



Asset Management Plan

Stormwater Drainage

2018-28

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1 EXECUTIVE SUMMARY

1.1 The Purpose of the Plan

Asset management planning is a comprehensive process to ensure delivery of services from infrastructure is provided in a financially sustainable manner.

This asset management plan details information about infrastructure assets including actions required to provide an agreed level of service in the most cost effective manner while outlining associated risks. The plan defines the services to be provided, how the services are provided and what funds are required to provide the services over a 10-year planning period.

This plan covers Council's stormwater drainage assets.

1.2 Asset Description

These assets include:

The stormwater drainage network comprises:

- Conduits 224.15 km;
- Pits 9846 Nos;
- Headwalls 234 Nos;
- Gross Pollutant Traps 34 No.

These infrastructure assets have significant value estimated at \$350,917,000.

1.3 Levels of Service

Our present funding levels are sufficient to continue to provide existing services at current levels in the medium term.

The main services consequences are:

- Increased blockages and potential for flooding;
- Deterioration to pipe or pit condition;
- Increase safety issues due to pipe collapse or flooding;
- Reduce system capacity.

1.4 Future Demand

The main demands for new services are created by:

- Population;
- Demographics;
- Technological changes;
- Floodplain management outcomes;

These will be managed through a combination of managing existing assets, upgrading of existing assets and providing new assets to meet demand and demand management. Demand management practices include non-asset solutions, insuring against risks and managing failures.

Demand management practices for Council's Stormwater infrastructure asset include:

- Planning controls;
- Promote Stormwater harvesting for parks and sports field irrigation;
- Floodplain Management – Ongoing catchment studies will enable a better understanding of the capacity and performance of our drainage network with resulting risk management recommendation, but may include upgrades to our stormwater assets.

1.5 Lifecycle Management Plan

What does it Cost?

The projected outlays necessary to provide the services covered by this Asset Management Plan (AM Plan) includes operations, maintenance, renewal and upgrade of existing assets. Over the 10-year planning period the funding required is \$18,938,000 or \$1,894,000 on average per year of which \$707,000 relates to projected renewals.

Stormwater drainage assets are long life assets and the age profile of this asset class results in the requirement for only a small amount of renewal work during the planning period. Overall, our stormwater drainage assets are depreciating at \$2,192,000 annually and budget allocation over and above the projected renewals covered by this Asset Management Plan is required to ensure the future sustainability of this asset class beyond the 10-year planning period.

1.6 Financial Summary

What we will do

Estimated available funding for this period is \$30,386,000 or \$3,039,000 on average per year as per the long-term financial plan or budget forecast. This is 160 Per cent of the cost to sustain the current level of service at the lowest lifecycle cost over the 10-year planning period.

The infrastructure reality is that only what is funded in the long-term financial plan can be provided. The emphasis of the Asset Management Plan is to communicate the consequences that this will have on the service provided and risks, so that decision making is “informed”.

The allocated funding leaves a surplus of \$1,145,000 on average per year over the projected expenditure required to provide services in the AM Plan. This is shown in the figure below.

The surplus should be set aside to cover the difference between annual depreciation and renewals over the planning period. This will ensure that the existing levels of service can be maintained beyond the 10-year planning period and for the life of the assets. This effectively returns the sustainability ratio to 1 across the life of the assets.

Projected Operating and Capital Expenditure

Randwick CC - Projected and Budget Expenditure for (Stormwater_S3_V1)

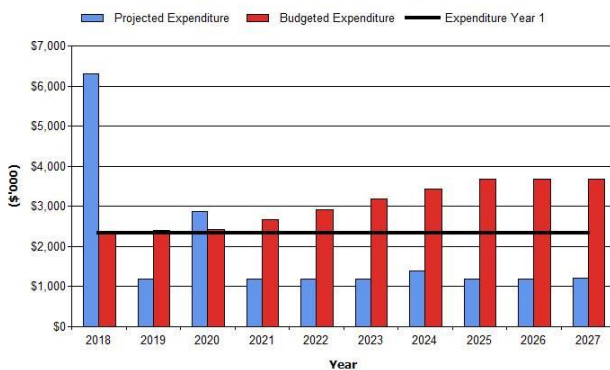


Figure values are in current (real) dollars.

We plan to provide stormwater management services for the following:

- Operation, maintenance, renewal and upgrade of Stormwater pits and conduits to meet service levels set by in annual budgets.
- Asset renewals and upgrades within the 10-year planning period.

Managing the Risks

Our present funding levels are sufficient to continue to manage risks in the medium term.

There are risks associated with providing the service and not being able to complete all identified activities and projects. We have identified major risks as the failure of pipe structure supporting a road corridor or a building significant structure.

The main risk consequences are:

- Injuries or loss of life;
- Property damage;
- Environmental incident;
- Significantly large repair cost;
- Damage to Council’s reputation.

We will endeavour to manage these risks within available funding by:

- Prioritised CCTV inspections based on location, age, pipe condition and accessibility;
- Use CCTV outcomes to generate capital work programs for pits and pipes;
- Inspection program for pits that are located within properties;
- Progressively developing Floodplain Risk Management Plans for our catchment.

1.7 Asset Management Practices

Our systems to manage assets include:

- Technology One;
- GIS-(ESRI Arcmap);
- Photographs;
- Electronic data capturing tools (ESRI Arc Collector);
- Risk management practices and tools.

Assets requiring renewal/replacement are identified from our annual CCTV program and CRMs.

1.8 Monitoring and Improvement Program

The next steps resulting from this asset management plan to improve asset management practices are:

- The procurement of a Strategic Asset Management System to allow sophisticated modelling, forecasting and risk management. (*Key Asset Management Strategy 7*)
- The formation of an Asset Management Steering Group to ensure a consistent asset centric approach across the organisation that is consistent with the Asset Management Policy and Strategy. (*Key Asset Management Strategy 2*)
- Further identification and refinement of costs associated with managing this asset class. (*Key Asset Management Strategy 4*)

These next steps are aligned with Key Strategies identified Council’s Asset Management Strategy 2018-28.

2. INTRODUCTION

2.1 Background

This asset management plan communicates the actions required for the responsive management of assets (and services provided from assets), compliance with regulatory requirements, and funding needed to provide the required levels of service over a 10-year planning period.

This asset management plan is to be read with the following associated planning documents:

- The Randwick City Plan;
- Delivery Plan 2018-21 and annual Operational Plans;
- Asset Management Policy;
- Asset Management Strategy 2018-28;
- Long Term Financial Plan 2018-28;
- Resourcing Strategy-Workforce Plan 2018-28;
- ICT Digital Strategy 2018-28;
- Randwick City Council Community Consultation Principles and Consultation Planning Guide.

This plan aligns with the Asset Management Strategy 2018-28 and covers a 10-year planning period. Figures within the plan extend beyond the 10-year planning period for the purpose of projecting asset management challenges beyond the life of the plan.

The infrastructure assets covered by this asset management plan are shown in Table 2.1. These assets are used to provide stormwater management services.

Table 2.1: Assets covered by this Plan

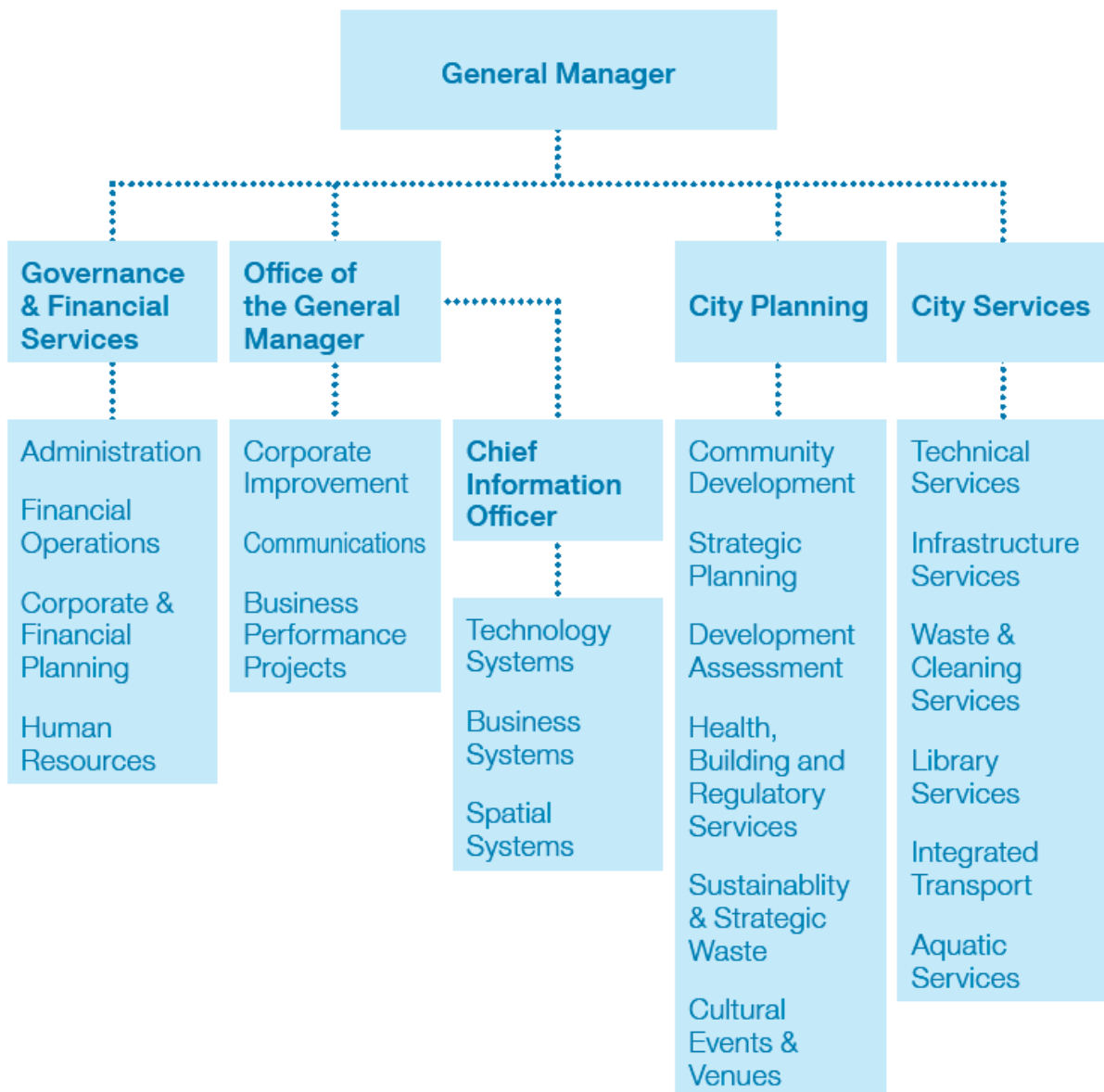
| Asset Category | Quantity | Replacement Value |
|-----------------------|-----------|----------------------|
| Conduits | 273.53 km | \$296,496,641 |
| Pits | 9846 Nos | \$52,917,272 |
| Headwalls | 236 Nos | \$1,151,653 |
| Gross Pollutant Traps | 34 No. | \$351,381 |
| TOTAL | | \$350,916,949 |

Table 2.1.1: Key Stakeholders in the AM Plan

| Key Stakeholder | Role in Asset Management Plan |
|---|---|
| Council Representatives (Includes Councillors and the Mayor) | <ul style="list-style-type: none"> • Represent needs of community/shareholders, • Allocate resources to meet the organisation’s objectives in providing services while managing risks, • Ensure organisation is financially sustainable. |
| Council Officers | <ul style="list-style-type: none"> • Manage Stormwater Drainage Assets • Ensure level of service provided meets needs of residents and visitors • Implement the components identified in the Stormwater Drainage asset management plan. |

| | |
|-----------|--|
| Residents | <ul style="list-style-type: none"> • Core beneficiaries of the service provided by Stormwater Drainage assets. • Their needs, wants and expectations are conveyed to the Council and should be reflected in desired levels of service. |
| Visitors | <ul style="list-style-type: none"> • Beneficiaries of the service provided Stormwater Drainage assets. • Their needs, wants and expectations drive the development in areas of the highest visitor usage and also commercial areas. |
| Insurers | <ul style="list-style-type: none"> • Insurers have interest in implementation of systems which allow Council to gain better knowledge of the condition of their assets. • Systems should be reflected in the number of claims made against each asset group. |

Our organisational structure for service delivery of infrastructure assets is detailed below.



2.2 Goals and Objectives of Asset Ownership

Our goal in managing infrastructure assets is to meet the defined level of service (as amended from time to time) in the most cost effective manner for present and future consumers. The key elements of infrastructure asset management are:

- Providing a defined level of service and monitoring performance,
- Managing the impact of growth through demand management and infrastructure investment,
- Taking a lifecycle approach to developing cost-effective management strategies for the long-term that meet the defined level of service.
- Identifying, assessing and appropriately controlling risks, and
- Linking to a long-term financial plan which identifies required, affordable expenditure and how it will be allocated.

Other references to the benefits, fundamentals principles and objectives of asset management are:

- International Infrastructure Management Manual 2015; ¹
- ISO 55000 ².

2.3 Plan Framework

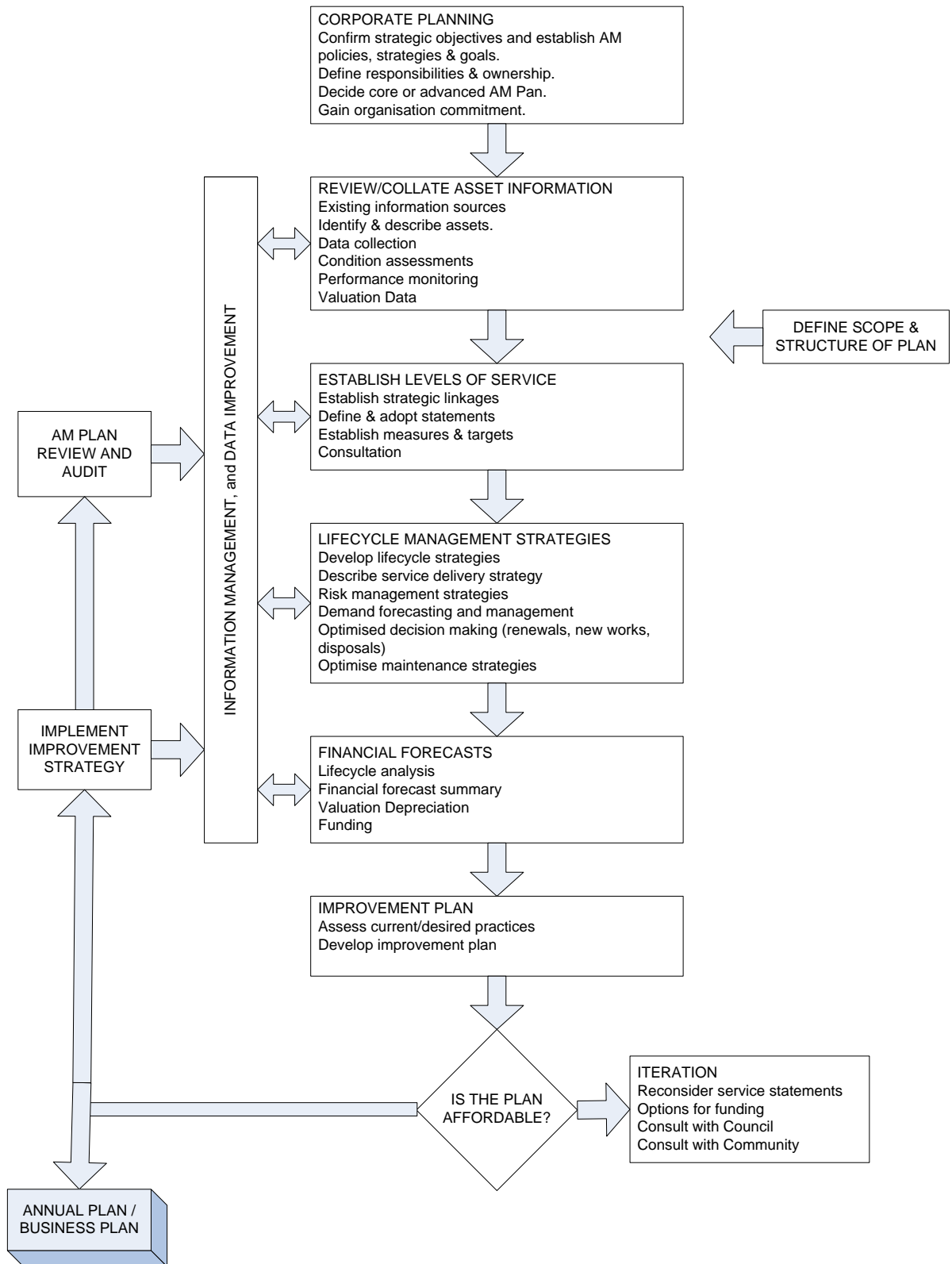
Key elements of the plan are

- Levels of service – specifies the services and levels of service to be provided by the organisation,
- Future demand – how this will impact on future service delivery and how this is to be met,
- Life cycle management – how Council will manage its existing and future assets to provide defined levels of service,
- Financial summary – what funds are required to provide the defined services,
- Asset management practices,
- Monitoring – how the plan will be monitored to ensure it is meeting organisation’s objectives,
- Asset management improvement plan.

A road map for preparing an asset management plan is shown below.

¹Based on IPWEA 2015 IIMM, Sec 2.1.3, p 2| 13

²ISO 55000 Overview, principles and terminology



2.4 Core and Advanced Asset Management

This asset management plan is prepared as a 'core' asset management plan over a 10-year planning period in accordance with the International Infrastructure Management Manual³. Core asset management is a 'top down' approach where analysis is applied at the system or network level. An 'advanced' asset management approach uses a 'bottom up' approach for gathering detailed asset information for individual assets.

3. LEVELS OF SERVICE

3.1 Customer Research and Expectations

In 2014, Council commissioned a community satisfaction survey conducted by Micromex Research^A. The survey was administered by a computer aided telephone system to a sample of 1,000 residents. The most recent customer satisfaction survey reported satisfaction levels for the following services.

Table 3.1: Community Satisfaction Survey Levels

| Performance Measure | Satisfaction Level* |
|---|---------------------|
| Overall satisfaction with Council's performance | 95% |
| Maintaining local roads | 72% |
| Long-term planning for the City | 80% |
| Council's response time to request for service | 78% |

*Based on Top 3 box (percentage of residents indicating they are very satisfied, satisfied, or somewhat satisfied).

Community satisfaction information is used in developing the 10-year Randwick City Plan and in the allocation of resources in the budget.

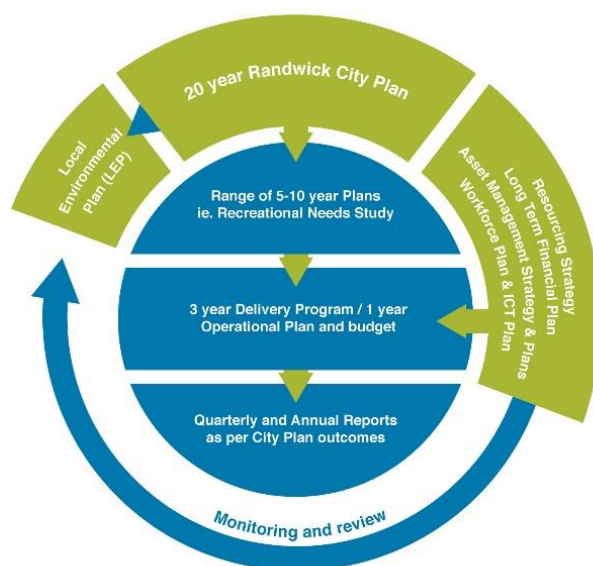
3.2 Strategic and Corporate Goals

This asset management plan is prepared under the direction of the 10-year Randwick City Plan and within the Integrated Planning and Reporting (IPR) framework

³ IPWEA, 2015, IIMM.

^A TRIM D02266591

Integrated Planning and Reporting framework



This plan will guide the delivery of actions by Council to achieve the following City Plan Outcomes:

Outcome 1: Leadership in Sustainability.

Outcome 6: A Liveable City.

Relevant goals and objectives and how these are addressed in this asset management plan are:

Table 3.2: Goals and how these are addressed in this Plan

| Randwick City Plan Outcome | Direction | Objective | How Goal and Objectives are addressed in AMP |
|-----------------------------------|--|--|--|
| Outcome 6: A Liveable City | Direction 6a: Our public infrastructure and assets are planned, managed and funded to meet the community expectations and defined levels of service. | Implement the strategic asset management system to deliver intergenerational equity and meet the Council's obligations as the custodian of our community's assets. | The implementation of a Strategic Asset Management System is a part of the monitoring and improvement program within this Asset Management Plan. |
| Outcome 6: A Liveable City | Direction 6a: Our public infrastructure and assets are planned, managed and funded to meet the community expectations and defined levels of service. | Conduct programmed asset maintenance management in accordance with adopted service levels. | The Stormwater Drainage Asset Management Plan includes funding for operations and maintenance and provisions for performance monitoring against adopted service level. |

| | | | |
|--|---|--|---|
| Outcome 6: A Liveable City | Direction 6c: The safety of our community is paramount and is acknowledged and supported through proactive policies, programs and strategies. | Conduct minor reactive maintenance management in accordance with adopted service levels. | <ul style="list-style-type: none"> Respond to customer requests within service level agreements. Identify High and Extreme risk walls. Planned Inspections for High and Extreme risk walls. Develop an operational and maintenance plan and allocate funding to carry out remediation work as required. |
| Outcome 1. Leadership in Sustainability | Direction 1a: Council has a long-term vision based on sustainability. | Ensure financial strategies underpin Council's asset management policies and strategic vision. | The Stormwater Drainage Asset Management Plan aligns with Council's Resourcing Strategy, including the Asset Management Strategy, Workforce Plan and Long-Term Financial Plan. |

The Randwick City Council will exercise its duty of care to ensure public safety in accordance with the infrastructure risk management plan prepared in conjunction with this AM Plan. Management of infrastructure risks is covered in Section 6.

