SWI consultants focused on services and sub-services where there was the biggest opportunity in that particular workstream. This would ensure that opportunities developed would be based on evidence and tested in a number of ways with Water Resources.

The concept being that this would also provide the basis for the opportunities to be scaled (the learning and recommendations transferred to other areas of the business) across other services within Water Resources where appropriate. The potential associated with the final recommendation's scalability is covered in Section 9.

In-Depth Analysis: Findings

Highlighted in this section is a summary of the findings from the in-depth analysis undertaken by the SWI consultants:

Levels of Service for Wastewater - In-Depth Analysis

- ✓ There is agreement with the high-level analysis undertaken that the definition of levels of service is not consistent across Water Resources. This was noted during the various discussions with the Water Resources managers, leaders and employees. It was noted that when discussing levels of service that in the main the focus was on the asset rather than the service provided or the customer outcome. This was reinforced at the post visit update meeting between SWI and Water Resources on 12/09/2015 with Water Resources stressing the need to focus on ensuring the basic definition of levels of service is understood.
- ✓ The Corporate Standards and Guidance documents for levels of service provide an overview and guidance to develop consistent levels of service across The City of Calgary. Therefore this provides a framework for explicitly stating levels of service wastewater activities. At present, there is no evidence to demonstrate the translation of these Corporate Standards and Guidance into specific levels of service for wastewater within Water Resources.
- ✓ There is however, evidence of the Corporate Standards and Guidance documents being translated into specific levels of service in other business units to provide for clear, specific, customer focused outcomes e.g. Transportation have a levels of service standard to clear snow within 24 hours of major snow fall.
- ✓ There is evidence that specific levels of service for wastewater do exist and were referred to during the initial discussions with the various Managers and Leaders. For example, there was a specific reference to a commitment to “no surcharge of the wastewater network up to a 1 in 50 year storm event”. This is an example of what Scottish Water would understand to be a specific (SMART) level of service albeit in this case the level of protection provided would be significantly higher than the UK norm. It was not clear from the initial discussions how well these levels of service have been documented or embedded within Water Resources and how widely understood they are outside the immediate teams.
- ✓ The levels of service referred to tended to focus on the asset performance i.e. technical levels of service and there was no clear link to the outcome received by the customer or the value provided.
- ✓ There was no clear line of sight from a corporate vision to drive specific wastewater levels of service that would enable performance monitoring and measurable improvements

The Corporate Standards and Guidance documents for levels of service provide an overview and strategy for stakeholder and customer engagement. In a similar manner to the levels of service, there was little evidence to show that a consistently applied strategy had been developed specifically for Water Resources.

Capital Delivery Efficiency - In-Depth Analysis

Capital Procurement

Water Resources employs the resource and skills of the Central Procurement and Supply team within the City of Calgary. This delivers benefits in terms of standardised approach, skills based and single point of contact for all City suppliers. Relative to the complexity, value and geographical spread of Water Resource projects, the consultants consider that a disproportionate amount of time, money and effort is being expended in the tendering and selection process. Equally, there is potential lost opportunity in not fully utilising the skills and experience within the supply chain.

Delivery of the capital programme currently involves the tendering of individual projects primarily through Requests for Standard Offers (RFSO's) to the Procurement team. This approach is both time consuming and expensive for Water Resources, Procurement team and suppliers. There are approximately 200 projects tendered each year under Requests For Tenders (RFT) or Request For Proposals (RFP) with each tender taking an average of 188 days. Although the tendering process is essential and adds value, there is a potential capital efficiency to be realised through a mix of procurement options. Capital efficiency could potentially be realised following a review of the current approach and consideration of project bundling, increased collaboration with suppliers and developing partnering arrangements. These options require consideration and development whilst being mindful of the impact on the supply chain and not placing too much reliance on a limited number of suppliers in the market place.

Capital Tracking and Reporting

Control and management of the Water Resources capital programme and projects is achieved through a combination of Excel spreadsheets and finance reports. There is no financial project ledger or formal project or programme management system to assist management in project control and corporate reporting.

Overall the capital programme needs to be built on a strong foundation with effective management and a clear understanding the dynamic elements of time, money and outputs.

Financial monitoring of the capital programme and projects is performed by Water Resources and supported by the Finance function. Project management is primarily achieved through the collation of spread sheets under the control of project managers. Monthly financial reporting is limited and appears to involve considerable effort for the management team in data collation and interpretation. Timing of supplier invoice processing and cost allocation to projects adds a layer of complexity to the reporting of performance and ability to accurately forecast investment.

These issues are partly reflected in the failure not to systematically capture the value of work done and associated accruals and the level of financial awareness within the delivery teams. It is reported that on a six monthly basis an assessment of the value of work delivered is performed by the business and associated accruals processed. Equally, it is reported that the business periodically performs a purge on outstanding invoices and costs and attempts to generate accurate forecasts. Based on the reported position, Water Resources generates updated forecasts and attempts to adjust budgets and speed of delivery to meet the target and outputs. This approach is time consuming and can generate cost and supply chain shocks in capital delivery with a consequential impact on capital efficiency.

Capital Governance

Water Resources has been operating with a capex approvals process which allows the transfer of budget between projects in order to meet an annual spending target taking into consideration the changes and delays which occur on projects. The administrative burden and tracking of these transfers is significant and does not add value in the delivery of projects. The process does not follow formal gateway approvals and could potentially result in the business and individuals making poor decisions. Water Resources is in the early stages of implementing the Corporate Project Management Framework (CPMF) with the objective of delivering consistency, transparency and accountability to project delivery.

The stage gating process currently in development should ensure that business decisions are taken in timely manner, are subject to appropriate challenge and are approved by the relevant stakeholders. Governance and project stability will also be improved through increased visibility and accountability of the capital investment portfolio.

Business Structure

Water Resources has around 30 project managers (PM) with each PM working with an average of 3 to 4 projects per year. The annual investment target for the next 10 years is approximately \$350m per annum and the structure of the team needs to be aligned to efficiently deliver the required outputs in a timely manner and within budget. The overall responsibility for delivery of the programme appears to be split between Infrastructure Planning and Infrastructure Delivery and although there is good communication between the functions, there is no single accountable owner.

Data Management and Analytics - In-Depth Analysis

The Water Resources business unit currently follows best practice in terms of Asset Management Policy, Strategy and Processes. The Asset Management approach is focused on delivering levels of service to the citizens of Calgary in a cost effective way.

We have observed that data and information management activities, especially around access to customer data and project management of capital delivery, are time consuming. In discussions with Utilities and Environmental Protection Information Technology team, it was noted that there is currently:

- 80 positions which support data entry in the system from paper forms
- 112 scripts to get failure data on the system
- 10 positions have (as one of their functions) the responsibility to convert this data into reports but less than 10 people are actually employed to analyse and use the data
- high risk of duplicated effort across both Water Services and Water Resources

Having the data taken from paper and put into the system is good but there is no centralised data governance, which means there is a lack of assessment regarding data quality and accuracy and data is difficult to access.

The current asset management approach relies on the collection and use of data and information from across the Water Resources and Water Services business units. This data and information is used to determine the best action for the asset (replace, repair, rehabilitate or maintain) and to assign the asset to the correct program or project.

The Water Resources business unit has already started to formalize the management of information and data within Water Resources and with Water Services. There is an opportunity to leverage this work and to focus on opportunities to improve information management for asset management activities and particularly those related to levels of service and capital delivery.

Information management and the difficulty in accessing data (including customer data) has been a common theme of discussions. Another issue is the use of multiple spreadsheets to report and track elements of the capital program. There is already a project as part of the UEP strategy to create a common data repository including addressing the issues with Asset Management information and the Asset Management Database.

Section 5 takes these findings and outlines the key recommendations emerging from the analysis, detailing the case for change, business need, the benefits of the recommendations and any associated implementation costs.

SECTION 5 – CUSTOMER ENGAGEMENT STRATEGY

CUSTOMER ENGAGEMENT STRATEGY



BUSINESS NEED

The City of Calgary Service Promise is:

“What matters to you matters to us. We listen, respect and act.”

The provision of wastewater services aligned to a specific level of service requires decision-making and choices around resources, affordability, cost, customer expectations, community values and risks (both infrastructure and financial).

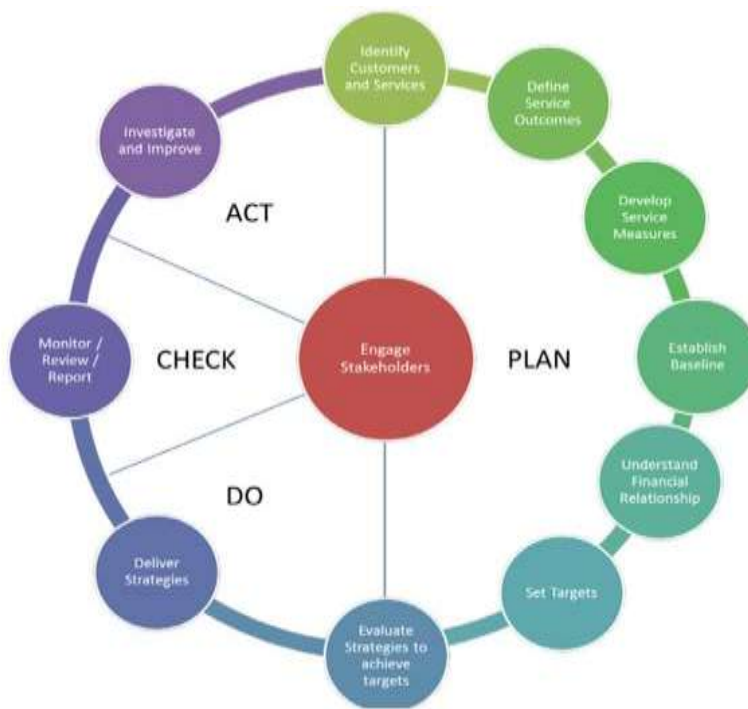
To make informed choices on future investment it is essential to engage with your customers in order to understand the outcomes and value of current services. It is also essential to understand customer priorities, expectations and perception of value. Customer engagement is necessary to drive and measure service improvement.

The term “customer” in this case includes internal and external stakeholders, residential customers, industrial and commercial clients, Regulators, Agencies and the environment.

The City of Calgary Corporate Asset Management Levels of Service Framework states that:

“Ongoing stakeholder engagement is critical throughout the process of developing and managing the Levels of Service Framework.”

Stakeholder engagement is at the heart of the Plan-Do-Check-Act process and the initial two stages of this process relate directly to customers:



Process for developing levels of service framework – sourced from The City of Calgary’s Corporate Asset Management, Levels of Service Framework

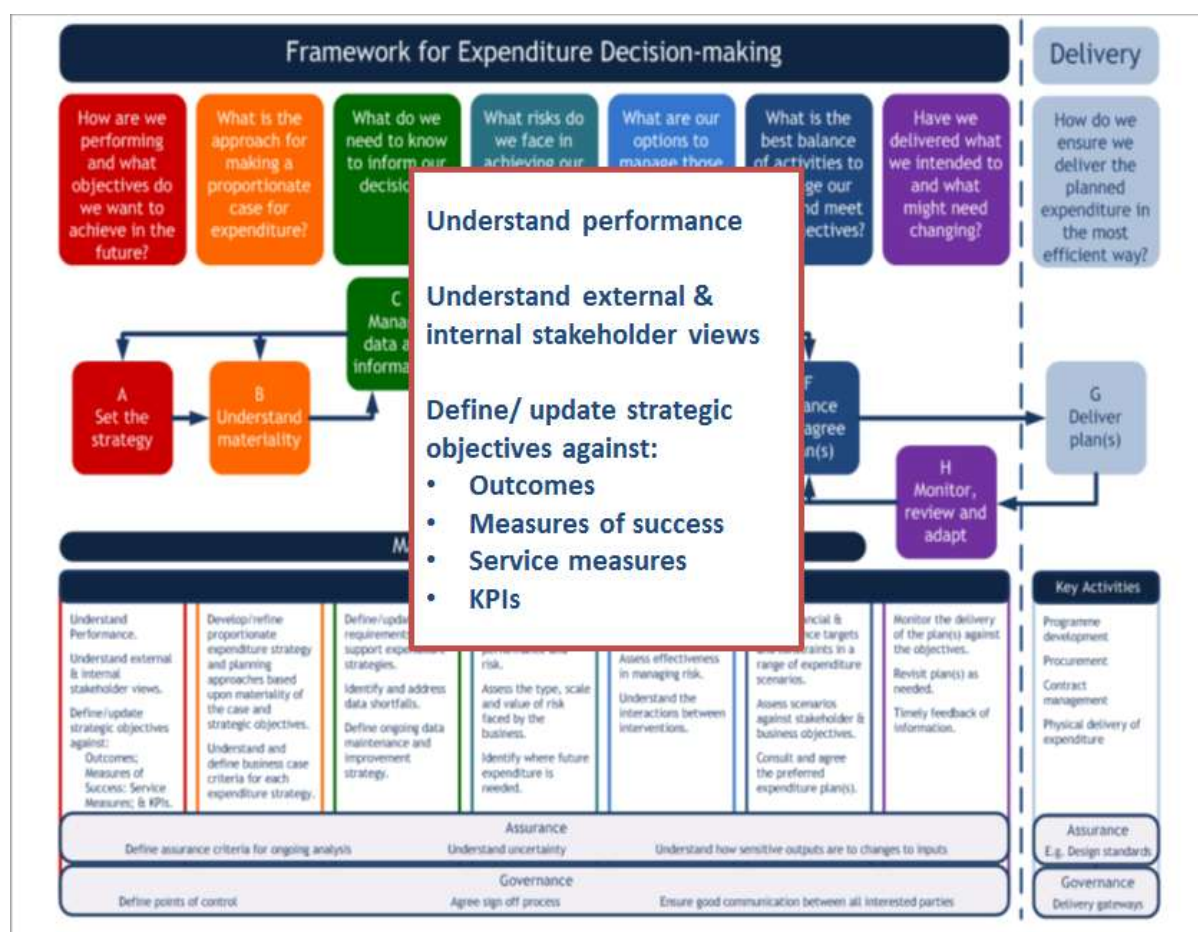
EVIDENCE – NEED FOR CHANGE

The UK Water Industry Framework for Expenditure Decision Making is a process used to ensure that Water Resources plan and deliver expenditure in the most efficient way.

The first steps in this process are:

1. Understand performance
2. Understand external and internal stakeholder view
3. Define/ update strategic objectives against:
 - Outcomes
 - Measures of success
 - Service measures
 - Key performance indicators

The levels of service framework will enable Water Resources to understand performance. The next step is customer engagement.

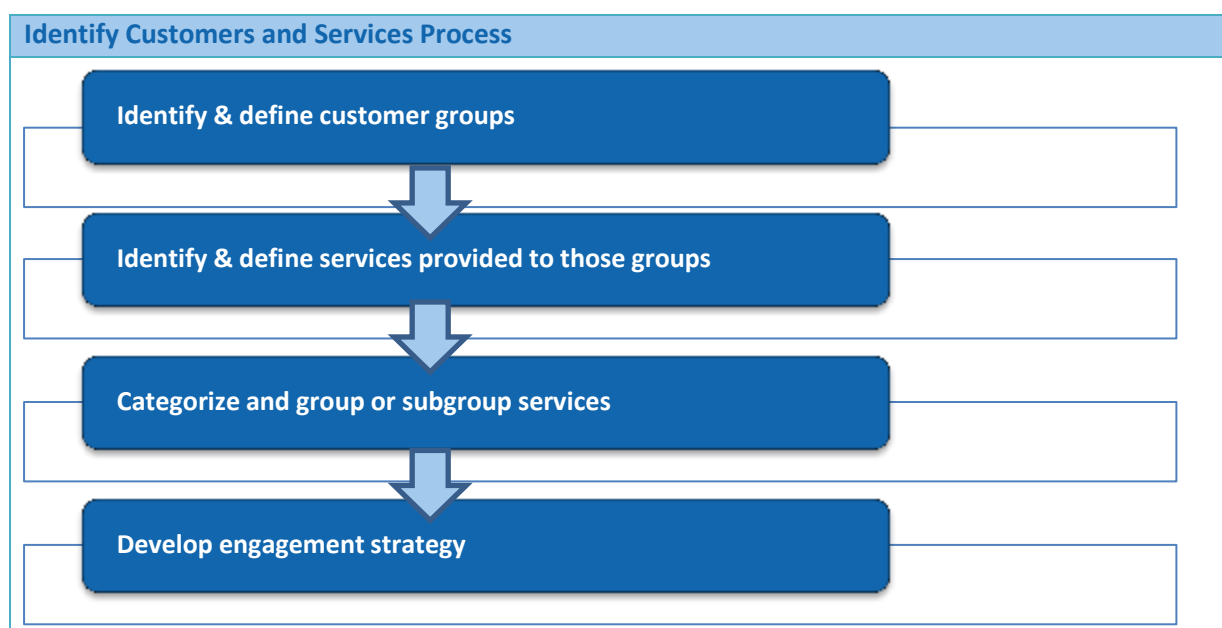


The City of Calgary, and therefore Water Resources, has a number of documents and processes available to them that provide a route map for good customer engagement:

- Corporate Customer Framework
- Customer Service at The City
- The City of Calgary Corporate Asset Management Levels of Service Framework
- Engage Policy

All these documents stress the need for customer engagement to inform the decision making process.

