# Executive Summary

## Background

The Juan de Fuca Water Distribution System (JdFWDS) provides potable water to ten communities in the western region of Greater Victoria, British Columbia, including the City of Langford, City of Colwood, Town of View Royal, District of Metchosin, District of Sooke, Scia'new Nation, T'Souke Nation, Songhees Nation, portions of Highlands, and the Juan de Fuca (JdF) Electoral Area. As a critical component of the Capital Regional District (CRD)'s infrastructure, the system's long-term functionality and sustainability are essential for maintaining service reliability and supporting future growth. CRD has engaged AECOM Canada ULC (AECOM) to develop an Asset Management Plan (AMP) for the JdFWDS. The objective of this AMP is to establish a structured framework and provide a financial and technical roadmap for the effective management of JdFWDS assets.

## Current State of the Infrastructure

The CRD's JdFWDS has an estimated total replacement value of approximately **$2 billion**. Table ES-1 shows the replacement costs (in 2025 dollars) of the JdFWDS water infrastructure.

**Table ES-1: JdFWDS Current Replacement Value (2025)**

| Asset Class | Asset Category | Asset Subsystem | Quantity | Unit | Unit Replacement Value Range ($ / Unit) | Total Replacement Value |
|---|---|---|---|---|---|---|
| Linear | Watermains | Hydrants | 5,259 (2,622 hydrants and 2,637 hydrant valves) | Ea. | Hydrant = $17,400 Hydrant Valve = $867 - $2,603 | $50,199,000 |
| | Watermains | Laterals | 13,093 | m | $2,900 | $37,969,000 |
| | Watermains | Mains | 547,454 | m | $1,740 - $7,540 | $1,267,265,000 |
| | Water Meters | Meters | 26,775 | Ea. | $2,900 – $8,700 | $84,399,000 |
| | Water Meters | Service Connections | 242,000 | m | $1,450 | $350,900,000 |
| | Watermains | Valves | 8,672 | Ea. | $867 - $9,763 | $19,924,000 |
| | **Total of Linear** | | | | | **$1,810,655,000** |
| Non-Linear | Bulk Water Stations | - | 4 | Ea. | $66,700 | $267,000 |
| | Pressure Control Stations | - | 55 | Ea. | $180,515 - $2,104,245 | $45,622,000 |
| | Pump Stations | - | 32 | Ea. | $613,970 - $3,513,066 | $51,604,000 |
| | Rechloramination Stations | - | 2 | Ea. | $673,896 - $1,046,119 | $1,720,000 |
| | Water Storage Tanks | - | 14 | Ea. | $295,053 - $19,515,729 | $55,590,000 |
| | **Total of Non-Linear** | | | | | **$154,803,000** |
| **Grand Total** | | | | | | **$1,965,458,000** |

Figure ES-1 summarizes condition rating of all the JdFWDS assets with associated replacement values. Almost two thirds of the total replacement value is attributed to assets in Very Good condition (64%). Only 6% are rated Poor or Very Poor with a significant portion of these belonging to the meter category, and 18% of total replacement value is related to the assets with unknown condition rating, such as service laterals.

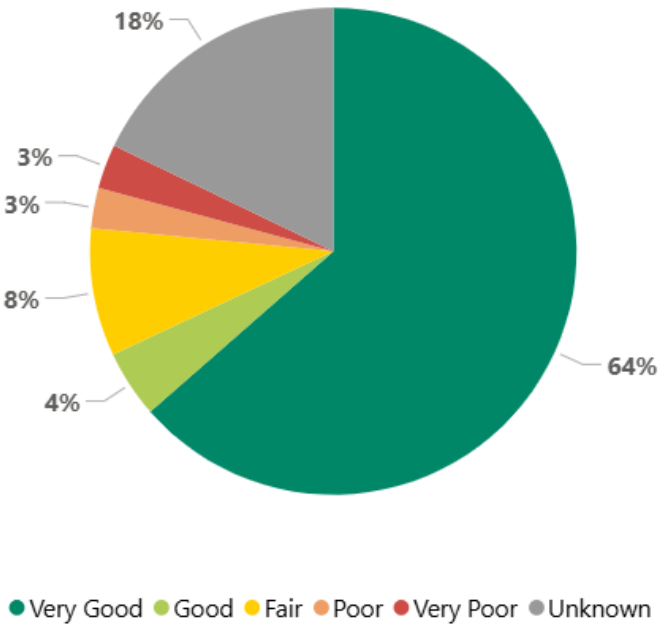


**Figure ES-1: JdFWDS Overall Condition Summary**

Additionally, **Figure ES-2** shows the condition of the assets based on different asset categories (non-linear) and subsystems (linear). Linear assets are largely in Very Good or Good condition with the exception of Meters which show significant deterioration, with over 30% in Poor or Very Poor condition (the linear meters include all linear conveyance segments and chambers as well). Condition information for service connections is not yet available and may be considered for future data collection. The condition distribution reflects the results of the non-linear asset condition assessments, which were completed through visual inspections by AECOM assessors from January 13–17 and February 24–28, 2025. The assessment covered 107 facilities, including bulk water stations, pressure control stations, pump stations, rechloramination stations, and water storage tanks (detailed breakdown is provided in **Table ES-1**). Additional information on the state of the infrastructure analysis can be found in **Section 2**.