3.3 Legislative Requirements

There are many legislative requirements relating to the management of assets. These include:

Table 3.3: Legislative Requirements

| Legislation | Requirement |
|---|--|
| Local Government Act 1993 | Sets out role, purpose, responsibilities and powers of local governments including the preparation of a long-term financial plan supported by asset management plans for sustainable service delivery. |
| Workplace Health and Safety Act 2011 | "Protecting workers and other persons against harm to their health, safety and welfare through the elimination or minimisation of risks arising from work..." |
| Australian Accounting Standard AASB116 | Reporting on asset condition and consumption to Councillors, management and the community. |
| Civil Liability Act 2002 and Civil Liability Amendment (Personal Responsibility) Act 2002 | Protects the Council from civil action by requiring the courts to take into account the financial resources, the general responsibilities of the authority and the compliance with general practices and applicable standards. |
| Local Government (General) Amendment (Stormwater) Regulation 2006 under the Local Government Act 1993 | <p>The object of this Regulation is to amend the Local Government (General) Regulation 2005:</p> <p>(a) to prescribe the maximum amount that may be charged by a council for the provision of stormwater management services, and</p> <p>(b) to provide that certain information regarding stormwater management services is to be included in a council's draft management plan, and</p> <p>(c) to provide that a council's annual report is to include certain information relating to the provision of stormwater management services.</p> <p>This Regulation is made under the Local Government Act 1993, including sections 403 (1), 428 (2) (r), 496A and 748 (the general regulation-making power).</p> |

| | |
|---|--|
| Protection of the Environment Administration Act 1991 | <p>The objects of this Act are as follows:</p> <ul style="list-style-type: none"> (a) to constitute the Environment Protection Authority, (b) to provide integrated administration for environment protection, (c) To require the Authority to perform particular tasks in relation to the quality of the environment, environmental audit and reports on the state of the environment. |
| Water Management Act 2000 | <p>The objects of this Act are to provide for the sustainable and integrated management of the water sources of the State for the benefit of both present and future generations and, in particular:</p> <ul style="list-style-type: none"> (a) to apply the principles of ecologically sustainable development, and (b) to protect, enhance and restore water sources, their associated ecosystems, ecological processes and biological diversity and their water quality, and (c) to recognise and foster the significant social and economic benefits to the State that result from the sustainable and efficient use of water, including: <ul style="list-style-type: none"> (i) benefits to the environment, and (ii) benefits to urban communities, agriculture, fisheries, industry and recreation, and (iii) benefits to culture and heritage, and (iv) benefits to the Aboriginal people in relation to their spiritual, social, customary and economic use of land and water, (d) to recognise the role of the community, as a partner in managing the environment. |

3.4 Customer Levels of Service

Service levels are defined service levels in two terms, customer levels of service and technical levels of service. These are supplemented by organisational measures.

Customer Levels of Service measure how the customer receives the service and whether value to the customer is provided.

Customer levels of service measures used in the asset management plan are:

| | |
|--------------|---|
| Quality | How good is the service ... <i>what is the condition or quality of the service?</i> |
| Function | Is it suitable for its intended purpose <i>Is it the right service?</i> |
| Safety | Is it safe for its intended purpose ? |
| Capacity/Use | Is the service over or under used ... <i>do we need more or less of these assets?</i> |

The current and expected customer service levels are detailed in Tables 3.4 and 3.5. Table 3.4 shows the expected levels of service based on resource levels in the current long-term financial plan.

Organisational measures are measures of fact related to the service delivery outcome e.g. number of occasions when service is not available, condition percentages of Very Poor, Poor/Average/Good, Very good.

These Organisational/Organizational measures provide a balance in comparison to the customer perception that may be more subjective.

Table 3.4: Customer Level of Service

| | Expectation | Performance Measure Used | Current Performance | Expected Position in 10 Years based on the current budget. |
|---|---|---|--|---|
| Service Objective: Effective stormwater management to minimise impact on flooding. | | | | |
| Quality | Water quality discharged from stormwater systems meet environmental standards. | Customer service requests (CRM's). | 95% CRM's resolved within SLA. | 98% CRMs to be resolved within SLA. |
| | Confidence levels | | High | Medium |
| Function | Storm events cause minimal disruption to community. | Customer Satisfaction Survey results. | 'Moderately low' satisfaction for Transport, Roads and Drainage in 2014. | Increase the community satisfaction rate. |
| | | Reduction in stormwater damage claims Made against Council. | 0 claims made to Council in 2013-2017. | |
| | Confidence levels | | Medium | Medium |
| Capacity and Use | Continue catchment study and flood plain management to assess the current capacity of the drainage network. | Number of Flood Plain Risk Management Plans completed. | Flood Plain Risk Management Plans completed for 3 catchments. | Flood Plain Risk Management Plans completed for all catchments. |
| | Confidence levels | | High | High |

3.5 Technical Levels of Service

Technical Levels of Service - Supporting the customer service levels are operational or technical measures of performance. These technical measures relate to the allocation of resources to service activities to best achieve the desired customer outcomes and demonstrate effective performance.

Technical service measures are linked to the activities and annual budgets covering:

- Operations – the regular activities to provide services (e.g. opening hours, cleansing, mowing grass, energy, inspections, etc.),
- Maintenance – the activities necessary to retain an asset as near as practicable to an appropriate service condition. Maintenance activities enable an asset to provide service for its planned life (e.g. road patching, unsealed road grading, building and structure repairs),
- Renewal – the activities that return the service capability of an asset up to that which it had originally (e.g. road resurfacing and pavement reconstruction, pipeline replacement and building component replacement),
- Upgrade/New – the activities to provide a higher level of service (e.g. widening a road, sealing an unsealed road, replacing a pipeline with a larger size) or a new service that did not exist previously (e.g. a new library).

Service and asset managers plan, implement and control technical service levels to influence the customer service levels.⁴

Table 3.5 shows the technical levels of service expected to be provided under this AM Plan. The ‘Desired’ position in the table documents the position being recommended in this AM Plan.

Table 3.5: Technical Levels of Service

| Service Attribute | Service Activity Objective | Activity Measure Process | Current Performance | Desired for Optimum Lifecycle Cost |
|------------------------------------|---|---|--|-------------------------------------|
| TECHNICAL LEVELS OF SERVICE | | | | |
| Operations | | | | |
| | Drainage cleaning to minimise localised flooding due to block stormwater pipes. | Annual Drainage cleaning program. | All pits are scheduled for annual cleaning with priority pits on more regular program. | Satisfied with current performance. |
| | GPT cleaning to improve the water quality. | Monthly GPT inspection program. | Cleaning as required. | Satisfied with current performance. |
| | Apply a risk management approach to stormwater inspections. | CCTV program. | | |
| | | Budget | \$346,000 | |
| Maintenance | | | | |
| | Infrastructure meets the needs of users. | Respond to CRM’s within SLA timeframe. | 64.8% CRMs resolved within SLA time frame. | |
| | | Budget | \$330,000 | |
| Renewal | | | | |
| | Infrastructure meets the needs of users. | Retaining walls are renewed when required. | Retaining walls are renewed as required. | Satisfied with current performance. |
| | | Budget | \$1,150,000 | |
| Upgrade/New | | | | |
| | Network upgrade to reduce flooding impact to properties. | Based on flood studies and complaints from residents. | Resolve issues case by case as arise. | Maintain current approach. |
| | | Budget | \$500,000 | |

⁴ IPWEA, 2015, IIMM, p 2 | 28.

It is important to monitor the service levels provided regularly as these will change. The current performance is influenced by work efficiencies and technology, and customer priorities will change over time. Review and establishment of the agreed position which achieves the best balance between service, risk and cost is essential.

4. FUTURE DEMAND

4.1 Demand Drivers

Drivers affecting demand include things such as population change, regulations, changes in demographics, seasonal factors, vehicle ownership rates, consumer preferences and expectations, technological changes, economic factors, agricultural practices, environmental awareness, etc.

4.2 Demand Forecasts

The present position and projections for demand drivers that may impact future service delivery and use of assets were identified and are documented in Table 4.3.

4.3 Demand Impact on Assets

The impact of demand drivers that may affect future service delivery and use of assets are shown in Table 4.3.

Table 4.3: Demand Drivers, Projections and Impact on Services

| Demand drivers | Present position | Projection | Impact on services |
|----------------|--|---|--|
| Population | 140,660 (As at June 30 2016, ABS estimated resident population – whole of Randwick Council area). | NSW Department of Planning and Environment projects a 23% increase in population by 2036 within Randwick Local Government Area. | An increase in population will require an increase in community and infrastructure services. Existing services may require amendment to cater for changes in use or increased patronage. |
| Demographics | Randwick City Council has: -18% over 60 YO -43% in the 20-45 YO group (As at June 30 2016, ABS estimated resident population – whole of Randwick Council area). | Greater proportion of 10-20 YO (>35% growth). Greater proportion of over 60 YO (>45% growth). Low proportion of 25-45 YO (<10% growth). | Greater need for aged and disability access. Increase in population will require improvements to public transport infrastructure and accessible recreational infrastructure. |

4.4 Demand Management Plan

Demand for new services will be managed through a combination of managing existing assets, upgrading of existing assets and providing new assets to meet demand and demand management. Demand management practices can include non-asset solutions, insuring against risks and managing failures.

Opportunities identified to date for demand management are shown in Table 4.4. Further opportunities will be developed in future revisions of this asset management plan.

Table 4.4: Demand Management Plan Summary

| Demand Driver | Impact on Services | Demand Management Plan |
|---------------|--|---|
| Population | An increase in population will require an increase in community and infrastructure services. | <ul style="list-style-type: none"> • Planning controls. • Promote Stormwater harvesting for parks and sports field irrigation. • Floodplain Management – Ongoing catchment studies will enable a better understanding of the capacity and performance of our drainage network. |

4.5 Asset Programs to meet Demand

The new assets required to meet demand can be acquired, donated or constructed. Additional assets are discussed in Section 5.5. The summary of the cumulative value of additional asset is shown in Figure 1.

Figure 1: Upgrade and New Assets to meet Demand – (Cumulative)

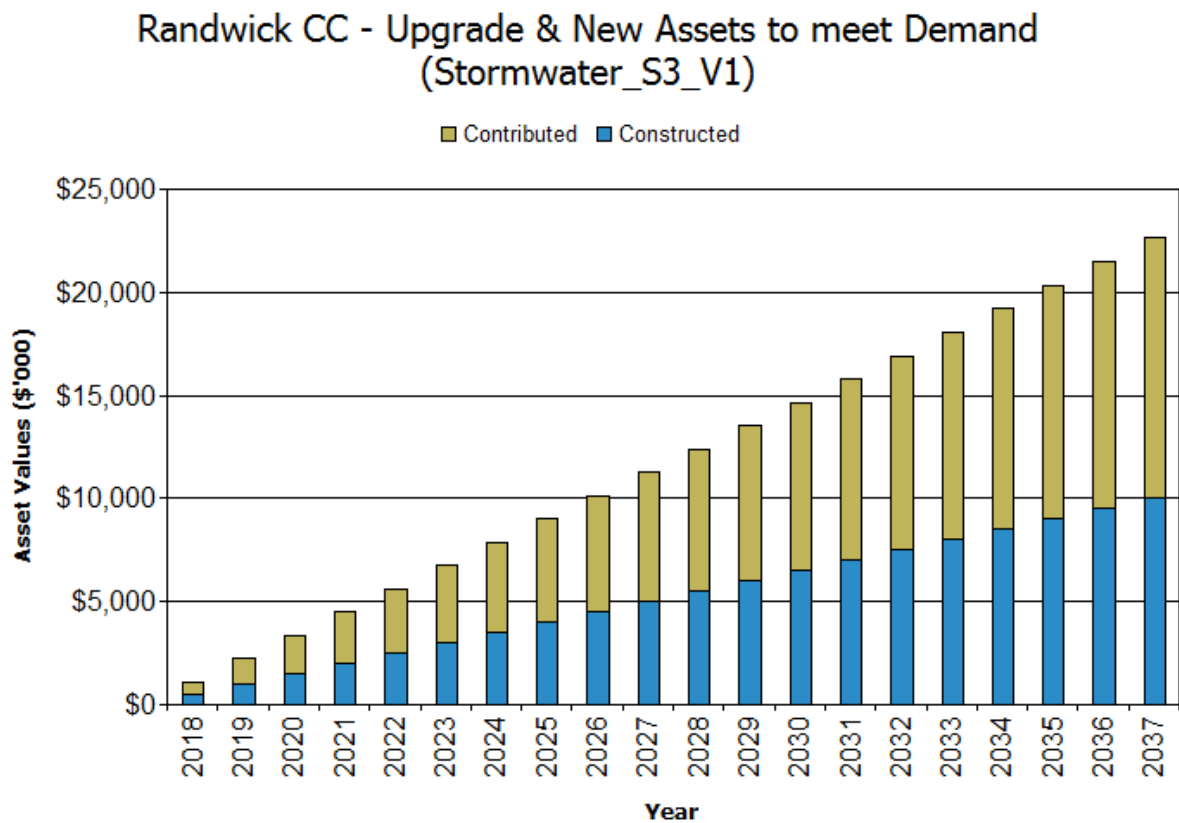


Figure values are in current (real) dollars.

Acquiring these new assets will commit ongoing operations, maintenance and renewal costs for the period that the service provided from the assets is required. These future costs are identified and considered in developing forecasts of future operations, maintenance and renewal costs for inclusion in the long-term financial plan further in Section 5.

5. LIFECYCLE MANAGEMENT PLAN

The lifecycle management plan details how the Council plans to manage and operate the assets at the agreed levels of service (defined in Section 3) while managing lifecycle costs.

5.1 Background Data

5.1.1 Physical parameters

The assets covered by this asset management plan are shown in Table 2.1.

The age profile of the assets included in this AM Plan are shown in Figure 2.

Figure 2: Asset Age Profile

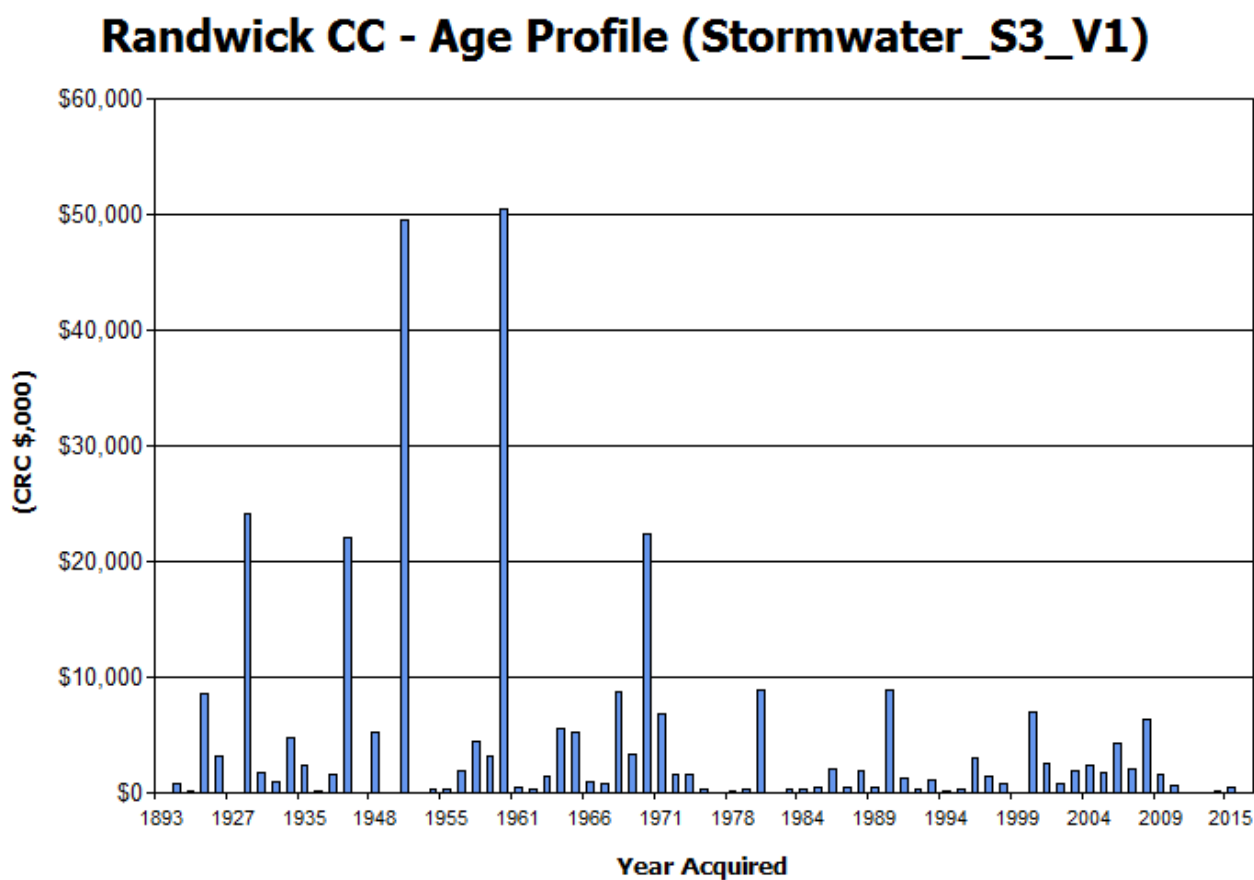


Figure values are in current (real) dollars.

5.1.2 Asset capacity and performance

Assets are generally provided to meet design standards where these are available.

Locations where deficiencies in service performance are known are detailed in Table 5.1.2.

Table 5.1.2: Known Service Performance Deficiencies

| Location | Service Deficiency |
|----------------------------------|---|
| Coogee Bay FRMSP | <ol style="list-style-type: none"> 1. New pits along Clyde Street, and in the flow path between Coogee St and Dolphin St (Option FM1). High priority. |
| Kensington Centennial Parl FRMSP | <ol style="list-style-type: none"> 1. Upgrades of the Sydney Water owned culverts under Gardeners Road between Leonard and Court Avenue as well as opposite of Aboud Avenue (option I&J). Low and Medium priority. 2. Upgrade drainage along Doncaster and Mooramie Avenues between Roma and Day Avenue for connection to the Sydney Water channel between these two streets (Option R). Low priority. 3. Capacity upgrade Market Street to Centennial Park upgrade the line in Centennial Avenue between Centennial Avenue and Market Street and along Darley Road (Option F). Medium priority. |
| Maroubra Bay FRMSP | <ol style="list-style-type: none"> 1. Drainage upgrade from 600mm to 900mm at White Avenue between Bennet Place and Farthing place (option N). High priority. 2. Upgrading flood retarding basin in John Shore Park in the vicinity of Fenton Avenue and Chapman Avenue (option C). High priority. 3. Duplication of drainage network from John Shore Park to the Beach Outlet (option D). Low priority. 4. Upgrading flood retarding basin in Muraborah Reserve (Wright Street) (Option B). Low priority. |
| West Kensington FRMSP | <ol style="list-style-type: none"> 1. Upgrade pipe network in vicinity of Duke Street and Balfour Road. Medium Priority. |

The above service deficiencies were identified from consultants engaged to undertake Floodplain Management.

5.1.3 Asset condition

Currently, condition of pipes are monitored annually using CCTV and pits are visually inspected annually.

Further our existing GPT are inspected on a monthly basis.

The condition profile of our assets is shown in Figure 3.