The City's Corporate Asset Management Levels of Service Framework has stakeholder engagement at the core and the initial step in the process is to identify customers and services.



Water Resources has robust information relating to assets and can determine and map which properties are served by an asset. It does not, however, have the same level of information for customers e.g. names, contact details, segmentation etc. as this information is held within the ENMAX billing system.

Currently customer contacts are made using the 311 service or to ENMAX who carry out the utility billing service to customers. The fact that ENMAX carry out the billing service puts some distance between Water Resources, Water Services and their customers i.e. not having direct access to bill payer details. This situation is similar in SW where the water charges are collected by the Local Council Authority as part of a community charge. As well as distancing customers, this situation makes it more difficult for customers to directly relate what they are paying to the service provided. SW (and the rest of the UK water industry) differs from the Water Utility in that they have an in-house customer contact centre dedicated to the dealing directly with customers regarding water and wastewater services.

Examples of the issues with customer data collection created by this situation include:

- Data not being available to meet timely operational, analytic, and forecasting demands. There is a significant lag between the capture and recording of water meter readings by ENMAX and the time this data is available to The City staff to be able to execute their processes.
- The quality of the available data is not of a standard which allows analytical and operational use, especially in relation to water consumption and billing and payment information. Contractually, all ad-hoc requests made by The City to extract specific segments of ENMAX data for reporting purposes incur additional cost and also an associated time delay to obtain this data.

RECOMMENDATIONS

Outlined in this section are a number of recommendations associated with a customer engagement strategy and the benefits of these recommendations.

Destination Statement

The destination statement below is an outline description of a defined future point once the opportunities have been implemented and the benefits from these recommendations realised. This description of the future is likely to be a number of years away, but this timeframe will be assessed in greater detail during the implementation planning stage of the ZBR.

Destination Statement for Customer Engagement Strategy

‘Engaging with our customers to make informed choices on future investment to deliver a reliable, value for money water utility service’



The recommendations are broken down into two areas:

1. Golden thread/ line of sight
2. Engage market research provider to develop levels of service

The recommendations that have emerged from the customer engagement strategy are described in more detail in the tables below:

RECOMMENDATIONS

Recommendation #1

Golden Thread/ Line of Sight

In synergy with the Levels of Service Framework, it is recommended that the Water Utility develop a water-specific value proposition to align and support The City's vision. The proposition would concisely encapsulate the strategic aim of the Water Utility looking forward. The strategy should be customer and employee focused, serving as road map to improvement with a clear indication of the destination and timeline.

Recommendation #2

The Creation of a Calgary Water Customer Forum

The creation of a customer forum body with the remit of ensuring that the customer voice is heard and their priorities and willingness to pay are at the heart of the price setting process. This will enable customer influence to be a fundamental part of the decision making process on water and wastewater services that customers pay for.

As part of the ZBR process SWI have produced a business policy document related to customer engagement, part of this document outlines the customer forum as utilised by SW as way of an example way of working for this type of body.

Recommendation #3

Engage Market Research Provider to Develop Levels of Service

It is recommended that a specialist market research service provider is engaged to work with the Water Utility to develop the existing levels of service and value proposition into a strategy for effective customer engagement.

The market research provider does not require specific knowledge of the water industry. The term "specialist" refers to the need for a professional market research agency which, while providing a degree of independence, has expertise in market and customer research and can provide a robust research methodology.

It is suggested that the first steps toward customer engagement make use of the knowledge and experience of the Water Utilities own customer facing employees and that the first perception study is tested within The City's employees.

BENEFITS

There are a significant number of benefits that will arise through the implementation of a customer engagement strategy:

- ✓ Aligns with the Corporate Customer Service Framework, the Corporate Asset Management Levels of Service Framework and other policy documents
- ✓ Understanding of what is right for the customer
- ✓ Delivering agreed outcomes for customers
- ✓ Identifying at risk and vulnerable customers i.e. customers at risk of service failure or and the vulnerable e.g. elderly and infirm or on dialysis
- ✓ Learning how customers prefer to communicate
- ✓ Education of customers
- ✓ Fewer complaints and possible increased usage of services e.g. lead service pipe replacement
- ✓ Understanding of customer segmentation to enhance methods of communication, service information, service priorities etc.
- ✓ Provide a voice for customers
- ✓ Understanding customer expectations and priorities
- ✓ Understanding customers willingness to pay/ defining and communicating customer value

Estimated Costs of Implementation

The large-scale customer engagement programme undertaken by SW cost in the region of **\$730,000** as a one off large scale engagement type exercise and **\$400,000** has been built into the annual budget to allow continuous engagement, monitoring, feedback and review as it has been recognised that customer engagement is a continuous process.

The scope of the programme was to engage with a sample of SW's 5m customers over a large geographic area including many small and remote communities, supporting a \$16billion programme of investment.

Scaling these costs to a scale relevant to The City, it is anticipated that a comprehensive customer engagement project would cost in the region of **\$150,000 – \$200,000**. SW has also had experience of smaller, more focused customer engagement commissions that cost approximately **\$100,000** on average.

This high-level indication of costs has been provided to give a benchmark when deciding what the scope of the initial City of Calgary water engagement project should be. These costs relate to typical costs for specialist market research service provision in the UK and may not be applicable to those in Calgary. It would be advisable for Water Resources to test these costs with a local service provider. The costs given do indicate the scale of expenditure for the different options.

SECTION 6 – LEVELS OF SERVICE FRAMEWORK

LEVELS OF SERVICE FRAMEWORK



BUSINESS NEED

Utilities and Environmental Protection (UEP) prepares a 4 year Action Plan for Council review and approval. The document sets out the UEP business unit strategies and actions which are focused on delivering the desired outcomes set by Council. Water Resources is a key business unit within UEP and the Water Infrastructure Investment Plan (WIIP) indicates that from 2015-2024, \$170-\$250m of the \$350m per year capital budget will be allocated to wastewater.

Factors contributing to this investment are population growth, intensification, redevelopment, aging infrastructure and the corresponding stress on the system. With limited information around customer and stakeholder expectations, key performance indicators and service level outcomes for wastewater, it is difficult to determine whether the right service level is being provided and what the options are for changing (increasing or decreasing on the most basic level) the scope and level of service. With increasing future investment channeled into the wastewater line of business, it is prudent to evaluate the current provision and what service level options are available which balance costs and quality and the options for Water Resources.

The City of Calgary “Opportunity Identification – Research and Analysis” document states the need to assess current levels of service for the wastewater line of business and explore the options and choices available to Water Resources in terms of levels of service i.e. service cost and service quality.

The provision of wastewater to a specific level of service requires decision-making and choices around resources, affordability, cost, customer expectations, community values and risks (both infrastructure and financial). There is an opportunity to define appropriate levels of service to achieve the desired service outcomes for wastewater.

The City of Calgary Corporate Asset Management Levels of Service Framework, where levels of service can be defined as "the description of the service output for a particular activity or service area against which performance may be measured," provides an excellent framework to set appropriate levels of service for wastewater that have meaningful customer outcomes. The process used to develop appropriate levels of service for wastewater could be incorporated into an approach to do the same for water and stormwater (scalability).

The Corporate Asset Management Levels of Service Framework Guidance documents rated the Water Utility (Water Services and Water Resources) at 2.8 out of 5 which is below the core level of levels of service but noted this was moving towards achieving the core level. Some of the considerations related to developing levels of service were rated lower for wastewater, such as defining service outcomes. Water industry leaders and specialists indicate that utilities which receive significant financial investment in infrastructure do not always demonstrate corresponding improvements to levels of service and delivery because the framework for performance monitoring has not been developed and stakeholder engagement has not been conducted.

Developing appropriate levels of service would be the first step in ensuring that issues such as managing capital costs, managing assets, understanding customer expectations and managing the regulatory environment are addressed together.

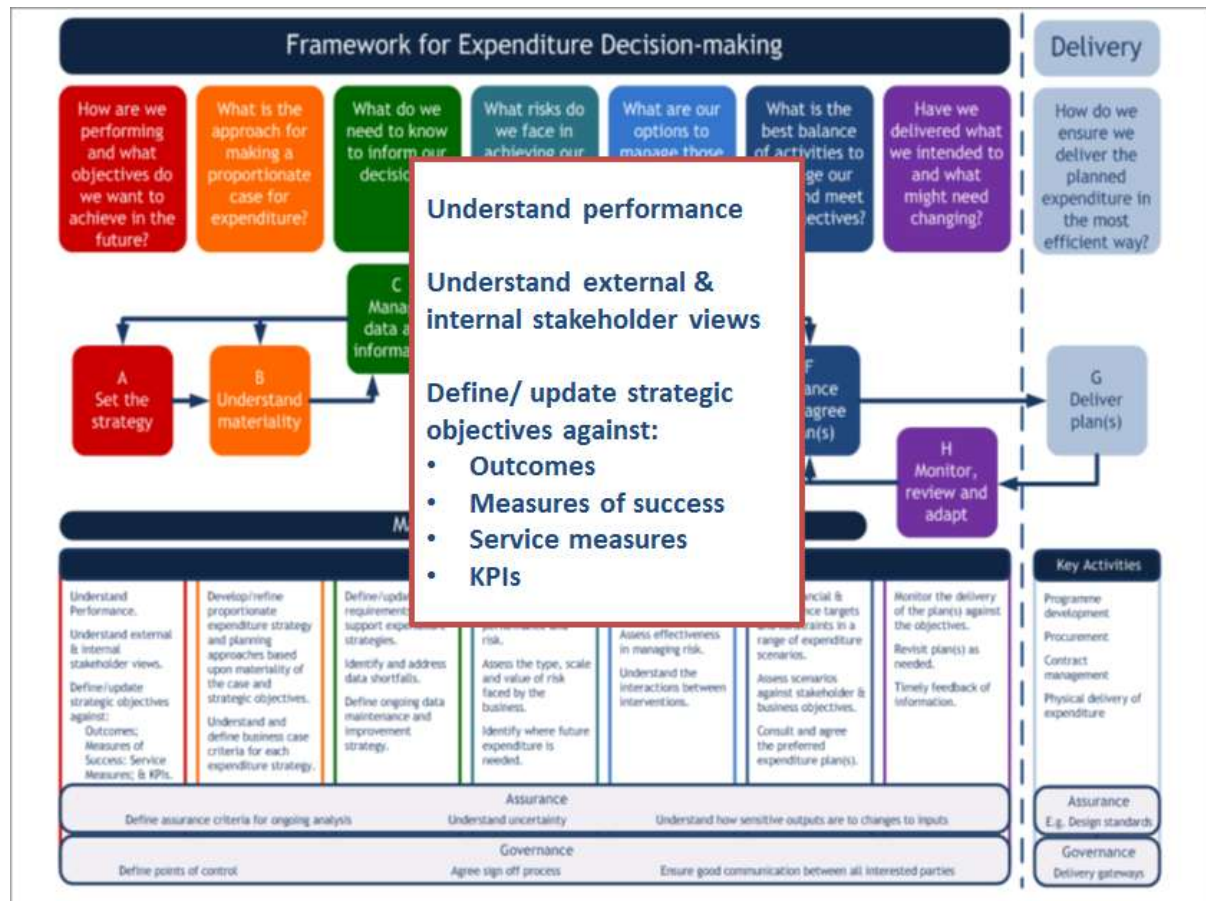
The view from the Water Resources is that it is providing a high level of service, often measured in reliability and focused on the asset, with a view was to being leaders in service delivery. This implies that infrastructure and service delivery was planned and implemented at a high service level and accompanying high cost. Current performance measure around "Customers that experience zero wastewater service back-ups in past year" has a target of 98%. This approach to deliver high reliability is changing, to look at what are the actual levels of service that are reasonable to deliver and considered acceptable by the regulator and customers, within the revenue generating capability of the business.

However, it should be noted that this does not change the notion of being leaders in service delivery. Development of levels of service would be an effective public communication and policy level decision making tool that can provide a road map, prioritize infrastructure projects, and assist in managing costs, risks and expectations.

It is envisaged that the initial determination of levels of service for wastewater (and water) as recommended could be implemented by the Water Utility within a period of approximately 12 months. It is acknowledged that this is a challenging time frame but the initial determination would sit within the Water Utility's own area of responsibility and can be based on current levels of service as a starting point. This initial determination of LoS would not require the input of the expectations and priorities of external customers, but would be a starting point to allow the initiation of the customer engagement exercise as described in Section 5.

It was also acknowledged that an exploration and determination of the appropriate service levels for the various lines of business within the Water Utility could result in a reduction or increase in level of service (or scope), which requires an accompanying ability to articulate and communicate that risk to customers.

The baselining of current performance needs to include financial and budget information to fully understand the cost of providing the current levels of service.



EVIDENCE – NEED FOR CHANGE

The Water Industry in England and Wales was privatised in 1989 and an economic regulator, Office of Water Services (OFWAT), a drinking water quality regulator, the Drinking Water Inspector (DWI) and an environmental regulator, Environment Agency (EA) perform the role of protecting the public, environment and ensure improvements to service.

Scottish Water was formed in 2002 and has a separate economic regulator, the Water Industry Commission for Scotland (WICS), a drinking water regulator, the Drinking Water Quality Regulator (DWQR) and an environmental regulator, Scottish Environmental Protection Agency (SEPA). In general terms the requirements on SW from regulation are broadly similar to that of England and Wales.

SW has been aligned with the other UK water companies in the measure of performance indicators using the Overall Performance Assessment (OPA). This provides a like for like comparison of service provision across the UK water industry and has been used as a tool by the regulators to drive improvement in the measured services. These measured services are regulated and are customer focused with specific associated customer outcomes. There are financial penalties imposed on UK water companies for poor performance and this has driven improvements in levels of service over the last 25 years.

It is appreciated that the regulatory environment in Canada is different to that in the UK and that there is no standard level of regulation over all water services. This can be viewed as advantageous to the Water Utility in that they have an opportunity to determine their own levels of service for the non-regulated areas of the business which will provide the best value for their customers and become leaders within the Province and Canada.

Once levels of service have been determined and the current service provision analysed against these levels, gaps in service provision (or possibly over provision) may be identified. This information can be used to inform capital and operational spend i.e. to target areas where the service provision falls below acceptable levels or to prioritise spend in certain areas. An understanding of the level of service and current provision will enable effective risk analysis.

The next stage in the journey will be to engage and understand customers in order to test how the current levels of service meet expectations and what the perceived value is. The Customer Engagement Strategy, outlined in Section 5 provides recommendations and examples of how to do this effectively.

The following description of the SW journey to date is provided as an example of what can be achieved and the associated timescales. The City has the opportunity to take the learning from this, along with the associated recommendations made to accelerate their own performance improvements in service provision and customer satisfaction.

Case Example: The Scottish Water Journey

Stage 1: 2002-2006

SW was formed in 2002 as an amalgamation of three regional water authorities with very different populations and geographical areas and massive differences in service charges. At the time there was a huge challenge to meet European Union Directives and the independent economic regulator's view was that overall performance was poor. There was heavy reliance on Public Private Partnership for wastewater investment and in the background the fact that the English and Welsh water companies had been privatised and providing services at a significantly higher level than those experienced in Scotland.

Comparison with the other UK water companies using the standardised Overall Performance Assessment indicators showed that SW was performing poorly and was situated in last place in the league table of performance, some way behind the rest of the field.

In the first investment period after its formation, SW's mission was:

- To make the new organisation financially viable
- Enable stable prices
- Begin the journey to an acceptable level of customer service

The targets set were to:

- Reduce operating costs by 40%
- Reduce the capital cost of pre-planned investment programmes from £2300m to £1800m

Stage 2: 2006-2010

The focus of the second investment period was placed on improving performance and quality products i.e.:

- Levels of service
- Value in delivery of new assets
- Credibility

The key achievements during this period were:

- Increased customer satisfaction – up from 63% at the start of the period to 89.9% in 2010
- Expenditure decrease – Opex was reduced by 40%. The majority of this reduction was achieved through improvements in operational efficiency and a reduction in staffing levels.

Stage 3: 2010-2015

In this investment period Scottish Water saw itself as a maturing client that had caught up with the pack in terms of the UK water company performance tables and was moving up to the upper quartile, from follower to leader.

During this period Scottish Water's OPA points increased from 177 points in 2005 to 400 points in 2014. This took Scottish Water into second place on the league table - within seven points of the leading company.

The Customer Forum had been appointed and a large scale customer engagement exercise had taken place to inform the next delivery plan.

Stage 4: 2015 -2021

The 2015 - 2021 business plan was developed to meet customer expectations rather than that of the regulators.