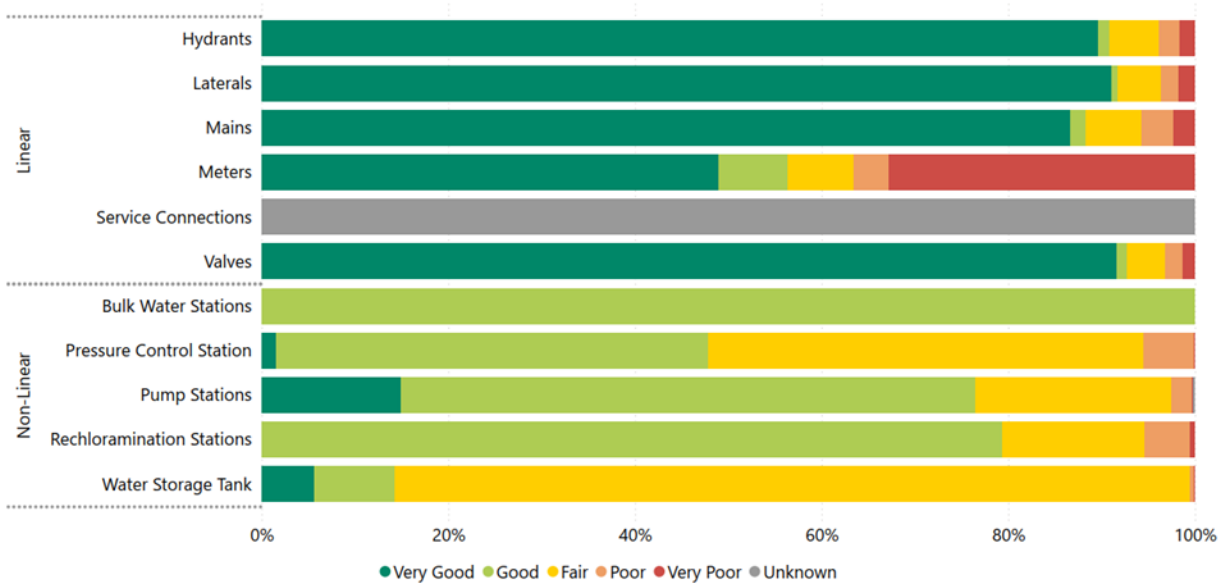


**Figure ES-2: JdFWDS Condition Distribution by Asset Category and Subsystem**

## Levels of Service (LoS)

Levels of Service (LoS) measure the extent and quality of a given service. With a well-defined LoS framework, the CRD JdFWDS can leverage LoS to inform operations and maintenance planning, service delivery, resource planning, capital planning, and track progress on corporate or department-wide strategic initiatives.

Defined LoS may be any combination of parameters deemed important by the CRD and represent service-cost trade-offs, established in a flexible, rational, and transparent manner, as follows:

- LoS assist and support decision-making and investment planning related to the planning, development, operation, maintenance, renewal, and replacement of municipal infrastructure.
- LoS promote good practice, sustainable development, and environmental stewardship.
- LoS facilitate community involvement and a public sense of ownership and incorporate community values.
- LoS supports the implementation of a corporate continuous improvement program to further optimize AM across all service areas.

The process for identifying and developing the CRD JdFWDS LoS Framework included several steps. It began with a scan of existing CRD documents, including the 2019 Corporate Asset Management Strategy and the Water Supply Strategic Plan, to identify relevant goals and objectives. The team also reviewed the Canadian Infrastructure Benchmarking Initiative (CIBI) key performance indicators (KPIs) that CRD collects for the JdFWDS. In addition, the framework development included compiling additional measures to ensure all pertinent objectives were reflected in the LoS. AECOM supported the development of a list of 19 measures, presented in **Table 3-4**, by facilitating a LoS workshop with CRD staff and holding a meeting to review CIBI KPIs. Detailed information on LoS framework and performance measures can be found in **Section 3** and **Appendix B**.

Several future demand drivers that might have an impact on the JdFWDS LoS were identified.

- Aging infrastructure.
- Regulatory changes.
- Staff availability (i.e., technical skill availability, skill gaps from changing technology, etc.).
- Succession management & skills transfer (i.e., succession plan to have experienced operators to operate the system, etc.).
- Funding (i.e., ensuring appropriate asset management planning and sustainable financial strategies to support service delivery).
- Contractor availability (i.e., contractors' availability for executing large projects, etc.).
- Climate change (i.e., droughts, sea level rise, etc.).
- Supply chain issues (i.e., material and equipment availability for capital projects, technology, etc.).
- Fluctuations on contract pricing (i.e., impact of inflation, supply chain considerations, etc.).
- Changing demographics (i.e., aging population is resistant to change).
- Population growth

Despite the wide range of future demand drivers identified above, the CRD has foundational programs in place that support proactive management of system pressures, including its established water conservation education and outreach program. While demand management in this context primarily relates to influencing customer water use, the CRD continues to monitor external drivers and adjust plans, budgets, and strategies to maintain service delivery as conditions evolve.

## Asset Criticality and Risk Management

Risk-based planning and decision-making serves as the foundation for modern, tactical asset management. Through gaining an understanding of its risk exposure, an organization can identify vulnerable assets and target its O&M and capital investments to reduce that exposure most effectively and ultimately improve the resiliency of its assets. Risk exposure is assessed based on the probability and consequences of an asset failure and is used to drive the selection and prioritization of appropriate actions, based on risk tolerance thresholds and funding availability.

The risk score reflects the probability (or likelihood) and consequence of failure (or criticality) and is ultimately used to identify assets which require immediate attention and provides opportunities to reduce risk exposure. AECOM

developed the risk model for JdFWDS watermains and non-linear assets. **Table ES-2** shows that the majority of assets (by replacement value) are in the low-risk category (68%), followed by 8% being characterized as medium risk, with the remaining 1% in the high and very high-risk categories. About 22% of assets have unknown risk at this stage, mostly for meters and service connections. Future integration of additional data sources will help refine these ratings.

**Table ES-2: Risk Thresholds and Asset Risk by Replacement Cost – All Assets**

| Risk Level (Score Thresholds) | Replacement Cost | % of Replacement Cost |
|---|---|---|
| **Low (0 ≤ Score < 5)** | $1,340,924,000 | 68.2% |
| **Medium (5 ≤ Score < 11)** | $165,720,000 | 8.4% |
| **High (11 ≤ Score < 16)** | $22,965,000 | 1.2% |
| **Very High (16 ≤ Score ≤ 25)** | $0 | 0% |
| **Unknown** | $435,849,000 | 22.2% |
| **Total** | **$1,965,458,000** | **100%** |

**Figure ES-3** shows that the non-linear assets have a much higher proportion of assets in the medium and high categories, whereas the majority of watermains have been characterized as low risk. **Appendix A** and **Appendix C** provide more details on the risk score for JdFWDS assets. Meters and service connections were not included in the risk analysis. Meters were excluded because, although GIS data was provided, the Excel/SAP dataset contains more detailed meter information. Service connections were omitted due to the absence of a complete service connection inventory within the available asset data. Refer to **Section 4** for more information.