Figure 3: Asset Condition Profile

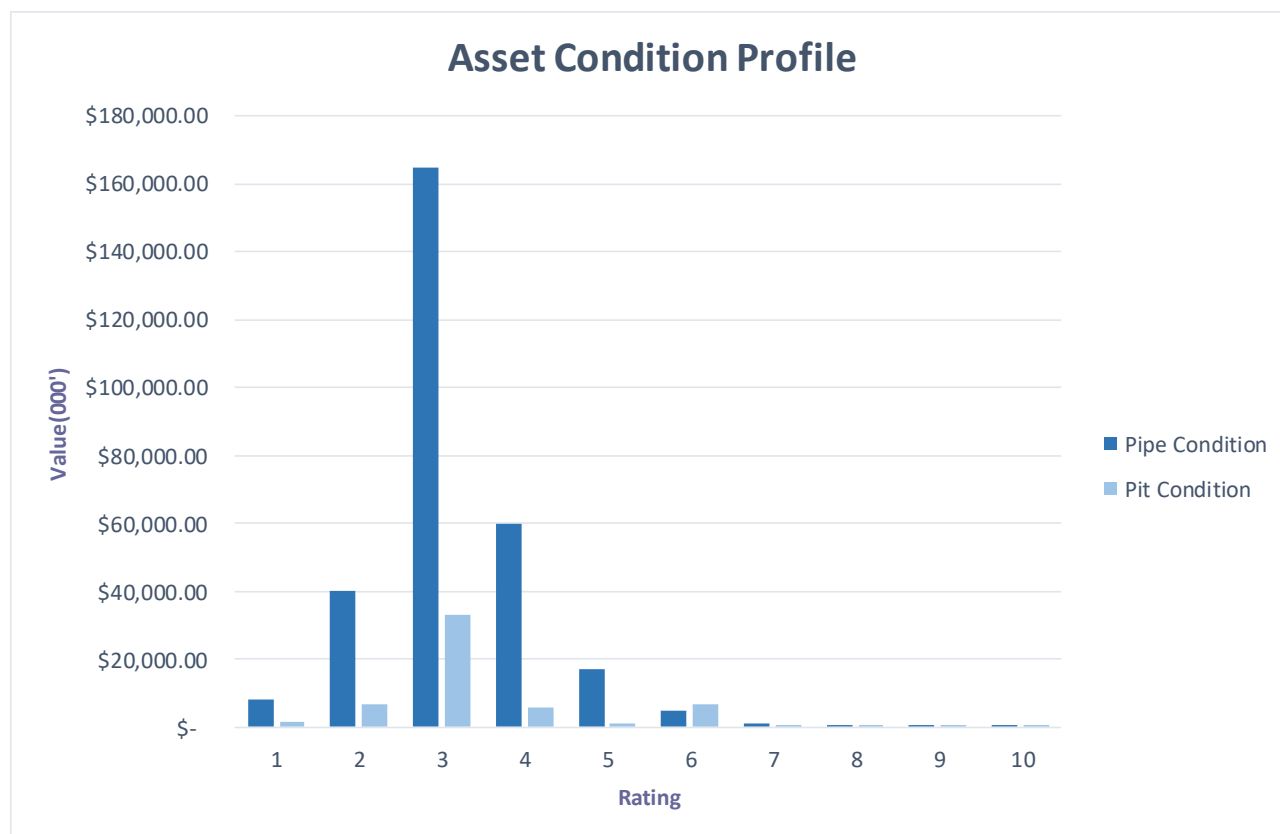


Figure values are in current (real) dollars.

According to above condition profile for pits and pipes, it is evident that majority of assets are in very good to good condition.

Condition is measured using a 1 – 10 rating system⁵ as detailed in Table 5.1.3.1 to 5.1.3.3

⁵ IPWEA, 2015, IIMM, Sec 2.5.4, p 2 | 80.

Table 5.1.3.1 -Conduit Condition Ratings

| Condition Grading | Condition Index | Description of Condition |
|--------------------------|-------------------------|---|
| 1 | New | New, no problems, no defects. Assume less than 5yrs old (if there is no age information). |
| 2 | Excellent | No problems, No defects Assume 5-10 years old (If there is no age information). |
| 3 | Very Good | No problems. Slight Surface wear. No influence to water tightness. Assume 10-25 years old (If there is no age information) |
| 4 | Good | Minor consistent in vert wear. Insignificant influence to water tightness or hydraulic pressure. Assume 25-50 years old (If there is no age information). |
| 5 | Average | Minor consistent in vert wear. Insignificant influence to water tightness or hydraulic pressure Assume 25-50 years old (If there is no age information). |
| 6 | Satisfactory | <5% obstruction to flow due to pipe defects such as calcite build-ups, lateral protrusions, no structural problems. Some surface wear, some seeping joints, or individual fine root intrusion. Assume 70-80 years old (If there is no age information). |
| 7 | Unsatisfactory | 5-10% obstruction to flow due to pipe defects, or minor structural problems such as cracking, slight joint displacement (less than thickness of pipe) or minor fine root infestation. Pipe wears existing, many seeping joints or gushing joint. Water tightness insufficient. Consider for relining. Assume 80-100 years old (If there is no age information). |
| 8 | Poor | <15% obstruction to flow due to pipe defects or significant protrusions, with structural problems and constructional deficiencies such as cracking, joint displacement (thickness of pipe) and/or significant root infestation. Pipe wear severe, many seeping joints or gushing joints. Water tightness insufficient. Relining required Assume 100-120 years old (If there is no age information). |
| 9 | Consider Reconstruction | >15% obstruction to flow due to pipe defects or severe protrusions, major structural problems, cracking, joint displacement (> 1.2 thickness), pipe deformation (<10%), severe pipe wear and/or major root infestation. Water tightness minimal. Relining not an option. Assume greater than 120 years old (If there is no age information). |
| 10 | Imminent Failure/Failed | Urgent reconstruction, Pipe is/will shortly be non-functioning. Pipe Deformation (>10%) or collapsed deeply rooted or other obstructions present. Relining not an option. Assume greater than 120 years old (If there is no age information). |

Table 5.1.3.2 -Pit Condition Ratings

| Condition Grading | Condition Index | Description of Condition |
|--------------------------|-------------------------|---|
| 1 | New | New, no problems, No defects. Assume less than 5yrs old (if there is no age information). |
| 2 | Excellent | No problems, No defects. Assume 5-10 years old (if there is no age information). |
| 3 | Very Good | No problems. Surface wear in pit, lintel or grate only. No influence to water tightness. Assume 10-30 years old (if there is no age information). |
| 4 | Good | Minor wear in invert, no structural problems. Minor protrusions that may act as snag points that may result in intermittent obstructions to flow at times (may be due to shape of pit etc.) Assume 30-50 years old (if there is no age information). |
| 5 | Average | Some wear in invert. < 5% obstruction to flow due to protrusions, no structural problems. Assume 50-80 years old (if there is no age information). |
| 6 | Satisfactory | Minor cracks and protrusions due to less than ideal construction methods or small amounts of dumped concrete etc. Outlet pipe may not be flush with pit wall but sealed. Assume 80-100 years old (if there is no age information). |
| 7 | Unsatisfactory | Structural problems such as small open cracks. Protrusions present that encourage blockages, severe invert wear. Outlet pipe not flush with pit wall and not sealed, sump does not drain. Assume 100-120 years old (if there is no age information). |
| 8 | Poor | Structural problems such as open cracks. Protrusions present that encourage blockages, severe invert wear. Inlet and Outlet pipe not flush with pit wall and not sealed, sump does not drain. Cracking around connections. Assume 120+ years old (if there is no age information). |
| 9 | Consider Reconstruction | Significant structural problems such as large cracks missing bricks and wall deformations. Protrusions present that cause blockages, severe invert wear or invert missing. Inlet and Outlet pipe not flush with pit wall and not sealed. Cracking around connections. Assume 120+ years old (if there is no age information). |
| 10 | Imminent Failure/Failed | Urgent reconstruction, Pit is/will shortly be non-functioning (Due to structural reasons). Pit walls deformed or collapsed reinforcement exposed and corroded. Major obstructions present such as concrete, or protruding bricks. Assume 120+ years old (if there is no age information). |

Table 5.1.3.3 -Lintel & Grate/Lid Condition Ratings

| Condition Grading | Condition Index | Description of Condition |
|-------------------|-------------------------|---|
| 1 | New | New, no problems, no defects. Assume less than 5yrs old (if there is no age information). |
| 2 | Excellent | No problems, no defects. Assume 5-10 years old (if there is no age information). |
| 3 | Very Good | No problems. Surface wear in pit, lintel or grate only. No influence to water tightness. Assume 10-30 years old (if there is no age information). |
| 4 | Good | Good condition. Surface wear only. Assume 30-50 years old (if there is no age information). |
| 5 | Average | Showing some wear and tear Assume 50-80 years old (If there is no age information). |
| 6 | Satisfactory | Lintel may be cracked but functioning and not blocked. Grate may be damaged but not a danger to public nor any reduction in functionality. Assume 80-100 years old (if there is no age information). |
| 7 | Unsatisfactory | Lintel may be damaged and partially blocked or grate may be damaged and functionality reduced. Consider lintel replacement Assume 100-120 years old (if there is no age information). |
| 8 | Poor | Lintel is damaged and blocked and grate is damaged and functionality reduced. Required lintel replacement. Consider grate replacement. Assume 120+ years old (if there is no age information). |
| 9 | Consider Reconstruction | Lintel is damaged and blocked and grate is damaged and functionality reduced. Required lintel and grate replacement. Consider pit reconstruction. Assume 120+ years old (if there is no age information). |
| 10 | Imminent Failure/Failed | Grate is damaged and lintel crushed. Part replacement not an option. Danger to public. Assume 120+ years old (if there is no age information). |

5.2 Operations and Maintenance Plan

Operations include regular activities to provide services such as public health, safety and amenity, e.g. drainage inspections.

Routine maintenance is the regular on-going work that is necessary to keep assets operating, including instances where portions of the asset fail and need immediate repair to make the asset operational again, e.g. drain cleaning, GPT cleaning etc.

Maintenance includes all actions necessary for retaining an asset as near as practicable to an appropriate service condition including regular ongoing day-to-day work necessary to keep assets operating.

Maintenance expenditure is shown in Table 5.2.1.

Table 5.2.1: Maintenance Expenditure Trends

| Year | Maintenance Budget \$ |
|----------------|-----------------------|
| 2016 | \$290,570 |
| 2017 | \$322,567 |
| 2018(estimate) | \$330,000 |

Maintenance expenditure levels are considered to be adequate to meet projected service levels, which may be less than or equal to current service levels. Where maintenance expenditure levels are such that they will result in a lesser level of service, the service consequences and service risks have been identified and highlighted in this AM Plan.

Summary of future operations and maintenance expenditures

Future operations and maintenance expenditure is forecast to trend in line with the value of the asset stock as shown in Figure 4. Note that all costs are shown in current 2017 dollar values (i.e. real values).

Figure 4: Projected Operations and Maintenance Expenditure

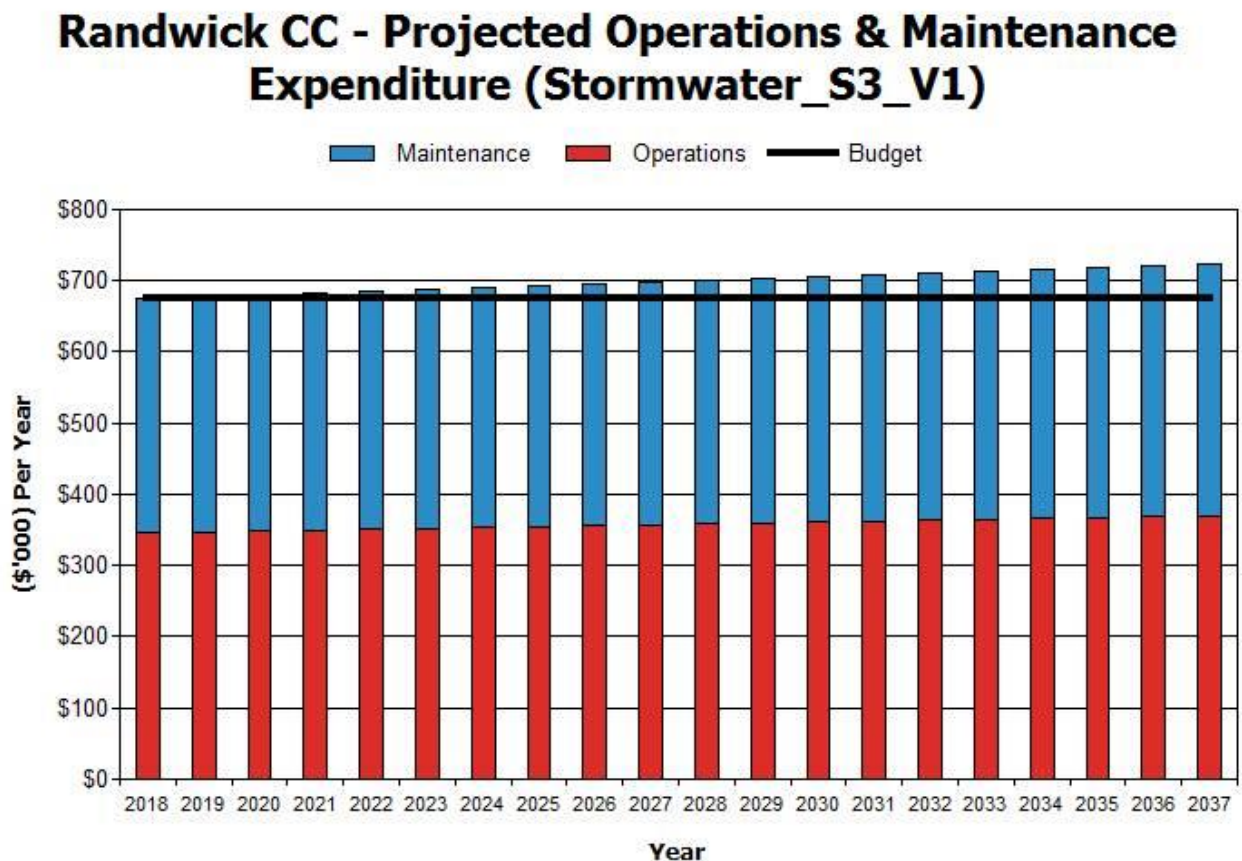


Figure values are in current (real) dollars.

Deferred maintenance, i.e. works that are identified for maintenance and unable to be funded, are to be included in the risk assessment and analysis in the infrastructure risk management plan.

Maintenance is funded from the operating budget where available. This is further discussed in Section 7.

5.3 Renewal/Replacement Plan

Renewal and replacement expenditure is major work which does not increase the asset's design capacity but restores, rehabilitates, replaces or renews an existing asset to its original service potential. Work over and above restoring an asset to original service potential is considered to be an upgrade/expansion or new work expenditure resulting in additional future operations and maintenance costs.

Council identify renewal replacement based on annual CCTV inspection reports.

5.3.1 Renewal ranking criteria

Asset renewal and replacement is typically undertaken to either:

- Ensure the reliability of the existing infrastructure to deliver the service it was constructed to facilitate (e.g. pipes and pits are structurally sound)
- To ensure the infrastructure is of sufficient quality to meet the service requirements (e.g. Pipes and pits are free from debris).⁶

It is possible to get some indication of capital renewal and replacement priorities by identifying assets or asset groups that:

- Have a high consequence of failure,
- Have high use and subsequent impact on users would be greatest,
- Have a total value representing the greatest net value,
- Have the highest average age relative to their expected lives,
- Are identified in the AM Plan as key cost factors,
- Have high operational or maintenance costs, and
- Have replacement with a modern equivalent asset that would provide the equivalent service at a savings.⁷

The ranking criteria used to determine priority of identified renewal and replacement proposals is detailed in Table 5.3.1.

⁶ IPWEA, 2015, IIMM, Sec 3.4.4, p 3|91.

⁷ Based on IPWEA, 2015, IIMM, Sec 3.4.5, p 3|97.

Table 5.3.1: Renewal and Replacement Priority Ranking Criteria

| | Criteria | Wt | Range | Score | Comments |
|--------------------------|---|----|-------|-------|---|
| | BCR High BCR = High Rating e.g. BCR > 1 = rating of 4-5 | 3 | 1-5 | X | BCR = 0 No Prop Damage |
| Q To Ask? Rating E.g. | Likelihood of Damage What Is The Storm Recurrence Interval? Is The Area In A Sag Point? Is The Area A Known Flood Prone Area? High probability of damage = High Rating (e.g. Floods in a 1 in 2 year storm = rating of 4-5) | 2 | 1-5 | X | from comments in letter. May be often but no damage |
| Q To Ask? Rating E.g. | Consequences of Damage Is The Area A Known Flood Prone Area?, Has There Been A History of Complaints In The Area?, Is There Potential For Injuries To Occur?, Is There Potential For Property Damage To Occur?, Is the Potential Property Damage Above Ground or Above Floor Flooding? Catastrophic Consequences of Damage = High Rating (e.g. drainage line under house = rating of 4-5) | 4 | 1-5 | X | No prop damage potential slip hazard but mostly nuisance |
| Q To Ask? Rating E.g. | Total Cost of Works Is The Cost Prohibitive?, Can The Work Be Done Under Maintenance? Low Cost Solution = High Rating (e.g. Cost only under \$5,000 and can do under maintenance = rating of 4-5) | 2 | 1-5 | X | Low cost solution |
| Q To Ask? Rating E.g. | No of Complaints What Is The Number of Complaints?, What Is The Number of Persons Complaining?, Has There Been A History of Complaints In The Area? No Complaints =1, Council Staff =3 Petition = 5 | 3 | 1-5 | X | Written complaint From Counsellor |
| Q To Ask? Rating E.g. | Effectiveness of Works Proposed Will the Work Reduce Flooding Significantly? Will the Work Reduce Flooding Downstream Significantly? Reduction in risk is significant of reduced to almost zero = High Rating (e.g. Flooding reduced to an insignificant level in 1 in 100 year storm = rating of 4-5) | 2 | 1-5 | X | Expect to be effective |
| Q To Ask? Rating E.g. | Current Condition of Existing Infrastructure - If any Is there any infrastructure that is in need of repair anyway? If condition of infrastructure is poor = High Rating | 3 | 1-5 | X | Good |
| Q To Ask? Rating E.g. | Likelihood of Development in Area Is there a chance a developer requiring the reconstruction/upgrade/relocation of infrastructure due to works?, Is there an opportunity to upgrade infrastructure on a demolition site? e.g. If it is likely that a developer will commence and will be conditioned to upgrade system = High Rating | 1 | 1-5 | X | No Chance of Dev. |
| | Total Score as Percentage (Min 20%- Max 100%) | | | XXX | |

Table 5.3.2: Removal and Replacement Priority Scores

| Priority | Score |
|-------------------------------|---------------|
| Very Low Priority | 20-40 |
| Low Priority | 41-50 |
| Low – Medium Priority | 51-60 |
| Medium Priority | 61-70 |
| Medium – High Priority | 71-80 |
| High Priority | 81-90 |
| Extreme Urgency | 91-100 |

Renewal will be undertaken using 'low-cost' renewal methods where practical. The aim of 'low-cost' renewals is to restore the service potential or future economic benefits of the asset by renewing the assets at a cost less than replacement cost.

Examples of low cost renewal include pipe relining (for pipes under buildings, deeper pipes or depending on the location) rather than replacing a pipe.

5.3.2 Summary of future renewal and replacement expenditure

Projected future renewal and replacement expenditures are forecast to increase over time when the asset stock increases. The expenditure required is shown in Figure 5. Note that all amounts are shown in current (real) dollars.

The projected capital renewal and replacement program is shown in Appendix A.

Figure 5: Projected Capital Renewal and Replacement Expenditure

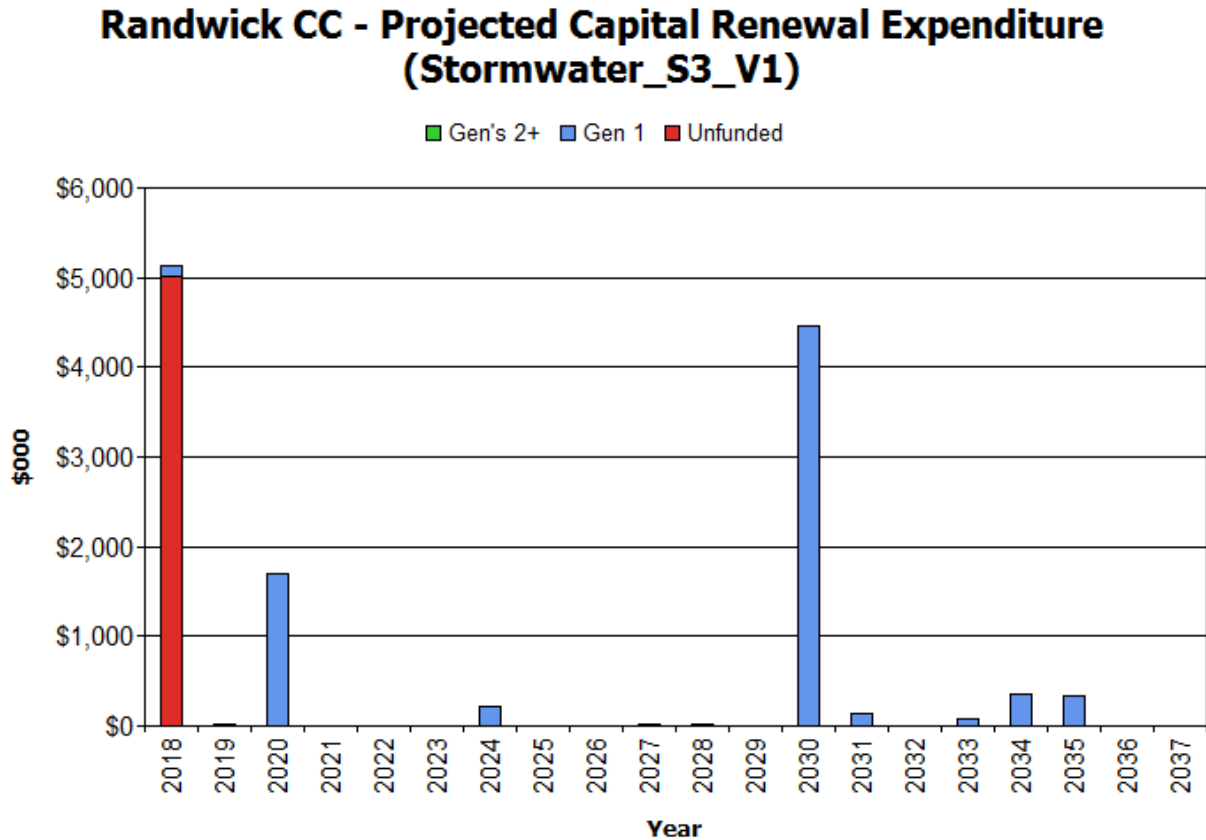


Figure values are in current (real) dollars.