During this current period Scottish Water is focused on:

- Strategic Direction to 2040
- Customers at the heart - informed by extensive studies
- Innovative solutions

The customer engagement feedback highlighted the general preference overall was for low prices and a reliable service. The feedback also highlighted that customers who were not subject to any water quality or service issues agreed with the need for investment to be prioritised in areas where customers were experiencing issues and, in general, were willing to fund this.

As can be seen from above it has been a 14 year plus and a 4 investment period journey for Scottish Water to reach the current level of service provision and expenditure. Improvements to service have been driven by economic and quality regulators and the competition generated by direct comparison with the other UK water companies.

The current scenario in Canada differs in that there are much fewer regulated levels of service and benchmarking and direct comparison between services are more difficult as the information is not all available in the same format etc.

The evidence gathered by SWI indicates that the Water Utility is well placed in terms of capable people, assets and data to make good progress in overall service improvements by focusing on the right areas i.e. customer outcomes.

The Water Utility currently has a number of performance measures which apply directly to the provision of wastewater services and these are reported on currently. Examples of the existing performance measures are shown in Appendix 1.

There are 29 performance measures relating directly to wastewater reported within the National Water and Wastewater Benchmarking Initiative. Most of these performance measures are focused on the asset not the customer outcome. It should be noted that there are no nationally recognised targets or performance zones associated with these. They are measured for comparison purposes to each other and not to a standard level of service.

There are 10 performance measures relating directly to wastewater reported within the Water Management Team performance management report (WMT-PMR). These are more customer-facing and align closer to the current UK Water performance indicators.

The current performance measures for wastewater have not been tested with stakeholders and customers to identify if they provide the service outcomes to meet expectations.

The City of Calgary Corporate Asset Management Levels of Service Framework has stakeholder engagement and customers at the core of its processes. To enable compliance with this framework, Water Resources need to produce a set of measures that will relate the service provision to customer outcomes. Once baseline measures are available the customer engagement process can begin to test and inform these baseline measures.

UK Water Industry Performance Indicators

Across the UK water industry there are currently 7no. performance indicators that apply directly to wastewater service. All of these performance measures are customer-facing and are listed below:

1	% properties suffering sewer flooding incidents caused by overloading
2	% properties suffering sewer flooding incidents caused by other causes
3	Sewer flooding (at risk register)
4	Category 1 & 2 environmental pollution incidents (High/ Medium severity)
5	Category 3 environmental pollution incidents (Lower severity)
6	Sewage sludge disposal - % compliance
7	% population equivalent served by non-compliant sewage treatment works

There are 17no. performance indicators in total, with 5no. relating directly to the provision of water services:

1	Low pressure
2	Unplanned interruptions to supply
3	Water restrictions (hosepipe ban)
4	Leakage
5	Security of Supply Index (SOSI)

The water performance indicators and customer service indicators are included to provide the full description of the current measured service provision and to emphasise the recommendation that it is beneficial to have the full range of water and wastewater levels of service determined before engaging with customers.

There are also a further 5no. performance indicators which relate directly to customer service:

1	Response to billing contact
2	Response to written complaints
3	Billing of metered customers
4	Telephone contacts
5	Assessment of contact centre

When reviewing a relatively high number of performance indicators that are primarily asset focused it is difficult to get a true understanding of the overall customer experience currently being delivered.

This is one the main advantages of aligning the Water Utility with the UK water industry performance measures. Adopting a lesser number of levels of service and performance indicators will provide an easily understood summary picture of the customer experience. The detailed information which is rolled up into these levels of service indicators will still be available for deeper interrogation of specific areas of performance as and when required.

Once the levels of service have been defined for each service, it is then possible to identify what the current service levels are actually being provided. This will provide a baseline that will enable the Water Utility to identify areas of service which need to be prioritised, and possibly areas where the current service provision is unnecessarily higher than expected. The availability of the baseline information will allow the Water Management Team (WMT) to determine the levels of service they are aiming to provide going forward, and drive improvements to meet these levels. As stated elsewhere it is recommended that at some point, with increasing maturity, these levels of service are tested with customers as outlined in the Customer Engagement Strategy recommendations.

A key benefit of having baseline performance data relating to defined levels of service is the opportunity to allocate and understand the actual cost of the service provision. This will enable cost benefit analysis of the service provision and allow the Water Utility to test the benefit of increasing or decreasing investment (capital and operating) in each area of service.

RECOMMENDATIONS

Outlined in this section are a number of recommendations associated with a wastewater level of service framework and the benefits of these recommendations.

Destination Statement

The destination statement below is an outline description of a defined future point once the opportunities have been implemented and the benefits from these recommendations realised. This description of the future is likely to be a number of years away, but this timeframe will be assessed in greater detail during the implementation planning stage of the ZBR.

Destination Statement - Wastewater Levels of Service Framework

‘Providing levels of service for wastewater which will deliver the outcomes that matter to our customers and allow us to drive improvements’



The recommendations are broken down into three areas:

1. Golden thread/ line of sight
2. Key performance indicators
3. Reporting and baselining current performance

The recommendations that have emerged from the wastewater levels of service framework theme are described in more detail in the tables over.

RECOMMENDATIONS

Recommendation #1

Golden Thread/ Line of Sight

In synergy with the Customer Engagement Strategy, it is recommended that the Water Utility develop a water-specific value proposition to align and support The City's vision. This proposition would concisely encapsulate the strategic aim of the Water Utility looking forward. The strategy should be customer and employee focused, serving as a road map to improvement with a clear indication of the destination and timeline.

Recommendation #2

Key Performance Indicators (KPIs)

It is recommended that the Water Utility adopt a small number of customer-facing, key performance indicators with associated levels of service which will reflect true performance in wastewater related to customer outcomes. This document has complied with the ZBR brief and concentrated on wastewater levels of service but the process should be extended to cover all water services to enable a full understanding of the impact of current service provision on customers.

Some of these levels of service will be regulatory e.g. wastewater treatment plant performance, where a certain compliance level will be mandatory and data will be available to understand current performance. Other levels of service will be more difficult to define and attribute targets to e.g. odour complaints. However, odour can have a serious impact on customers and improvements in service will provide clear benefits.

To support the development of this recommendation, we would recommend that a level of service working group is formed. This should be championed by a member of the management team and comprise of suitable representatives from both Water Resources and Water Services. This working group would initially be tasked with identifying what additional levels of service and performance indicators are needed. We would advise that this list is kept as targeted as possible.

The next stage would be to assess current performance with respect to these levels of service. This will then provide a baseline of current service provision which will identify where customers are being impacted the most.

The Water Utility can use this baseline information to make decisions on the prioritisation of investment and to set targets to drive performance improvements. This can initially be completed in-house by the WMT, but it is recommended that this is tested with customers through a customer engagement process.

Recommendation #3

Reporting and Baselining Current Performance

The main recommendations for data and information are:

- The proposed wastewater levels of service are prioritised as an immediate business need for reporting and baselining current performance.
- The baselining of current performance needs to include financial and budget information to fully understand the cost of providing current levels of service.

To address the data and information issues:

- A working group, led by a member of the WMT, should be set up with a membership drawn from Water Resources, Water Services, BT support and Finance. This group should review data and information availability and drive the creation of a dashboard of current performance and current cost.

BENEFITS

The adoption of a small number of customer-facing, key performance indicators with associated levels of service that will reflect true performance will provide the following benefits:

- ✓ Provides a baseline to enable understanding of current service provision to customers i.e. outcome of services
- ✓ Provides an understanding of the cost of each service provision and to be able to review the value experienced by the customer
- ✓ Identifies where current assets are not providing the desired level of service and this information can then be used to prioritise the investment programme
- ✓ Knowledge of the current baseline will allow the management team to set current and future targets to drive improvement or maintain current service
- ✓ Provides transparency, accountability and ensures consistency across the business unit in service provision
- ✓ Provides well-defined and easily understood levels of service, performance indicators and outcomes for customers and stakeholders that can be tested to gain a true measure of satisfaction and understanding of customer expectation
- ✓ Allows the Water Utility the opportunity to reduce or defer capital investment by using targeted operational spend by Water Services to maintain a level of service if more efficient
- ✓ Provides the ability to mitigate infrastructure risks and assess risk appetite for assets based on knowledge of the actual baseline and an understanding of the cost/ benefit of increasing or decreasing service levels

SECTION 7 – INVESTMENT PORTFOLIO MANAGEMENT

INVESTMENT PORTFOLIO MANAGEMENT



BUSINESS NEED

Introduction

Utilities and Environmental Protection (UEP) prepares a 4 year Action Plan for City of Calgary Council review and approval. The document sets out the UEP business unit strategies and actions which are focused on delivering the desired outcomes set by Council. Business unit financial costings and resource requirements are presented within the Action Plan and once approved by Council provide the envelope within which each business unit must operate. Water Resources is a key business unit within UEP and has their own Action Plan approved at this time. The Action Plan is further supported by the longer term 10 year rolling Investment Plan which is driven from with Water Resources.

In order to align with the high-level Action Plan, it is recommended that Water Resources develop a detailed internal business plan. The internal business plan should set the vision for the business, state the objectives required to meet the vision and provide a detailed baseline of financial and outputs across the full 4 year period.

The internal business plan should specifically generate a detailed investment portfolio showing a profiled view of the investment deliverables in terms of time, investment and outputs. The internal business plan should be set to specifically outperform the Action Plan as the later document is the expected minimum that Water Resources has promised to deliver and has been agreed by Council and customers.

The internal business plan is aspirational; achievable, stretching with the development of opportunities and therefore greater risk in delivery. The focus becomes one of stakeholder management, positioning of the business with Council and the determination and approach of management. Water Resources should be driving and setting internal targets to outperform the Action Plan.

This business case details the benefits which can be delivered by extending the current financially driven investment portfolio to capture the metrics of project outputs and project milestones.

Specifically, the business case covers:

- Establishing a detailed investment portfolio
- Working within the envelope of the 4 year approved budget
- Establishing a Portfolio Management team
- Establishing stage gating
- Establishing project and portfolio risk management
- Developing data management, analytics and cost intelligence

The benefits which can be delivered by the recommendations in this business case are primarily focused on improvements in the effectiveness of delivering the capital programme. However, this effectiveness will also drive capital efficiency as the financial and programme controls combined with increased accountability and improved visibility of projects and risk allows greater challenge to be applied which will reduce the opportunity of “discretionary” capital expenditure.

Strategic Fit

Establishing a Water Resources internal business plan will enable the following strategic benefits:

- Provide a future vision and culture of working together to meet common goals
- Demonstrate strong leadership and business direction
- Provide a detailed profile of the investment plan in terms of time, investment and outputs
- Provide a baseline for establishing metrics and tracking performance
- Develop a culture of ownership and accountability
- Key enabler to driving capital efficiency and effectiveness
- Provide an understanding of the cost per output

Customer/ Citizen Needs

A detailed internal business plan allows Water Resources to align with the corporate vision, “Calgary: a great place to make a living, a great place to make a life” with a fully costed and profiled investment portfolio with defined outputs which align with Council outcomes and customer levels of service and demands. The internal business plan and detailed investment portfolio are key enablers to improved business effectiveness and capital efficiency, thereby generating greater outputs from each customer dollar invested.

The diagram below shows the key stakeholders who will influence the Water Resources business plan and investment portfolio.



EVIDENCE – NEED FOR CHANGE

Business Plan and Investment Portfolio

The 4 Year UEP Action Plan presents an overall operating and investment framework for each UEP business unit. The Action Plan is focused primarily on cost and alignment with Council outcomes but does not provide detail of outputs, when they will be delivered or whether they meet the needs of the citizens. The Action Plans for UEP are reviewed by Council as a group of business units and once approved, provide the overall framework within which the business units must operate.

A Water Resources internal business plan would capture the vision and the strategies and objectives which align with and deliver the vision. The internal business plan should provide the “Golden Thread” to allow staff to see how they contribute to the overall vision of the business. This aspect of the internal business plan provides the platform to allow the business to become more effective and efficient in the delivery of its service to the customer. Within the Water Resources internal business plan, it is envisaged that the investment portfolio will form the central piece as it is this aspect which will deliver significant benefit.

In planning for the 2015-2018 business cycle, the Water Management Team identified capacity to deliver on capital programmes and investment as one of the top strategic risks for the business unit.

In order to reduce these risks, improving predictability in capital delivery was identified as a key component in reducing the risk. Many different factors impact the predictability in the delivery of a capital project and must be considered holistically in the context of delivering an investment portfolio of capital projects.

The investment portfolio needs to set out the overall envelope for capital delivery detailing programmes and projects for delivery by time, investment and outputs. Regulated water businesses in the UK have their investment portfolios costed and profiled in time for delivery, with clearly defined outputs. Performance and delivery metrics associated with the investment portfolio are closely monitored by both the water businesses and regulators to ensure that investment outputs are being delivered on time and to budget. This approach ensures that customers are receiving the levels of service that they have paid for and that asset performance is being maintained for the long term benefit of customers.

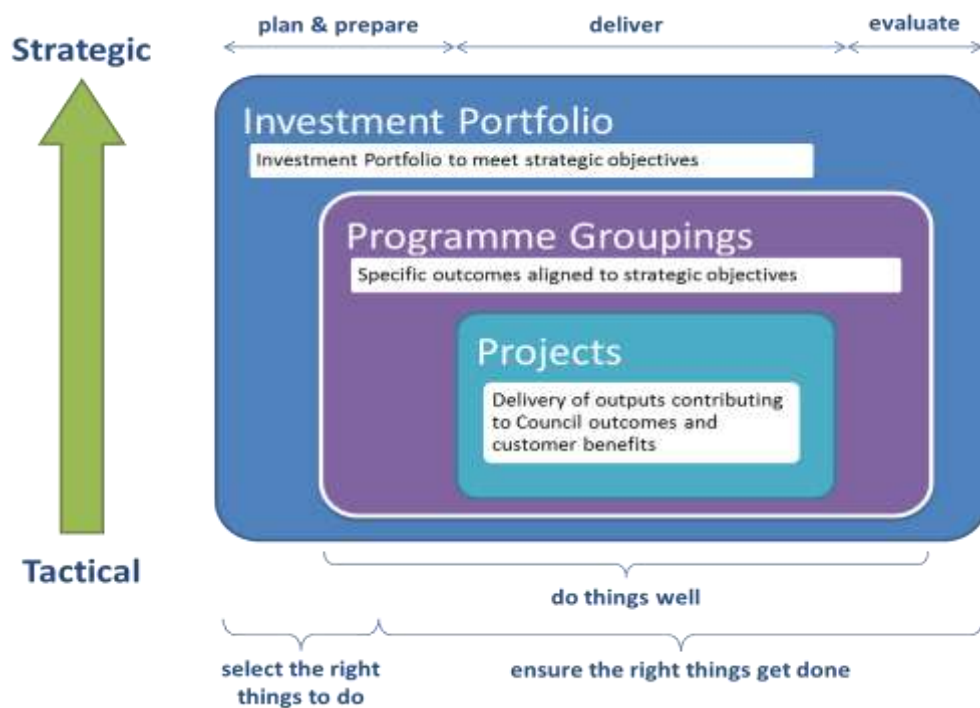
These regulatory pressures are applied to UK utility businesses to ensure that they hold to their business plans and regulatory contracts ensuring that customers receive the outputs for which they have paid. These regulatory and customer pressures are not as prevalent in Alberta, but their absence should not detract from the principle applied by stakeholders.

Currently, Water Resources is driven to achieve an annual spend target with customer outputs and timing of delivery being of secondary importance. The approach of working within an annually approved value, approved spending limit, whilst trying to manage to a different investment value generates difficulties and inefficiencies in managing the delivery of a 4 year investment portfolio.

The difficulties and inefficiencies include:

- Forcing management decisions to move budgets between live projects
- Instability in project delivery
- Reduced ownership and accountability in project progression
- Increased risk of frustrating the capital delivery schedule
- Increased risk of short term management actions resulting in capital inefficiency
- Increased number of tender requests to Supply Management
- Increased risk of discretionary and inefficient expenditure
- Peaks in the annual tendering process generating self-induced market competition
- Reduced opportunity to bundle projects
- Reduced opportunity of providing portfolio visibility to the supply chain
- Reduced opportunity for implementing different capital delivery models

The diagram over shows the structure of an investment portfolio comprising of programme groupings of similar investment outputs e.g. water treatment plants, water distribution network, with each programme area holding individual projects delivering the output requirements for the programme. The investment portfolio should reflect the strategic view of Water Resources to meet customer demands and service with the individual projects showing the tactical view of how the strategic goals will be achieved.



Portfolio Management

The delivery of investment is primarily achieved through the progression of projects from Infrastructure Planning through to Infrastructure Delivery. There is no single group responsible for the overall management and reporting of the investment plan. Equally, the absence of stage gating in the process makes overall ownership and accountability difficult to track and report. If management queries arise on the delivery of programmes or projects it can be difficult to identify who is accountable.