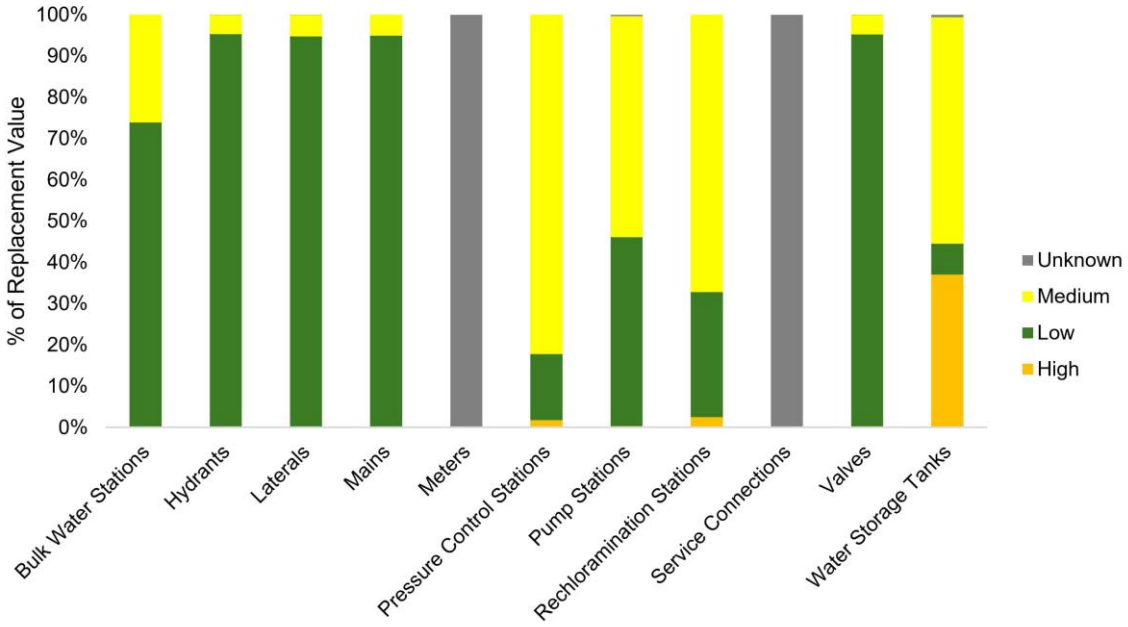


**Figure ES-3: Risk by Asset Category**

## Water Distribution System Capacity Assessment

To model the current and future capacity requirements of the JdFWDS, AECOM has followed the process outlined below:

- **Review and understand the current model and the available data.** This activity was to determine what work needs to be done upfront to build a reliable model. This preliminary review assessed the available information with the aim of ensuring that the model is updated to reflect current conditions and infrastructure.
- **Define the current system demand**. This activity was to understand the current system demand to ensure an accurate baseline scenario with which to compare future scenarios against.
- **Determine the service gaps**. Identify and quantify the forecast gaps between the current demand and each future demand scenario. To support this, a set of scenarios was created (this approach was summarized in the technical memo presented in **Appendix F** and agreed with the CRD) and the changes to population and demand were identified through to the end of the AMP's horizon.

The hydraulic model is supplied in **Appendix D** with key assessment results presented in **Appendix E** and a full methodology in **Appendix F**. The high-level findings of the capacity assessment are shown in **Table ES-3**.

**Table ES-3: Capacity Assessment Findings**

| Capability | Gap | Recommendation | Priority |
|---|---|---|---|
| **Growth projects** | Network capacity is exceeded in several areas once growth forecasts have been loaded into the demand model. | Refer to **Table 5-10** for a summary of recommendations for linear and non-linear projects. | Determined per project by population, growth and strategy. |
| **Capacity Modelling** | The Sooke River Road Disinfecting Facility (SRRDF) supply cannot meet future demand using forecast population and the CRD design criteria. | The East-West Connector* is a vital piece of infrastructure that Sooke will rely on in the future and has been used in models to allow further analysis. Its installation has been assumed as certain for the future scenarios of Sooke. | High |
| | Fire flow scenarios are assessed on a pressure zone requirement basis only. Individual fire flow scenarios (per linear asset) have not been assessed as individual zoning and growth construction was not available | Ongoing update of the model should include input from the local municipalities to allow detailed fire flow assessment to take place. | Medium (Continuous Improvement) |
| | The design consumption rate is noted to be significantly higher than the actual consumption reported in the JdFWDS and results in future flexibility but also future growth projects being determined as required prior to the reality. | An accurate figure should be used to realistically determine the requirements for growth projects and a consistent conservatism factor determined that accommodates the routine fluctuations in demand and localized growth that a pressure zone may experience. | Medium (Continuous Improvement) |

* Note – The East-West Connector is a Regional Water Supply Master Plan Project

## Maintenance, Repair and Replacement Strategies

Effective maintenance, repair, and replacement strategies are essential to sustaining the long-term performance, reliability, and safety of the JdFWDS. AECOM began with the analysis of current-state business process maps that illustrate how maintenance activities are identified, scheduled, executed, and recorded (**Section 6 Figure 6-1** to **Figure 6-4**).

This was followed by a detailed examination of existing maintenance, repair, and replacement strategies across linear and non-linear assets, supported by findings from recent condition assessments, staff input, and operational data.

Benchmarking insights from the Canadian Infrastructure Benchmarking Initiative (CIBI) were also integrated to assess performance relative to peer utilities and to rationalize the recommended resourcing and budget enhancements. In summary, the following high-level recommendations draw together the resourcing plan (**Table 6-6**) and the benchmarking insights to provide a focused roadmap for the future.

Recommendations are as follows.

- **Close the labour gaps as recommended in Table 6-6**. The additional 19.4 process FTE and 1 EIC FTE, estimated through a rigorous review with CRD staff (meetings with operations staff, analysis of work order hours, and benchmarking), will help achieve industry-guided targets for flushing, valve exercising, hydrant teardown, and meter-testing cycles. However, of this gross requirement of approximately 20 additional FTEs, approximately 10 FTE-equivalents are assumed to be addressed through Strategic Alliance Partners support, with the remaining ~10 internal FTEs to be phased at ~2 FTE per year over 5 years.
- **Continue to Leverage Strategic Alliance Partners.** Further to the previous recommendation, Strategic Alliance Partners currently supports a variety of contracted field support and maintenance tasks that do not require a water ticket. These include landscaping and similar non-ticketed duties, as well as labour-intensive support work associated with valve and hydrant maintenance, such as removing valve box lids, vacuuming debris from sleeves, painting lids, and cutting grass around hydrants. A meaningful share of the current field-based support workload is already being delivered through the Strategic Alliance Partners, allowing CRD's certified operators to remain focused on utility-based work requiring the appropriate qualifications.
- **Target a 30/70 corrective–preventive split.** With the added staff, the CRD should shift work plans so that corrective maintenance hours drop from approximately 45% toward the <30% benchmark shown by top-quartile peers (**Figure 6-8**).
- **Reduce overtime costs.** Filling daytime positions should pull overtime spend down from $15,000 to the peer median $6,000–8,000 per field FTE within three years, freeing a further $200,000+ annually for proactive work.
- **Expand proactive leak detection**. Allocate staff time to district metering and acoustic leak audits to begin quantifying non-revenue water and prioritising leak fixes and main renewals. As Non-Revenue Water and Infrastructure Leakage Index are not analyzed in detail, proactive leak detection is not financially justified by this AMP. However, early discovery of leaks provides benefits such as assisting in an improved maintenance split and reduced overtime costs which could be easily measured with a pilot project.
- **Institute a four-year valve and air-valve cycle**. Establish the dedicated valve crew and use Strategic Alliance Partners support to ensure every valve group is located, exercised, and documented at least once per cycle.