Figure 5 indicates that there is a back log of capital renewal by 2018. This could be improved as more up to date condition data become available. However, we are planning to reduce the backlog within next 10 years subjected to funding availability.

Deferred renewal and replacement, i.e. those assets identified for renewal and/or replacement and not scheduled in capital works programs are to be included in the risk analysis process in the risk management plan.

Renewals and replacement expenditure in the capital works program will be accommodated in the long-term financial plan. This is further discussed in Section 7.

5.4 Creation/Acquisition/Upgrade Plan

New works are those that create a new asset that did not previously exist, or works which will upgrade or improve an existing asset beyond its existing capacity. They may result from growth, social or environmental needs. Assets may also be acquired at no cost. These additional assets are considered in Section 4.4.

5.4.1 Selection criteria

New assets and upgrade/expansion of existing assets are identified from various sources such as community requests, proposals identified by strategic plans or partnerships with others. Candidate proposals are inspected to verify need and to develop a preliminary renewal estimate. Verified proposals are ranked by priority and available funds and scheduled in future works programmes. The priority ranking criteria is detailed below.

Table 5.4.1: New Assets Priority Ranking Criteria

| Criteria | Weighting |
|---|-------------|
| Community – Function | 30 |
| Community – Quality | 5 |
| Technical – Condition | 10 |
| Technical – Risk of Failure | 40 |
| Technical – Operating/Maintenance and Lifecycle costs | 15 |
| Total | 100% |

5.4.2 Summary of asset expenditure requirements

The financial projections from this asset plan are shown in Figure 7 for projected operating (operations and maintenance), and capital expenditure (renewal and upgrade/expansion/new assets). Note that all costs are shown in real values.

The bars in the graphs represent the anticipated budget needs required to achieve lowest lifecycle costs, the budget line indicates what is currently available. The gap between these informs the discussion on achieving the balance between services, costs and risk to achieve the best value outcome.

Figure 7: Projected Operating and Capital Expenditure

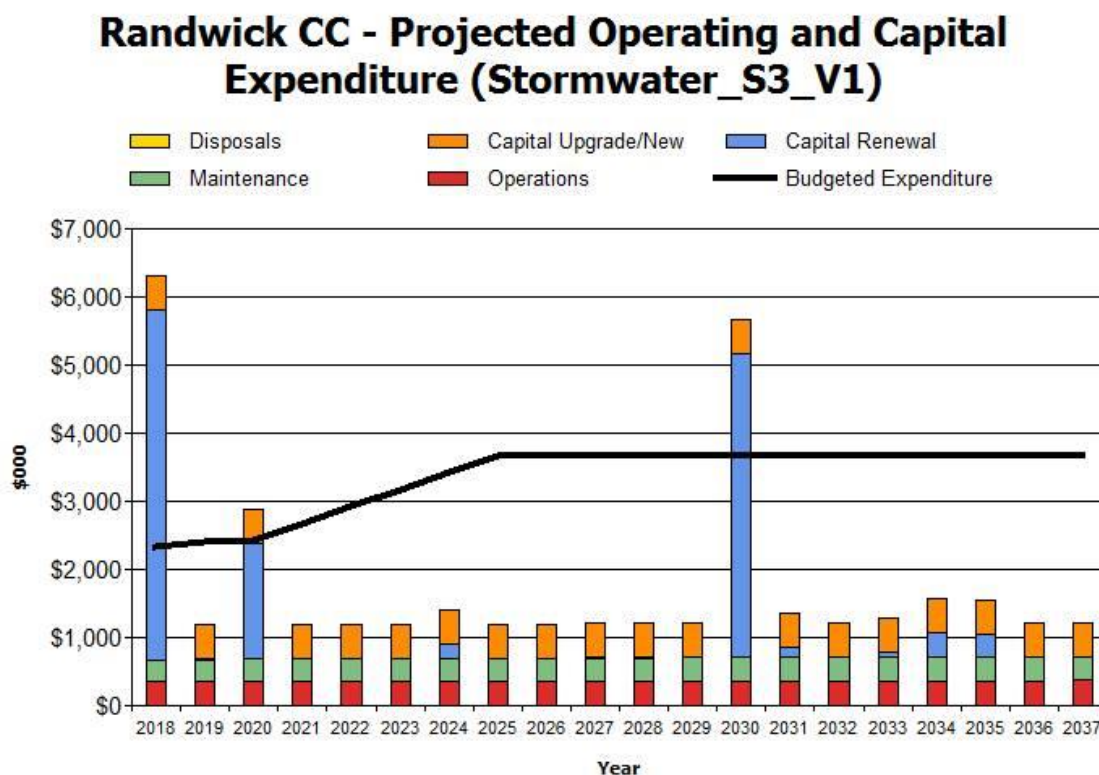


Figure values are in current (real) dollars.

According to Figure 7, Council will be committed to increase funding for drainage assets capital renewal.

6. RISK MANAGEMENT PLAN

The purpose of infrastructure risk management is to document the results and recommendations resulting from the periodic identification, assessment and treatment of risks associated with providing services from infrastructure, using the fundamentals of International Standard ISO 31000:2009 Risk management – Principles and guidelines.

Risk Management is defined in ISO 31000:2009 as: ‘coordinated activities to direct and control with regard to risk’⁸.

An assessment of risks⁹ associated with service delivery from infrastructure assets has identified critical risks that will result in loss or reduction in service from infrastructure assets or a ‘financial shock’. The risk assessment process identifies credible risks, the likelihood of the risk event occurring, the consequences should the event occur, develops a risk rating, evaluates the risk and develops a risk treatment plan for non-acceptable risks.

6.1 Critical Assets

Critical assets are defined as those which have a high consequence of failure causing significant loss or reduction of service. Similarly, critical failure modes are those which have the highest consequences.

Critical assets have been identified and their typical failure mode and the impact on service delivery are as follows:

Table 6.1 Critical Assets

| Critical Asset(s) | Failure Mode | Impact |
|-----------------------------|--|---|
| Major Pipes under buildings | <ul style="list-style-type: none"> Failure of pipe structure Pipe blockage | Property damage. |
| Pits within properties | Failure of pit lids. | Injuries to residence or property damage. |
| Pollution Control Devices | Damage to the device or pollution spill due to lack of maintenance. | Water quality. |

By identifying critical assets and failure modes investigative activities, condition inspection programs, maintenance and capital expenditure plans can be targeted at the critical areas.

6.2 Risk Assessment

Currently, Council carry out CCTV inspection of Pits and pipes and also routine GPT inspections.

The risk management process used in this project is shown in Figure 6.2 below.

⁸ ISO 31000:2009, p 2

⁹ 4.3.1 Hazard/Risk Identification, Assessment and Control

Figure 6.2 Risk Management Process – Pipes and Pits

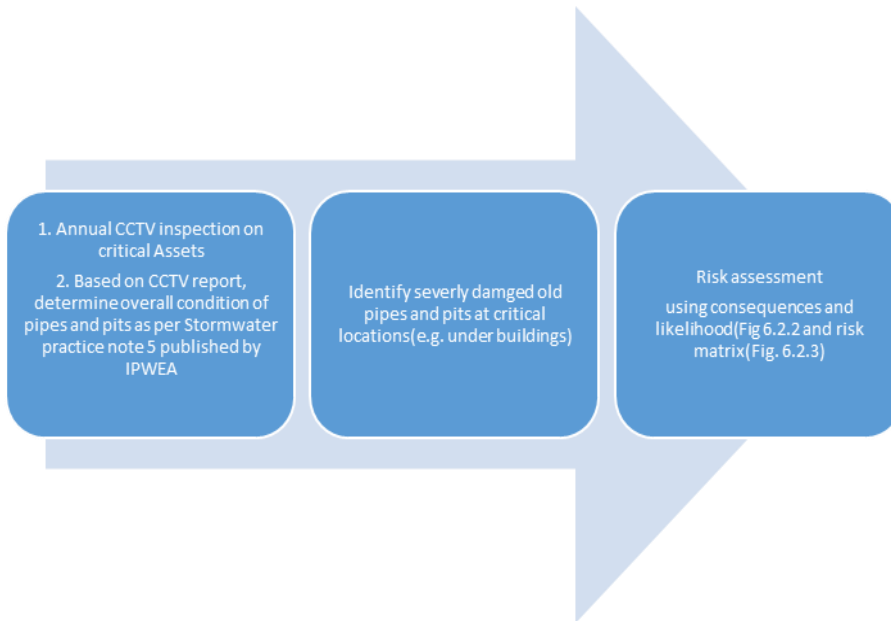


Figure 6.2.2-Risk table

Risk Assessment

| Risk Factors | Consequence | Likelihood |
|-------------------------------|--------------------|--|
| <i>Personal Injury</i> | | <i>Please note likelihood is based on condition assessment</i> |
| <i>Financial Implications</i> | | |
| <i>Environmental</i> | | |
| <i>Political</i> | | |

| Consequence | Risk Descriptions |
|----------------------|---|
| <i>Catastrophic</i> | Death, toxic release off site with detrimental effect, huge financial loss (>\$100,000), sustained comprehensive negative national media coverage with major loss in community trust |
| <i>Major</i> | Extensive injuries, loss of production capability, off site release with no detrimental effects, major financial loss (>\$50,000 & <\$100,000), Ongoing negative media coverage in local and metro press with minimal community trust |
| <i>Moderate</i> | Medical treatment required, on-site release contained with outside assistance, high financial loss (>\$10,000 & <\$50,000), Short period negative media coverage with rigorous community discussion |
| <i>Minor</i> | First aid treatment, on-site release immediately contained, medium financial loss (>\$1000 & <\$10,000), little or no impact on community's perception of Council |
| <i>Insignificant</i> | No injuries, low financial loss (<\$1000), no effect to normal operations |

Figure 6.2.3- Risk matrix

| | CONSEQUENCE | | | | |
|--------------------|---------------|-------------|-------------|--------------|---------------|
| LIKELIHOOD | Insignificant | Minor | Moderate | Major | Catastrophic |
| | -2 | -3 | -7 | -13 | -20 |
| Almost Certain (5) | Medium (10) | High (15) | High (35) | Extreme (65) | Extreme (100) |
| Likely (4) | Medium (8) | Medium (12) | High (28) | High (52) | Extreme (80) |
| Possible (3) | Low (6) | Medium (9) | High (21) | High (39) | Extreme (60) |
| Unlikely (2) | Low (4) | Low (6) | Medium (14) | High (26) | High (40) |
| Rare (1) | Low (2) | Low (3) | Medium (7) | Medium (13) | High (20) |

The risk assessment process identifies credible risks, the likelihood of the risk event occurring, the consequences should the event occur, develops a risk rating, evaluates the risk and develops a risk treatment plan for non-acceptable risks.

An assessment of risks¹⁰ associated with service delivery from infrastructure assets has identified the critical risks that will result in significant loss, 'financial shock' or a reduction in service.

Critical risks are those assessed with 'Very High' (requiring immediate corrective action) and 'High' (requiring corrective action) risk ratings identified in the Infrastructure Risk Management Plan. The residual risk and treatment cost after the selected treatment plan is implemented, is shown in Table 6.2. These risks and costs are reported to management and Council.

¹⁰ 4.3.1 Hazard/Risk Identification, Assessment and Control

Table 6.2: Critical Risks and Treatment Plans

| Service or Asset at Risk | What can Happen | Risk Rating (VH, H) | Risk Treatment Plan | Residual Risk * | Treatment Costs |
|---------------------------|--|---------------------|---|-----------------|---|
| Stormwater Pipes | Pipe failure causing damage to private property and may cause injuries to residence. | High | Condition assessment to identify pipes requiring renewal. Renewal of pipes in poor condition. | Medium | Contractor inspection. Staff time. Capital Works. |
| Stormwater Pipes | Heavy rain overwhelming stormwater drainage capacity causing flooding and erosion to natural watercourses, private properties etc. | High | On site detention policy to ensure that maximum flow does not increase with heavy rain or development. Catchment studies and Floodplain Risk Management Plans including education, Capital Works and development controls. | High | Staff time and Capital Works. |
| Stormwater pits | Failure of pit lids. | High | Condition assessment of pit lids and supporting rings. | Low | Staff inspections time. |
| Pollution Control Devices | Pollution spill event. | Medium | Maintain pollution control devices so that they perform as designed. | Low | Inspection costs and maintenance costs. |

Note * The residual risk is the risk remaining after the selected risk treatment plan is operational.

7. FINANCIAL SUMMARY

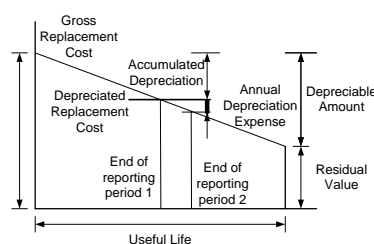
This section contains the financial requirements resulting from all the information presented in the previous sections of this asset management plan. The financial projections will be improved as further information becomes available on desired levels of service and current and projected future asset performance.

7.1 Financial Statements and Projections

7.1.1 Asset valuations

The best available estimate of the value of assets included in this Asset Management Plan are shown below. Assets are valued fair value.

| | |
|--|------------------|
| Gross Replacement Cost | \$309,782,000.00 |
| Depreciable Amount | \$234,376,000.00 |
| Depreciated Replacement Cost ¹¹ | \$235,855,000.00 |
| Annual Average Asset Consumption | \$2,192,000.00 |



¹¹ Also reported as Written Down Value, Carrying or Net Book Value.

7.1.2 Sustainability of service delivery

Two key indicators for service delivery sustainability that have been considered in the analysis of the services provided by this asset category, these being the:

- asset renewal funding ratio, and
- medium-term budgeted expenditures/projected expenditure (over 10 years of the planning period).

Asset Renewal Funding Ratio

Asset Renewal Funding Ratio¹² 222 percent

The Asset Renewal Funding Ratio is the most important indicator and indicates that over the next 10 years of the forecasting that we expect to have 222 percent of the funds required for the optimal renewal and replacement of assets.

Medium term – 10-year financial planning period

This asset management plan identifies the projected operations, maintenance and capital renewal expenditures required to provide an agreed level of service to the community over a 10 year period. This provides input into 10-year financial and funding plans aimed at providing the required services in a sustainable manner.

These projected expenditures may be compared to budgeted expenditures in the 10-year period to identify any funding shortfall. In a core asset management plan, a gap is generally due to increasing asset renewals for ageing assets.

The projected operations, maintenance and capital renewal expenditure required over the 10-year planning period is \$1,394,000 on average per year.

Estimated (budget) operations, maintenance and capital renewal funding is \$2,539,000 on average per year giving a 10-year funding surplus of \$1,145,000 per year. This indicates 182 percent of the projected expenditures will provide the services documented in the asset management plan. This excludes upgrade/new assets.

Providing services from infrastructure in a sustainable manner requires the matching and managing of service levels, risks, projected expenditures and financing to achieve a financial indicator of approximately 1.0 for the first years of the asset management plan and ideally over the 10-year life of the Long Term Financial Plan.

7.1.3 Projected expenditures for long-term financial plan

Table 7.1.3 shows the projected expenditures for the 10-year long-term financial plan.

Expenditure projections are in 2017 real values.

¹² AIFMM, 2015, Version 1.0, Financial Sustainability Indicator 3, Sec 2.6, p 9.

Table 7.1.3: Projected Expenditures for Long Term Financial Plan (\$000)

| Year | Operations (\$000) | Maintenance (\$000) | Capital Renewal (\$000) | Capital Upgrade/ New (\$000) | Disposals (\$000) |
|------|-----------------------|------------------------|-------------------------------|---------------------------------------|----------------------|
| 2018 | \$346 | \$330 | \$5,127 | \$500 | \$0 |
| 2019 | \$347 | \$331 | \$21 | \$500 | \$0 |
| 2020 | \$349 | \$332 | \$1,696 | \$500 | \$0 |
| 2021 | \$350 | \$334 | \$0 | \$500 | \$0 |
| 2022 | \$351 | \$335 | \$0 | \$500 | \$0 |
| 2023 | \$352 | \$336 | \$0 | \$500 | \$0 |
| 2024 | \$354 | \$337 | \$211 | \$500 | \$0 |
| 2025 | \$355 | \$338 | \$0 | \$500 | \$0 |
| 2026 | \$356 | \$340 | \$0 | \$500 | \$0 |
| 2027 | \$357 | \$341 | \$12 | \$500 | \$0 |
| 2028 | \$359 | \$342 | \$10 | \$500 | \$0 |
| 2029 | \$360 | \$343 | \$0 | \$500 | \$0 |
| 2030 | \$361 | \$344 | \$4,460 | \$500 | \$0 |
| 2031 | \$362 | \$346 | \$147 | \$500 | \$0 |
| 2032 | \$364 | \$347 | \$0 | \$500 | \$0 |
| 2033 | \$365 | \$348 | \$74 | \$500 | \$0 |
| 2034 | \$366 | \$349 | \$363 | \$500 | \$0 |
| 2035 | \$368 | \$350 | \$330 | \$500 | \$0 |
| 2036 | \$369 | \$352 | \$0 | \$500 | \$0 |
| 2037 | \$370 | \$353 | \$2 | \$500 | \$0 |

7.2 Funding Strategy

Funding for assets is provided from the budget and long-term financial plan.

The financial strategy of the entity determines how funding will be provided, whereas the asset management plan communicates how and when this will be spent, along with the service and risk consequences of differing options.

7.3 Valuation Forecasts

Asset values are forecast to increase as additional assets are added to service.

Additional assets will generally add to the operations and maintenance needs in the longer term, as well as the need for future renewal. Additional assets will also add to future depreciation forecasts.

7.4 Key Assumptions Made in Financial Forecasts

This section details the key assumptions made in presenting the information contained in this asset management plan. It is presented to enable readers to gain an understanding of the levels of confidence in the data behind the financial forecasts.

Key assumptions made in this asset management plan are:

Table 7.4: Key Assumptions made in AM Plan and Risks of Change

- Register condition represents current actual condition of pits and pipes. High risk sections of Council’s stormwater drainage assets will be inspected annually and condition updated accordingly.
- Asset values and dimensions are correct. Change to asset values and dimensions will have an effect on resources required to operate, maintain and renew the open space assets.
- The estimates used for current rates of renewal will remain constant at current 2017 values for the next 10 years. Possible increase in renewal costs may reduce level of works budgeted with possible reduction in the road infrastructure service level.

7.5 Forecast Reliability and Confidence

The expenditure and valuations projections in this AM Plan are based on best available data. Currency and accuracy of data is critical to effective asset and financial management. Data confidence is classified on a 5 level scale¹³ in accordance with Table 7.5.

Table 7.5: Data Confidence Grading System

| Confidence Grade | Description |
|-------------------|--|
| A Highly reliable | Data based on sound records, procedures, investigations and analysis, documented properly and agreed as the best method of assessment. Dataset is complete and estimated to be accurate $\pm 2\%$ |
| B Reliable | Data based on sound records, procedures, investigations and analysis, documented properly but has minor shortcomings, for example some of the data is old, some documentation is missing and/or reliance is placed on unconfirmed reports or some extrapolation. Dataset is complete and estimated to be accurate $\pm 10\%$ |
| C Uncertain | Data based on sound records, procedures, investigations and analysis which is incomplete or unsupported, or extrapolated from a limited sample for which grade A or B data are available. Dataset is substantially complete but up to 50% is extrapolated data and accuracy estimated $\pm 25\%$ |
| D Very Uncertain | Data is based on unconfirmed verbal reports and/or cursory inspections and analysis. Dataset may not be fully complete and most data is estimated or extrapolated. Accuracy $\pm 40\%$ |
| E Unknown | None or very little data held. |

The estimated confidence level for, and reliability of data used in this AM Plan is considered to be reliable

8. PLAN IMPROVEMENT AND MONITORING

8.1 Status of Asset Management Practices¹⁴

8.1.1 Accounting and financial data sources

¹³ IPWEA, 2015, IIMM, Table 2.4.6, p 2 | 71.

¹⁴ ISO 55000 Refers to this the Asset Management System

Council implemented Technology One as its financial system. This system contains a works and assets module in which work orders or tasks can be raised and costing tracked against a particular asset category.

8.1.2 Asset management data sources

Currently Technology One system is used as asset management data source

8.2 Improvement Plan

The asset management improvement plan generated from this asset management plan is shown in Table 8.1.