Monthly Reporting

Water Resources operates within the Corporate Project Management Framework (CPMF) and has established effective project governance and controls. However, Water Resources should continue to develop the CPMF and establish a strict monthly reporting cycle where project, programme and portfolio performance is tracked and challenged. The business completes a formal financial projection in September and December of each year and this can generate unexpected financial forecasts resulting in programmes being accelerated or slowed down and the reallocation of budgets between projects. This generates inefficient capital delivery and short term actions as management attempt to hit financial targets for each year. The discipline of monthly reporting is essential in order to effectively track delivery and performance and to prevent cost shocks within the business. The processes are simple and rely on project managers reporting standard metrics; value of work done (VOWD), financial monthly forecast profiles, latest best estimate (LBE) of total delivery cost, forecast of milestone (stage gate) achievement and confirmation of outputs.

Financial Awareness

It has been recognised that there is an opportunity to improve financial awareness within the business for staff below manager level. This partly reflects the level of financial support and engagement provided within Water Resources. Significant investment is being generated with some complex commercial contracts and risks being managed by staff with limited financial support or guidance. Significant investment sums are being paid to contractors and financial challenge and awareness should therefore be strong.

Stage Gating

Water Resources has been operating with an annual budget approvals process which allows the transfer of budget between projects in order to allow annual targets to be achieved. The administrative burden and tracking of these transfers is significant and does not add value in the delivery of projects. The process does not follow formal gateway approvals and could potentially result in the business and individuals making poor decisions. However, it is fundamentally important to establish a profiled 4 year Action Plan providing an overall funding envelope against which an internal business plan and investment portfolio can be established.

The development of an internal business plan and investment portfolio needs to be supported by stage gateway project approvals. The stage gating follows the over-arching control framework set out by Council, the Corporate Project Management Framework (CPMF) and establishes project accountability. This will provide an effective overall control framework for project delivery and be a key enabler in tracking project progress within the investment portfolio. The stage gate approvals process should ensure that business decisions are taken in a timely manner, are subject to appropriate challenge and are approved by the relevant stakeholders.

Water Resources have already recognised the value of stage gating and have set up a project team to develop a framework. Their work to date has identified 10 stages through the project lifecycle and this business case will review the progress made to date and suggest how metrics can be established against the gateways to facilitate project and programme monitoring and reporting.

The CPMF Steering Committee commissioned a working group to prepare a paper on stage gating in 2012/13. The paper presented the background and benefits which can be realised from stage gating in the delivery of capital projects. The working group also looked at existing stage gating models employed by a number of organisations and extracted elements which aligned with The City objectives and existing processes. The models reviewed were drawn from the following:

- Australian Government Information Management Office
- University of Saskatchewan - Innovation in Decision Making Framework (Public Sector Thesis)
- University of Salford Process Protocol for Capital Construction
- Treasury Board of Canada Secretariat Independent Review Program
- Seattle Public Utility Stage Gating Process

The working group identified that there would be significant project benefits realised from the implementation of stage gating. However, it was equally recognised that further work was required to establish a model which could be applied to The City.

Project and Programme Risk Management

Water Resources recognises project risk within delivery projects but does not allocate risk contingencies to programmes or the portfolio. Project risk is currently set at a relatively high level of 10% and is used to cover a number of cost aspects related to project delivery including increased scope, inflation increases and inefficiencies in delivery. There does not appear to be strong control over the utilisation or consistency in project risk contingencies and there is no recognition of programme or portfolio risks. This approach to risk management allows project scope creep and exposes the business to capital inefficiencies and delivery risk. One aspect which could be present in this environment is the opportunity for “discretionary” capital expenditure. This type of expenditure can be driven by project managers doing more work on assets than is technically required and ad-hoc demands such as “when you are here can you also do....”. Although this scenario is easily recognisable, we have been unable to quantify within Water Resources as the information is circumstantial. However, such examples demonstrate the capital efficiencies which can inherently be driven from implementing effective financial and project controls.

In order to gain an appreciation of the potential value at risk within Water Resources of “discretionary” expenditure, a sample of 9 projects were assessed. Based on a sample of 9 projects with purchase orders (POs) greater than \$2m delivered by Water Resources in 2015, it was found that change orders amounting to an increase of approximately 9% were required in order to accommodate changes in project scope or unforeseen expenses such as contaminated soil or additional works.

It is interesting to note that on average, these cost increases utilised 84% of existing project risk reserves/contingencies. All projects that had change orders used the existing project contingency to cover most or all of the additional costs. This could be caused by the lack of clarity in the Corporate Project Management Framework Standard in relation to spending contingency as well as the lengthy process to add budget to an existing PO.

The sample indicates that high levels of risk are held within existing project budgets and are utilised for expenditure which should be subject to greater challenge and prioritisation. Project risk should be held for unforeseen expenditure such as land contamination and project delays and a separate programme risk reserve should be held to recognise scope change. The process for the release of programme risk to project budgets should be simple and timely but importantly be subject to independent challenge, increased visibility and business prioritisation.

Government Regulations/ Legislation Impacting the Service

Council approval of the Water Resources 4 year Action Plan allows the business to develop a fully costed, profiled and output driven investment portfolio. The investment portfolio is split into six programmes with each programme having Council approved investment limits:

- Programme 891: Water Treatment Plants
- Programme 892: Water Distribution Network
- Programme 894: Wastewater Treatment Plants
- Programme 895: Wastewater Collection Network
- Programme 897: Drainage Facilities & Network
- Programme 89: Facilities, Equipment & Technology

The investment portfolio details the projected annual investment values, timing of project delivery and the outputs being delivered. Annual investment targets and outputs should remain a focus for the business but flexibility and authority to plan across the 4 year period is a requirement to establish effective performance measures, tracking and accountability.

Ideally, the business should set out an annual investment range rather than an absolute number as the objective of hitting a precise number on a capital programme is not practical or realistic and can generate poor business behaviours. This approach is considered best industry practice in the delivery of large capital investment programmes and is the approach adopted in regulated businesses in the UK. Adoption of this approach inherently drives increased capital efficiency as investment is targeted on outputs and outcomes rather than an absolute financial target.

RECOMMENDATIONS

Outlined in this section are a number of recommendations associated with investment portfolio management and the benefits of these recommendations.

Destination Statement

The destination statement below is an outline description of a defined future point once the opportunities have been implemented and the benefits from these recommendations realised. This description of the future is likely to be a number of years away, but this timeframe will be assessed in greater detail during the implementation planning stage of the ZBR.

Destination statement for Investment Portfolio Management:

‘Implementing strong capital programme and project controls and reporting capability to drive capital efficiency and value for customers, suppliers and stakeholders.’



The recommendations are broken down into eight areas:

1. Internal business plan and investment portfolio
2. Portfolio management
3. Embed a monthly reporting cycle
4. Financial awareness and support
5. Stage-gating, budget approvals and milestones
6. Portfolio, programme and project risk
7. Capital delivery reporting
8. Project & cost data store

The recommendations that have emerged from the investment portfolio management theme are described in more detail over the page.

RECOMMENDATIONS

Recommendation #1

Internal Business Plan and Investment Portfolio

It is recommended that a 4 year internal business plan and detailed investment portfolio is developed showing a profiled plan of spend, time (milestone measures/ stage gates) and project outputs which aligns with the Council approved Action Plan.

Recommendation #2

Portfolio Management

It is recommended that the responsibility and accountability for developing the investment portfolio and subsequent tracking and reporting is given increased focus within the business.

Recommendation #3

Embed a Monthly Reporting Cycle

It is recommended that Water Resources develop a monthly reporting cycle in order to facilitate timely performance reporting of the investment portfolio, programmes and projects. Establish metrics on the quality of information provided by the business in order to improve performance and establish a culture of continuous improvement. Once the metrics have been established and a baseline target set by the business, the metrics can be stretched to start driving out-performance.

Recommendation #4

Financial Awareness and Support

Water Resources should increase financial awareness and operational support of business activities. This finance support is primarily required in the support and development of business processes, controls and reporting and raising the financial competencies of project managers. It is recommended that this “operational” financial support is embedded within the business and is involved in developing financial awareness training sessions for Water Resources staff in addition to providing financial support and input to business activities.

Recommendation #5

Stage-gating, Budget Approvals and Milestones

It is recommended that continued development of stage gating should be a priority in order to increase the controlled delivery of projects and to set performance and milestone targets.

Recommendation #6
Portfolio, Programme and Project Risk

Risk is a key component associated with the delivery of a portfolio of capital projects. It is recommended that Water Resources recognises risk at different levels; portfolio, programme and project and assigns accountability for the utilisation and drawdown of these risk contingencies within the management team.

The recommendations in this business case focus on improving the effectiveness of delivering the capital programme which intrinsically drives capital efficiency. However, it is not possible to produce a calculation stating the capital efficiency which can be achieved by Water Resources through the implementation of such recommendations. Experience in Scottish Water would suggest that through continual improvement and the setting of stretching targets in each regulatory period, Water Resources should be able to achieve between 2% and 3% capital efficiency. This capital efficiency is primarily driven by effective management, accountability and visibility of project scope definition, risk utilisation and establishment of a single 4 year portfolio.

Recommendation #7
Capital Delivery Reporting

It is recommended that formal monthly reporting is implemented to provide Water Resources with confidence and predictability of portfolio performance and to increase stability in capital delivery.

Recommendation #8
Project and Cost Data Store

It is recommended that a central project and cost data store is implemented to provide Water Resources with confidence and predictability in project costing and to increase stability in capital programmes.

BENEFITS

Significant benefits can be generated by the development of a business plan, an investment portfolio, stage gateways and financial training. Ensuring an efficient portfolio and project management system is in place that supports accurate forecasts of time, money and outputs as well allowing the management of risk will:

- Improve the predictability of the capital delivery program, the efficiency (budget and schedule) and the effectiveness (scope and quality)
- Ensure the status of capital delivery projects is well reported and communicated across the organization with challenges explained, trends and performance indicators understood, and risks defined with actionable next steps
- Improve the ownership of projects and programmes ensuring that projects and outputs are delivered to time and budget
- Increase understanding of the financial mechanics of the business and the impact of investment decisions
- Deliver an effective capital portfolio with the ability to drive capital efficiency of **2%-3%**, circa **\$7m - \$10.5m**.

The production of an internal business plan, the monthly reporting of the investment portfolio and stage gateways will provide visibility to customers of Water Resources of the performance against the original profile in the delivery of project outputs in line with money and time. Further advantages which can be leveraged include the delivery of more outputs for the same level of investment and improved and smoother delivery of projects. Overall, there is increased opportunity for stable or lower prices to customers.

This business case focuses on the continual improvements and development of initiatives already in progress by Water Resources. The developments and recommendations primarily relate to the effectiveness of Water Resources but there is also a consequential long term impact on capital efficiency and levels of service. The calculation or benchmarking of the level of realisable capital efficiency for Water Resources is not possible since the data is not available and comparisons with other businesses is not relevant due to differences such as economic factors or differences in the business model or business development lifecycle.

The recommendations within the business case do, however, provide the tools and structure to allow determined management to identify and drive capital efficiencies. The drive for capital efficiency needs to be the continued development of a cultural shift in delivering more for less for the benefit of customers. However, based the experience of SW and the considered assessment of the business maturity and economic environment in which Water Resources operates, a capital efficiency of between **2%** and **3%** from the implementation of the recommendations within this business case are considered achievable.

Estimated Costs of Implementation

The requirements for establishing a business plan, an investment portfolio and stage gateways have been recognised by Water Resources. In planning for the 2015-2018 business cycle, the Water Management Team identified capacity to deliver on capital programs and investment as one of the top strategic risks for the business unit.

In recognising this risk a strategic programme charter was developed, Delivery of Infrastructure Investments, setting out the vision, responsibilities and milestone deliverables. Success of the programme of work is stated as:

- The bigger picture around progress in delivery of capital projects and our capacity to deliver is understood, monitored and managed with appropriate rigor
- Risks and delays around delivery are understood, communicated and managed
- Improvements in project delivery are achieved (e.g. schedule, cost, scope, transparency) and woven into a culture of continuous improvement
- Trends in capital delivery are understood and inform planning of the next iteration of the improvement programme
- Longer term: the forecasted delivery of the current portfolio of projects has a high level of confidence to meet targets, timelines, and scope within the constraints and capacity to deliver

This recommendations build on this existing programme of work and aims to provide guidance towards best practice on building metrics associated with time, money and outputs. Accordingly, it is not anticipated the recommendations will generate additional incremental costs above those already being incurred by the business. The business case builds on much of the work which is already being delivered but adds further controls, programme and project practices, metrics and accountabilities. The focus is on internal business change, both cultural and process driven.

It would be possible to implement a programme management system such as Oracle Primavera but SWI believes that the size of the Water Resource capital programme would not warrant this investment. However, if The City had the Primavera tool kit available then the recommendation would be to implement the software and training within Water Resources.

SECTION 8 – CAPITAL DELIVERY MODELS

CAPITAL DELIVERY MODELS



BUSINESS NEED

Introduction

Utilities and Environmental Protection (UEP) prepares a 4 year Action Plan for Council review and approval. The Action Plan sets out the UEP business unit strategies and actions which are focused on delivering the desired outcomes set by Council. Business unit financial costings and resource requirements are presented within the Action Plan and once approved by Council, provide the envelope within which each business unit must operate. Water Resources is a key business unit within the UEP Action Plan and has their own Action Plan approved at this time.

In order to align with the high level Action Plan, it is recommended that Water Resources develop a detailed Internal Business Plan. The internal business plan should set the vision for the business, state the objectives required to meet the vision and provide a detailed baseline of financial and customer outputs across the full 4 year period. The internal business plan should specifically generate a detailed investment portfolio showing a profiled view of the investment deliverables in terms of time, money and outputs. The internal business plan should be set to specifically outperform the Action Plan as the later document is the expected minimum that Water Resources has promised to deliver and which has been agreed by Council and Customers.

This business case details the benefits which can be delivered through developing a detailed investment portfolio and outlines recommendations which can be utilised to deliver this investment portfolio in an effective and efficient manner. The opportunity to improve effectiveness and efficiency is achieved through providing visibility of the investment portfolio to the supply chain and aligning investment with customer demands and levels of service.

Strategic Fit

The Supply Management team is currently developing different delivery models which are scalable across The City. Water Resources is the second largest business unit in The City for capital investment. Within Utilities and Environmental Protection, (UEP), Water Resources accounts for 48% of tenders and contract awards and 30% of purchase orders. The Supply Management team possesses a rich source of market information and is attempting to implement different procurement models and templates on behalf of the business units within The City. However, in order for Supply Management to effectively engage with Water Resources, visibility of the investment portfolio is required across a minimum of 4 years. This will allow Supply Management to recommend the most appropriate delivery models for implementation and to assist in the drive towards increased capital efficiency and effectiveness.

Customer/ Citizen Needs

Customers need assurance that capital investment is delivering benefits to them as individuals as well as supporting the development and growth of The City. Applying appropriate delivery models to capital procurement can significantly improve value for money and ensure that customers receive outputs in a timely and controlled manner. Equally, forward visibility of work in the long term allows the supply chain to develop through reducing their risk and adding value and depth to the chain. Overall, this creates economic activity which benefits customers in the wider economy.

EVIDENCE – NEED FOR CHANGE

Current Supply Arrangements

Water Resources is focused on delivering to an annual investment target but does not actively manage the procurement and supply for the investment portfolio across the full 4 year cycle. Water Resources has adopted an approach where projects can only be tendered within a self-imposed annual Approved Spending limit.

Accordingly, the business is working within an annual Council approved limit and has then set an Approved Spending limit in order to achieve an investment/ affordability target for each year. These limits have artificially broken up the investment plan making delivery overly complicated and inefficient. The approach has resulted in almost every project being individually tendered which leads to the following disadvantages:

- Difficulties in managing the investment plan
- Difficulties in delivering to an overall investment plan target
- Short term changes in budget leading to inefficient delivery and loss of project accountability
- Perception that under investment in any given year would be lost from the overall agreed Action Plan investment
- Peaks and troughs in the tendering process resulting in the business competing against itself in the supply market
- Reduced supplier interest due to the smaller value tender and proposals
- Increased cost of processing each tender and proposal both within The City and for suppliers
- Missed opportunities in driving capital efficiencies through different capital delivery models

The tendering process requires time, resource and money by Water Resources, Supply Management and Legal teams. This is not an efficient approach as the process takes on average 106 days to complete Request for Tenders and 188 days for Requests for Proposals. A more efficient delivery approach is to consider different delivery models including project bundling, framework agreements, supplier collaboration, partnership arrangements and supply joint ventures.

Setting an annual investment target should not prevent the business from planning and procuring contracts across the full 4 year investment portfolio on the condition that the delivered annual investment value remains within the expected range. This position has been confirmed with senior finance officials in The City and further confirmed by the embedded Water Resource Finance team. In planning for the 2015-2018 business cycle, the Water Management Team (WMT) identified capacity to deliver on capital programmes and spending as one of the top strategic risks for the business unit.

