APPENDIX K – Gap Analysis Results

SECTION 1: ENTERPRISE GAPS

ASSET MANAGEMENT PROGRAM DEVELOPMENT

RECOMMENDATION	GAP	BENEFIT
The FPWC Asset Management Program will have documented asset management policy, strategy, and asset management plans for major asset classes, including methodologies for calculating business risk exposure and making repair/replace decisions. Use lifecycle costing and develop a methodology to understand FPWC's total cost of ownership. All governance structures should be signed off by management with core team buy-in.	FPWC does not currently have an agreed upon asset management policy, clear strategy on how to achieve the long-term desired results and alignment between managing assets and the use of technology to support facilitating asset maintenance. While another consultant is doing some work in this area, the output has not been reviewed for this assessment.	Optimizing FPWC's asset management program will set the direction for all staff on what the organization is looking to achieve and how it will proceed to achieve the desired results.

ASSET MANAGEMENT COMMUNICATION STRATEGY

RECOMMENDATION	GAP	BENEFIT
Develop and implement an organizational asset management communication strategy.	FPWC lacks an asset management program communication strategy, resulting in a lack of alignment across the organization.	The communication strategy will ensure consistent understanding of both progress and setbacks and where support is needed from FPWC staff. The communication strategy will foster a transparent AM program with staff.

SYSTEM USAGE

RECOMMENDATION	GAP	BENEFIT
Use your next EAM system to manage asset maintenance activities, including preventive maintenance (PM), condition assessments, and failure analysis.	Asset maintenance, failure analysis and condition assessments are carried out in multiple third-party systems and not always reflected in WAM v1, making it difficult to compile data to drive maintenance and capital programs.	A single enterprise system ensures consistency in the data that needs to be captured in the EAM system to support prioritized, data-driven decisions for FPWC's capital and maintenance programs.

ROLES AND RESPONSIBILITIES

RECOMMENDATION	GAP	BENEFIT
Develop organizational roles based on RACI matrix (Responsible, Accountable, Consulted, Informed).	The roles related to an established asset management program are not defined.	Organizational understanding of the asset management program is ensured. Commitment by FPWC management and staff to the program will be reinforced.

INTEGRATION SYSTEM ARCHITECTURE

RECOMMENDATION	GAP	BENEFIT
Ensure there is a coordinated effort across any system assessments. It is also critical that FPWC understands how their next EAM will work with their existing integration technologies and if the existing integration technologies are the right ones for the future.	FPWC is considering upgrades or replacements project for multiple critical business systems.	A coordinated effort will ensure FPWC does not have any architecture surprise as they consider their next EAM system and the most effective architecture is chosen.

ASSET REGISTRY

RECOMMENDATION	GAP	BENEFIT
The EAM system, by its nature should be the enterprise registry of asset data. All other sources of data should either be migrated into the register or interfaced to provide visibility of ALL assets and attributes.	There is no one place to see all asset information.	A central location of asset information will make the asset management program more attainable, including asset condition assessment, repair and replace decision as well as capital planning.

ASSET HIERARCHY

RECOMMENDATION	GAP	BENEFIT
Asset information is efficiently maintained by the development and implementation of a universal asset hierarchy and asset information strategy. This will lead to current and reliable asset information.	Each line of business does not have its own asset hierarchy. Asset data maintenance is challenging due to the lack of consistency. Lack of currency and reliability will also lead to low confidence in the system.	These strategies allow FPWC to leverage accurate asset information for decision-making.

WARRANTY TRACKING

RECOMMENDATION	GAP	BENEFIT
Institute procedures that enter and track warranties by asset class and individual asset.	There is no warranty tracking.	This process will save money by identifying assets under warranty, to either call in the vendor for repair or make a warranty claim by cost.

REPORTING

RECOMMENDATION	GAP	BENEFIT
FPWC should evaluate their custom reports and ensure the next EAM system allows for robust query and analytics reporting.	FPWC has 400 requests for reports and delivered 40 to the various internal stakeholders. More information is needed from the EAM system that helps the organization manage their business. Users are not able to develop their reports.	An enterprise and departmental emphasis and control of reporting needs will support the results FPWC desires from their AM program.

BASELINE COMPUTING

RECOMMENDATION	GAP	BENEFIT
Analyze the computing skills and needs at FPWC and tailor a training program to support the users. Training should be tailored based on the type of device a user is likely to work in the most, such as mobile technology for field staff.	Computing skills and familiarity with technology are lacking, which causes gaps in the quality of data entered in the EAM system for analysis and reporting.	By raising computing skills across FPWC the likelihood of general issues that consume time will be lowered.