Table 8.1: Improvement Plan

| Task No | Task | Responsibility | Resources Required | Timeline |
|---------|--|----------------------|--------------------|-------------|
| 1 | Continue and increase annual CCTV inspections. | Engineering services | Budget | Ongoing |
| 2 | Establish a strategic asset management system for all infrastructure asset. | Engineering services | Asset Engineer | Not started |
| 3 | Review and improvement of maintenance practices. | Engineering services | Asset Engineer | Ongoing |
| 4 | Improve current capitalisation and disposal process and introduce relevant financial policies. | Finance | Asset Accountant | Ongoing |

8.3 Monitoring and Review Procedures

This asset management plan will be reviewed during annual budget planning processes and amended to show any material changes in service levels and/or resources available to provide those services as a result of budget decisions.

The AM Plan will be updated annually to ensure it represents the current service level, asset values, projected operations, maintenance, capital renewal and replacement, capital upgrade/new and asset disposal expenditures and projected expenditure values incorporated into the long-term financial plan.

The AM Plan has a life of 4 years and is due for complete revision and updating within 4 year of each Council election.

8.4 Performance Measures

The effectiveness of the asset management plan can be measured in the following ways:

- The degree to which the required projected expenditures identified in this asset management plan are incorporated into the long-term financial plan,
- The degree to which 1-5 year detailed works programs, budgets, business plans and corporate structures take into account the 'global' works program trends provided by the asset management plan,
- The degree to which the existing and projected service levels and service consequences (what we cannot do), risks and residual risks are incorporated into the Strategic Plan and associated plans,
- The Asset Renewal Funding Ratio achieving the target of 1.0.

9. REFERENCES

- IPWEA, 2006, 'International Infrastructure Management Manual', Institute of Public Works Engineering Australasia, Sydney, www.ipwea.org/IIMM
- IPWEA, 2008, 'NAMS.PLUS Asset Management', Institute of Public Works Engineering Australasia, Sydney, www.ipwea.org/namsplus.
- IPWEA, 2015, 2nd edn., 'Australian Infrastructure Financial Management Manual', Institute of Public Works Engineering Australasia, Sydney, www.ipwea.org/AIFMM.
- IPWEA, 2015, 3rd edn., 'International Infrastructure Management Manual', Institute of Public Works Engineering Australasia, Sydney, www.ipwea.org/IIMM
- IPWEA, 2012 LTFP Practice Note 6 PN Long Term Financial Plan, Institute of Public Works Engineering Australasia, Sydney

10. APPENDICES

Appendix A Projected 10-year Capital Renewal and Replacement Works Program

| Asset ID | Sub Category | Asset Name | Rem Life (Years) | Useful Life (Years) |
|----------|--------------|----------------------------|------------------|---------------------|
| FD000241 | Conduits | US Pit 0060 to DS Pit 0050 | -1 | 60 |
| FD000223 | Conduits | US Pit 1320 to DS Pit 1310 | -1 | 60 |
| DR018444 | Conduits | US Pit 3070 to DS Pit 3060 | -1 | 60 |
| FD000118 | Conduits | US Pit 310 to DS Pit 300 | -1 | 60 |
| DR011352 | Conduits | US Pit 4760 to DS Pit 4750 | -1 | 80 |
| DR011032 | Conduits | US Pit 5090 to DS Pit 5080 | -1 | 80 |
| DR011359 | Conduits | US Pit 5100 to DS Pit 5090 | -1 | 80 |
| DR011031 | Conduits | US Pit 5110 to DS Pit 5090 | -1 | 80 |
| DR012147 | Conduits | US Pit 5120 to DS Pit 5080 | -1 | 80 |
| DR012745 | Conduits | US Pit 1080 to DS Pit 1070 | -1 | 80 |
| DR019051 | Conduits | US Pit 0040 to DS Pit 0030 | -1 | 80 |
| DR020804 | Conduits | US Pit 0060 to DS Pit 0050 | -1 | 80 |
| DR016388 | Conduits | US Pit 0060 to DS Pit 0055 | -1 | 80 |
| DR016387 | Conduits | US Pit 0060 to DS Pit 0055 | -1 | 80 |
| DR020805 | Conduits | US Pit 0070 to DS Pit 0060 | -1 | 80 |
| DR021408 | Conduits | US Pit 0080 to DS Pit 0060 | -1 | 80 |
| DR018485 | Conduits | US Pit 0080 to DS Pit 0070 | -1 | 80 |
| DR018864 | Conduits | US Pit 0090 to DS Pit 0060 | -1 | 80 |
| DR018483 | Conduits | US Pit 0120 to DS Pit 0110 | -1 | 80 |
| DR018484 | Conduits | US Pit 0130 to DS Pit 0120 | -1 | 80 |
| DR021416 | Conduits | US Pit 0160 to DS Pit 0150 | -1 | 80 |
| FD000042 | Conduits | US Pit 0160 to DS Pit 0150 | -1 | 80 |
| DR019032 | Conduits | US Pit 0160 to DS Pit 0150 | -1 | 80 |
| DR019031 | Conduits | US Pit 0170 to DS Pit 0160 | -1 | 80 |
| DR019023 | Conduits | US Pit 0200 to DS Pit 0190 | -1 | 80 |
| DR019016 | Conduits | US Pit 0300 to DS Pit 0290 | -1 | 80 |
| DR019934 | Conduits | US Pit 0310 to DS Pit 0290 | -1 | 80 |
| DR019014 | Conduits | US Pit 0310 to DS Pit 0300 | -1 | 80 |
| DR019015 | Conduits | US Pit 0320 to DS Pit 0300 | -1 | 80 |
| DR014117 | Conduits | US Pit 0340 to DS Pit 0270 | -1 | 80 |
| DR014195 | Conduits | US Pit 0350 to DS Pit 0340 | -1 | 80 |
| DR016436 | Conduits | US Pit 0400 to DS Pit 0390 | -1 | 80 |
| DR019019 | Conduits | US Pit 0420 to DS Pit 0410 | -1 | 80 |
| DR021488 | Conduits | US Pit 0440 to DS Pit 0430 | -1 | 80 |
| DR018913 | Conduits | US Pit 0450 to DS Pit 0440 | -1 | 80 |
| DR021487 | Conduits | US Pit 0460 to DS Pit 0440 | -1 | 80 |
| DR010581 | Conduits | US Pit 0490 to DS Pit 0480 | -1 | 80 |
| DR010580 | Conduits | US Pit 0510 to DS Pit 0490 | -1 | 80 |
| DR018988 | Conduits | US Pit 0510 to DS Pit 0500 | -1 | 80 |

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|----------|----------|----------------------------|----|----|
| DR020782 | Conduits | US Pit 0580 to DS Pit 0570 | -1 | 80 |
| DR021493 | Conduits | US Pit 0780 to DS Pit 0770 | -1 | 80 |
| DR020792 | Conduits | US Pit 0810 to DS Pit 0750 | -1 | 80 |
| DR018894 | Conduits | US Pit 0820 to DS Pit 0810 | -1 | 80 |
| DR018893 | Conduits | US Pit 0840 to DS Pit 0820 | -1 | 80 |
| DR018968 | Conduits | US Pit 0970 to DS Pit 0960 | -1 | 80 |
| FD000155 | Conduits | US Pit 100 to DS Pit 90 | -1 | 80 |
| DR011797 | Conduits | US Pit 100 to DS Pit 90 | -1 | 80 |
| DR018980 | Conduits | US Pit 1000 to DS Pit 0990 | -1 | 80 |
| DR011461 | Conduits | US Pit 1010 to DS Pit 1000 | -1 | 80 |
| DR018981 | Conduits | US Pit 1020 to DS Pit 1010 | -1 | 80 |
| DR019169 | Conduits | US Pit 1040 to DS Pit 1030 | -1 | 80 |
| DR020914 | Conduits | US Pit 1050 to DS Pit 1040 | -1 | 80 |
| DR023260 | Conduits | US Pit 110 to DS Pit 100 | -1 | 80 |
| DR011847 | Conduits | US Pit 120 to DS Pit 110 | -1 | 80 |
| DR018985 | Conduits | US Pit 1220 to DS Pit 1030 | -1 | 80 |
| DR018984 | Conduits | US Pit 1230 to DS Pit 1220 | -1 | 80 |
| DR019171 | Conduits | US Pit 1240 to DS Pit 1220 | -1 | 80 |
| DR018947 | Conduits | US Pit 1250 to DS Pit 1240 | -1 | 80 |
| DR018946 | Conduits | US Pit 1260 to DS Pit 1240 | -1 | 80 |
| DR021386 | Conduits | US Pit 1260 to DS Pit 1250 | -1 | 80 |
| DR018945 | Conduits | US Pit 1270 to DS Pit 1240 | -1 | 80 |
| DR020875 | Conduits | US Pit 1270 to DS Pit 1260 | -1 | 80 |
| DR012694 | Conduits | US Pit 130 to DS Pit 100 | -1 | 80 |
| DR021440 | Conduits | US Pit 1340 to DS Pit 1320 | -1 | 80 |
| DR011720 | Conduits | US Pit 1390 to DS Pit 1380 | -1 | 80 |
| FD000159 | Conduits | US Pit 140 to DS Pit 130 | -1 | 80 |
| DR010827 | Conduits | US Pit 1400 to DS Pit 1390 | -1 | 80 |
| DR020863 | Conduits | US Pit 1410 to DS Pit 1400 | -1 | 80 |
| DR018977 | Conduits | US Pit 1410 to DS Pit 1400 | -1 | 80 |
| DR020862 | Conduits | US Pit 1420 to DS Pit 1410 | -1 | 80 |
| DR018975 | Conduits | US Pit 1430 to DS Pit 1420 | -1 | 80 |
| DR020895 | Conduits | US Pit 1430 to DS Pit 1420 | -1 | 80 |
| DR020861 | Conduits | US Pit 1470 to DS Pit 1420 | -1 | 80 |
| DR012340 | Conduits | US Pit 1480 to DS Pit 1470 | -1 | 80 |
| DR011852 | Conduits | US Pit 150 to DS Pit 140 | -1 | 80 |
| DR020899 | Conduits | US Pit 1500 to DS Pit 1490 | -1 | 80 |
| DR020858 | Conduits | US Pit 1510 to DS Pit 1500 | -1 | 80 |
| DR020857 | Conduits | US Pit 1520 to DS Pit 1500 | -1 | 80 |
| DR020878 | Conduits | US Pit 1550 to DS Pit 1540 | -1 | 80 |
| DR021442 | Conduits | US Pit 1560 to DS Pit 1550 | -1 | 80 |
| DR020877 | Conduits | US Pit 1570 to DS Pit 1560 | -1 | 80 |
| DR020876 | Conduits | US Pit 1580 to DS Pit 1560 | -1 | 80 |
| FD000156 | Conduits | US Pit 160 to DS Pit 150 | -1 | 80 |
| DR021413 | Conduits | US Pit 1620 to DS Pit 1615 | -1 | 80 |
| DR020798 | Conduits | US Pit 1630 to DS Pit 1620 | -1 | 80 |
| DR020797 | Conduits | US Pit 1640 to DS Pit 1630 | -1 | 80 |

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|----------|----------|----------------------------|----|----|
| DR020847 | Conduits | US Pit 1660 to DS Pit 1650 | -1 | 80 |
| DR020848 | Conduits | US Pit 1680 to DS Pit 1670 | -1 | 80 |
| DR011789 | Conduits | US Pit 1680 to DS Pit 1670 | -1 | 80 |
| DR011447 | Conduits | US Pit 1810 to DS Pit 1800 | -1 | 80 |
| DR023087 | Conduits | US Pit 1820 to DS Pit 1810 | -1 | 80 |
| DR021484 | Conduits | US Pit 1850 to DS Pit 1840 | -1 | 80 |
| DR012673 | Conduits | US Pit 1910 to DS Pit 430 | -1 | 80 |
| DR015333 | Conduits | US Pit 1940 to DS Pit 1930 | -1 | 50 |
| DR021096 | Conduits | US Pit 1950 to DS Pit 1920 | -1 | 80 |
| DR015332 | Conduits | US Pit 1950 to DS Pit 1940 | -1 | 50 |
| DR021095 | Conduits | US Pit 1970 to DS Pit 1950 | -1 | 80 |
| DR023091 | Conduits | US Pit 2000 to DS Pit 1470 | -1 | 80 |
| DR012376 | Conduits | US Pit 2120 to DS Pit 2110 | -1 | 80 |
| DR020535 | Conduits | US Pit 2260 to DS Pit 2250 | -1 | 80 |
| DR020538 | Conduits | US Pit 2310 to DS Pit 2300 | -1 | 80 |
| DR020166 | Conduits | US Pit 2370 to DS Pit 2360 | -1 | 80 |
| DR020547 | Conduits | US Pit 2400 to DS Pit 2390 | -1 | 80 |
| DR020540 | Conduits | US Pit 2420 to DS Pit 2410 | -1 | 80 |
| DR012271 | Conduits | US Pit 2450 to DS Pit 2430 | -1 | 80 |
| DR020629 | Conduits | US Pit 2450 to DS Pit 2440 | -1 | 80 |
| DR021348 | Conduits | US Pit 2500 to DS Pit 2490 | -1 | 80 |
| DR021347 | Conduits | US Pit 2510 to DS Pit 2490 | -1 | 80 |
| DR020490 | Conduits | US Pit 2530 to DS Pit 2520 | -1 | 80 |
| DR020491 | Conduits | US Pit 2540 to DS Pit 2530 | -1 | 80 |
| DR020489 | Conduits | US Pit 2550 to DS Pit 2530 | -1 | 80 |
| DR020496 | Conduits | US Pit 2580 to DS Pit 2570 | -1 | 80 |
| DR012272 | Conduits | US Pit 2600 to DS Pit 2550 | -1 | 80 |
| DR020503 | Conduits | US Pit 2620 to DS Pit 2610 | -1 | 80 |
| DR020506 | Conduits | US Pit 2630 to DS Pit 2620 | -1 | 80 |
| DR020505 | Conduits | US Pit 2640 to DS Pit 2630 | -1 | 80 |
| DR020176 | Conduits | US Pit 2670 to DS Pit 2660 | -1 | 80 |
| DR020511 | Conduits | US Pit 2720 to DS Pit 2710 | -1 | 80 |
| DR023093 | Conduits | US Pit 2720 to DS Pit 2710 | -1 | 80 |
| DR023094 | Conduits | US Pit 2730 to DS Pit 2720 | -1 | 80 |
| DR020515 | Conduits | US Pit 2770 to DS Pit 2760 | -1 | 80 |
| DR020513 | Conduits | US Pit 2790 to DS Pit 2780 | -1 | 80 |
| DR020551 | Conduits | US Pit 2990 to DS Pit 2980 | -1 | 80 |
| DR020648 | Conduits | US Pit 3090 to DS Pit 3080 | -1 | 80 |
| DR020651 | Conduits | US Pit 3100 to DS Pit 3090 | -1 | 80 |
| DR021430 | Conduits | US Pit 3110 to DS Pit 3090 | -1 | 80 |
| DR020737 | Conduits | US Pit 3150 to DS Pit 3140 | -1 | 80 |
| DR012361 | Conduits | US Pit 320 to DS Pit 310 | -1 | 80 |
| DR011712 | Conduits | US Pit 330 to DS Pit 320 | -1 | 80 |
| DR012302 | Conduits | US Pit 340 to DS Pit 320 | -1 | 80 |
| DR023071 | Conduits | US Pit 370 to DS Pit 360 | -1 | 80 |
| DR020709 | Conduits | US Pit 3850 to DS Pit 3830 | -1 | 80 |
| FD000165 | Conduits | US Pit 390 to DS Pit 400 | -1 | 80 |

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|----------|----------|----------------------------|----|----|
| DR017700 | Conduits | US Pit 3980 to DS Pit 3970 | -1 | 80 |
| DR012293 | Conduits | US Pit 400 to DS Pit 380 | -1 | 80 |
| FD000194 | Conduits | US Pit 400 to DS Pit 410 | -1 | 80 |
| DR012363 | Conduits | US Pit 420 to DS Pit 410 | -1 | 80 |
| FD000144 | Conduits | US Pit 440 to DS Pit 1910 | -1 | 80 |
| DR011714 | Conduits | US Pit 440 to DS Pit 430 | -1 | 80 |
| DR011343 | Conduits | US Pit 4400 to DS Pit 4390 | -1 | 80 |
| DR023073 | Conduits | US Pit 460 to DS Pit 450 | -1 | 80 |
| DR020642 | Conduits | US Pit 4630 to DS Pit 4620 | -1 | 80 |
| DR017907 | Conduits | US Pit 4640 to DS Pit 4630 | -1 | 80 |
| DR017908 | Conduits | US Pit 4660 to DS Pit 4640 | -1 | 80 |
| FD000124 | Conduits | US Pit 470 to DS Pit 460 | -1 | 80 |
| FD000177 | Conduits | US Pit 480 to DS Pit 470 | -1 | 80 |
| DR012006 | Conduits | US Pit 480 to DS Pit 470 | -1 | 80 |
| DR012280 | Conduits | US Pit 480 to DS Pit 470 | -1 | 80 |
| DR012279 | Conduits | US Pit 490 to DS Pit 480 | -1 | 80 |
| FD000143 | Conduits | US Pit 490 to DS Pit 480 | -1 | 80 |
| DR010841 | Conduits | US Pit 5090 to DS Pit 5080 | -1 | 80 |
| DR011829 | Conduits | US Pit 520 to DS Pit 510 | -1 | 80 |
| DR017127 | Conduits | US Pit 5480 to DS Pit 5230 | -1 | 80 |
| DR016807 | Conduits | US Pit 5500 to DS Pit 5490 | -1 | 80 |
| DR016801 | Conduits | US Pit 5540 to DS Pit 5530 | -1 | 80 |
| FD000191 | Conduits | US Pit 560 to DS Pit 550 | -1 | 80 |
| DR012000 | Conduits | US Pit 570 to DS Pit 550 | -1 | 80 |
| FD000183 | Conduits | US Pit 580 to DS Pit 570 | -1 | 80 |
| FD000198 | Conduits | US Pit 590 to DS Pit 570 | -1 | 80 |
| DR023318 | Conduits | US Pit 600 to DS Pit 520 | -1 | 80 |
| DR012277 | Conduits | US Pit 610 to DS Pit 470 | -1 | 80 |
| DR011744 | Conduits | US Pit 610 to DS Pit 600 | -1 | 80 |
| DR016324 | Conduits | US Pit 6170 to DS Pit 6160 | -1 | 80 |
| DR017073 | Conduits | US Pit 6180 to DS Pit 6160 | -1 | 80 |
| DR023274 | Conduits | US Pit 620 to DS Pit | -1 | 80 |
| DR023077 | Conduits | US Pit 630 to DS Pit 620 | -1 | 80 |
| DR012648 | Conduits | US Pit 630 to DS Pit 620 | -1 | 80 |
| DR016870 | Conduits | US Pit 6370 to DS Pit 6360 | -1 | 80 |
| DR016806 | Conduits | US Pit 6390 to DS Pit 6380 | -1 | 80 |
| DR023061 | Conduits | US Pit 670 to DS Pit 660 | -1 | 80 |
| DR023276 | Conduits | US Pit 680 to DS Pit 1990 | -1 | 80 |
| FD000168 | Conduits | US Pit 690 to DS Pit 680 | -1 | 80 |
| DR016345 | Conduits | US Pit 7010 to DS Pit 7000 | -1 | 80 |
| DR017226 | Conduits | US Pit 7100 to DS Pit 7080 | -1 | 80 |
| DR016510 | Conduits | US Pit 7110 to DS Pit 7100 | -1 | 80 |
| DR016512 | Conduits | US Pit 7150 to DS Pit 7110 | -1 | 80 |
| DR016511 | Conduits | US Pit 7160 to DS Pit 7150 | -1 | 80 |
| DR012639 | Conduits | US Pit 720 to DS Pit 710 | -1 | 80 |
| DR011014 | Conduits | US Pit 7320 to DS Pit 7310 | -1 | 80 |
| DR013325 | Conduits | US Pit 7330 to DS Pit 7320 | -1 | 80 |