## Capital Projects Identification and Financial Plan

In order to support the development of a 20-year financial plan, a lifecycle reinvestment model was developed. Financial projections are presented under three funding scenarios to illustrate the implications of different investment strategies on asset condition and service level outcomes:

- Funding Scenario 1 (S1): Do nothing, with no capital investment.
- Funding Scenario 2 (S2): an unconstrained budget, allowing the JdFWDS to reinvest in assets as required.
- Funding Scenario 3 (S3): the defined budget scenario, allowing $10 millions for linear assets and $3.5 millions for non-linear assets in 2026, escalated for inflation in subsequent years.

Under the unconstrained funding scenario (S2), the total funding requirement for the JdFWDS linear and non-linear assets is approximately $1.1 billion dollars over 20 years (including inflation). This averages $56.3 million dollars per year, with $39 million dollars for linear assets (**Figure ES-4**) and $16.8 million dollars for non-linear assets (**Figure ES-5**). Of the total funding requirement, approximately $708.8 million dollars is allocated to capital projects (63 % of the total, see **Section 7.6** for details). The summary of capital projects identified under S2 are provided in **Section 7.5**, with complete project lists available in **Appendix H**.

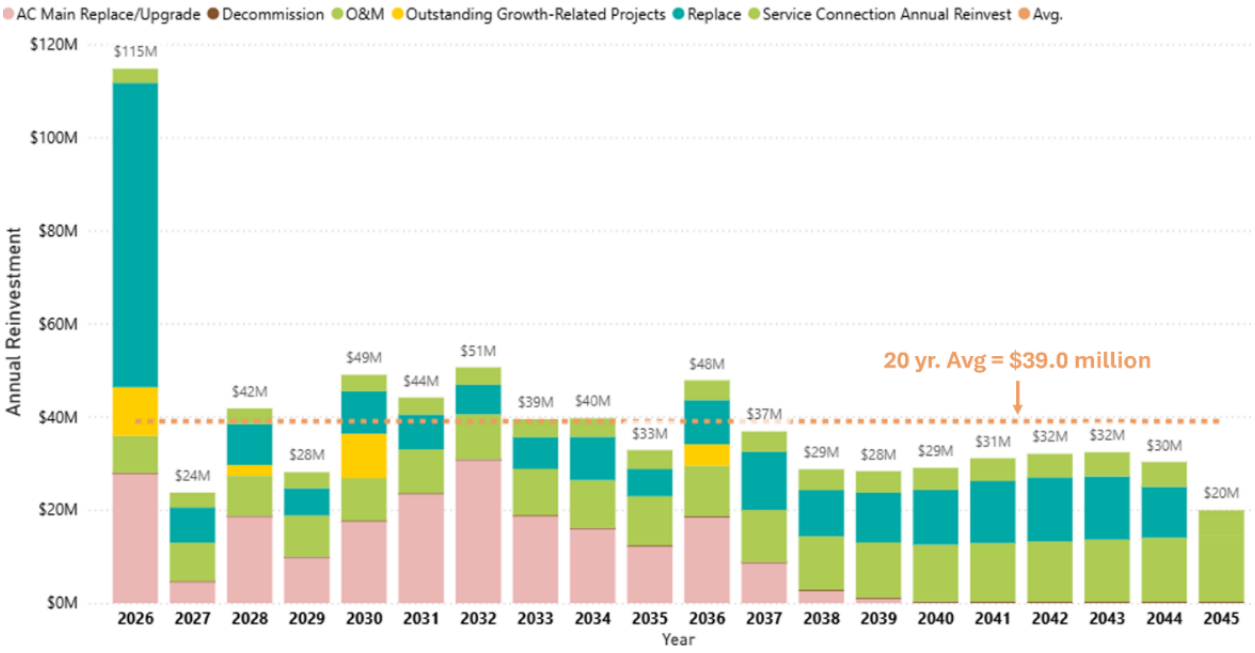


**Figure ES-4: Linear Asset Full Funding Need Profile**

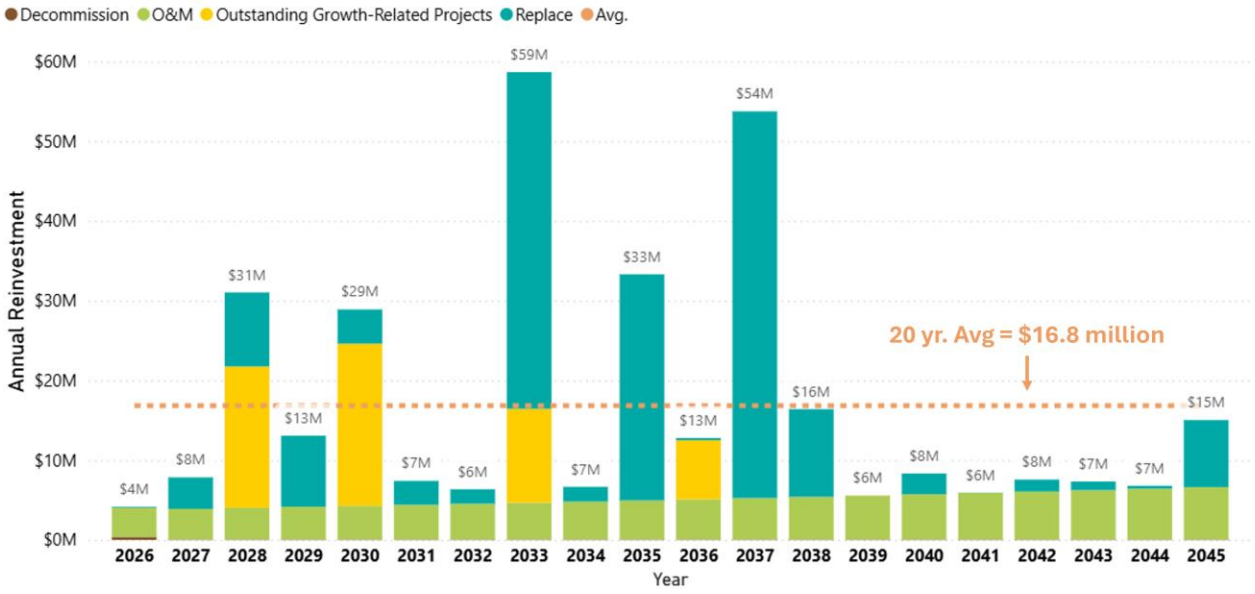


**Figure ES-5: Non-Linear Asset Full Funding Need Profile**

While S2 identifies the ideal long-term funding need, this level of reinvestment is not expected to be achievable. The following analysis therefore focuses on how each funding scenario affects the ability of JdFWDS to sustain the desired levels of service. In this context, level of service is defined as the percent of assets in fair or better condition.