EAM Training

RECOMMENDATION	GAP	BENEFIT
FPWC EAM system training should be based on a hybrid Train-the-Trainer model. Basic system functionality of the next EAM system should be trained by the implementer. Core business-specific functionality should be trained by FPWC power users and these same power users should be part of designing the system. Furthermore, a core team of power users should be assembled that will participate in the project throughout and become key resources to train and onboard future staff. All training should be digitally recorded and stored to develop a learning management system.	FPWC has users who do not know the capabilities of an EAM system and do not know the capabilities of the current WAM v1 version used.	Knowledge of the system design will be embedded into the power users, thus creating an empowered culture for FPWC. This approach will create more “buy-in” of the system long term, which should result in better data quality in the system.

MOBILE COMPUTING

RECOMMENDATION	GAP	BENEFIT
FPWC should invest in a mobile solution that enables EAM system users to work outside the office, in the field. A mobile platform that works with the future EAM system should be the most widely used and adopted product in FPWC's future AM program. NOTE: PWC has decided on Oracle Field Services.	FPWC does not currently use mobile technology.	Work will be more accurately managed with information in the field via a mobile device and duplicate data entry between paper and completing work orders in an office setting will be reduced or eliminated.

SCHEDULING

RECOMMENDATION	GAP	BENEFIT
FPWC should define its scheduling requirements for all types of work and equipment (e.g. short cycle and long cycle work) and enforce that scheduling resources is mandatory. Establish policies and practices of assigning and prioritizing work that encourage effective scheduling of work and visibility to all, including contractor work.	FPWC does not schedule work within WAM v1, for internal work or contractor work. FPWC is unable to load-level or perform accurate forecasting of work across the enterprise. Therefore, FPWC does not fully leverage their resource capacity efficiently and effectively.	Better customer support as well as a reduction in project durations completed with fewer resources, in some cases. Scheduling resources promotes proactive work practices and reduce costs. A more proactive approach to work management will benefit the crews, supervisors, storeroom and customers.

Purchase Requisitions and Account Validations

RECOMMENDATION	GAP	BENEFIT

Plan for an interface of purchase requisitions from the EAM system to the ERP system, where controls for valid account strings are done in the EAM system.	There is no validation for purchases in EBS for an accounting string related to a valid WAM v1 work order.	A gain in efficiency will be seen by pre-validating in the EAM system the account string against the work order task/activity, so that EBS validation is not necessary.

Blanket Contracts

RECOMMENDATION	GAP	BENEFIT
Analyze the ability to implement blanket contracts for purchasing materials and services with preferred vendors/suppliers.	Blanket contracts for stores replenishment are not being used by FPWC.	Optimal pricing and potential for supplier monitored inventory will reduce inventory on-hand. Additionally, blank contracts will reduce administrative overhead with requisitions and purchase orders.

Material Demand Management

RECOMMENDATION	GAP	BENEFIT
Work planners need to be able to rely upon the EAM system indication of on-hand quantities of materials needed to accomplish work. FPWC should verify the inaccuracies, determine the cause, and correct the problem. Train users to enter 'Required Date' on their stock checkout requests and demonstrate how that request process and staging will make their parts available more quickly.	On-hand quantities of inventory material displayed in WAM v1 are not accurate. Pre-pick/staging of materials is not being done. The result is jobs are delayed.	Material demand accurately and timely communicated to the storeroom will improve work accomplishment.

Inventory Bar Coding/RFID

RECOMMENDATION	GAP	BENEFIT

Improvements to the existing barcoding solution at the warehouses as part of FPWC's EAM system implementation.	FPWC barcoding needs improvement to optimize stock issues and returns.	Efficient issuing of materials to jobs/accounts and accurate tracking of availability will provide real-time information regarding costs in the warehouse.

Bill of Materials (BOMs)

RECOMMENDATION	GAP	BENEFIT
Define materials for the bill of materials against specific physical assets to be ready to order any BOM Items not kept in inventory, should the asset break down or need repair.	Parts required to repair/rebuild specific assets are not listed in WAM v1. These are the type of parts that are referenced in the original equipment manufacturer (OEM) manual for an asset maintenance program but are not kept on a shelf in inventory.	Time and money will be saved in purchasing expensive items or those requiring long lead time to purchase. As well as time savings by doing pre-emergency research of materials needed in the event of an emergency.