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|----------|----------|----------------------------|----|----|
| DR023220 | Conduits | US Pit 7340 to DS Pit 7000 | -1 | 80 |
| DR023221 | Conduits | US Pit 7340 to DS Pit 7330 | -1 | 80 |
| FD000169 | Conduits | US Pit 760 to DS Pit 720 | -1 | 80 |
| FD000432 | Conduits | US Pit 770 to DS Pit 760 | -1 | 80 |
| DR015456 | Conduits | US Pit 7700 to DS Pit 7720 | -1 | 80 |
| DR014707 | Conduits | US Pit 7720 to DS Pit 7740 | -1 | 80 |
| DR023280 | Conduits | US Pit 780 to DS Pit 770 | -1 | 80 |
| DR016483 | Conduits | US Pit 7960 to DS Pit 7950 | -1 | 80 |
| DR017281 | Conduits | US Pit 7990 to DS Pit 7980 | -1 | 80 |
| FD000138 | Conduits | US Pit 80 to DS Pit 70 | -1 | 80 |
| DR017282 | Conduits | US Pit 8000 to DS Pit 7990 | -1 | 80 |
| DR017280 | Conduits | US Pit 8010 to DS Pit 7990 | -1 | 80 |
| DR016482 | Conduits | US Pit 8030 to DS Pit 8020 | -1 | 80 |
| DR017434 | Conduits | US Pit 8070 to DS Pit 8060 | -1 | 80 |
| DR017437 | Conduits | US Pit 8080 to DS Pit 8060 | -1 | 80 |
| DR017243 | Conduits | US Pit 8090 to DS Pit 8080 | -1 | 80 |
| DR017279 | Conduits | US Pit 8100 to DS Pit 8080 | -1 | 80 |
| DR017261 | Conduits | US Pit 8130 to DS Pit 8120 | -1 | 80 |
| DR017246 | Conduits | US Pit 8170 to DS Pit 8160 | -1 | 80 |
| FD000208 | Conduits | US Pit 820 to DS Pit 810 | -1 | 80 |
| DR017487 | Conduits | US Pit 8200 to DS Pit 8190 | -1 | 80 |
| FD000173 | Conduits | US Pit 830 to DS Pit 820 | -1 | 80 |
| DR011850 | Conduits | US Pit 90 to DS Pit 80 | -1 | 80 |
| DR011285 | Conduits | US Pit 9380 to DS Pit 9370 | -1 | 80 |
| DR011298 | Conduits | US Pit 9400 to DS Pit 9390 | -1 | 80 |
| DR011297 | Conduits | US Pit 9410 to DS Pit 9400 | -1 | 80 |
| DR011296 | Conduits | US Pit 9420 to DS Pit 9410 | -1 | 80 |
| DR011307 | Conduits | US Pit 9430 to DS Pit 9420 | -1 | 80 |
| DR011295 | Conduits | US Pit 9450 to DS Pit 9420 | -1 | 80 |
| DR023127 | Conduits | US Pit 960 to DS Pit 950 | -1 | 80 |
| DR011528 | Conduits | US Pit 9840 to DS Pit 9760 | -1 | 80 |
| DR011591 | Conduits | US Pit 9860 to DS Pit 9850 | -1 | 80 |
| DR010639 | Conduits | US Pit 9870 to DS Pit 9860 | -1 | 80 |
| DR011590 | Conduits | US Pit 9880 to DS Pit 9870 | -1 | 80 |
| DR010638 | Conduits | US Pit 9890 to DS Pit 9870 | -1 | 80 |
| DR011597 | Conduits | US Pit 9900 to DS Pit 9890 | -1 | 80 |
| DR019182 | Conduits | US Pit 0510 to DS Pit 0500 | -1 | 80 |
| DR019181 | Conduits | US Pit 0520 to DS Pit 0510 | -1 | 80 |
| DR019005 | Conduits | US Pit 0560 to DS Pit 0510 | -1 | 80 |
| DR019088 | Conduits | US Pit 0910 to DS Pit 0900 | -1 | 80 |
| DR019075 | Conduits | US Pit 1340 to DS Pit 1330 | -1 | 80 |
| DR019074 | Conduits | US Pit 1350 to DS Pit 1340 | -1 | 80 |
| DR019073 | Conduits | US Pit 1370 to DS Pit 1350 | -1 | 80 |
| DR019118 | Conduits | US Pit 1410 to DS Pit 1400 | -1 | 80 |
| DR019116 | Conduits | US Pit 1590 to DS Pit 1580 | -1 | 80 |
| DR019115 | Conduits | US Pit 1600 to DS Pit 1590 | -1 | 80 |
| DR019064 | Conduits | US Pit 1660 to DS Pit 1650 | -1 | 80 |

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|----------|----------|-----------------------------|----|----|
| DR019063 | Conduits | US Pit 1670 to DS Pit 1660 | -1 | 80 |
| DR019065 | Conduits | US Pit 1700 to DS Pit 1660 | -1 | 80 |
| DR010528 | Conduits | US Pit 0060 to DS Pit 0050 | -1 | 80 |
| DR010527 | Conduits | US Pit 0070 to DS Pit 0060 | -1 | 80 |
| DR010526 | Conduits | US Pit 0080 to DS Pit 0060 | -1 | 80 |
| DR010524 | Conduits | US Pit 0080 to DS Pit 0120 | -1 | 80 |
| DR020417 | Conduits | US Pit 0090 to DS Pit 0080 | -1 | 80 |
| DR020413 | Conduits | US Pit 0110 to DS Pit 0100 | -1 | 80 |
| DR020398 | Conduits | US Pit 0120 to DS Pit 0110 | -1 | 80 |
| DR020397 | Conduits | US Pit 0130 to DS Pit 0120 | -1 | 80 |
| DR010542 | Conduits | US Pit 0240 to DS Pit 0230 | -1 | 80 |
| DR014669 | Conduits | US Pit 0250 to DS Pit 0240 | -1 | 80 |
| DR016573 | Conduits | US Pit 0280 to DS Pit 0270 | -1 | 80 |
| DR010550 | Conduits | US Pit 0300 to DS Pit 0250 | -1 | 80 |
| DR014514 | Conduits | US Pit 0300 to DS Pit 0290 | -1 | 80 |
| DR010549 | Conduits | US Pit 0310 to DS Pit 0300 | -1 | 80 |
| DR010543 | Conduits | US Pit 0330 to DS Pit 0320 | -1 | 80 |
| DR020401 | Conduits | US Pit 0420 to DS Pit 0410 | -1 | 80 |
| DR020400 | Conduits | US Pit 0430 to DS Pit 0410 | -1 | 80 |
| DR014634 | Conduits | US Pit 0440 to DS Pit 0430 | -1 | 80 |
| DR019342 | Conduits | US Pit 0520 to DS Pit 0510 | -1 | 80 |
| DR021569 | Conduits | US Pit 0560 to DS Pit 0550 | -1 | 80 |
| DR018876 | Conduits | US Pit 0670 to DS Pit 0660 | -1 | 80 |
| DR016977 | Conduits | US Pit 0700 to DS Pit 0690 | -1 | 80 |
| DR020953 | Conduits | US Pit 0710 to DS Pit 0700 | -1 | 80 |
| DR016555 | Conduits | US Pit 0730 to DS Pit 0720 | -1 | 80 |
| DR014660 | Conduits | US Pit 0750 to DS Pit 0730 | -1 | 80 |
| DR020479 | Conduits | US Pit 0860 to DS Pit 0850 | -1 | 80 |
| DR020478 | Conduits | US Pit 0870 to DS Pit 0860 | -1 | 80 |
| DR020477 | Conduits | US Pit 0980 to DS Pit 0970 | -1 | 80 |
| DR020938 | Conduits | US Pit 1000 to DS Pit 0990 | -1 | 80 |
| DR011598 | Conduits | US Pit 10000 to DS Pit 9990 | -1 | 80 |
| DR020476 | Conduits | US Pit 1010 to DS Pit 1000 | -1 | 80 |
| DR020475 | Conduits | US Pit 1020 to DS Pit 1010 | -1 | 80 |
| DR020465 | Conduits | US Pit 1040 to DS Pit 1030 | -1 | 80 |
| DR020464 | Conduits | US Pit 1050 to DS Pit 1030 | -1 | 80 |
| DR020463 | Conduits | US Pit 1060 to DS Pit 1030 | -1 | 80 |
| DR019576 | Conduits | US Pit 1170 to DS Pit 1160 | -1 | 60 |
| DR020989 | Conduits | US Pit 1200 to DS Pit 1190 | -1 | 80 |
| DR019568 | Conduits | US Pit 1210 to DS Pit | -1 | 80 |
| DR021541 | Conduits | US Pit 1250 to DS Pit 1240 | -1 | 80 |
| DR013774 | Conduits | US Pit 1340 to DS Pit 1330 | -1 | 80 |
| DR012152 | Conduits | US Pit 1340 to DS Pit 1330 | -1 | 80 |
| DR020439 | Conduits | US Pit 1340 to DS Pit 1330 | -1 | 80 |
| DR021375 | Conduits | US Pit 1350 to DS Pit 1300 | -1 | 80 |
| DR013778 | Conduits | US Pit 1350 to DS Pit 1340 | -1 | 80 |
| DR013773 | Conduits | US Pit 1360 to DS Pit 1340 | -1 | 80 |

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|----------|----------|----------------------------|----|----|
| DR020431 | Conduits | US Pit 1370 to DS Pit 1350 | -1 | 80 |
| DR021001 | Conduits | US Pit 1370 to DS Pit 1360 | -1 | 80 |
| FD000084 | Conduits | US Pit 1370 to DS Pit 1360 | -1 | 80 |
| FD000083 | Conduits | US Pit 1370 to DS Pit 1360 | -1 | 80 |
| DR020442 | Conduits | US Pit 1390 to DS Pit 1370 | -1 | 80 |
| DR010677 | Conduits | US Pit 140 to DS Pit 120 | -1 | 80 |
| DR020447 | Conduits | US Pit 1400 to DS Pit 1390 | -1 | 80 |
| DR020450 | Conduits | US Pit 1420 to DS Pit 1400 | -1 | 80 |
| DR020451 | Conduits | US Pit 1430 to DS Pit 1420 | -1 | 80 |
| DR020449 | Conduits | US Pit 1440 to DS Pit 1420 | -1 | 80 |
| DR020452 | Conduits | US Pit 1450 to DS Pit 1440 | -1 | 80 |
| DR020448 | Conduits | US Pit 1460 to DS Pit 1440 | -1 | 80 |
| DR010849 | Conduits | US Pit 1460 to DS Pit 1450 | -1 | 80 |
| DR021269 | Conduits | US Pit 1490 to DS Pit 1450 | -1 | 80 |
| DR020454 | Conduits | US Pit 1490 to DS Pit 1480 | -1 | 80 |
| DR012407 | Conduits | US Pit 150 to DS Pit 140 | -1 | 80 |
| DR014068 | Conduits | US Pit 1550 to DS Pit 1540 | -1 | 80 |
| DR011139 | Conduits | US Pit 1640 to DS Pit 1630 | -1 | 80 |
| DR011135 | Conduits | US Pit 1660 to DS Pit 1650 | -1 | 80 |
| DR012980 | Conduits | US Pit 1750 to DS Pit 1740 | -1 | 80 |
| DR012985 | Conduits | US Pit 1830 to DS Pit 1820 | -1 | 80 |
| DR011419 | Conduits | US Pit 1880 to DS Pit 1870 | -1 | 80 |
| DR011418 | Conduits | US Pit 1890 to DS Pit 1880 | -1 | 80 |
| DR011415 | Conduits | US Pit 1930 to DS Pit 1920 | -1 | 80 |
| DR013997 | Conduits | US Pit 1930 to DS Pit 1920 | -1 | 80 |
| DR011414 | Conduits | US Pit 1940 to DS Pit 1930 | -1 | 80 |
| DR014024 | Conduits | US Pit 2140 to DS Pit 2130 | -1 | 80 |
| DR013913 | Conduits | US Pit 2200 to DS Pit 2190 | -1 | 80 |
| DR013580 | Conduits | US Pit 2270 to DS Pit 2260 | -1 | 80 |
| DR018426 | Conduits | US Pit 2320 to DS Pit 2310 | -1 | 80 |
| DR018420 | Conduits | US Pit 2360 to DS Pit 2350 | -1 | 80 |
| DR018419 | Conduits | US Pit 2370 to DS Pit 2360 | -1 | 80 |
| DR015247 | Conduits | US Pit 2470 to DS Pit 2460 | -1 | 80 |
| DR010673 | Conduits | US Pit 260 to DS Pit 240 | -1 | 80 |
| DR023101 | Conduits | US Pit 270 to DS Pit 260 | -1 | 80 |
| FD000373 | Conduits | US Pit 2720 to DS Pit 2710 | -1 | 60 |
| DR010984 | Conduits | US Pit 280 to DS Pit 270 | -1 | 80 |
| DR010760 | Conduits | US Pit 2950 to DS Pit 2940 | -1 | 80 |
| DR010762 | Conduits | US Pit 2960 to DS Pit 2950 | -1 | 80 |
| DR010759 | Conduits | US Pit 2970 to DS Pit 2950 | -1 | 80 |
| DR011198 | Conduits | US Pit 2990 to DS Pit 2980 | -1 | 80 |
| DR012265 | Conduits | US Pit 30 to DS Pit 20 | -1 | 80 |
| DR014028 | Conduits | US Pit 3090 to DS Pit 3080 | -1 | 80 |
| DR017099 | Conduits | US Pit 3340 to DS Pit 3330 | -1 | 80 |
| DR012386 | Conduits | US Pit 340 to DS Pit 330 | -1 | 80 |
| DR016949 | Conduits | US Pit 3440 to DS Pit 3430 | -1 | 80 |
| DR020745 | Conduits | US Pit 3460 to DS Pit 3450 | -1 | 80 |

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|----------|----------|----------------------------|----|----|
| DR017072 | Conduits | US Pit 3490 to DS Pit 3480 | -1 | 80 |
| DR010874 | Conduits | US Pit 3490 to DS Pit 3480 | -1 | 80 |
| DR011488 | Conduits | US Pit 350 to DS Pit 340 | -1 | 80 |
| DR011630 | Conduits | US Pit 3500 to DS Pit 3490 | -1 | 80 |
| DR011325 | Conduits | US Pit 3510 to DS Pit 3490 | -1 | 80 |
| DR011323 | Conduits | US Pit 3520 to DS Pit 3510 | -1 | 80 |
| DR011487 | Conduits | US Pit 360 to DS Pit 340 | -1 | 80 |
| DR011971 | Conduits | US Pit 3600 to DS Pit 3590 | -1 | 80 |
| DR011969 | Conduits | US Pit 3610 to DS Pit 3600 | -1 | 80 |
| DR011970 | Conduits | US Pit 3620 to DS Pit 3600 | -1 | 80 |
| DR020758 | Conduits | US Pit 3650 to DS Pit 3640 | -1 | 80 |
| FD000244 | Conduits | US Pit 3660 to DS Pit 3650 | -1 | 60 |
| DR016948 | Conduits | US Pit 3800 to DS Pit 3790 | -1 | 80 |
| DR016978 | Conduits | US Pit 3820 to DS Pit 3810 | -1 | 80 |
| DR020708 | Conduits | US Pit 3860 to DS Pit 3850 | -1 | 80 |
| DR011367 | Conduits | US Pit 3860 to DS Pit 3850 | -1 | 80 |
| DR020704 | Conduits | US Pit 3880 to DS Pit 3870 | -1 | 80 |
| DR020703 | Conduits | US Pit 3910 to DS Pit 3880 | -1 | 80 |
| DR016751 | Conduits | US Pit 3950 to DS Pit 3930 | -1 | 80 |
| DR015476 | Conduits | US Pit 3970 to DS Pit 3960 | -1 | 80 |
| DR020494 | Conduits | US Pit 4020 to DS Pit 4010 | -1 | 80 |
| DR018187 | Conduits | US Pit 4020 to DS Pit 4010 | -1 | 80 |
| DR018176 | Conduits | US Pit 4110 to DS Pit 4100 | -1 | 80 |
| DR011622 | Conduits | US Pit 4120 to DS Pit 4110 | -1 | 80 |
| DR020664 | Conduits | US Pit 4130 to DS Pit 4120 | -1 | 80 |
| DR012118 | Conduits | US Pit 4130 to DS Pit 4120 | -1 | 80 |
| DR012116 | Conduits | US Pit 4150 to DS Pit 4120 | -1 | 80 |
| DR018184 | Conduits | US Pit 4160 to DS Pit 4110 | -1 | 80 |
| DR020676 | Conduits | US Pit 4370 to DS Pit 4360 | -1 | 80 |
| DR017206 | Conduits | US Pit 4450 to DS Pit 4440 | -1 | 80 |
| DR020671 | Conduits | US Pit 4460 to DS Pit 4450 | -1 | 80 |
| DR016987 | Conduits | US Pit 4540 to DS Pit 4530 | -1 | 80 |
| DR017191 | Conduits | US Pit 4620 to DS Pit 4610 | -1 | 80 |
| DR020641 | Conduits | US Pit 4640 to DS Pit 4630 | -1 | 80 |
| DR017568 | Conduits | US Pit 4665 to DS Pit 4660 | -1 | 80 |
| DR017567 | Conduits | US Pit 4670 to DS Pit 4660 | -1 | 80 |
| DR017001 | Conduits | US Pit 4840 to DS Pit 4830 | -1 | 80 |
| DR017179 | Conduits | US Pit 5130 to DS Pit 5120 | -1 | 80 |
| DR017260 | Conduits | US Pit 5160 to DS Pit 5140 | -1 | 80 |
| DR017477 | Conduits | US Pit 5190 to DS Pit 5180 | -1 | 80 |
| DR010959 | Conduits | US Pit 5250 to DS Pit 5240 | -1 | 80 |
| DR010958 | Conduits | US Pit 5270 to DS Pit 5250 | -1 | 80 |
| DR017132 | Conduits | US Pit 5280 to DS Pit 5250 | -1 | 80 |
| FD000342 | Conduits | US Pit 5280 to DS Pit 5270 | -1 | 80 |
| FD000339 | Conduits | US Pit 5280 to DS Pit 5270 | -1 | 80 |
| FD000343 | Conduits | US Pit 5280 to DS Pit 5270 | -1 | 80 |
| DR017128 | Conduits | US Pit 5280 to DS Pit 5270 | -1 | 80 |

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|----------|----------|----------------------------|----|----|
| DR017307 | Conduits | US Pit 5380 to DS Pit 5370 | -1 | 80 |
| DR017306 | Conduits | US Pit 5390 to DS Pit 5370 | -1 | 80 |
| DR018136 | Conduits | US Pit 5490 to DS Pit 5480 | -1 | 80 |
| DR018135 | Conduits | US Pit 5500 to DS Pit 5490 | -1 | 80 |
| DR010949 | Conduits | US Pit 5560 to DS Pit 5550 | -1 | 80 |
| DR016808 | Conduits | US Pit 5580 to DS Pit 5280 | -1 | 80 |
| DR010619 | Conduits | US Pit 5600 to DS Pit 5590 | -1 | 80 |
| DR010967 | Conduits | US Pit 5610 to DS Pit 5600 | -1 | 80 |
| DR010966 | Conduits | US Pit 5620 to DS Pit 5610 | -1 | 80 |
| DR010969 | Conduits | US Pit 5630 to DS Pit 5610 | -1 | 80 |
| DR010964 | Conduits | US Pit 5810 to DS Pit 5800 | -1 | 80 |
| DR017004 | Conduits | US Pit 5890 to DS Pit 5880 | -1 | 80 |
| DR017077 | Conduits | US Pit 5910 to DS Pit 5890 | -1 | 80 |
| DR017003 | Conduits | US Pit 5920 to DS Pit 5910 | -1 | 80 |
| DR016355 | Conduits | US Pit 5930 to DS Pit 5920 | -1 | 80 |
| DR016321 | Conduits | US Pit 5940 to DS Pit 5920 | -1 | 80 |
| DR023118 | Conduits | US Pit 610 to DS Pit 600 | -1 | 80 |
| DR023119 | Conduits | US Pit 620 to DS Pit 610 | -1 | 80 |
| DR012129 | Conduits | US Pit 6290 to DS Pit 6280 | -1 | 80 |
| DR012449 | Conduits | US Pit 630 to DS Pit 620 | -1 | 80 |
| DR012128 | Conduits | US Pit 6300 to DS Pit 6290 | -1 | 80 |
| DR012393 | Conduits | US Pit 640 to DS Pit 630 | -1 | 80 |
| DR016478 | Conduits | US Pit 6500 to DS Pit 6490 | -1 | 80 |
| DR010743 | Conduits | US Pit 6510 to DS Pit 6490 | -1 | 80 |
| FD000236 | Conduits | US Pit 6510 to DS Pit 6490 | -1 | 80 |
| DR010608 | Conduits | US Pit 6550 to DS Pit 6540 | -1 | 80 |
| DR016489 | Conduits | US Pit 6560 to DS Pit 6550 | -1 | 80 |
| DR010961 | Conduits | US Pit 6560 to DS Pit 6550 | -1 | 80 |
| DR017232 | Conduits | US Pit 6570 to DS Pit 6560 | -1 | 80 |
| DR016735 | Conduits | US Pit 6580 to DS Pit 6530 | -1 | 80 |
| DR016604 | Conduits | US Pit 6600 to DS Pit 6580 | -1 | 80 |
| DR016503 | Conduits | US Pit 6650 to DS Pit 6640 | -1 | 80 |
| DR011102 | Conduits | US Pit 6700 to DS Pit 6690 | -1 | 80 |
| DR011101 | Conduits | US Pit 6710 to DS Pit 6700 | -1 | 80 |
| DR011100 | Conduits | US Pit 6720 to DS Pit 6710 | -1 | 80 |
| DR011103 | Conduits | US Pit 6740 to DS Pit 6720 | -1 | 80 |
| DR017337 | Conduits | US Pit 6750 to DS Pit 6740 | -1 | 80 |
| DR011073 | Conduits | US Pit 6770 to DS Pit 6760 | -1 | 80 |
| DR010884 | Conduits | US Pit 7030 to DS Pit 7020 | -1 | 80 |
| DR010890 | Conduits | US Pit 7040 to DS Pit 7030 | -1 | 80 |
| DR010889 | Conduits | US Pit 7060 to DS Pit 7040 | -1 | 80 |
| DR010888 | Conduits | US Pit 7070 to DS Pit 7060 | -1 | 80 |
| DR010904 | Conduits | US Pit 7130 to DS Pit 7120 | -1 | 80 |
| DR010907 | Conduits | US Pit 7180 to DS Pit 7160 | -1 | 80 |
| DR018070 | Conduits | US Pit 7290 to DS Pit 7280 | -1 | 80 |
| DR012485 | Conduits | US Pit 740 to DS Pit 730 | -1 | 80 |
| DR017828 | Conduits | US Pit 7450 to DS Pit 7440 | -1 | 80 |