For linear assets (**Figure ES-6**), the current funding level is approximately sufficient to maintain service levels at approximately 76% over the next 20 years. As the broader main inventory ages and deterioration accelerates, higher investment will be required to avoid sharper declines in condition and service performance.

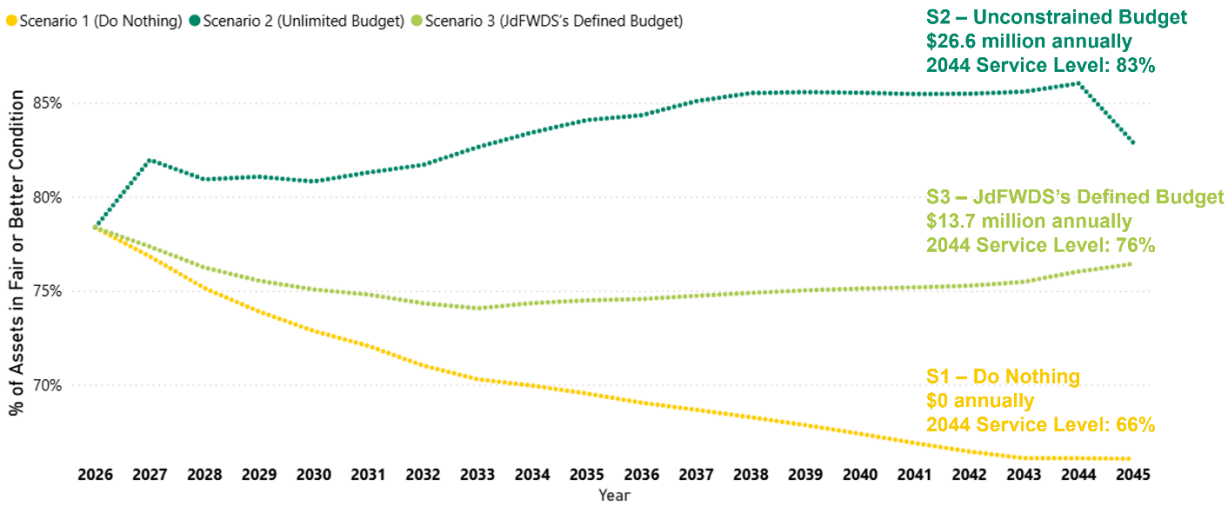


**Figure ES-6: % of Linear Assets in Fair or Better Condition Over the Next 20 Years for All Budget Scenarios**

For non-linear assets (**Figure ES-7**), the gap between S2 and S3 is more pronounced. Under S2, condition stabilizes at approximately 82% by 2044, while under S3 it declines to approximately 40%. This difference can be partly attributed to the shorter Expected Service Lives (ESLs) of non-linear assets, which makes their condition more sensitive to funding levels and more responsive to reinvestment. Because non-linear assets are easier to access and inspect, renewal decisions should continue to rely on field condition assessments and risk scoring. The most recent assessment, completed in 2025, provides the current basis for prioritizing limited funding toward the highest-priority assets.

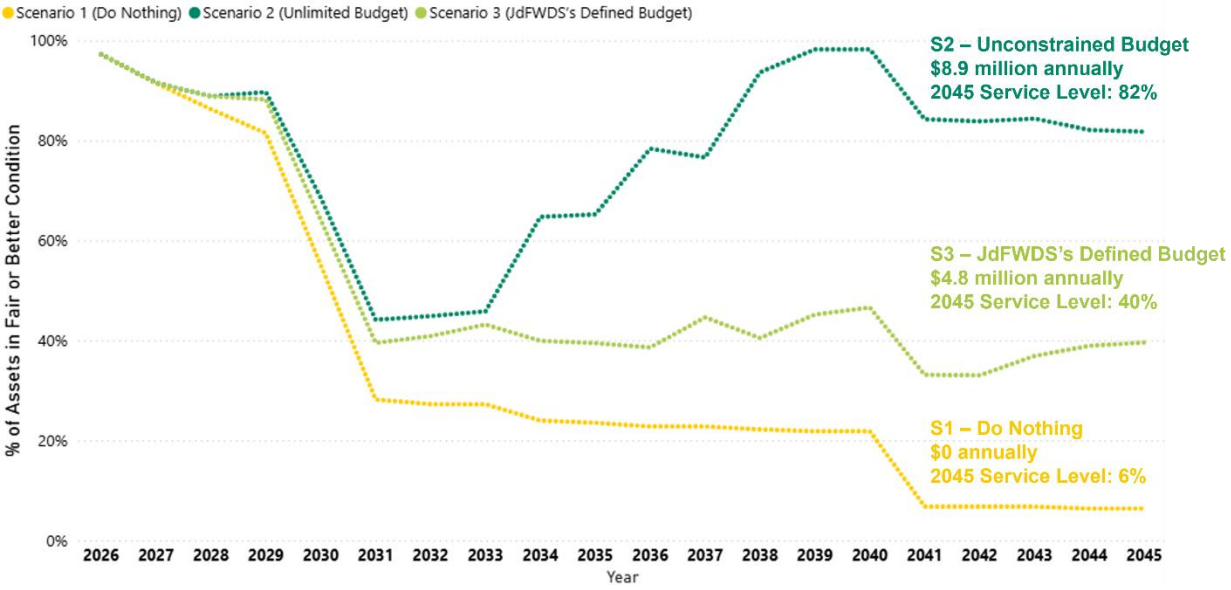


**Figure ES-7: % of Non- Linear Assets in Fair or Better Condition Over the Next 20 Years for All Budget Scenarios**

In summary, to support long-term service reliability and cost-effective asset management, it is recommended that the JdFWDS adjust funding levels to maintain approximately 80% of assets in fair or better condition, particularly for non-linear assets. This target aligns with peer utility practices and research, and strikes a balance between acceptable service performance and financial efficiency. In addition, major renewal projects should be planned and delivered in phases to spread large investments over multiple years and smooth budget requirements.

## Performance Tracking

Performance tracking is a critical component of a sustainable and effective asset management. It ensures that the AMP remains a living document, responsive to changes in system condition, funding, risk, and service expectations. AECOM outlined a framework for monitoring and evaluating the effectiveness of the AMP over time, with the goal of enabling data-driven decision-making, supporting continuous improvement, and maintaining alignment with CRD's strategic objectives. A set of proposed performance indicators specific to AMP execution is summarized in **Table ES-4**.