Critical Spare Parts

RECOMMENDATION	GAP	BENEFIT
Identify and label critical spare parts, determine their purchasing channels and min/max values for forecasting.	Critical spare parts are not being adequately maintained or tracked.	FPWC should see a reduction in asset downtime and increased reliability.

Overhead Cost Allocation

RECOMMENDATION	GAP	BENEFIT
Get clarification about best practices of GASB and FERC relative to overhead allocations.	Overhead cost allocation processing adversely impacts cost estimates and actuals in WAM v1. Vehicle costs as a distributed OH allocation prevent the use of direct charges for specific vehicles on work orders, so billing becomes labor intensive.	Some unnecessary business processes and software functionality will be eliminated.

Standing Work Orders

RECOMMENDATION	GAP	BENEFIT
Work orders should be used to dispatch crews to address an asset issue at a defined location. The crew should use each work order to log equipment, labor, materials, and other costs.	Employee labor, materials and direct charges are captured on standing work orders and therefore FPWC is unable to report costs on an asset.	FPWC will able to report on the cost of asset maintenance at the asset level, which supports data-driven decision making.

Continuing Property Record (CPR) Repository Accuracy to Physical Assets

RECOMMENDATION	GAP	BENEFIT
Audit the information within the CPR repository and detail where the differences in quantities exist. Analyze the reason for differences and correct those differences.	The CPR repository for fixed assets does not match physical asset quantities.	An assurance that group asset quantities match physical asset quantities reduces the level of effort for Finance to reconcile EBS to GIS. Periodic checks will be required in order to reconcile. The effort to simplify usage codes and continuing property unit codes will make installation versus retirement of like assets negligible.

Employee Interface Accuracy

RECOMMENDATION	GAP	BENEFIT
Verify the employee interface is keeping the employee registry up-to-date.	There are employees who are active but have yet to log time on their timesheets since September 2020.	Verifying the information transferred by way of interfaces ensures only active employees can be used for system transactions going forward.

Billing System and EAM System Interface

RECOMMENDATION	GAP	BENEFIT
Schedule a session to discuss the effects of C2M implementation on the next generation of EAM system. Plan on addressing and filling any gaps in data that service personnel need.	Customer information is not complete and accurate in WAM v1, making it challenging to support customers. Customer records in WAM v1 are not inactivated when a customer moves out of the area.	Elimination of the issues preventing optimal workflow will help adoption of changes.

Meter Information

RECOMMENDATION	GAP	BENEFIT
Refine the management of meter information by moving the system of record from CC&B to meter management solution that interfaces with CC&B.	The system of record for meters is CC&B, but maintenance records are not stored in CC&B making it challenging to manage the lifecycle of meters.	Establish a go-forward strategy that supports meter management for both accurate billing and asset management.

Timekeeping

RECOMMENDATION	GAP	BENEFIT
Confirm all timekeeping rules, then consider the benefits and drawbacks of continuing timesheet entry within the EAM system. Viable functionality within EBS should be explored.	Timekeeping within WAM v1 is considered a strength, due to the ability to create timesheets for a crew. Yet some payroll rules are not enforced in WAM v1, so errors occur in data entry that must be fixed regularly.	Streamlining timekeeping processes will help reduce errors and create a better experience for staff.

GIS – EAM Asset Integration

RECOMMENDATION	GAP	BENEFIT
GIS should remain the system of origin for all linear assets. These assets should be integrated into the EAM system via an automated, near real-time interface that supports one- or two-way synchronization.	The asset synchronization between GIS and WAM v.1 does not run frequently or reliably enough to support the needs of the business. For example, newly constructed linear assets, initially recorded in GIS, are not available in WAM v1 to record work against if the nightly interface does not run as expected.	Work activities on newly installed assets are available in the EAM system for equipment, labor and material charging. Having a reliable, near real-time one- or two-way synchronization will enable flexibility in implementing business requirements, as there may be use cases for both one- and two-way integrations of asset attributes.

GIS – EAM Map Viewer

RECOMMENDATION	GAP	BENEFIT
Implement an EAM system that supports the use of GIS viewing technology to overlay both work and assets on a map.	The WAM v1 GIS interface does not support the overlay of work activities and assets in a GIS viewer.	More efficient work planning and assignment is enabled through the visualization of work and assets in a GIS map viewer.