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|----------|----------|----------------------------|----|-----|
| DR012442 | Conduits | US Pit 780 to DS Pit 740 | -1 | 80 |
| DR011514 | Conduits | US Pit 7810 to DS Pit 7780 | -1 | 80 |
| DR011512 | Conduits | US Pit 7820 to DS Pit 7810 | -1 | 80 |
| DR011513 | Conduits | US Pit 7830 to DS Pit 7810 | -1 | 80 |
| DR010911 | Conduits | US Pit 8100 to DS Pit 8090 | -1 | 80 |
| DR010910 | Conduits | US Pit 8110 to DS Pit 8100 | -1 | 80 |
| DR010997 | Conduits | US Pit 820 to DS Pit 810 | -1 | 80 |
| DR010915 | Conduits | US Pit 8270 to DS Pit 8250 | -1 | 80 |
| DR010913 | Conduits | US Pit 8300 to DS Pit 8290 | -1 | 80 |
| DR016652 | Conduits | US Pit 8310 to DS Pit 8300 | -1 | 80 |
| DR011000 | Conduits | US Pit 840 to DS Pit 810 | -1 | 80 |
| DR017818 | Conduits | US Pit 8440 to DS Pit 8430 | -1 | 80 |
| DR017819 | Conduits | US Pit 8450 to DS Pit 8430 | -1 | 80 |
| DR012145 | Conduits | US Pit 8480 to DS Pit 8470 | -1 | 80 |
| DR010725 | Conduits | US Pit 8490 to DS Pit 8480 | -1 | 80 |
| DR010999 | Conduits | US Pit 850 to DS Pit 840 | -1 | 80 |
| DR010711 | Conduits | US Pit 8500 to DS Pit 8490 | -1 | 80 |
| DR012575 | Conduits | US Pit 8580 to DS Pit 8560 | -1 | 80 |
| DR010998 | Conduits | US Pit 860 to DS Pit 840 | -1 | 80 |
| DR011553 | Conduits | US Pit 8600 to DS Pit 8590 | -1 | 80 |
| DR011595 | Conduits | US Pit 8620 to DS Pit 8610 | -1 | 80 |
| DR010792 | Conduits | US Pit 8770 to DS Pit 8760 | -1 | 80 |
| DR011587 | Conduits | US Pit 9110 to DS Pit 9100 | -1 | 80 |
| DR011550 | Conduits | US Pit 9120 to DS Pit 9110 | -1 | 80 |
| DR011530 | Conduits | US Pit 9750 to DS Pit 9740 | -1 | 80 |
| DR010801 | Conduits | US Pit 9780 to DS Pit 9770 | -1 | 80 |
| DR010642 | Conduits | US Pit 9790 to DS Pit 9780 | -1 | 80 |
| DR010641 | Conduits | US Pit 9800 to DS Pit 9780 | -1 | 80 |
| DR010640 | Conduits | US Pit 9810 to DS Pit 9800 | -1 | 80 |
| DR011537 | Conduits | US Pit 9990 to DS Pit 9980 | -1 | 80 |
| DR015172 | Conduits | US Pit 0280 to DS Pit 0270 | -1 | 80 |
| DR013847 | Conduits | US Pit 0290 to DS Pit 0280 | -1 | 80 |
| DR014887 | Conduits | US Pit 0760 to DS Pit 0750 | -1 | 80 |
| DR018015 | Conduits | US Pit 1360 to DS Pit 1350 | -1 | 80 |
| DR017975 | Conduits | US Pit 1910 to DS Pit 1900 | -1 | 80 |
| DR018221 | Conduits | US Pit 3830 to DS Pit 3820 | -1 | 80 |
| DR017923 | Conduits | US Pit 4330 to DS Pit 4320 | -1 | 80 |
| DR011762 | Conduits | US Pit 1270 to DS Pit 1260 | -1 | 80 |
| DR011759 | Conduits | US Pit 950 to DS Pit 940 | -1 | 80 |
| DR011758 | Conduits | US Pit 960 to DS Pit 950 | -1 | 80 |
| DR011757 | Conduits | US Pit 970 to DS Pit 950 | -1 | 80 |
| DR000001 | Pits | Byron St | 0 | 100 |
| DR000002 | Pits | Byron St | 0 | 100 |
| DR000420 | Pits | Carr St | 0 | 100 |
| DR000955 | Pits | Carr St | 0 | 100 |
| DR000419 | Pits | Carr St | 0 | 100 |
| DR000418 | Pits | Carr St | 0 | 100 |

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|----------|----------|------------------------------|---|-----|
| DR000953 | Pits | Carr St | 0 | 100 |
| DR000543 | Pits | Carr St | 0 | 100 |
| DR000544 | Pits | Carr St | 0 | 100 |
| DR000422 | Pits | Carr St | 0 | 100 |
| DR000557 | Pits | Dudley St | 0 | 100 |
| DR000004 | Pits | Dudley St | 0 | 100 |
| DR000553 | Pits | Dudley St | 0 | 100 |
| DR000554 | Pits | Dudley St | 0 | 100 |
| DR000556 | Pits | Dudley St | 0 | 100 |
| DR000552 | Pits | Dudley St | 0 | 100 |
| DR000555 | Pits | Dudley St | 0 | 100 |
| DR000415 | Pits | Mount St | 0 | 100 |
| DR000546 | Pits | Mount St | 0 | 100 |
| DR000548 | Pits | Mount St | 0 | 100 |
| DR000416 | Pits | Mount St | 0 | 100 |
| DR000417 | Pits | Mount St | 0 | 100 |
| DR000551 | Pits | Mount St | 0 | 100 |
| DR000003 | Pits | Thomas St | 0 | 100 |
| DR001732 | Pits | BOTANY STREET | 1 | 100 |
| DR000829 | Pits | BOTANY STREET | 1 | 100 |
| DR001733 | Pits | BOTANY STREET | 1 | 100 |
| DR001486 | Pits | COOK STREET | 1 | 100 |
| DR001498 | Pits | ELIZABETH STREET | 1 | 100 |
| DR018863 | Conduits | US Pit 0100 to DS Pit 0090 | 2 | 100 |
| DR018862 | Conduits | US Pit 0120 to DS Pit 0100 | 2 | 100 |
| DR019034 | Conduits | US Pit 0140 to DS Pit 0130 | 2 | 80 |
| FD000044 | Conduits | US Pit 0150 to DS Pit 0140 | 2 | 60 |
| FD000031 | Conduits | US Pit 0150 to DS Pit 0140 | 2 | 60 |
| DR016225 | Conduits | US Pit 0380 to DS Pit 0370 | 2 | 100 |
| DR010496 | Conduits | US Pit 0480 to DS Pit 0470 | 2 | 100 |
| DR010495 | Conduits | US Pit 0590 to DS Pit 0530 | 2 | 100 |
| DR021355 | Conduits | US Pit 0910 to DS Pit 0900 | 2 | 80 |
| DR011580 | Conduits | US Pit 10050 to DS Pit 10040 | 2 | 80 |
| DR011660 | Conduits | US Pit 10090 to DS Pit 10080 | 2 | 80 |
| DR011574 | Conduits | US Pit 10100 to DS Pit 10090 | 2 | 80 |
| DR015950 | Conduits | US Pit 10248 to DS Pit 2270 | 2 | 100 |
| DR014622 | Conduits | US Pit 1080 to DS Pit 1070 | 2 | 60 |
| FD000224 | Conduits | US Pit 1230 to DS Pit 1220 | 2 | 60 |
| DR016423 | Conduits | US Pit 1530 to DS Pit 0930 | 2 | 100 |
| DR015271 | Conduits | US Pit 1630 to DS Pit 1620 | 2 | 50 |
| DR017037 | Conduits | US Pit 1710 to DS Pit 1700 | 2 | 60 |
| DR012977 | Conduits | US Pit 1720 to DS Pit 1710 | 2 | 60 |
| DR012976 | Conduits | US Pit 1730 to DS Pit 1720 | 2 | 60 |
| DR011261 | Conduits | US Pit 1920 to DS Pit 1910 | 2 | 80 |
| DR011262 | Conduits | US Pit 1930 to DS Pit 1910 | 2 | 80 |
| DR016149 | Conduits | US Pit 2290 to DS Pit 10480 | 2 | 100 |
| DR011235 | Conduits | US Pit 2340 to DS Pit 2290 | 2 | 100 |

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|----------|----------|-----------------------------|---|-----|
| FD000272 | Conduits | US Pit 2370 to DS Pit 2360 | 2 | 60 |
| DR010724 | Conduits | US Pit 2380 to DS Pit 2370 | 2 | 80 |
| DR011454 | Conduits | US Pit 2390 to DS Pit 2380 | 2 | 100 |
| DR011453 | Conduits | US Pit 2400 to DS Pit 2390 | 2 | 100 |
| DR011452 | Conduits | US Pit 2410 to DS Pit 2400 | 2 | 100 |
| DR021351 | Conduits | US Pit 2410 to DS Pit 2400 | 2 | 100 |
| DR010720 | Conduits | US Pit 2410 to DS Pit 2400 | 2 | 80 |
| DR010721 | Conduits | US Pit 2420 to DS Pit 2400 | 2 | 80 |
| DR010717 | Conduits | US Pit 2470 to DS Pit 2460 | 2 | 80 |
| DR010715 | Conduits | US Pit 2490 to DS Pit 2480 | 2 | 80 |
| DR015543 | Conduits | US Pit 2520 to DS Pit 2510 | 2 | 100 |
| DR010595 | Conduits | US Pit 2540 to DS Pit 2530 | 2 | 80 |
| DR016152 | Conduits | US Pit 2620 to DS Pit 10510 | 2 | 80 |
| FD000277 | Conduits | US Pit 2670 to DS Pit 2660 | 2 | 60 |
| DR017053 | Conduits | US Pit 2800 to DS Pit 2790 | 2 | 60 |
| FD000152 | Conduits | US Pit 2920 to DS Pit 2910 | 2 | 60 |
| DR017415 | Conduits | US Pit 2940 to DS Pit 2930 | 2 | 60 |
| DR020523 | Conduits | US Pit 3130 to DS Pit 3120 | 2 | 80 |
| DR010892 | Conduits | US Pit 3170 to DS Pit 3160 | 2 | 80 |
| DR011163 | Conduits | US Pit 3210 to DS Pit 3200 | 2 | 80 |
| FD000211 | Conduits | US Pit 330 to DS Pit 320 | 2 | 100 |
| FD000056 | Conduits | US Pit 3370 to DS Pit 3360 | 2 | 60 |
| DR011330 | Conduits | US Pit 3640 to DS Pit 3630 | 2 | 80 |
| DR011628 | Conduits | US Pit 3650 to DS Pit 3640 | 2 | 80 |
| DR011190 | Conduits | US Pit 3800 to DS Pit 3790 | 2 | 80 |
| DR017698 | Conduits | US Pit 4040 to DS Pit 3980 | 2 | 100 |
| DR011966 | Conduits | US Pit 4060 to DS Pit 4050 | 2 | 80 |
| DR012117 | Conduits | US Pit 4140 to DS Pit 4130 | 2 | 80 |
| DR023269 | Conduits | US Pit 420 to DS Pit 330 | 2 | 100 |
| DR023057 | Conduits | US Pit 420 to DS Pit 410 | 2 | 100 |
| DR010943 | Conduits | US Pit 4350 to DS Pit 4340 | 2 | 80 |
| DR010945 | Conduits | US Pit 4370 to DS Pit 4360 | 2 | 80 |
| DR012004 | Conduits | US Pit 510 to DS Pit 500 | 2 | 100 |
| DR011355 | Conduits | US Pit 5190 to DS Pit 5180 | 2 | 80 |
| DR012123 | Conduits | US Pit 5260 to DS Pit 5250 | 2 | 80 |
| DR010957 | Conduits | US Pit 5290 to DS Pit 5280 | 2 | 80 |
| DR011677 | Conduits | US Pit 5320 to DS Pit 5310 | 2 | 80 |
| DR010955 | Conduits | US Pit 5340 to DS Pit 5330 | 2 | 80 |
| DR011037 | Conduits | US Pit 5470 to DS Pit 5460 | 2 | 80 |
| DR023273 | Conduits | US Pit 550 to DS Pit 520 | 2 | 100 |
| DR010948 | Conduits | US Pit 5530 to DS Pit 5520 | 2 | 80 |
| DR011164 | Conduits | US Pit 5680 to DS Pit 5670 | 2 | 80 |
| DR010615 | Conduits | US Pit 5690 to DS Pit 5680 | 2 | 80 |
| DR011087 | Conduits | US Pit 5750 to DS Pit 5740 | 2 | 80 |
| DR011084 | Conduits | US Pit 5940 to DS Pit 5930 | 2 | 80 |
| DR010867 | Conduits | US Pit 6000 to DS Pit 5990 | 2 | 80 |
| DR011816 | Conduits | US Pit 6060 to DS Pit 6050 | 2 | 60 |

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|----------|----------|----------------------------|---|-----|
| DR011918 | Conduits | US Pit 6110 to DS Pit 6100 | 2 | 60 |
| DR011824 | Conduits | US Pit 6150 to DS Pit 6100 | 2 | 60 |
| DR011202 | Conduits | US Pit 6847 to DS Pit 6846 | 2 | 80 |
| DR011201 | Conduits | US Pit 6849 to DS Pit 6848 | 2 | 80 |
| DR019852 | Conduits | US Pit 7100 to DS Pit 7090 | 2 | 60 |
| DR017266 | Conduits | US Pit 7470 to DS Pit 7460 | 2 | 100 |
| DR011503 | Conduits | US Pit 7720 to DS Pit 7710 | 2 | 80 |
| DR015292 | Conduits | US Pit 7730 to DS Pit 7720 | 2 | 100 |
| DR012229 | Conduits | US Pit 7930 to DS Pit 7920 | 2 | 80 |
| DR023229 | Conduits | US Pit 7940 to DS Pit 7930 | 2 | 80 |
| DR012227 | Conduits | US Pit 7950 to DS Pit 7940 | 2 | 80 |
| DR010748 | Conduits | US Pit 8140 to DS Pit 8130 | 2 | 80 |
| DR010669 | Conduits | US Pit 8150 to DS Pit 8130 | 2 | 80 |
| DR023536 | Conduits | US Pit 8180 to DS Pit 8160 | 2 | 100 |
| DR012544 | Conduits | US Pit 8660 to DS Pit 8650 | 2 | 60 |
| DR012532 | Conduits | US Pit 8680 to DS Pit 8670 | 2 | 60 |
| DR012435 | Conduits | US Pit 880 to DS Pit 870 | 2 | 100 |
| DR012456 | Conduits | US Pit 900 to DS Pit 890 | 2 | 100 |
| DR011548 | Conduits | US Pit 9220 to DS Pit 9210 | 2 | 80 |
| DR011546 | Conduits | US Pit 9230 to DS Pit 9210 | 2 | 80 |
| DR010816 | Conduits | US Pit 9250 to DS Pit 9240 | 2 | 80 |
| DR011559 | Conduits | US Pit 9910 to DS Pit 9900 | 2 | 80 |
| DR000716 | Pits | Ada St | 2 | 100 |
| DR001165 | Pits | Ada St | 2 | 100 |
| DR001763 | Pits | Addison St | 2 | 100 |
| DR001761 | Pits | Addison St | 2 | 100 |
| DR009653 | Pits | Albion St | 2 | 100 |
| DR001635 | Pits | ALICE LN | 2 | 100 |
| DR001634 | Pits | ALICE LN | 2 | 100 |
| DR000480 | Pits | Alison Rd | 2 | 100 |
| DR000482 | Pits | Alison Rd | 2 | 100 |
| DR009421 | Pits | Andrew St | 2 | 100 |
| DR010485 | Pits | Anzac Parade | 2 | 100 |
| DR002588 | Pits | Anzac Parade | 2 | 100 |
| DR002084 | Pits | Anzac Parade | 2 | 100 |
| DR003235 | Pits | Anzac Pde | 2 | 100 |
| DR000051 | Pits | Arcadia St | 2 | 100 |
| DR009817 | Pits | Arden St | 2 | 100 |
| DR007775 | Pits | Arden St | 2 | 100 |
| DR009762 | Pits | Arden St | 2 | 100 |
| DR009505 | Pits | Arden St | 2 | 100 |
| DR009771 | Pits | Arden St | 2 | 100 |
| DR009814 | Pits | Arden St | 2 | 100 |
| DR009772 | Pits | Arden St | 2 | 100 |
| DR009765 | Pits | Arden St | 2 | 100 |
| DR009812 | Pits | Arden St | 2 | 100 |
| DR009764 | Pits | Arden St | 2 | 100 |

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|----------|------|----------------|---|-----|
| DR009766 | Pits | Arden St | 2 | 100 |
| DR009813 | Pits | Arden St | 2 | 100 |
| DR009763 | Pits | Arden St | 2 | 100 |
| DR009757 | Pits | Arden St | 2 | 100 |
| DR005595 | Pits | Arthur St | 2 | 100 |
| DR001478 | Pits | ARTHUR STREET | 2 | 100 |
| DR001463 | Pits | ARTHUR STREET | 2 | 100 |
| DR007820 | Pits | Asher St | 2 | 100 |
| DR007821 | Pits | Asher St | 2 | 100 |
| DR000788 | Pits | AVOCA ST | 2 | 100 |
| DR000714 | Pits | Avoca St | 2 | 100 |
| DR001005 | Pits | AVOCA ST | 2 | 100 |
| DR000717 | Pits | Avoca St | 2 | 100 |
| DR000715 | Pits | Avoca St | 2 | 100 |
| DR005714 | Pits | Barker St | 2 | 100 |
| DR005712 | Pits | Barker St | 2 | 100 |
| DR005715 | Pits | Barker St | 2 | 100 |
| DR009802 | Pits | Barry St | 2 | 100 |
| DR009823 | Pits | Battery St | 2 | 100 |
| DR010328 | Pits | Bay Pde | 2 | 100 |
| DR010331 | Pits | Bay Pde | 2 | 100 |
| DR009745 | Pits | Beach St | 2 | 100 |
| DR000057 | Pits | Beach st | 2 | 100 |
| DR007704 | Pits | Beach St | 2 | 100 |
| DR009747 | Pits | Beach St | 2 | 100 |
| DR007731 | Pits | Beach St | 2 | 100 |
| DR009748 | Pits | Beach St | 2 | 100 |
| DR007710 | Pits | Beach St | 2 | 100 |
| DR007700 | Pits | Beach St | 2 | 100 |
| DR009746 | Pits | Beach St | 2 | 100 |
| DR007709 | Pits | Beach St | 2 | 100 |
| DR007701 | Pits | Beach St | 2 | 100 |
| DR005513 | Pits | Belmore Rd | 2 | 100 |
| DR005702 | Pits | Botany Lane | 2 | 100 |
| DR005705 | Pits | Botany Lane | 2 | 100 |
| DR005704 | Pits | Botany Lane | 2 | 100 |
| DR005698 | Pits | Botany St | 2 | 100 |
| DR005691 | Pits | Botany St | 2 | 100 |
| DR005700 | Pits | Botany St | 2 | 100 |
| DR005692 | Pits | Botany St | 2 | 100 |
| DR005699 | Pits | Botany St | 2 | 100 |
| DR001464 | Pits | BRADLEY STREET | 2 | 100 |
| DR000949 | Pits | Bream St | 2 | 100 |
| DR007835 | Pits | Brook St | 2 | 100 |
| FD000653 | Pits | Bunnerong Rd | 2 | 100 |
| DR009467 | Pits | Burnie St | 2 | 100 |
| DR009658 | Pits | Burnie St | 2 | 100 |