**Table ES-4: AM Plan Performance Monitoring Indicators**

| AMP Component | Performance Monitoring Indicators |
|---|---|
| **State of Infrastructure** | % of assets from JdFWDS in fair or better condition |
| **Levels of Service** | % of LoS performance measures of which current performance is recorded<br>% of LoS performance measures for which current performance meets / exceeds target performance |
| **Risk Management** | % of high and very high-risk assets |
| **Lifecycle Strategies & Financial Plan** | Asset reinvestment rate (%) for JdFWDS<br>Asset expansion rate (%) for JdFWDS<br>Forecasted annual expenditure ($) for JdFWDS<br>Funding Gap (% or $) for JdFWDS |
| **Continuous Improvement** | % of high priority improvement initiatives implemented |

## Asset Management Maturity

The CRD requested that a maturity assessment of the JdFWDS be carried out using the Institute of Asset Management (IAM) maturity scale. This eight-point scale was used by AECOM to assess the capabilities and maturity of the CRD's JdFWDS. AECOM mapped 40 targeted assessment questions to the scale to evaluate current practices.

**Figure ES-8** shows the summary of results which indicates the current AM maturity position of the JdFWDS. The JdFWDS has greater maturity in Purpose and Context, however, to successfully reach the AM Readiness Target Level, improvements in Asset Management Decision Making and Lifecycle Delivery is essential.


**Figure ES-8: AM Maturity Assessment Results**

**Table ES-5** shows a summary of the action items to improve AM maturity, gathered from discussions, workshops, and surveys.

**Table ES-5: Summary of Short and Long-Term Actions for AM Maturity Improvement**

| Capability | Short Term Action | Long Term Action |
|---|---|---|
| **Purpose & Context** | • Develop an external stakeholder communications plan that formalizes existing informal relationships with regulators, municipalities, and others.<br>• Create an internal stakeholder prioritization plan which identifies key internal stakeholders (IT, fleet, finance, and more). | • Conduct a study on resource use to quantify how much staffing and support is required for system growth and maintain aging infrastructure.<br>• Establish a CMMS work order standard that shows status progression, closure criteria, and other information for accurate tracking. |
| **Leadership & Governance** | • Conduct a CMMS Function Review to include breakdown work order failure codes to allow reliable reporting, required regulatory work order tracking, and work order prioritization standards.<br>• Review and update the existing AM policy from 2019, making sure it reflects current operational needs and is still appropriate for staff. | • Develop clear operational guidelines to support current and future staff that will serve as a reference for operations, standards, and procedures (“Water Bible”). |
| **Organization & People** | • Implement succession planning for key roles and shadowing of critical personnel to help retain knowledge. | • Establish planning and scheduling standards with defined windows that evolve from the current two week look-ahead to the more structured intervals such as monthly, quarterly, and eventually six, 12, and 18 months to support proactive maintenance planning and resource allocation |
| **Strategy & Planning** | • Improve communication and prioritization within the AM strategy.<br>• Define clear roles and responsibilities for AM practices and procedures to reduce duplication of effort. | • Support planning and scheduling by establishing accurate resourcing requirements to enable the organisation to identify and address shortfalls |
| **Asset Management Decision-Making** | • Use asset risk to inform and improve decision making and prioritization to ensure that resources are spent wisely. | • Leverage the AMP LoS, valuation data, and asset registry to establish a single, reliable source for asset history. |
| **Life Cycle Delivery** | • Define disposal standards for large and small equipment like standards for long-term isolations, mothballing, and management of redundant assets to set requirements for management and divestment.<br>• Develop emergency response and mitigation plans based on asset risk and CoF. | • Not Applicable. |
| **Information Management** | • Establish a work order date standard that defines the purpose of each data field within the CMMS and who is responsible.<br>• Develop standardized procedures for document management. | • Define standards for inputting and updating asset registries across all business systems for consistency to help with maintain accurate asset data. |
| **Risk** | • Fully implement an asset risk framework for tactical risk analysis to assist with prioritization and decision making.<br>• Escalate strategic risks from this AMP to enterprise risk for consideration and formalise the risk escalation methodology and responsibilities. | • Implement a defined Management of Change procedure that should be followed for asset changes. |

## Recommended Improvement Initiatives and Roadmap

Measuring and reporting AM performance reflects CRD's commitment to delivering JdFWDS services effectively and in alignment with defined service objectives. The successful implementation of this AMP relies on ongoing performance evaluation and continuous improvement. This includes executing recommended improvement initiatives that support long-term, sustainable service delivery. In summary, the improvement initiatives are described in **Table ES-6**.