GIS – EAM Standard Functionality

RECOMMENDATION	GAP	BENEFIT
Implement an EAM system that supports standard GIS functionality, such as address, work activity and asset search capabilities; red-line capabilities; and the ability to create work activities from the EAM's GIS map viewer.	The WAM v1 GIS interface does not support the use of standard GIS functionality. Users have had to develop of manual processes outside of WAM v1 to meet business needs. This has resulted in a negative user experience and perception of Oracle WAM technology.	Implementation of an EAM system with standard GIS functionality and consistent use of this functionality will reduce manual processes, save users time on tasks, and enable a more positive user experience with the selected EAM.

Data Migration

RECOMMENDATION	GAP	BENEFIT
Plan and schedule data review workshops for readiness to migrate data. Document the data sets for quality and determine if there is value to migrating each proposed data set.	Poor data quality makes developing a data migration plan challenging. And data that could be migrated into a future EAM system resides across several third-party data sets.	The value of migrating data is essential to determine if money should be allocated to migrate the actual data in the project budget. Following through on this recommendation will ensure FPWC does not spend money unnecessarily migrating data.

System Administrator Support

RECOMMENDATION	GAP	BENEFIT
Assess the resource allocation to support an EAM system. Each department requires a representative to support their system and data needs. Develop both technical and AM strategy committees that meets regularly (preferably weekly) to further FPWC's AM strategy in support of the Asset Mangaement Program and address action items. Develop procedures to escalate issues to a governance committee. FPWC's Asset Management Program and EAM system should be supported by a cross-functional team, including an executive sponsor(s), business champions, system administrators, business analysts, and trainers.	There are insufficient resources to maintain WAM v1, including resources to support the users (e.g., training, business process improvement, data integrity). Without a cross-functional team focused on the asset management program and implementation of a new EAM system, FPWC will struggle to ensure the goals of the AM program are realized.	Aligning the strategy, structure and staff will create the results FPWC desires.

Section 2 - Gaps by Division - Electric

Preventive Maintenance

RECOMMENDATION	GAP	BENEFIT
Setup PM triggers according to a defined PM program outlined in FPWC's future Asset Management Plans. Conduct training on current system and outline the desired future state.	Preventive maintenance is not setup or used effectively inside WAM v1. PM work is being managed outside of WAM v1.	Moving from reactive to proactive maintenance will reduce FPWC's maintenance costs long term. Tracking PM maintenance allows FPWC to measure the savings over time.

Planning and Scheduling

RECOMMENDATION	GAP	BENEFIT
Develop processes that encourage and require planning and scheduling, including reports that measure adherence to schedule. Create a dedicated role for a Planner/Scheduler to establish schedules 6-12 months in the future, including projects.	Planning and scheduling are a core part of the Electrical Systems personnel's work, for internal and external (contractor) work, yet scheduling work is not being done in WAM v1.	Managing work schedules within the EAM system will reduce stress and minimize the effects of periodic emergency work. The visibility of the schedule will encourage participation by employees as well as assure management that the right work is being planned.

Contractors

RECOMMENDATION	GAP	BENEFIT
Evaluate the contractor work processes and ability to track work beyond just invoices. The costs for purchases are ten times as much as inventory. It appears a large percentage of work is done by contractors.	Users cannot see contractor estimates or actuals in WAM v1. Similarly, there is no visibility of contractor schedules.	Visibility to measure contractor work will save money and ensure quality control and governance. The ability to compare contractor costs and in-house costs.

Compatible Unit (CU) Accuracy

RECOMMENDATION	GAP	BENEFIT
Review and update FPWC's CU's annually.	CU's have inaccurate material, labor and equipment cost estimates, so analyzing cost estimates against actual costs does not help FPWC plan project costs accurately in advance.	FPWC can accurately evaluate their job estimates based on historical actuals, facilitating improved job and project estimation over time.

Staking Sheets

RECOMMENDATION	GAP	BENEFIT
Review the output printed staking sheet and update with data elements available in WAM v1. Design the ideal staking report output for the next generation EAM.	The staking sheets printed from WAM v1 are not descriptive enough. For example, the "from" and "to" locations do not display, and crews pulling wires need this information. This makes it difficult to convey information to operations.	Clarify staking sheet requirements and configuring an EAM to support these requirements will help streamline field work.

Street Address Normalization

RECOMMENDATION	GAP	BENEFIT
Define a master street address list and have all applications reference against that normalized standard list of street names.	Searching for work orders in WAM v1 by address is a challenge because the address is not always in the same standard format.	Eliminate the possibility of errors on address and customer information.