In order to reduce these risks, improving predictability in capital delivery was identified as a key component. Many different factors impact the predictability of the delivery of a capital project and must be considered holistically in the context of delivering an investment portfolio. Accordingly, providing longer term visibility of the capital programme will generate increased interest in the supply market, help drive down prices and give greater predictability in delivery.

Government Regulations/ Legislation Impacting the Service

Council approval of the Water Resources 4 year Action Plan allows the business to develop a fully costed, profiled and output driven investment portfolio. The investment portfolio is split into six programmes with each programme having Council approved investment limits.

- Program 891: Water Treatment Plants
- Program 892: Water Distribution Network
- Program 894: Wastewater Treatment Plants
- Program 895: Wastewater Collection Network
- Program 897: Drainage Facilities & Network
- Program 89: Facilities, Equipment & Technology

The investment portfolio details the projected annual investment values, timing of project delivery and the outputs being delivered. Annual investment targets and outputs remain a focus for the business but flexibility and authority to plan across the 4 year period is a requirement to establish the most appropriate capital delivery model. This approach is considered best industry practice in the delivery of large capital investment programmes and is the approach adopted in regulated businesses in the UK.

RECOMMENDATIONS

Outlined in this section are a number of recommendations associated with capital delivery models and the benefits of these recommendations.

Destination Statement

The destination statement below is an outline description of a defined future point once the opportunities have been implemented and the benefits from these recommendations realised. This description of the future is likely to be a number of years away, but this timeframe will be assessed in greater detail during the implementation planning stage of the ZBR.

Destination Statement - Capital Delivery Models

‘Working collaboratively with the supply chain to drive capital efficiency, market stability and cost certainty for the benefit of customers, suppliers and stakeholders.’



The recommendations are broken down into four areas:

1. **Planning and procurement horizon** - it is recommended that Water Resources plans and procures investment across the 4 year period rather than limiting itself to individual years
2. **Supply management involvement** - it is recommended that a profiled 4 year investment portfolio is developed with the involvement of Supply Management
3. **Supply management resources** - it is recommended that Supply Management resource is embedded within Water Resources in order that their skills and experience can be applied to the most effective mix of capital delivery options for the investment portfolio
4. **Capital delivery models** - it is recommended that Water Resources utilise different capital delivery models in order to improve effectiveness and efficiency of capital delivery

RECOMMENDATIONS

Recommendation #1

Planning and Procurement Horizon

A pre-requisite to considering options around delivery models is to have an understanding of what is to be delivered, when it is to be delivered and what the delivery risks are. The investment portfolio is a key document in gaining an understanding of these requirements but equally, future customer levels of service and asset condition should also be considered.

Such longer term investment requirements may be derived from the Asset Management Plans. Presenting a complete, long term picture to the market is an essential requirement to gain supplier interest and collaboration. Equally, ensuring that the market has a clear understanding of what is being tendered is essential in order to prevent potential accusations of unfair tendering and legal challenge.

Recommendation #2

Supply Management Involvement

Consideration should be given to ensuring that no one supplier has a disproportionate volume of work as this would expose the business to undue risk. The Supply Management and Legal teams should be well placed to advise and ensure compliance with procurement legislation.

Recommendation #3

Supply Management Resources

Considering the size of the investment portfolio, it recommended that the business embed Supply Management resource within Water Resources under a service level agreement. Dedicated Supply Management resource is already embedded within the Transportation business unit and currently advise on delivery options. This has created benefits for Transportation and therefore this practice should be extended. This recommendation should be considered once the detailed investment portfolio is established in order that Supply Management can advise on the most appropriate supply options. Indeed, Supply Management support should be consulted in shaping the investment portfolio in order to drive value in the supply chain and generate greater depth in the market.

Following discussions with Supply Management, a number of delivery model options would drive benefits for Water Resources. The Supply Management team has a good understanding of the model types highlighted over and consider that although some have not yet been tested with The City, there could be opportunity to test them as the business units across The City develop and make use of the routes to supply.

The capital delivery models which are considered appropriate for Water Resources at this stage are detailed over.



Recommendation #4

Capital Delivery Models

There are a number of capital delivery models that can be implemented in to improve effectiveness and efficiency of capital delivery, these models are detailed out in the following section, it is recommended that Water Resources utilise different capital delivery models in order to improve effectiveness and efficiency of capital delivery, however, these needs to be assessed against the eligibility of the programme groupings and availability of the supply chain.

However, all the following are considered to be applicable to the delivery of Water Resources capital programme:

A. Project Bundling

Project bundling allows a programme of similar deliverables to be developed and tendered as a whole. Project bundling is effective where the contractor has particular skill and experience in delivering customer outputs, such as the refurbishment of lifting stations. Efficiencies can be gained in this approach as the contractor can programme his work package within the constraints of the investment portfolio deliverables of time, money and outputs. Most contractors would find this beneficial in terms of providing a base volume of work which can be planned and scheduled thereby minimising their risk profile and business costs.

B. Frameworks

Framework arrangements are useful where capital solutions use the same asset components e.g. screens, membranes, filter media. Framework arrangements tend to work at project and programme levels within an investment portfolio. Framework arrangements tend to work on the basis of the number of units that will be requested over a period of time. Within the framework arrangement the exact specifications can be demanded, or alternatively, selected from within a cataloged range of products. The framework tends to set the price of the components at the point of agreement and is then subject to an annual inflation index. Accordingly, the negotiation of frameworks can be helpful where there is a consistent volume of materials, goods or services required by the business over time. The “locking in” of framework prices can also be beneficial where market conditions are volatile such as those experienced in Calgary where oil and gas prices drive supplier activity.

Although the frameworks can be used directly by the business in construction and maintenance activities, approved contractors can be directed to use the frameworks in order to draw down materials against the framework agreement. These goods and material issues to approved contractors tend to be free with the materials being charged directly to projects. Alternatively, materials can be charged to contractors at the framework rates which are then invoiced as part of the contractors monthly cost.

Regardless of the free or standard rate approach, such framework call-off arrangements require careful Supply Management control to ensure that materials are correctly allocated to projects. The controls need to be strong to ensure that scenarios such as excess material issues and the associated risk of paying for the materials twice are well managed and controlled.

A further variation which can be applied to framework arrangements is the application of supply rebates which allow the refund of monies to the customer (Water Resources) if predetermined levels of supply are exceeded. In Scottish Water, rebates of up to 9% of the cost of the supplied goods and services can be recovered. However, where rebates are an active component of supply, they need to be managed in order that evidence can be produced to substantiate claims to the supplier. Equally, rebates are often not immediately visible to staff who are making purchasing decisions and indeed can generate the perception that procurement is not effective since the gross purchase price is not considered good value for money. This is particularly the case where rebates are held centrally and not applied back into the projects or activities where the cost of supply was originally charged.

Framework arrangements can also be applied to the supply of professional services. This is particularly useful where there is an immediate resource or skill requirement and the framework would allow the call off at a pre-determined rates.

C. Design & Build

Some projects or programmes of work can be complex and require specialist knowledge. In these scenarios, a design and build option can be helpful. Design and build arrangements can be at project or programme level. One-off specific projects can be delivered effectively under a design and build approach but equally, programmes of work can be delivered under this mechanism where multiple sites are being constructed to a standard base design and build.

Some design and build contracts can be turnkey* in nature but care should be taken to ensure that the liability of risk is understood and reflected within the overall contract award structure.

** turnkey - a contract in which the contractor is given full responsibility to design and build something that the client must be able to use as soon as it is finished without needing to do any further work on it themselves.*

D. Supplier Collaboration

Water Resources can balance the requirement for control and ownership with the desire for increased engagement and coordination of capital delivery through supplier collaboration. Early engagement of suppliers in profiling the investment portfolio can generate benefits in terms of using the skills of the supplier in the decision and prioritisation of projects. Working collaboratively can drive mutual benefits at both project and programme levels:

- Helps shape the investment portfolio for mutual benefit in terms of timing of delivery
- Identification of bundling opportunities
- Assistance in project optioneering and prioritisation
- Mutual transfer of skills and knowledge
- Clear understanding of business drivers between contractor and Water Resources and vice versa

E. Partnership & Joint Venture Arrangements

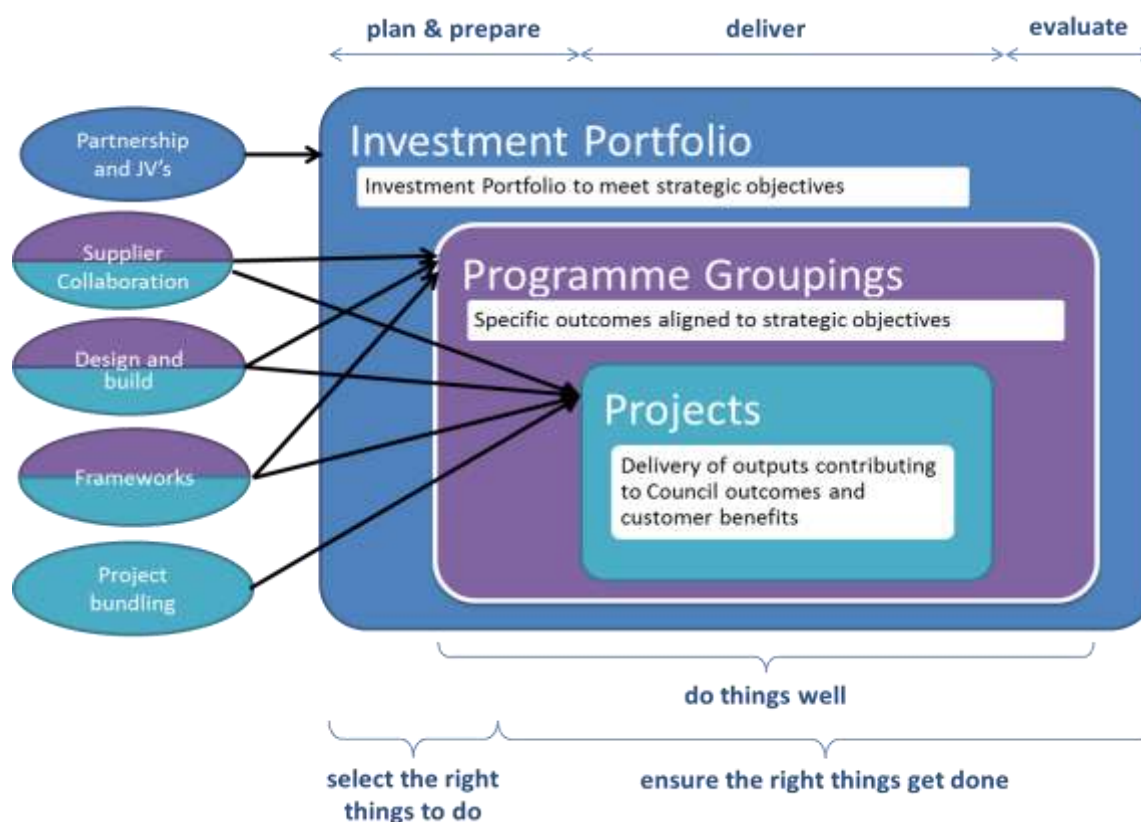
Partnership and joint venture (JVs) arrangements with suppliers can generate a strong capital delivery vehicle. These arrangements are typically joint ventures or partnerships with an amalgamation of one or more commercial businesses within a single entity. Partnerships attempt to align two or more businesses to common goals, aspirations, incentivisations and outputs. This allows the pulling of resource, skills and strengths to cover different aspects of programme delivery. These arrangements tend to be functionally based around programmes of work. Overall, this delivery vehicle provides:

- Locking-in output delivery for a predetermined value
- Locking-in supplier capacity to the investment portfolio
- Ability to set target prices
- Building in tendered efficiency factors driven by volumes and forward visibility
- Generation of incentive mechanisms for the partnership/ joint ventures to outperform
- Generation of pain/ gain arrangements
- Development of key performance criteria in order to drive the right behaviours with the supplier
- Sharing of risk
- Sharing of skills between commercial and City of Calgary staff
- Scalability to other business units within The City

Although partnerships and joint ventures can provide a strong delivery vehicle, issues for consideration include:

- Complexity of the commercial arrangements and negotiations demands considerable resource
- Cultural difference and expectations within joint ventures and partnerships can drive different behaviours
- Potential complexity and issues relating to dispute resolution and arbitrations
- Potential over-reliance on one supplier
- High risk of disputes and claims
- Strong financial tracking and a clear line of sight on deliverables are essential

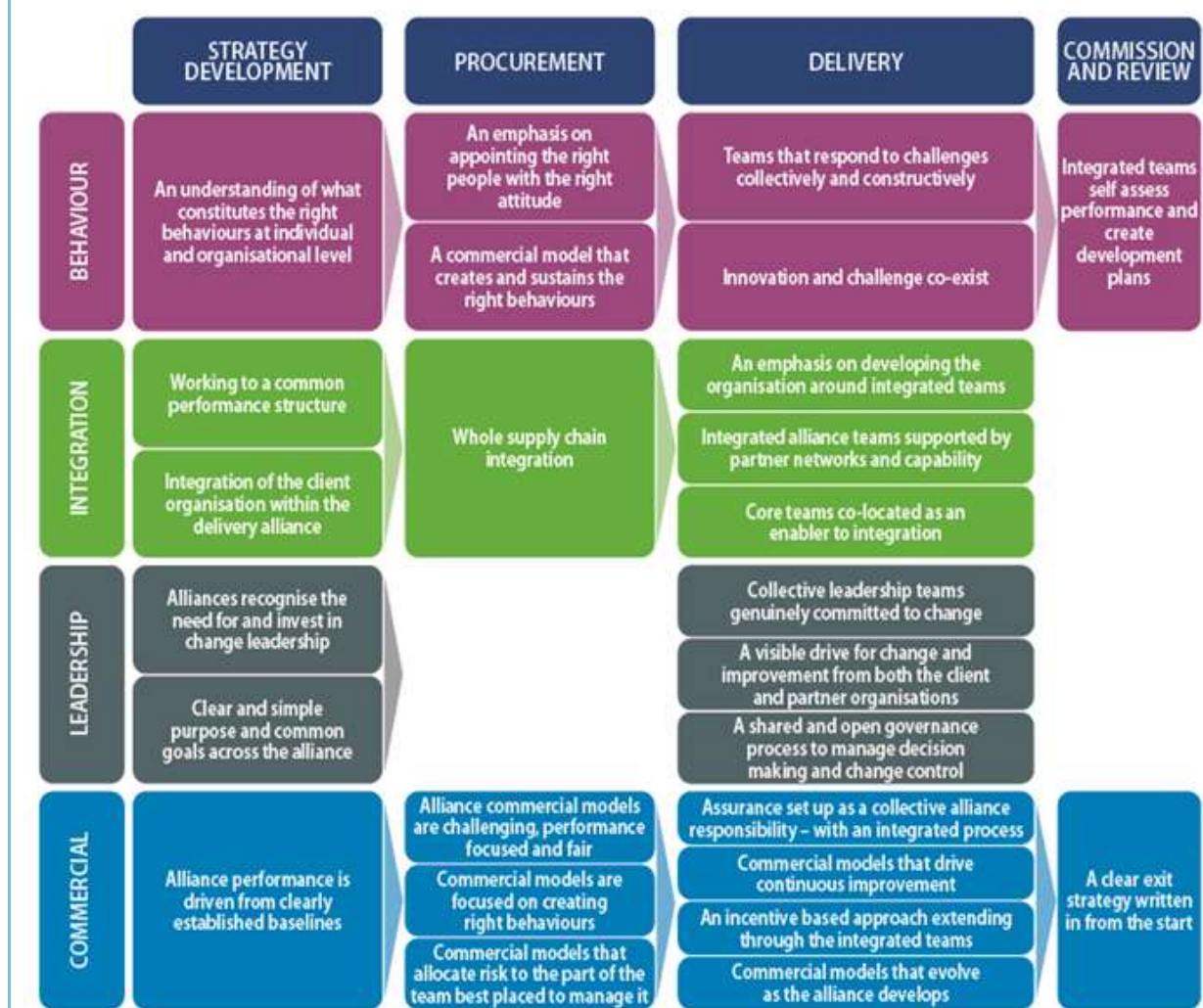
The diagram below illustrates where the different capital delivery models tend to apply within an investment portfolio. It is for illustrative purposes only - Supply Management is best placed to advise based on visibility of the investment portfolio.



The decision about whether a business is ready to enter into joint ventures or partnerships is complex and is influenced by a number of factors both internal and external. The following aspects should be achieved during the decision as to whether to form one of these alliance arrangements:

- The proposed delivery organisation is highly integrated recognising that in these types of alliance model, the client team are active parts of the project and not that the projects are transferred to a third party for delivery.
- “Best for Project” selection principles have been established, providing a clear approach on how teams will be brought together from across the alliance.
- The environmental enablers for collaboration, such as co-location and collaborative systems and processes, have been identified and are covered in the implementation plan.

The diagram below is an industry accepted framework matrix and is prepared by the Infrastructure Client Group, based in the UK, in order to assess business readiness to enter an alliance arrangement.