## Table ES-6: Recommended Improvement Initiatives

| AMP Area | Opportunity Area | Current Observation / Gap | Proposed Recommendation | Priority Level |
|---|---|---|---|---|
| **State of Infrastructure** | **Linear – General** | • No Global ID Included in the source GIS database | • Global IDs have been produced and assigned as part of the consolidated asset inventory to ensure consistent identification across datasets. In addition, Global IDs have been incorporated into the source GIS data provided by JdFWDS. The provided Global IDs can be used as a starting point for ongoing data management, or alternatively, JdFWDS may choose to regenerate Global IDs based on their preferred convention, provided that consistency is maintained across all systems | Medium |
| | **Linear – Water Meters** | • Inconsistency between attribute names | • Update the meter information stored in SAP ISU to include Global IDs by cross-referencing with the GIS layer and establish consistent naming conventions and attribute structures across SAP and GIS to support data integration and accuracy. | High |
| | **Linear – Service Connections** | • No data currently available for service connections<br>• No installation date data and no condition data. | • Collect and input core service connection data, starting with inventory, to enable assignment of Global IDs in the future. | High |
| | | | • Obtain installation dates from as-built records or historical documentation, where available; otherwise, estimate based on adjacent main installation dates. | High |
| | | | • Establish a process for collecting and tracking service connection condition data (e.g., through inspections or age-based proxies). | High |
| | **Linear – Watermains** | • Duplicate IDs | • Review and resolve duplicate entries in the CRD Model ID field to ensure each asset is uniquely identified. It is recommended to implement a data validation process to prevent future duplication during data entry or system integration. | High |
| | **Non-Linear – Bulk Water Station** | • No original asset records<br>• No ID assigned | • The bulk water station assets were not included in the region's existing asset inventory. AECOM developed corresponding asset records to capture key components such as electrical, plumbing, and superstructure elements.<br>• It is recommended to maintain the bulk water station assets in the inventory, refine the listings with detailed asset information, and assign unique asset IDs to each station. | High |
| | **Non-Linear – Pressure Control Stations** | • Only 28% of assets have an Equipment ID assigned | • Approximately 28% of the assets within the Pressure Control Stations, including pumps, valves, and RTUs, have been assigned Equipment IDs (e.g., 6006468).<br>• The remaining assets, including those documented during the 2025 condition assessment, have not yet been assigned Equipment IDs.<br>• It is recommended to complete the assignment of unique asset IDs for all Pressure Control Station assets and affix identification labels to the corresponding physical equipment. | High |
| | **Non-Linear – Pump Stations** | • Only 35% of assets have an Equipment ID assigned | • Approximately 35% of the assets within the Pump Stations, including pumps, valves, and RTUs, have been assigned Equipment IDs (e.g., 6006468).<br>• The remaining assets, including those documented during the 2025 condition assessment, have not yet been assigned Equipment IDs.<br>• It is recommended to complete the assignment of unique asset IDs for all Pump Station assets and affix identification labels to the corresponding physical equipment. | High |
| | **Non-Linear – Rechloramination Stations** | • Only 30% of assets have an Equipment ID assigned | • Approximately 30% of the assets within the Rechloramination Stations, including pumps, valves, and RTUs, have been assigned Equipment IDs (e.g., 6006468).<br>• The remaining assets, including those documented during the 2025 condition assessment, have not yet been assigned Equipment IDs.<br>• It is recommended to complete the assignment of unique asset IDs for all Rechloramination Stations assets and affix identification labels to the corresponding physical equipment. | High |
| | **Non-Linear – Water Storage Tanks** | • Only 21% of assets have an ID assigned. | • Approximately 21% of the assets within the Water Storage Tanks, including valves, and RTUs, have been assigned Equipment IDs (e.g., 6006468).<br>• The remaining assets, including those documented during the 2025 condition assessment, have not yet been assigned Equipment IDs.<br>• It is recommended to complete the assignment of unique asset IDs for all Water Storage Tank assets and affix identification labels to the corresponding physical equipment. | High |
| **Level of Service** | **Target Setting / Review** | • Some LoS targets exist (e.g., from CIBI), but not all measures have defined targets. | • Review existing targets against CRD's service goals and historical performance; establish targets for measures without one. Where a target is not feasible, set desired trends. | High |
| | **Refine and Review Measures** | • A preliminary list of LoS has been established, however it should be regularly reviewed going forward. | • Implement regular reviews (e.g., annually or every 4 years) to assess performance, verify data quality, and confirm alignment with strategic goals. | High |
| | **Incorporate Customer Feedback** | • Current LoS framework does not capture direct customer input. | • Introduce customer feedback mechanisms (e.g., surveys) to identify service expectations, gaps, and areas where CRD may be exceeding expectations. | Medium |
| | **Evaluate Risks with LoS** | • Risks associated with not meeting LoS have not been considered. | • Assess risks of not achieving LoS to better inform both capital planning and O&M prioritization. | Medium |
| **Asset Criticality & Risk Management** | **Improved methodology** | • CoF scores for pump stations and pressure control station assets are mostly directed by the operation team. | • Develop repeatable rules for determining station criticality for PCS and PS, building on efforts already carried out by CRD.<br>• It is recommended to improve the framework by incorporating additional quantitative and system-based factors, such as:<br>– Population or customers served: Weight stations by the number of people or service connections dependent on them. | Medium |

| AMP Area | Opportunity Area | Current Observation / Gap | Proposed Recommendation | Priority Level |
|---|---|---|---|---|
| | | | – Elevation and hydraulic criticality: Include factors such as elevation head, system pressure influence, and storage tank dependency. | |
| | **Improved methodology** | • CoF scores for water storage tank assets are mostly directed by the CRD's subject matter experts (SMEs) | • Consideration should be given to developing a more standardized and transparent framework for assessing water storage tanks criticality, ensuring consistent evaluation across the system. The framework could incorporate the following key factors:<br>– Location: Water storage tanks situated in more remote or upstream areas (e.g., Sooke) typically have a higher Consequence of Failure (CoF) due to their importance in maintaining supply continuity and limited alternative sources.<br>– Valve System Configuration: The degree of system isolation and control—such as the availability and reliability of inlet/outlet valves, bypass arrangements, and pressure zones—can significantly influence the operational flexibility and response time during an outage.<br>– Population Served: water storage tanks supplying larger populations or critical service areas (e.g., hospitals, emergency services, or dense residential zones) should be assigned higher criticality scores, reflecting their greater social and service impacts.<br>– Redundancy: The presence (or absence) of backup water storage tanks, interconnections, or alternative supply routes affects the system's resilience. Water storage tanks without redundancy should be deemed more critical due to the higher risk of service interruption. | Medium |
| | **Improved methodology** | • CoF and PoF scores for watermains are equally weighted | • Establish weightings for CoF and PoF criteria to reflect CRDs expectations regarding what should drive PoF and CoF scores | Medium |
| | **Risk framework application** | • Asset-level risk management strategies | • Incorporate asset-level risk and CoF management strategies into future corporate risk management initiatives or update existing documents such as the ARMF and risk management policy. | Medium |
| | **Risk Analysis** | • Meter assets were excluded from this specific risk analysis as they are managed through the SAP dataset, which provides a more detailed basis for future integration. | • Meter assets were analyzed separately using the SAP-based inventory, which provided more detailed attribute information than the GIS dataset. For the next update, the existing unique identifier can be leveraged to enhance integration between the SAP and GIS datasets, allowing the risk analysis to draw on both spatial and attribute information. This approach will strengthen data alignment and enable a more comprehensive inclusion of meters within the overall risk framework. | Medium |
| **Capacity Modelling** | **Growth projects** | • Network capacity is exceeded in several areas once growth forecasts have been loaded into the demand model. | • Refer to **Table 5-10** for a summary of recommendations for linear and pumping projects. | Determined per project |
| | **Capacity Modelling** | • SRRDF supply cannot meet future demand using forecast population and the CRD design criteria. | • The East-West Connector* is a vital piece of infrastructure that Sooke will rely on in the future and has been used in models to allow further analysis. Its installation has been assumed as certain for the future scenarios of Sooke. | High |
| | | • Fire flow scenarios are assessed on a pressure zone requirement basis only. Individual fire flow scenarios (per linear asset) have not been assessed as individual zoning and growth construction was not available | • Ongoing update of the model should include input from the local municipalities to allow detailed fire flow assessment to take place. | Medium |
| | | • The design consumption rate is noted to be significantly higher than the actual consumption reported in the JdFWDS and results in future flexibility but also future growth projects being determined as required prior to the reality. | • An accurate figure should be used to realistically determine the requirements for growth projects and a consistent conservatism factor determined that accommodates the routine fluctuations in demand and localized growth that a pressure zone may experience. | Medium |
| **Maintenance, Repair and Replacement Strategies** | **Staffing & Workforce Capacity** | • Crew numbers have remained static despite system growth. Operators spend more time reacting to emergencies and less on scheduled tasks, creating backlog, fatigue, and overtime costs.<br>• Supporting services (vehicles, IT licences, HR, safety) are also under pressure. | • Add 19 process FTEs and 1 EIC FTE (**Table 6-6**). Of this gross requirement, approximately 10 FTE-equivalents are assumed to be addressed through Strategic Alliance Partners support, with the remaining approximately 10 internal FTEs to be phased at ~2 FTE per year over 5 years.<br>• Include trucks, IT, and training costs in future staffing plans.<br>• Reduce overtime (current $15 k per field FTE vs $6–8k/FTE as per CIBI peer median). | Medium to High |
| | **Preventive vs. Corrective Balance** | • PM requirements for new assets are identified informally through staff discussions, with inconsistent documentation and data entry in SAP PM.<br>• Maintenance task scheduling is performed manually despite SAP PM being used to generate PM tasks.<br>• Corrective work still ~44% of hours, diverting crews from preventive programs. | • Introduce a standardized PM intake form at asset commissioning, capturing manufacturer recommendations, regulatory requirements, and operational needs.<br>• Develop a formal SOP to guide the integration of PM tasks into SAP PM.<br>• Leverage SAP PM capabilities for geographic grouping and automated scheduling; establish documented protocols to reduce reliance on staff knowledge.<br>• Target 30/70 corrective–preventive split by expanding flushing, valve exercising, hydrant inspections, and leak detection. | Medium |
| | **Information Management & Data Quality** | • Work details are not consistently entered into GIS or cost codes.<br>• Work order closure and data entry rely on manual QA processes, with inconsistent validation and limited backlog analysis.<br>• Missing data hampers planning, budget defense, and compliance audits. | • Implement a standardized QA checklist for work orders.<br>• Integrate maintenance records into GIS/CMMS in near-real time.<br>• Conduct periodic backlog and feedback reviews to identify systemic issues and improve process consistency. | High |
| | **Decision-Making & Workflow Integration** | • Field decisions on CM tasks (e.g., whether to complete on-site or escalate) are based on informal judgment, with no clear thresholds. | • Define thresholds and triggers for minor vs. major CM tasks, including safety and timing criteria.<br>• Create SOPs to guide field staff and supervisors on CM handling, including escalation and documentation requirements.<br>• Develop end-to-end SOPs for workflows involving Operations, Engineering, and Finance. | Medium to High |