| | | | | |
|----------|------|------------------------|---|-----|
| DR009657 | Pits | Burnie St | 2 | 100 |
| DR009656 | Pits | Burnie St | 2 | 100 |
| DR009469 | Pits | Burnie St | 2 | 100 |
| DR007727 | Pits | Carr St | 2 | 100 |
| DR007746 | Pits | Carr St | 2 | 100 |
| DR007745 | Pits | Carr St | 2 | 100 |
| DR007742 | Pits | Carr St | 2 | 100 |
| DR007739 | Pits | Carr St | 2 | 100 |
| DR007730 | Pits | Carr St | 2 | 100 |
| DR001078 | Pits | CARTER ST | 2 | 100 |
| DR000801 | Pits | CARTER ST | 2 | 100 |
| DR000802 | Pits | CASTLE LANE | 2 | 100 |
| DR000796 | Pits | CASTLE LANE | 2 | 100 |
| DR000797 | Pits | CASTLE LANE | 2 | 100 |
| DR001576 | Pits | CENTENNIAL AV | 2 | 100 |
| DR001578 | Pits | CENTENNIAL AV | 2 | 100 |
| DR001577 | Pits | CENTENNIAL AV | 2 | 100 |
| DR000808 | Pits | CENTENNIAL AV | 2 | 100 |
| FD000450 | Pits | CHURCH STREET | 2 | 100 |
| DR001719 | Pits | CHURCH STREET | 2 | 100 |
| DR009460 | Pits | Clifton Rd | 2 | 100 |
| DR009463 | Pits | Clifton Rd | 2 | 100 |
| DR009655 | Pits | Clifton Rd | 2 | 100 |
| DR000795 | Pits | CLOVELLY RD | 2 | 100 |
| DR009800 | Pits | Clovelly Rd | 2 | 100 |
| DR009430 | Pits | Clovelly Rd | 2 | 100 |
| DR009816 | Pits | Clovelly Rd | 2 | 100 |
| DR000792 | Pits | CLOVELLY RD | 2 | 100 |
| DR009815 | Pits | Clovelly Rd | 2 | 100 |
| DR009453 | Pits | Clovelly Rd | 2 | 100 |
| DR009801 | Pits | Clovelly Rd | 2 | 100 |
| DR001013 | Pits | CLOVELLY RD | 2 | 100 |
| DR000789 | Pits | CLOVELLY RD | 2 | 100 |
| DR000791 | Pits | CLOVELLY RD | 2 | 100 |
| DR000790 | Pits | CLOVELLY RD | 2 | 100 |
| DR000794 | Pits | CLOVELLY RD | 2 | 100 |
| DR000793 | Pits | CLOVELLY RD | 2 | 100 |
| DR009806 | Pits | Clovelly Rd | 2 | 100 |
| DR009454 | Pits | Clovelly Rd | 2 | 100 |
| DR001365 | Pits | CLOVELLY RD | 2 | 100 |
| DR001633 | Pits | CNR ALICE LN & PINE ST | 2 | 100 |
| DR001632 | Pits | CNR ALICE LN & PINE ST | 2 | 100 |
| DR005717 | Pits | Coogee Bay Rd | 2 | 100 |
| DR001503 | Pits | COOK STREET | 2 | 100 |
| DR010470 | Pits | Dacre St | 2 | 100 |
| DR010469 | Pits | Dacre St | 2 | 100 |
| DR000970 | Pits | Dangar St | 2 | 100 |

| | | | | |
|----------|------|-----------------|---|-----|
| DR000969 | Pits | Dangar St | 2 | 100 |
| DR000826 | Pits | Dangar St | 2 | 100 |
| DR001232 | Pits | Dangar St | 2 | 100 |
| DR001574 | Pits | DARLEY RD | 2 | 100 |
| DR000058 | Pits | Dolphin St | 2 | 100 |
| DR007797 | Pits | Dudley St | 2 | 100 |
| DR007822 | Pits | Dudley St | 2 | 100 |
| DR007796 | Pits | Dudley St | 2 | 100 |
| DR007817 | Pits | Dudley St | 2 | 100 |
| DR007798 | Pits | Dudley St | 2 | 100 |
| DR007799 | Pits | Dudley St | 2 | 100 |
| DR007818 | Pits | Dudley St | 2 | 100 |
| DR007806 | Pits | Dudley St | 2 | 100 |
| DR007882 | Pits | Dundas St | 2 | 100 |
| DR000484 | Pits | Dutruc St | 2 | 100 |
| DR000483 | Pits | Dutruc St | 2 | 100 |
| DR000485 | Pits | Dutruc St | 2 | 100 |
| DR005672 | Pits | Eurimbla St | 2 | 100 |
| DR005678 | Pits | Eurimbla St | 2 | 100 |
| DR005677 | Pits | Eurimbla St | 2 | 100 |
| DR005566 | Pits | Eurimbla St | 2 | 100 |
| DR005669 | Pits | Eurimbla St | 2 | 100 |
| DR005670 | Pits | Eurimbla St | 2 | 100 |
| DR005671 | Pits | Eurimbla St | 2 | 100 |
| DR005679 | Pits | Eurimbla St | 2 | 100 |
| DR005676 | Pits | Eurimbla St | 2 | 100 |
| DR009809 | Pits | Fern St | 2 | 100 |
| DR009811 | Pits | Fern St | 2 | 100 |
| DR001579 | Pits | FIGTREE | 2 | 100 |
| DR001587 | Pits | FIGTREE | 2 | 100 |
| DR001588 | Pits | FIGTREE | 2 | 100 |
| DR003830 | Pits | Forsyth St | 2 | 100 |
| DR001509 | Pits | FRANCES STREET | 2 | 100 |
| FD000473 | Pits | FRANCES STREET | 2 | 100 |
| DR001507 | Pits | FRANCES STREET | 2 | 100 |
| DR001552 | Pits | FRANCES STREET | 2 | 100 |
| FD000449 | Pits | FRANCES STREET | 2 | 100 |
| DR001558 | Pits | FRANCES STREETT | 2 | 100 |
| DR001572 | Pits | FRENCHMANS RD | 2 | 100 |
| DR008084 | Pits | Garnet St | 2 | 100 |
| DR006834 | Pits | Garrett St | 2 | 100 |
| DR006836 | Pits | Garrett St | 2 | 100 |
| DR009692 | Pits | Gordon Ave | 2 | 100 |
| DR000633 | Pits | Gordon St | 2 | 100 |
| DR001248 | Pits | Govett St | 2 | 100 |
| DR009810 | Pits | Greville St | 2 | 100 |
| DR009499 | Pits | Greville St | 2 | 100 |

| | | | | |
|----------|------|---------------|---|-----|
| DR009498 | Pits | Greville St | 2 | 100 |
| DR007776 | Pits | Havelock Ave | 2 | 100 |
| DR007777 | Pits | Havelock Ave | 2 | 100 |
| DR007795 | Pits | Havelock Ave | 2 | 100 |
| DR007794 | Pits | Havelock Ave | 2 | 100 |
| DR007780 | Pits | Havelock Ave | 2 | 100 |
| DR005658 | Pits | Hay St | 2 | 100 |
| DR006120 | Pits | Hendy Ave | 2 | 100 |
| DR006118 | Pits | Hendy Ave | 2 | 100 |
| DR002016 | Pits | High St | 2 | 100 |
| DR002015 | Pits | High St | 2 | 100 |
| DR000712 | Pits | Judge St | 2 | 100 |
| DR009442 | Pits | Keith St | 2 | 100 |
| DR009443 | Pits | Keith St | 2 | 100 |
| DR009441 | Pits | Keith St | 2 | 100 |
| DR009445 | Pits | Keith St | 2 | 100 |
| DR009440 | Pits | Keith St | 2 | 100 |
| DR005696 | Pits | Kennedy St | 2 | 100 |
| DR005713 | Pits | Kennedy St | 2 | 100 |
| DR005708 | Pits | Kenneth Lane | 2 | 100 |
| DR005707 | Pits | Kenneth Lane | 2 | 100 |
| DR005706 | Pits | Kenneth Lane | 2 | 100 |
| DR000825 | Pits | King St | 2 | 100 |
| DR000827 | Pits | King St | 2 | 100 |
| DR000820 | Pits | King St | 2 | 100 |
| DR000823 | Pits | King St | 2 | 100 |
| DR000824 | Pits | King St | 2 | 100 |
| DR005449 | Pits | Lee St | 2 | 100 |
| DR005667 | Pits | Magill St | 2 | 100 |
| DR005660 | Pits | Magill St | 2 | 100 |
| DR005659 | Pits | Magill St | 2 | 100 |
| DR005668 | Pits | Magill St | 2 | 100 |
| DR009664 | Pits | Major St | 2 | 100 |
| DR009665 | Pits | Major St | 2 | 100 |
| DR003608 | Pits | Marine Parade | 2 | 100 |
| DR003609 | Pits | Marine Parade | 2 | 100 |
| DR000809 | Pits | MARKET ST | 2 | 100 |
| DR001323 | Pits | MARKET ST | 2 | 100 |
| DR001324 | Pits | MARKET ST | 2 | 100 |
| DR001320 | Pits | MARKET ST | 2 | 100 |
| DR001321 | Pits | MARKET ST | 2 | 100 |
| DR001327 | Pits | MARKET ST | 2 | 100 |
| DR006768 | Pits | Maroubra Rd | 2 | 100 |
| DR005697 | Pits | Middle St | 2 | 100 |
| DR005695 | Pits | Middle St | 2 | 100 |
| DR000713 | Pits | Milford St | 2 | 100 |
| DR009674 | Pits | Moore St | 2 | 100 |

| | | | | |
|----------|------|---------------|---|-----|
| DR000384 | Pits | Mount St | 2 | 100 |
| DR009455 | Pits | Mundarra St | 2 | 100 |
| DR007883 | Pits | Neptune St | 2 | 100 |
| DR007881 | Pits | Neptune St | 2 | 100 |
| DR009825 | Pits | Oak St | 2 | 100 |
| DR009827 | Pits | Oak St | 2 | 100 |
| DR009828 | Pits | Oak St | 2 | 100 |
| DR009826 | Pits | Oak St | 2 | 100 |
| DR007868 | Pits | Oberon St | 2 | 100 |
| DR007869 | Pits | Oberon St | 2 | 100 |
| DR007870 | Pits | Oberon St | 2 | 100 |
| DR001608 | Pits | PARK AV | 2 | 100 |
| DR001589 | Pits | PARK AV | 2 | 100 |
| DR001593 | Pits | PARK AV | 2 | 100 |
| DR001609 | Pits | PARK AV | 2 | 100 |
| DR001594 | Pits | PARK AV | 2 | 100 |
| DR001595 | Pits | PARK AV | 2 | 100 |
| DR001591 | Pits | PARK AV | 2 | 100 |
| DR001590 | Pits | PARK AV | 2 | 100 |
| DR001603 | Pits | PARK AV | 2 | 100 |
| DR001592 | Pits | PARK AV | 2 | 100 |
| DR005443 | Pits | Perouse Rd | 2 | 100 |
| DR001631 | Pits | PINE ST | 2 | 100 |
| DR001309 | Pits | PINE ST | 2 | 100 |
| DR001560 | Pits | PRINCE STREET | 2 | 100 |
| DR001517 | Pits | PRINCE STREET | 2 | 100 |
| DR009717 | Pits | Quail St | 2 | 100 |
| DR003797 | Pits | Rainbow St | 2 | 100 |
| DR008077 | Pits | Rainbow St | 2 | 100 |
| DR003717 | Pits | Rainbow St | 2 | 100 |
| DR006134 | Pits | Rainbow St | 2 | 100 |
| DR006133 | Pits | Rainbow St | 2 | 100 |
| DR006130 | Pits | Rainbow St | 2 | 100 |
| DR006132 | Pits | Rainbow St | 2 | 100 |
| DR003796 | Pits | Rainbow St | 2 | 100 |
| DR003795 | Pits | Rainbow St | 2 | 100 |
| DR002567 | Pits | Roma Avenue | 2 | 100 |
| DR002569 | Pits | Roma Avenue | 2 | 100 |
| DR002568 | Pits | Roma Avenue | 2 | 100 |
| DR001441 | Pits | ROSCREA AVE | 2 | 100 |
| DR010040 | Pits | Seaside Pde | 2 | 100 |
| DR010042 | Pits | Seaside Pde | 2 | 100 |
| DR009575 | Pits | Simeon St | 2 | 100 |
| DR001000 | Pits | Stephen St | 2 | 100 |
| DR005445 | Pits | Stewart St | 2 | 100 |
| DR009444 | Pits | Surfside Ave | 2 | 100 |
| DR009416 | Pits | Surfside Ave | 2 | 100 |

| | | | | |
|----------|----------|----------------------------|---|-----|
| DR009785 | Pits | Susan Ln | 2 | 100 |
| DR001566 | Pits | THE AVENUE | 2 | 100 |
| DR009822 | Pits | Tower St | 2 | 100 |
| DR009821 | Pits | Tower St | 2 | 100 |
| DR005610 | Pits | Waratah Ave | 2 | 100 |
| DR005606 | Pits | Waratah Ave | 2 | 100 |
| DR005611 | Pits | Waratah Ave | 2 | 100 |
| DR000632 | Pits | Waverley St | 2 | 100 |
| DR001004 | Pits | Waverley St | 2 | 100 |
| DR001381 | Pits | Wentworth St | 2 | 100 |
| DR001241 | Pits | Wentworth St | 2 | 100 |
| DR001240 | Pits | Wentworth St | 2 | 100 |
| DR008079 | Pits | Wolseley Rd | 2 | 100 |
| DR007867 | Pits | Wolseley Rd | 2 | 100 |
| DR019066 | Conduits | US Pit 1560 to DS Pit 1550 | 6 | 100 |
| DR007919 | Pits | Beach St | 6 | 100 |
| DR007920 | Pits | Beach St | 6 | 100 |
| DR007902 | Pits | Beach St | 6 | 100 |
| DR007901 | Pits | Beach St | 6 | 100 |
| DR007903 | Pits | Beach St | 6 | 100 |
| DR008009 | Pits | Clifford St | 6 | 100 |
| DR008010 | Pits | Clifford St | 6 | 100 |
| DR008008 | Pits | Clifford St | 6 | 100 |
| DR008007 | Pits | Clifford St | 6 | 100 |
| DR007959 | Pits | Malabar Rd | 6 | 100 |
| DR007946 | Pits | Malabar Rd | 6 | 100 |
| DR007947 | Pits | Malabar Rd | 6 | 100 |
| DR007942 | Pits | Marian St | 6 | 100 |
| DR007943 | Pits | Marian St | 6 | 100 |
| DR007941 | Pits | Marian St | 6 | 100 |
| DR007945 | Pits | Marian St | 6 | 100 |
| DR007944 | Pits | Marian St | 6 | 100 |
| DR007989 | Pits | Mount St | 6 | 100 |
| DR007991 | Pits | Mount St | 6 | 100 |
| DR007843 | Pits | Neptune St | 6 | 100 |
| DR007842 | Pits | Neptune St | 6 | 100 |
| DR008000 | Pits | Oberon St | 6 | 100 |
| DR008015 | Pits | Oberon St | 6 | 100 |
| DR007994 | Pits | Oberon St | 6 | 100 |
| DR008006 | Pits | Oberon St | 6 | 100 |
| DR008004 | Pits | Oberon St | 6 | 100 |
| DR008005 | Pits | Oberon St | 6 | 100 |
| DR007995 | Pits | Oberon St | 6 | 100 |
| DR008016 | Pits | Oberon St | 6 | 100 |
| DR007940 | Pits | Rainbow St | 6 | 100 |
| DR007923 | Pits | Rainbow St | 6 | 100 |
| DR007926 | Pits | Rainbow St | 6 | 100 |

| | | | | |
|----------|----------|----------------------------|---|-----|
| DR007981 | Pits | Rainbow St | 6 | 100 |
| DR007983 | Pits | Rainbow St | 6 | 100 |
| DR007927 | Pits | Rainbow St | 6 | 100 |
| DR007982 | Pits | Rainbow St | 6 | 100 |
| DR007992 | Pits | Rainbow St | 6 | 100 |
| DR007993 | Pits | Rainbow St | 6 | 100 |
| DR007921 | Pits | Rainbow St | 6 | 100 |
| DR007984 | Pits | Rainbow St | 6 | 100 |
| DR007930 | Pits | Rainbow St | 6 | 100 |
| DR007922 | Pits | Rainbow St | 6 | 100 |
| FD000250 | Conduits | US Pit 0990 to DS Pit 0980 | 7 | 60 |
| DR012523 | Conduits | US Pit 5880 to DS Pit 5870 | 9 | 80 |
| DR012525 | Conduits | US Pit 5960 to DS Pit 5950 | 9 | 80 |

Appendix C Budgeted Expenditures Accommodated in LTFP

| NAMS.PLUS3 Asset Management Randwick CC | | | | | | | | | | | | | | | | | | | | |
|--|--|---------|---------|---------|---------|---------|---------|---------|---------|--|--|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| © Copyright. All rights reserved. The Institute of Public Works Engineering Australasia | | | | | | | | | | | | | | | | | | | | |
| Stormwater_S3_V1 | | | | | | | | | | Asset Management Plan | | | | | | | | | | |
| Stormwater | | | | | | | | | | Operations and Maintenance Costs for New Assets | | | | | | | | | | |
| First year of expenditure projections 2018 (financial yr ending) | | | | | | | | | | Existing %ages calculated from data in worksheet | | | | | | | | | | |
| Asset values at start of planning period | | | | | | | | | | Planned Expenditures from LTFP | | | | | | | | | | |
| Current replacement cost \$309,782 (000) | | | | | | | | | | You may use these values calculated from your data or overwrite the links. | | | | | | | | | | |
| Depreciable amount \$234,376 (000) | | | | | | | | | | Calc CRC from Asset Register \$309,782 (000) | | | | | | | | | | |
| Depreciated replacement cost \$235,855 (000) | | | | | | | | | | This is a check for you. | | | | | | | | | | |
| Annual depreciation expense \$2,192 (000) | | | | | | | | | | Additional operations costs 0.11% of asset value | | | | | | | | | | |
| | | | | | | | | | | Additional maintenance 0.11% | | | | | | | | | | |
| | | | | | | | | | | Additional depreciation 0.94% | | | | | | | | | | |
| | | | | | | | | | | Planned renewal budget (information only) 0.37% of CRC (Year 1 comparison) | | | | | | | | | | |
| 20 Year Expenditure Projections Note: Enter all values in current 2018 values | | | | | | | | | | | | | | | | | | | | |
| Financial year ending | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 | 2033 | 2034 | 2035 | 2036 | 2037 |
| Expenditure Outlays included in Long Term Financial Plan (in current \$ values) | | | | | | | | | | | Average of first 10 year Expenditure Outlays from LTFP | | | | | | | | | |
| Operations | | | | | | | | | | | | | | | | | | | | |
| Operations budget | \$346 | \$346 | \$346 | \$346 | \$346 | \$346 | \$346 | \$346 | \$346 | \$346 | \$346 | \$346 | \$346 | \$346 | \$346 | \$346 | \$346 | \$346 | \$346 | \$346 |
| Management budget | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| AM systems budget | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Total operations | \$346 | \$346 | \$346 | \$346 | \$346 | \$346 | \$346 | \$346 | \$346 | \$346 | \$346 | \$346 | \$346 | \$346 | \$346 | \$346 | \$346 | \$346 | \$346 | \$346 |
| Maintenance | | | | | | | | | | | | | | | | | | | | |
| Reactive maintenance budget | \$330 | \$330 | \$330 | \$330 | \$330 | \$330 | \$330 | \$330 | \$330 | \$330 | \$330 | \$330 | \$330 | \$330 | \$330 | \$330 | \$330 | \$330 | \$330 | \$330 |
| Planned maintenance budget | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Specific maintenance items budget | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Total maintenance | \$330 | \$330 | \$330 | \$330 | \$330 | \$330 | \$330 | \$330 | \$330 | \$330 | \$330 | \$330 | \$330 | \$330 | \$330 | \$330 | \$330 | \$330 | \$330 | \$330 |
| Capital | | | | | | | | | | | | | | | | | | | | |
| Planned renewal budget | \$1,750 | \$1,225 | \$1,250 | \$1,500 | \$1,750 | \$2,000 | \$2,250 | \$2,500 | \$2,500 | \$2,500 | \$2,500 | \$2,500 | \$2,500 | \$2,500 | \$2,500 | \$2,500 | \$2,500 | \$2,500 | \$2,500 | \$2,500 |
| Planned upgrade/new budget | \$500 | \$500 | \$500 | \$500 | \$500 | \$500 | \$500 | \$500 | \$500 | \$500 | \$500 | \$500 | \$500 | \$500 | \$500 | \$500 | \$500 | \$500 | \$500 | \$500 |
| Non-growth contributed asset value | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Asset Disposals | | | | | | | | | | | | | | | | | | | | |
| Est Cost to dispose of assets | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Carrying value (DRC) of disposed assets | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Additional Expenditure Outlays Requirements (e.g from Infrastructure Risk Management Plan) | | | | | | | | | | | Average of first 10 years Expenditure Outlays required from IRMP | | | | | | | | | |
| Additional Expenditure Outlays required and not included above | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 | 2033 | 2034 | 2035 | 2036 | 2037 |
| Operations | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Maintenance | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Capital Renewal | to be incorporated into Forms 2 & 2.1 (where Method 1 is used) OR Form 2B Defect Repairs (where Method 2 or 3 is used) | | | | | | | | | | | | | | | | | | | |
| Capital Upgrade | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| User Comments #2 | | | | | | | | | | | | | | | | | | | | |
| Forecasts for Capital Renewal using Methods 2 & 3 (Form 2A & 2B) & Capital Upgrade (Form 2C) | | | | | | | | | | | Average of first 10 years Capital Renewal & Upgrade Forecasts | | | | | | | | | |
| Forecast Capital Renewal from Forms 2A & 2B | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Forecast Capital Upgrade from Form 2C | \$500 | \$500 | \$500 | \$500 | \$500 | \$500 | \$500 | \$500 | \$500 | \$500 | \$500 | \$500 | \$500 | \$500 | \$500 | \$500 | \$500 | \$500 | \$500 | \$500 |

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