BENEFITS

The business will realise benefits from the capital delivery models through the ability to plan delivery across the full 4 years rather than being restricted to 1 year blocks. These benefits will be seen in terms of improved effectiveness of the Water Resources Infrastructure Planning and Delivery teams and a more controlled delivery profile. Forward planning against investment portfolio, combined with monthly forecasting will provide Portfolio Management and the WMT with valuable information and levers to deliver to an annual investment target. This target can be presented as a range rather than an absolute number. Any over or under investment can be rolled forward into subsequent years within the portfolio.

In terms of efficiency, the business, procurement, legal and supplier processes take on average 106 days to complete request for tenders (RFTs) and 188 days for requests for proposals (RFPs). This inherently has significant cost to the business and the supply chain all of which is paid through the investment portfolio. Based on information received for 2015 from Supply Management, there have been 189 new, extended or renewal contracts and 536 purchase orders processed. Excluding purchase orders, the split of RFTs and RFPs is approximately equal and therefore the total number of days utilised in the process is approximately 28,000 days { $RFT=(189/2*106 \text{ days})$ & $RFP=(189/2*188 \text{ days})$ }. This equates to around \$15m being approximately 125 people (28,000 days /224 days per person) at say \$120,000 per person. On the assumption that bundling projects reduces the number of RFTs and RFPs by say 10%, there is a potential saving in the end-to-end process of **\$1.5m** per year.

This broad calculation can be challenged in terms of each contract not being actively progressed throughout the period, for example advertised period. However, it can equally be stated that the supplier is actively progressing and incurring cost during the period whilst The City is awaiting response to the proposals. Equally, time, effort and cost is being spent by two or more suppliers throughout the tender period which is not reflected in the overall number of days. Ultimately, the cost incurred by suppliers in preparing tenders, successful and unsuccessful is paid for by their clients.

SW's experience of implementing different capital delivery models has achieved capital savings of **15%** of external supplier costs across a 6 year programme. Proving this outcome is particularly difficult as there are no immediate comparisons of "what might have been" had the delivery model not been implemented. Such efficiencies tend to be reflected in the ability to deliver more customer outputs or improving levels of service whilst maintaining customer charges. On the basis that material and contractor costs accounts for **75%-80%** of the capital programme of circa \$350m p.a., and the potential savings could be **7% to 15%**, the financial benefit could be in the range of **\$18m - \$42m**.

Instead, capital efficiency is tracked through the passage of time and cost capture processes which ultimately generate indicative cost trends of efficiency. The indicative capital efficiency of 15%, specifically not being stated as a capital cost saving, is dependent on where Water Resources is in relation to the overall market as well as current economic conditions. In a depressed economic environment, prices will be more competitive and hence it will be more difficult to drive further efficiencies. Accordingly, the capital efficiency and business case recommendations should be reflected through greater supply market stability and predictability in delivery of the investment portfolio. Supply Management will be well placed to provide an overview as to the impact of the recommendations on stabilising supply market prices, improvement in capital efficiency and investment portfolio predictability.

The 7% efficiency saving should be achieved by providing the forward visibility and planning of the programme across the full 4 years and not tendering on the each project as and when the project is promoted for delivery. This lower level of efficiency is considered achievable with providing the supply chain market with the forward visibility of demand and tender opportunity for that work over the 4 years and supported by embedded Supply Management from Water Resources. The 15% as stated above can be achieved where Water Resources and other City businesses combine their procurement needs for similar products and negotiates partnering and supply agreements on a larger scale and again provides the market with the longer term view of demand and volume requirements. The partnering agreements will have pain/gain mechanisms and will be managed with performance related KPIs.

Embedding Supply Management within Water Resources should generate benefits in terms of a dedicated resource to support delivery of the investment portfolio and providing clarity of the most appropriate capital delivery models. The skills and experience of Supply Management will provide a wider supply market perspective compared with the experience of the existing approach. Supply Management should also be involved in developing the investment portfolio to ensure that supply delivery considerations are taken into account in the profiling of delivery. In addition, Supply Management will gain business experience and be able to apply this to the development of scalable solutions for The City. Likewise, the development of best practice from the Supply Management team will be more easily incorporated into the Water Resources business and ensure consistency and alignment with City best practice.

Corporate/ Business Unit Costs

Establishing dedicated Supply Management skills within Water Resources will generate a new business cost in line with an agreed service level agreement. However, this should be offset by a reduced service cost currently applied by The City.

Depending on the capital delivery models selected as being appropriate for Water Resources, financial benefits can be realised and will allow these savings to be reinvested by the business in terms of more customer outputs being delivered, increased risk reserves within the investment portfolio protecting the business from price shocks, or to reduce borrowings from The City and stabilise customer rates.

Timing of Benefit Realisation

The capital delivery models highlighted in this section will not always be applicable across the whole of the capital programme. During the implementation phase an assessment will be undertaken to assess the programme groupings that would benefit from the implementation of one or more of these capital delivery models. Equally, the implementation of these models and the benefits realised takes some time to manifest itself in capital savings from the programme, for example the creation of a joint venture model might take a number of years to be created before any savings from its implementation could be realised. Therefore, an initial assessment has been made as to the portion of the capital programme that would be eligible for an alternate delivery model and a view of when savings might be realised.

This has tended to focus on the business cycle to the end of 2022 due to the fact that there is a higher degree of certainty and more programme intelligence on the projects that will be delivered in this timeframe, making it easier to undertake this type of assessment.

The table below demonstrates the portion of the programme that would benefit from a revised capital delivery model and assesses the potential short term savings (between now and 2022) that can be delivered:

Phasing of Capital Delivery Savings (short term)				
Investment Driver	2017-18 Savings	Annual Capital Spend (2019-2022)	Portion eligible for alternate delivery	Potential Savings (2019-2022)
Capital Maintenance	\$0m	\$80m	\$60m	\$5m
Growth	\$0m	\$30m	\$30m	\$3m
Capital Upgrades	\$0m	\$20m	\$20m	\$2m
TOTALS	\$0m	\$130m	\$110m	\$10m

However, it should be noted that this is the short term view of savings resulting from the implementation of the capital delivery model recommendations and that the range of savings highlighted will ramp-up over a number of business cycles.

SECTION 9

SCALABILITY

Scalability Approach

The scope of the in-depth analysis phase was designed to ensure that the assessment carried out across the workstreams was comprehensive and robust, in order to facilitate a full understanding of the opportunities for improvement across Water Resources. These areas were also chosen due to the fact that they provided the basis for the opportunities identified to be scaled (the learning and recommendations transferred to other areas of the business) across other services where appropriate.

Customer Engagement Strategy

As recommended in the Customer Engagement Strategy, we would advise that customer engagement includes a full view of all Water Utility levels of service, not just those applicable to Water Resources. The benefit of this approach is that the customer can appreciate the full range of services provided by the whole Water Utility and will be able to make comparisons and understand the costs involved.

It will be possible to scale this process across the services provided by the Utilities and Environmental Protection department.

Wastewater Levels of Service

SWI have followed the brief for the ZBR and concentrated on the wastewater levels of service for this business case.

It is recommended that the suggested levels of service for wastewater are developed across the Water Utility to take account of all services provided. This is essential to provide a clear understanding of the current baseline in terms of service delivered to customers and the intended outcomes.

To mirror the UK water industry, this would entail having a performance measure and level of service for the water line of service:

1. Low pressure
2. Unplanned interruptions to supply
3. Water restrictions
4. Leakage
5. Security of Supply/ resilience

In addition to the UK Water Industry standard, it would be beneficial to Water Resources to consider the service provided by Watershed Planning and there may be appropriate, specific levels of service and performance measures for this area of business.

It is recommended that the Water Utility follow a process similar to that detailed in Section 6 given for the practical example and using a similar facilitator to extend the principles of the wastewater levels of service to develop performance indicators and levels of service for the whole Water Utility. There will be some performance indicators and levels of service that are regulated and mandatory e.g. wastewater treatment works compliance and water quality. Data will be available for these LoS to understand and analyse current performance.

Other LoS will be more difficult to define and attribute targets e.g. odour complaints. These performance indicators should be set by the Water Utility following the Plan, Do, Check, Act process, test the validity of the performance measure and levels of service.

As previously stated, the next step in the process would be to engage external customers to test their priorities, expectations and desire for value.

Investment Portfolio Management

The creation of an internal business plan, investment portfolio, staged gateways and risk management are each scalable across not just to Utilities & Environmental Protection but across all capital intensive areas of The City. The approach should be to capture all capital projects with the objective of keeping processes as simple and consistent between business units and for project managers.

Water Resources have made strong progress in developing their processes to support capital tracking and reporting. The processes and data capture requirements are being managed on Microsoft Excel which is currently sufficient to meet the needs of delivering 250-300 projects. As stated above, should The City consider software tools for project management eg Primavera, then these could be considered.

Capital Delivery Models

The capital delivery models are actively being reviewed by Supply Management and there appears to be a recognition and willingness from Supply to increase their level of support and engagement with Water Resources. The capital delivery models are entirely scalable across divisions of The City that deliver capital construction projects. However, Water Resources, having a 4 year investment portfolio combined with the longer term asset management plans, should allow significant benefits to be achieved in both effectiveness and efficiency.

SECTION 10

CHANGE MANAGEMENT STRATEGY

These following sections outline the basis of a change management approach/ high level implementation plan in order to assist Water Resources in the implementation of the ZBR recommendations. The objective is to provide Water Resources` with a starting point on implementation structure, change suggestions and approaches pertaining to the embedding of the opportunities and, therefore, the realisation of the benefits.

INTRODUCTION

As outlined in this report there are a number of strategic recommendations that will take a significant effort and resource in order to implement and realise the benefits within Water Resources. These recommendations will also have a big impact on Water Resources in terms of changed ways of working, behaviours, business processes, decision making, data collection and analysis.

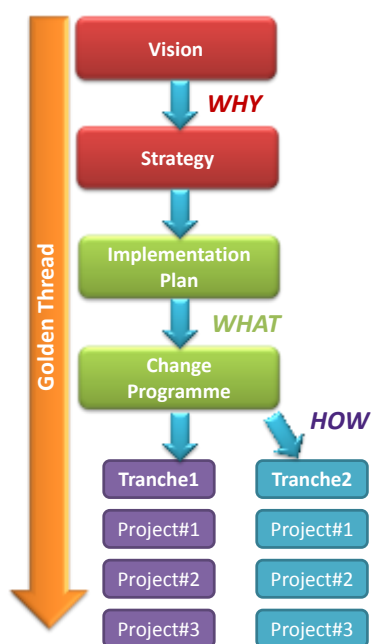
These changes also have a number of dependencies, and need to be assessed in the context of the number and scale of Business As Usual (BAU) projects and initiatives to be able to implement and navigate through a number of step changes. It will be particularly important to manage the people aspects of these changes, given the scale of change that is likely to happen across a large number of roles within Water Resources.

Within Water Resources the number, scale and ambition of projects and initiatives that are currently being undertaken across Water Resources in conjunction with the wider UEP Function is impressive. People are collaborating and working well across business units, building from the bottom up. Project charters exist for these initiatives including success criteria and dependencies with other projects and initiatives. Change Initiatives are being delivered through business as usual teams. However, given the scale of implementing these changes our recommendation is that all the changes are managed in a change portfolio, driving discipline into the delivery and allowing water Resources to manage resources and priorities and the dependencies between the projects.

CHANGE PORTFOLIO DEVELOPMENT

Following a best practice change management approach would allow the Water Management Team to set out their vision for the future and communicate this effectively to all staff in the Water Resource Business Unit. It would also enable more effective collaboration across UEP business units.

Change Management Golden Thread



This would allow the change activity being undertaken by BAU teams to be coordinated and managed through a change programme with a clear line of sight from the strategic objectives of Water Management Team (top down) to the projects and initiatives currently ongoing (bottom up).

More formal change management and establishing a change programme:

- ✓ provides a future vision and culture of working together to meet common goals
- ✓ demonstrates strong leadership and business direction
- ✓ is a key enabler to reducing the strategic risks identified by the Water Management Team
- ✓ a formal change programme will allow the Water Management team to communicate and drive change across the business unit building on the current “opt in” approach of individuals and creating “buy in” from teams and sections
- ✓ will drive the creation of a detailed milestone plan for all change projects and initiatives to allow proper dependency management and critical path identification

Change Management Approach

There is a balance to be achieved through delivering the ‘soft’ change management aspects e.g. communications, shared purpose and the ‘hard’ aspects of change e.g. portfolio management, change governance. However, both are equally important in delivering the strategic changes that Water Resources will face over the coming years.

There are a number of critical capabilities that will need to be in place to embed this level of change successfully and deliver the associated benefits, both in terms of efficiency and effectiveness.

The diagram below highlights the cycle of delivering the change and the ‘soft’ and ‘hard’ capabilities that will make it work. Also, highlighted are some of the key capabilities that need to be considered during implementation planning in terms of creating or enhancing the skills and capabilities in change management within Water Resources.

Strong Change Leadership

Water Resources need to build a critical network of skilled change leaders who will be accountable for change execution providing direction, guidance and support for the change. This will both demonstrate commitment to the change but also provide a firm foundation for the project delivery of change.



Shared Change Purpose

Water Resources need to develop a clear value proposition and under this a compelling case for change that will drive Water Resources to deliver this value proposition. This will help directs and motivates people in the teams – generating urgency, buy-in and commitment and a degree of frustration with the status-quo.

Sustained Personal Change

Part of the overall people change approach needs to be about helping people to adapt personally and individually to the change. This needs to be part of our day to day business in Water Resources and the discussions we have can be centered on how we do this better. The benefits will be in minimising disruption, increasing performance and embedding the transition and making these changes stick that will maximise the benefits of change.

The really critical capabilities that will make all of this work are:

- ✓ Strong change leadership
- ✓ Clear accountability for the delivery of change
- ✓ Change programme and project management delivery capabilities
- ✓ Effective people change management skills
- ✓ Effective change communication

A formal change management approach allows the Water Management team to set out their value proposition of putting customers at the heart of the business and communicates to staff the change to a customer level of service and outcomes focused approach. The change portfolio and detailed milestone plan is a key enabler to improved business effectiveness generating greater outputs from each customer dollar.

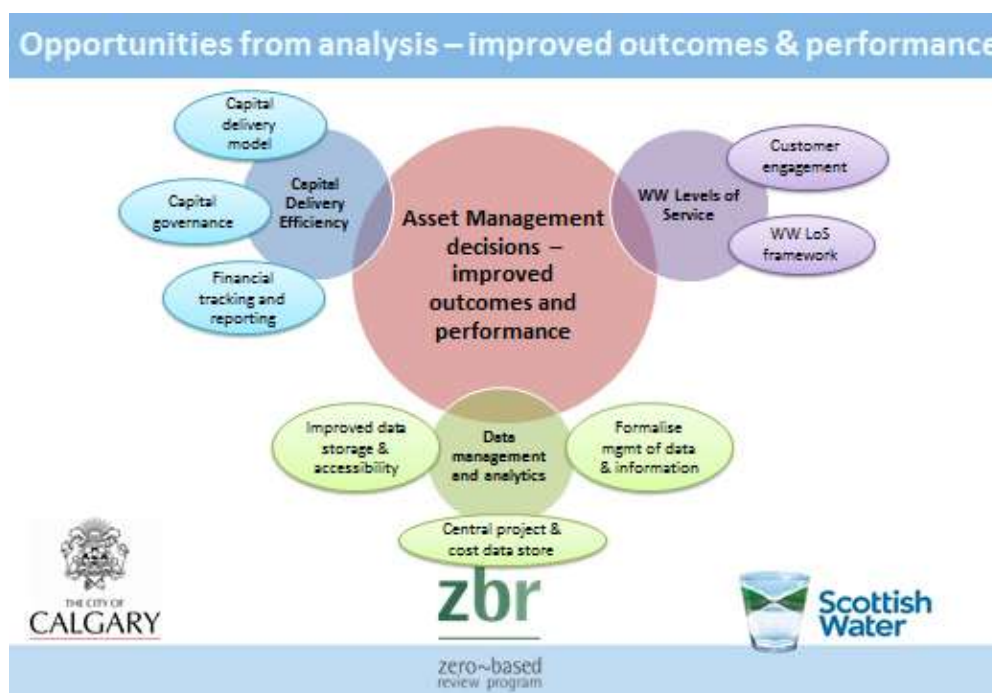
Support for Proposed Change

Currently, Water Resources is driven to achieve an annual investment value with little regard to customer outputs or timing of delivery. The approach of working within an approved annual investment total generates difficulties and inefficiencies in managing the delivery of the investment portfolio.