| AMP Area | Opportunity Area | Current Observation / Gap | Proposed Recommendation | Priority Level |
|---|---|---|---|---|
| | | • Maintenance activities involve multiple departments, but roles, handoffs, and communication protocols are not clearly defined. | • Ensure SOPs are version-controlled and embedded in training/onboarding. | |
| | **Supply Chain & Spare Parts** | • Specialty electronics, pumps, and valves that once arrived in weeks now take months.<br>• CRD stocks more spares in older facilities, tying up money and creating security/insurance concerns. | • Establish a centralized critical-spares strategy and long-term supplier agreements.<br>• Modernize storage facilities and strengthen inventory controls.<br>• Use Strategic Alliance Partner contractors for excavation, traffic control, and specialised O&M where parts delays are common. | Medium |
| | **Regulatory Compliance** | • Provincial and federal regulations continue to tighten, with more prescriptive sampling, analytical, and reporting requirements.<br>• Non-compliance risks penalties, reputational damage, and loss of public trust. | • Prepare to increase monitoring and sampling capacity to align with future regulatory requirements when confirmed.<br>• Prepare to enhance reporting and monitoring processes to ensure timely compliance with evolving regulatory requirements if requirements are updated. | High |
| | **Advancing Preventive Programs & System Modernization** | • Legacy programs (AMI migration, valve cycles, proactive leak detection) face long backlogs and limited resources. | • Allocate one new FTE for district metering and acoustic leak audits and consider a pilot project to support financial justification for enhanced leak detection.<br>• Institute a four-year valve/air-valve cycle supported by Strategic Alliance Partner asphalt services.<br>• Accelerate AMR-to-AMI migration by doubling the meter team and supplementing with Strategic Alliance Partner plumbing resources. | Medium to High |
| **Capital Projects and Financial Plan** | **Maintain Target Asset Condition Levels** | • Under the current planned budget:<br>• The percentage of linear assets in fair or better condition is forecast to remain steady at approximately 74% to 76% over the planning period.<br>• The percentage of non-linear assets in fair or better condition is expected to gradually decline from 97% to 40% by the end of the planning period. | • Many water utilities aim to maintain approximately 80% of their assets in fair or better condition[1], as research and peer practices suggest this range supports cost-effective lifecycle management while avoiding steep renewal spikes. Maintaining asset health within this band provides a defensible foundation for long-term service reliability and cost stability. | High |
| | **Establish Minimum Annual Reinvestment Rate** | • Under the current budget, the capital reinvestment rate is 0.94%, which represents the percentage of total replacement value reinvested annually in system assets. | • Maintain a minimum annual reinvestment rate of 1% of replacement value would allow the JdFWDS to renew the system over a 100-year lifecycle and support sustainable long-term asset condition. | High |
| | **Risk-Based Capital Prioritization** | • Current budgeting practices do not explicitly apply risk-based prioritization to capital reinvestment decisions. | • Prioritize projects using risk-based criteria to ensure funding is directed to assets with the greatest impact on service and risk reduction.<br>• For linear assets, if funding is constrained, prioritize legacy AC main upgrades and aging meter replacement to reduce operating risk, improve reliability, and enhance billing accuracy. | High |
| | **Phased Planning for Large-Ticket Items** | • Upcoming large-ticket renewal needs (e.g., Water Storage Tanks) may exceed short-term delivery capacity and budget flexibility. Executing all major renewals immediately is not feasible given resource and market constraints. | • Develop a phased capital planning and delivery strategy for major renewal projects, spreading large-ticket investments over a multi-year horizon. This will align project scheduling with internal capacity, contractor availability, and annual funding growth. | Medium |

* Note – The East-West Connector is a Regional Water Supply Master Plan Project

[1] Municipality of Bluewater. Asset Management Plan (2024). 20240812-fin-amp-2024-bluewater-asset-management-plan-psd-final.pdf. Retrieved on Oct 29, 2025.
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