Section 3 - Gaps by Division - Water

Asset Hierarchy

RECOMMENDATION	GAP	BENEFIT
Assess the asset hierarchy for vertical assets to ensure that the level of granularity meets FPWC's asset management program needs. Perform an inventory of data that is missing or needs to be added to the asset hierarchy.	The asset hierarchy for vertical assets is difficult to search and update. This has led tosignificant data gaps over time.	An asset hierarchy facilitates efficient maintenance of asset data. It enables users to easily search for assets and apply them to the appropriate maintenance program. Allows for effective failure modes and effects analysis; alignment of Water Resource's maintenance program; and efficient cost and regulatory reporting.

Total Cost of Ownership

RECOMMENDATION	GAP	BENEFIT
Develop desired business process for capturing new assets on capital project work orders and configure technology appropriately to associate installation costs once the asset(s) has been added to the GIS.	Unable to capture total cost of ownership of assets. Assets are created in GIS and synchronized with WAM v1. The capital work order is often closed and the work order and assets cannot be associated.	FPWC is able to utilize a total cost of ownership methodology in conjunction with its asset management program to better forecast capital and operations and maintenance costs.

GIS Functionality

RECOMMENDATION	GAP	BENEFIT
Implement an EAM system that meets the functional GIS requirements outlined in the Requirements Traceability Matrix (RTM).	There is insufficient GIS functionality in place to support asset and work management practices for PWC's water distribution and wastewater collection systems.	GIS functionality such as the ability to create and view work from the map, provide 'redline' feedback on assets, and visualize trends will enable the organization to be more efficient.

Customer Addresses

RECOMMENDATION	GAP	BENEFIT
Implement quality control of addresses entered in CC&B.	GIS is unable to map customer addresses accurately due to incorrect information added in CC&B because there is no address validation.	Reduce the manual work done by GIS staff to update thousands of addresses imported from CC&B. Improve the accuracy of customer tracing on the utility network in the event of water or sewer issues.

Actionable Data

RECOMMENDATION	GAP	BENEFIT
Configure standard, reportable fields and train end users on their proper application. Configure standard reports and dashboards within the new EAM sysystem. Identify reports that users have identified as critical for operations and prioritize these for development.	Actionable data is not readily available due to a lack of configuration of standard fields for assets, condition data, failure reporting, and work management.Users are also unable to generate reports such as the “backlog” report.	Empowers decision makers with readily available data in an enterprise system. Reduces the manual work to maintain numerous spreadsheets outside of the EAM system. Reduces errors and time spent entering data in the EAM system.

Service Requests

RECOMMENDATION	GAP	BENEFIT
Update FPWC’s field activity and service request configurations based on reporting requirements.	The intake process for service requests lacks the granularity needed for accurate reporting; specifically, there are no details that consistently log pressure, odor, taste, turbidity.	Reduce manual process of data input by users and extraction and refinement in spreadsheets by supervisors to satisfy reporting needs.

Integrated Reporting

RECOMMENDATION	GAP	BENEFIT
Develop reporting requirements and build the relevant dashboards, analytics, and reports that leverage data across Water Resource's various asset management tools.	Lack of integrated reporting with other asset management tools such as Innovyze Info Asset Planner and InfoWater/InfoSewer makes it challenging to prioritize replacement and rehabilitation projects.	Readily access actionable data across multiple systems to enable the prioritization of asset maintenance and development of capital improvement plans. Reduce the time spent developing and maintaining spreadsheets outside of these asset management tools.

Automated Timesheets

RECOMMENDATION	GAP	BENEFIT
Integrate the EAM system and timekeeping solutions such that timesheets are automatically populated with the work orders and labor hours logged in the EAM system. NOTE: PWC is implementing Oracle HCM. The bidder should prepare recommendation for timekeeping process based on best practice.	Entering labor hours in timesheets is a laborious effort, especially for plant operations staff, as they need to search for as many as 20 work orders per day for time entry.	Increase value-added time spent by staff in the performance of operations and maintenance tasks by reducing the time needed to update timesheets.

Planning and Estimating Work

RECOMMENDATION	GAP	BENEFIT
Implement direct charges of equipment, labor, and materials to work orders.	Estimated work values can vary significantly from actual values due to the monthly variance in overhead costs.	Billouts and cost recovery will accurately reflects the work performed.