The difficulties and inefficiencies include:

- forcing management decisions to move budgets between live projects
- instability in project delivery
- reduced ownership and accountability in project progression
- inability to promote projects for tender in a timely manner
- increased number of tender requests to the Supply business
- peaks in the tendering process generating self-induced market competition
- reduced opportunity to bundle projects
- reduced opportunity of providing portfolio visibility to the supply chain
- reduced opportunity for implementing different capital delivery models

The Water Management Team has recognised the need to move to a much more customer outcomes focused approach to managing the Water Resource Business unit and the delivery of the investment portfolio. This is reflected in the scope of the current Water Resources ZBR process and the initial priorities for business cases.



Data Management and Analytics

Our analysis showed that much of the Data Management and Analytics work is already underway and supporting change projects and initiatives, especially in the capital delivery efficiency area. Work on levels of service and customer engagement is not as developed but the approach being taken to implement the UEP Data Foundation Strategy will support this work.

The main gap that exists is not in Data Management and Analytics but in the Management of Change.

Those people working on the various change initiatives and programmes are generally very aware of the strategic need. Project charters exist for these initiatives including success criteria and dependencies with other projects and initiatives. However, there appears to have been no unit wider communication of the need for change and as such a soft approach to implementation is required whereby those impacted by the change are requested to opt in. All teams are working well together and the various change projects and initiatives will bear fruit. However, there is a significant risk that the change will not be delivered on time and that change will not be able to be fully embedded in the Business Unit, thereby, not realising the expected benefits.

Overall Recommendations

Water Resources have already started a number of change projects and initiatives with a view to changing the business unit approach to be more customer outcomes focused. This has come from communications with Council with regard to developing a focused business plan for each business unit in preference to the current planning and budgeting process. This has influenced the priorities for the Water Resources ZBR.

An essential requirement now is a more formal change management approach including the creation of a coordinated change portfolio. This should follow a best practice change management approach for large organisations.

Change Management Approach

Step 1

The Water Management team should set out a clear vision of where it wants the organisation to be at the start of the next business plan cycle with the Council.

This will provide staff with a clear understanding of the “why”.

Step 2

That vision should inform a strategy with clear objectives showing what changes needs to happen across Water Resources and highlighting the collaboration required with Water Services and Corporate Business Units.

The strategy will give Managers and Team Leaders a clear understanding of business objectives and allow them to align their own and team objectives with the strategy.

Step 3

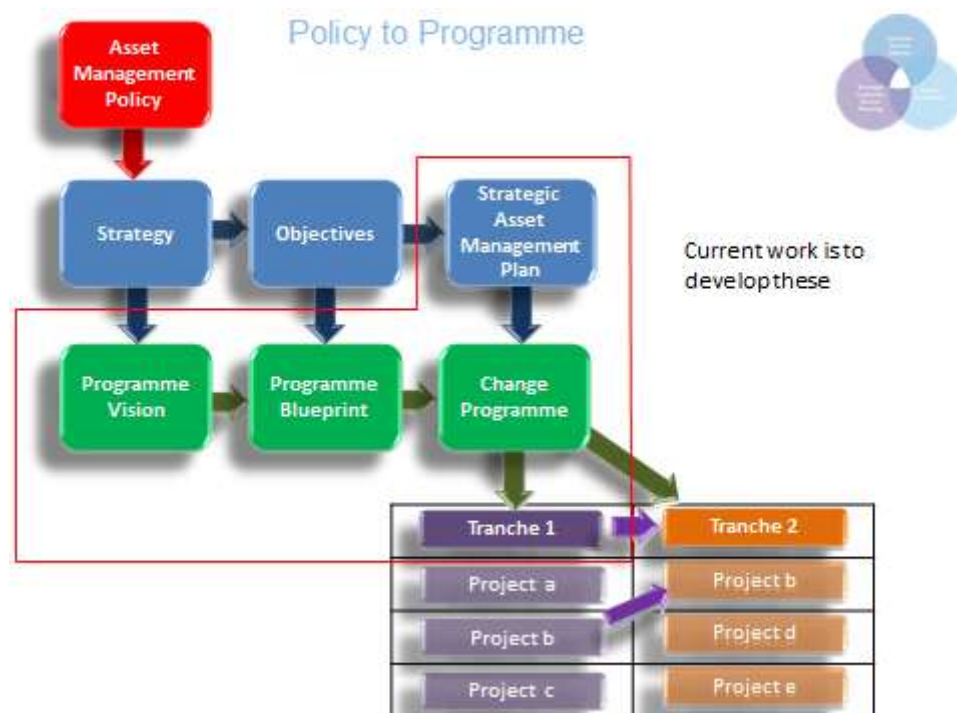
The creation of a detailed implementation plan to deliver the objectives of the strategy. This, and Step 3, will give everyone from Senior Management to team members a clear picture of “what” needs to be done to deliver the change.

Step 4

As part of the implementation plan a coordinated Change Programme will be put together incorporating all of the current change projects and initiatives. The Programme Blueprint and objectives will come directly from the Strategy and Plan. It is likely that a dedicated Programme Manager and programme management resource will be required to drive detailed milestone plans and manage dependencies.

The change portfolio is the last part of the jigsaw and shows “how” the change will be delivered in time.

Each of the above steps will need to be communicated widely and well to everyone in Water Resources and to those business units where collaboration and support is required. A Change Communication Plan is required and it is through this communication plan that the Water Management team will enable business buy in and move away from the current reliance on individual opt in.



SECTION 11

IMPLEMENTATION PLANNING

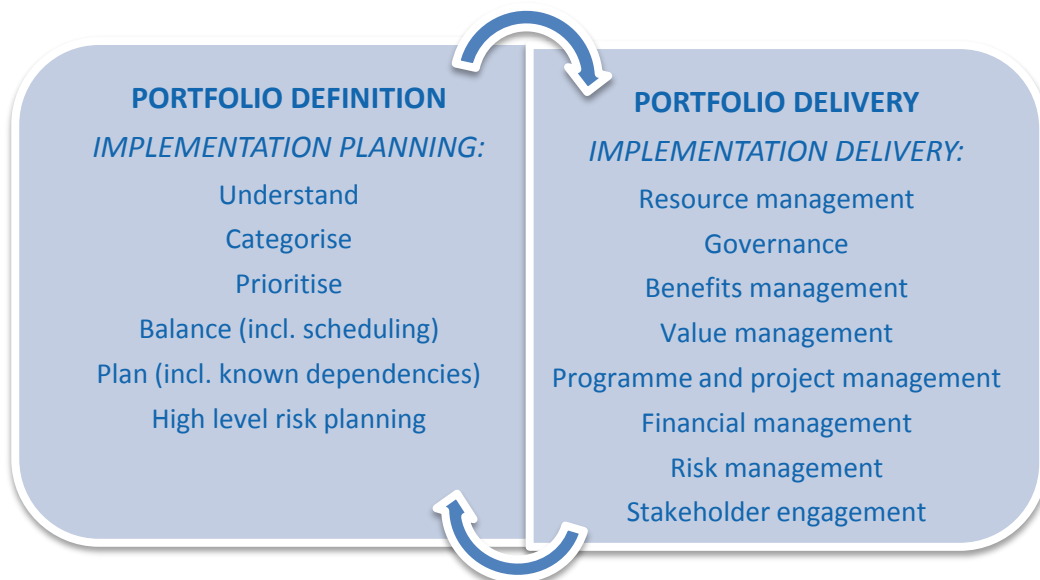
INTRODUCTION

This section outlines the basis of a high level implementation plan in order to assist Water Resources in the implementation planning phase of the ZBR methodology. The objective is to provide Water Resources with a high level plan on implementation structure, suggestions and approaches pertaining to the embedding of the opportunities and, therefore, the realisation of the benefits.

IMPLEMENTATION PLANNING


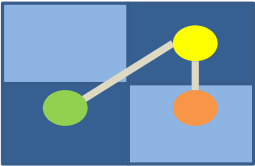
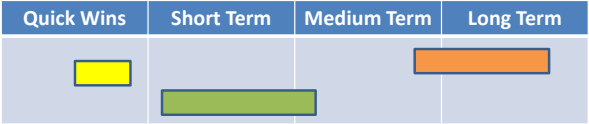
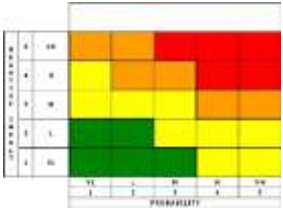
In the previous section on change management the approach to the creation of a holistic change programme for the delivery of all change within Water Resources has been highlighted.

The diagram below identifies the key elements of delivering a portfolio of change; the ZBR process has delivered a foundation for the creation of the portfolio definition, particularly the stages around understanding and categorising. The purpose of the programme definition stages is to bring together all the key information that will provide clarity of which changes will contribute the greatest benefits to the strategic objectives.



The key output of this will be the implementation plan which will allow Water Resources to make confident decisions regarding the scope of the change, the justification for making the changes and determine how and when the change projects will be delivered. Defining the portfolio does not mean that everything must be planned in detail, that will be the responsibility of portfolio and project management, however, being able to understand a high level schedule, supported by a description of the change, estimated resource requirements, timescales and risks will enable a way forward to be agreed and also facilitate the portfolio being understood by other key stakeholders e.g. Council, other business units, employees.

Appendix 3 provides a definition of each of the stages of portfolio definition with an assessment of progress made to date on these stages through the ZBR with Water Resources.

Implementation Planning	
<p>1. Prortisation of recommendations</p> <ul style="list-style-type: none"> ✓ Efficiency and effectiveness benefits vs. the complexity of implementation ✓ Overlay existing initiatives/ projects to gain full picture of change 	<p>2. Map dependencies</p> <ul style="list-style-type: none"> ✓ Link initiatives that are dependent and/ or have synergies with each other 
<p>3. Scheduling of delivery</p> <ul style="list-style-type: none"> ✓ Assessment of the timing of implementation ✓ Takes into account priority and any dependencies 	<p>4. Risks and mitigations</p> <ul style="list-style-type: none"> ✓ Understand the change risks ✓ Develop mitigating actions for pro-active management 

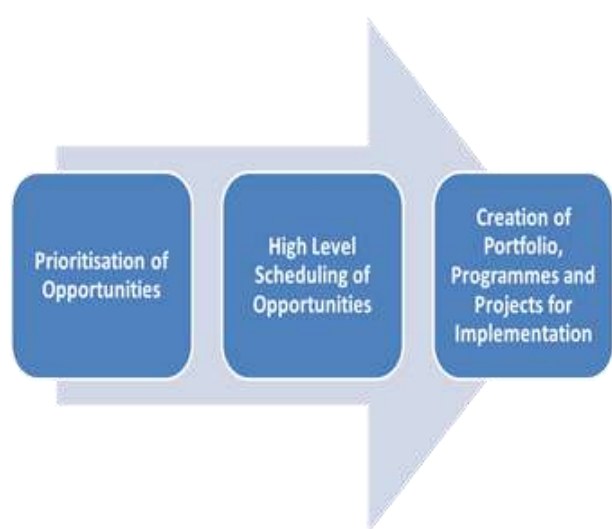
The remainder of this section covers some of the other key elements of the definition of the portfolio and has been broken down into three components to assist in implementation planning:

1. Prioritisation of recommendations
2. Map dependencies between change recommendations
3. Scheduling of delivery of the recommendations
4. Risks and mitigating action

PRIORTISATION

Introduction

As can be seen from the risks highlighted in previous section it will be essential to manage the recommendations from the ZBR as a change portfolio#1 of programmes and projects, and to take into account any ongoing or future continual improvement initiatives as well. However, to be able to develop an effective portfolio of change it is essential to analyse the ZBR opportunities to develop an effective, efficient and deliverable portfolio.



The first two steps in this process are covered in this section (prioritisation and scheduling). Portfolio management is important in implementing this level of change because it ensures that the 'right' programmes and projects are started and delivered in the right priority order with dependencies understood and managed pro-actively. The right programmes and projects are those that collectively make the greatest contribution to The City of Calgary's strategic objectives and targets.

#1 Portfolio Management is a coordinated collection of strategic processes and decisions that together enable the most effective balance of organisational change and business as usual.

Prioritisation of Opportunities

Therefore, one of the first steps is to analyse the opportunities from the ZBR in terms of overall benefit that they will provide versus their complexity of implementation. This assists in the process of informing some key questions associated with prioritisation around:

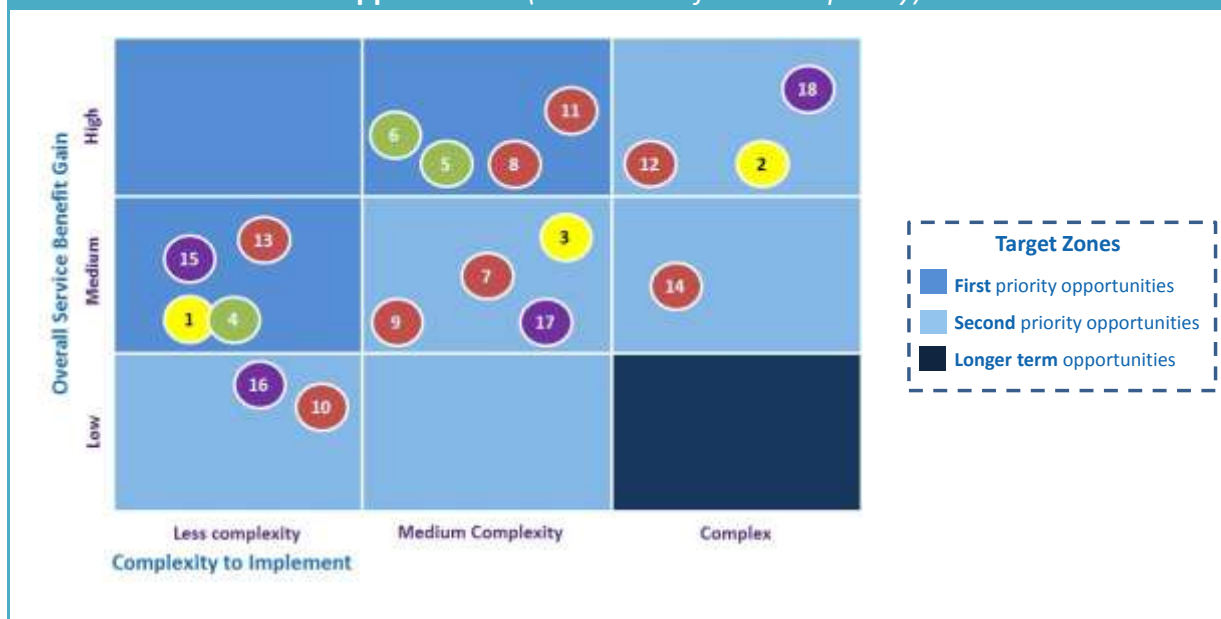
- ✓ What are the most important changes?
- ✓ What changes should be resourced above all others?

The prioritisation matrix below assists in demonstrating the opportunities in this fashion; the matrix is further broken down into three target zones:

1. **First** priority opportunities
2. **Second** priority opportunities
3. **Longer term** opportunities

The rationale for the high complexity of some of the opportunities can be around their reliance on up-front investment, in particular technology investment, to realise the benefits, or these areas that are relatively new to Water Resources. Equally some of the less complex opportunities are likely to be a continuation of some of the activities that are already being undertaken by Water Resources and the opportunity here is around maturing those activities to deliver greater benefit.

Prioritisation Matrix of Opportunities (*overall benefit vs. complexity*)



Customer Engagement ●		Portfolio Management ●	
1. Golden thread/ line of sight		7. Internal business plan	
2. Customer forum		8. Portfolio management	
3. Market research provider		9. Reporting cycle	
		10. Financial awareness	
		11. Stage- gating	
		12. Risk management	
		13. Delivery reporting	
		14. Data store	
Levels of Service ●		Capital Delivery Models ●	
4. Golden thread/ line of sight		15. Planning and procurement horizons	
5. Key performance indicators		16. Supply chain involvement	
6. Reporting/ baselining		17. Supply chain resources	
		18. Capital delivery models ^{#1}	

^{#1} Note some aspects of capital delivery models eg bundling, are potentially less complex to implement

DEPENDENCIES

An important element of planning an effective portfolio of change following the completion of the ZBR, is to understand and manage the dependencies that are essential to enabling the opportunities to be implemented and the benefits to be realised.

This could be dependencies on other opportunities within the portfolio, business as usual activities or other change initiatives within Water Resources or across The City eg IT implementations.

Dependency identification and management is an iterative process which must be monitored and managed throughout the lifecycle. The purpose of dependency identification and management is to:-

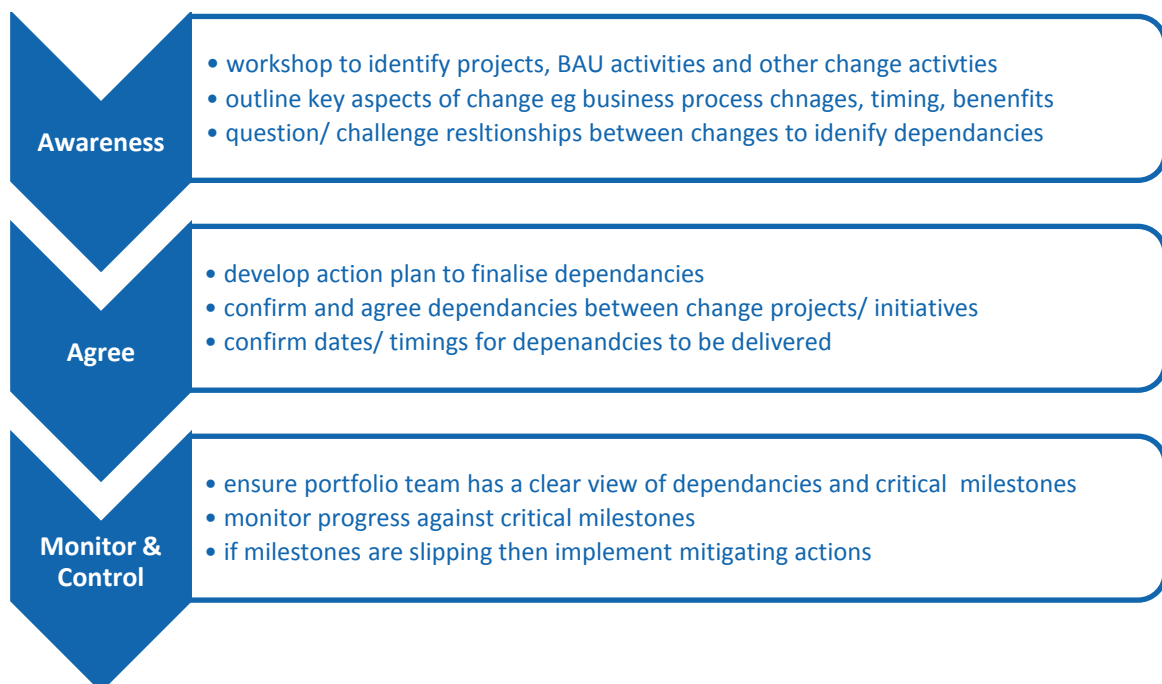
- ✓ Minimise potential hotspots and clashes which can lead to programmes or projects stalling
- ✓ Minimise the need to re-schedule the Portfolio delivery plan
- ✓ Minimise impact to time, cost and scope
- ✓ Avoid the erosion of quality outputs and benefits delivery

The table below defines the various different categories of dependencies including how to assess the criticality, impact and severity associated with the management of the dependencies.

Category	Definition
Dependency	Incoming <i>out-with your control</i> - An activity or output required from another initiative out with your programme or project to enable you to proceed Outgoing <i>within your control</i> – An activity or output planned by your project or programme required by others to allow them to proceed
Interdependency	<i>Within your control</i> - An activity or output required across work-streams within your programme or project to enable you to proceed
Synergy	Activities or outputs planned by you or other projects or programmes which align. If joined up, this enables the opportunity to collaborate, reduce risk, enhance benefits, gain more stakeholder buy-in and maximise the outcome & sustainable change when programmes / projects transition into BAU
Overlap	Duplication of scope/activities across projects and programmes. Effective management of overlaps can lead to opportunities to reduce cost, scope, time and alleviate capacity constraints (resources) as well as enhance quality of outputs
Criticality <i>(Exposure if dependency not managed)</i>	High (Immediate action required) – Programme/Project cannot proceed without this dependency being managed, this will impact the critical path in terms of time, cost and quality. Programme/Project milestones plan may need to be re-baselined. Medium (Actions need to be prioritised) – Programme/Project requires this dependency, however alternative options/activities can be deployed to avoid significant impact to the critical path in terms of time, cost and quality.

	Low (Minimal action required) – Programme/Project requires the dependency but impact to critical path will be negligible.
Impact	Description of the effect on ability to deliver to time, cost & quality, and resultant impact on wider business, resources (including people) and business benefits
Severity	The result of the impact on the portfolio or business if the dependency is not managed. This could be; the failure to meet regulatory dates or impact to the business' reputation, achievement of the Vision, or adversely impact business continuity

A three stage process can be undertaken to identify, agree and manage the dependencies that need to be managed to ensure successful delivery of the programmes/ projects within the portfolio, as outlined below:



SCHEDULING OF OPPORTUNITIES

The prioritisation matrix has developed a starting point for the creation of scheduling the opportunities identified during the ZBR. This is an integral stage towards the development of the programmes and projects that will be delivered during the implementation.

Highlighted in this section is a high level view on the scheduling of these opportunities, breaking them down into an implementation timeline, as defined below:

1. **Quick Wins** (delivered within 12 months)
2. **Short Term** (1-2 years)
3. **Medium Term** (2-4 years)
4. **Long Term** (4+ years)

The scheduling of opportunities is based on the following assumptions/ comments/ calcifications:

- ✓ Water Resources, will through its implementation planning, determine the actual cost of implementation, including any information technology requirements, and calculate the net benefit of implementing the recommendations (i.e. efficiency savings vs. cost of implementation)
- ✓ It should be noted that as further business analysis is undertaken by Water Resources and as the implementation planning work matures, it will revise the scheduling assessment outlined in the table over
- ✓ As this assessment has been carried out without a full understanding of other business activities being planned or currently undertaken there is a risk that business priorities within Water Resources will have an impact on the scheduling of these opportunities, potentially meaning that the timeline is adversely affected, for example a short term opportunity could become medium term implementation.
- ✓ Scheduling does not include scalability to other areas in Water Resources. The timing and approach to integrating scalability will be determined by Water Resources in more detail through the implementation planning phase

SCHEDULING OF OPPORTUNITIES	
Quick Wins (delivered within 12 months)	Short Term (1-2 years)
1. Golden thread/ line of sight 4. Golden thread/ line of sight 10 Financial awareness	3. Market research provider 5. Key performance indicators 6. Reporting/ baselining 8. Portfolio management 9. Reporting cycle 11. Stage-gating 13. Delivery reporting 17. Supply chain involvement
Medium Term (2-4 years)	Long Term (4+ years)
2. Customer forum 7 Internal business plan 12 Risk management 14 Data store 15 Planning and procurement horizon 17 Supply chain resources	18. Capital delivery models ^{#1}

^{#1} Note some aspects of capital delivery models eg bundling, can potentially be implemented in a shorter timeframe

RISKS AND MITIGATION

All change portfolios, programmes and projects carry risks as they are fairly unique to the specific organisation, constrained, based on assumptions, performed by people and often subject to external influences. To assist in managing those risks it is vital to define and understand the risks and develop mitigating actions to allow for the risks to be pro-actively managed, ensuring that the success of the change is optimising through minimising threats and maximising opportunities. To kick-start this risk process, identified below are some of the high level risks and mitigating implementation suggestions aimed at the pro-active management of these risks that specifically relate to the implementation of the opportunities as identified through the ZBR process.

Risk Description		Mitigating High Level Implementation Suggestions
1	Failure to deliver project outcomes due to lack of project resources caused by conflicting work priorities	Create a dedicated business change portfolio with structured programmes and projects and accountable programme managers with individual workstream project managers responsible for implementation and delivery of outcomes with dedicated full time project resources with suitable programme and project governance.
2	Poor communication to employees leads to a reluctance to support the project implementation	Develop and implement a detailed communications strategy and plan aligned to programme and project plans. Driven by a robust vision and mission by key sponsor / stakeholders / programme board.
3	Water Resources capacity for change	<p>Undertake an assessment of the teams and individuals that will be impacted by the programme of change to be implemented. This will assist in determining the scheduling of the ZBR recommendations (and also any continual improvement initiatives) to ensure that change is pro-actively managed to maximise the chances of the changes being accepted and the benefits being realised.</p> <p>Linked to risk #2 also undertake pro-active change management activities eg engage teams in change development, create more visibility of the change, paint a picture of the future state, which will also assist in the acceptance and delivery of the change.</p>

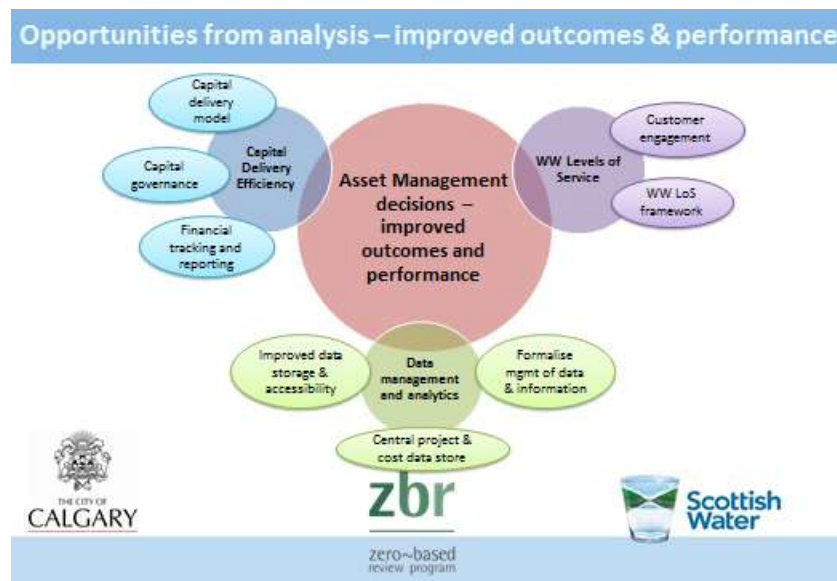
4	Not measuring performance so cannot demonstrate/ measure improvement or success of initiatives.	<p>Develop and track performance measures related to ZBR initiatives.</p> <p>Develop measures that are able to define, track and demonstrate the success of implementation. To ensure that this is even more meaningful for Water Resources expand the measurement to encompass the continual improvement initiatives undertaken by Water Resources.</p>
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SECTION 12

CAPABILITY GAPS

INTRODUCTION

The Water Management Team has recognised the need to move to a much more customer outcomes focused approach to managing the Water Resource Business unit and the delivery of the investment portfolio. This is reflected in the scope of the current Water Resources ZBR process and the initial priorities for business cases.



Our analysis is showing that much of the work required in the three main areas is already underway. We have been particularly impressed with the number, range and ambition of projects and initiatives that are currently being undertaken by staff across Water Resources in conjunction with the wider UEP Function. In all cases we found that staff are collaborating and working well across business units, building from the bottom up.

We believe that there are three areas where a capability gap exists within Water Resources and these are:

- Data Analytics
- Project Management
- Cost Intelligence

DATA ANALYTICS

Water Resources has very good asset risk data and for water and waste water networks the ability and information exists to relate that asset risk to a risk of disruption to customers. For treatment works good asset risk data also exists but it is not directly related to the operational performance of the works.

We believe a gap exists in analytical skills. With the retirement of key staff Infrastructure planning no longer has the ability to do statistical analysis of asset and customer information. We believe that this will be a key skill required in building and right sizing future business plans and investment portfolios and understanding the risks to service associated with such plans.

Building an internal analytics capability would allow Infrastructure Planning to develop statistical and mathematical models to predict how assets above and below ground deteriorate, perform and impact on customers. Insights from these models are used to support both capital and operational decisions.

Also modeling and data analysis can support a variety of business problems such as: the prediction of water quality failures in order to plan appropriate interventions; the identification of a sustainable peak daily demand.

Recommendations:

- Consideration is given to either building an internal analytics capability or, using an external consultant, to build insights ahead of the next business planning round with City of Calgary in 2018
- The Asset Planning team lead a pilot project to establish asset and performance risk measures for treatment works [using a water treatment works or a stable waste water plant like Pine Creek]

PROJECT MANAGEMENT

We believe that Water Resources current structure has a heavy reliance on Project Engineers and Subject Matter Experts to carry out project management activities on the capital programme. With the move to an investment portfolio and a four year plan we believe that an opportunity exists to build project management expertise within Infrastructure Delivery. This would require an increased focus on project management skills and the potential re-focus of the role to be less engineering dominated.

COST INTELLIGENCE

Constructing an investment portfolio requires a baseline project cost estimate to be established. At present estimating involves individual project managers searching out tendered rates from previous tenders and interpreting and applying them as best they can. These rates need to be collated and stored in a central database to enable consistent estimating and to greatly reduce the time for project estimating.

The need for a Central Project and Cost Data store has been recognised in the UEP Data Foundation Strategy supporting both Infrastructure Asset and Capital and Financial Planning.

However, we believe that a further step is required which involves putting some intelligence around this information and grouping rates into ranges of cost for estimating purposes. This could be done internally or using a cost consultant. A further step would be to develop an in house capability to keep this cost information up to date and to help inform its use in cost benefit and cost estimating for projects.

SECTION 13

APPENDICIES

APPENDIX 1 – WATER UTILITY EXISTING PERFORMANCE MEASURES

Performance measures from the National Water and Wastewater Benchmarking Initiative that apply directly to wastewater.

Wastewater Collection Performance Measures
of Blocked Sewers / 100 km Length
of Blocked Sewers / 100km Length Due to Different Causes
% of Blocked Sewers that were Repeat Occurrences
% of Length Cleaned / Length that Can be Cleaned
% Sewer Cleaned Hydraulically and Mechanically
% of Manholes Visually Inspected
of Pump Station Failures / # of Pump Stations
5-year Average # of Sewer Repairs (Planned & Emergency) / 100 km Length
% of Length CCTV Inspected
Breakdown of Length CCTV Inspected / Length that can be Inspected
5 Year Running Average Capital Reinvestment / Replacement Value
% of Sewer Length Replaced
% of Sewer Length Replaced and Relined
of Planned & Emergency Service Connection Repairs / 1,000 Service Connections
Volume of CSOs as % of Total Wastewater Volume – Combined System
of Blocked Service Connections / 1000 Service Connections
of Connections with Sanitary Flooding / 1,000 Service Connections
Breakdown of Connections with Sanitary Flooding by Causes / 1,000 Service Connections
of Reported Overflows due to Capacity / 100 km length
Breakdown of # Reported Overflows by cause / 100 km Length
of Wastewater Related Customer Complaints / 1,000 People Served
% of Calls for Service resolved within the Defined Level of Service
WWTP Performance Measures
% of Time WWTP Operates with No Remaining System Redundancy
% of time WWTP operates while vulnerable to failure
% of Design AAF Capacity Utilized
of Non-Compliances
kg of BOD Discharged to Environment per Capita
of Bypasses in year
of Odour Complaints / 1,000 People Served

Wastewater level of service performance measures from WMT Performance Management Report.
Projected remaining years of wastewater treatment capacity (installed)
Projected remaining years of wastewater treatment capacity (firm)
Serviced land supply (WW) alignment to corporate Growth Management Plan (years)
Sewer main backups
Water, wastewater and drainage systems assessed to be in fair or better condition
Repeat Sewer Main backups
Customers that experience zero wastewater service back-ups in the past year
Average time to respond to a citizen-reported emergency wastewater incident
Provincial regulations met for treated wastewater
% of used biosolids/total produced

APPENDIX 2 – ASSESSMENT OF PORTFOLIO DEVELOPMENT

Implementation Planning Stage & Definition		Progress to date
Understand	The understanding of the need for change (i.e. to meet strategic objectives and what the current and future changes might look like	ZBR process has identified new change in the context of the broader need for change (efficiency and effectiveness). Water Resources need to combine with any continual improvement initiatives (and business as usual) to develop full understanding. Water Resources will also need to fully understand the costs of implementation to determine if there is a net benefit to the recommendations (efficiency gains vs. cost of implementation).
Categorise	Organise the changes into groups of similar organisational needs i.e. themes of work, strategic objectives, technology	The areas identified through the ZBR process have been themed around work types (job planning, performance measurement and risk based maintenance). Within these themes the opportunities have been placed in sub-themes with clear reference to the benefits of efficiency and effectiveness
Prioritise	<p>Prioritising ranks the change within the portfolio based on defined measures. This type of prioritisation helps answer questions around:</p> <ul style="list-style-type: none"> • Should we do it? • What are the most important changes? • What changes must be resourced above all others? • What changes have the most risk attached? 	A high level prioritisation (based on benefit vs. complexity) has been undertaken to answer some of the questions of prioritisation and start the process around scheduling. A refinement of the prioritisation exercise has been the completion of a scheduling table with a view of high level dependencies.

Balance	Balancing a portfolio means judging all portfolio elements in order to find the ideal mix of changes. For example, the mix that has the greatest potential collectively to achieve the organisation's strategic objectives within the constraints of resources (people, money etc.)	Although the scheduling exercise does attempt to balance the portfolio of change, it does not take account of any existing or future planned initiatives or BAU activities or any resource constraints within Water Resources or any other business unit within The City of Calgary eg Information Technology.
Plan	The plan focus on collecting all the information from the stages above along with other information regarding on going change eg continual improvement initiatives, to enable stakeholders to fully understand the full portfolio and make informed decisions about it	
HL Risk Planning	Define the high level risks that would have an impact on the delivery of the overall portfolio of benefits and set in place mitigating actions to pro-actively manage their potential impact	A very high level view of the risks associated with the delivery of the benefits identified through the ZBR process has been undertaken. This needs to be refined and further levels of granularity included to undertake effective risk management practices.