



Field Service Management solution

PAL RRP BUS 7.15 - FSM solution - Dec 2020 -
Public

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1 Overview

Business	CitiPower and Powercor
Title	Field Service Management solution
Project ID	PAL BUS 7.15 - FSM solution - Dec2020 - Public
Category	IT capital expenditure - non-recurrent
Identified need	<p>Our field and office workforce utilise our automated and integrated works management (AIWM) solution to perform their duties on a day to day basis. Our field service management (FSM) solution, which is an integral component of the AIWM, requires replacement as vendor support will be withdrawn from December 2023.</p> <p>If we do not invest in a timely replacement of our FSM solution, we will experience cost increases in the delivery of field services, as well as a deterioration in network reliability delivered to our customers and expose our field crew to increased safety risk.</p>
Recommended option	Option 2—scheduled replacement of our field service management solution prior to market withdrawal
Proposed start date	2021/22
Proposed end date	2023/24
Supporting documents	<ul style="list-style-type: none"> • PAL RRP MOD 7.22 - Field service management solution - Dec2020 - Confidential • PAL ATT40 - Field service management market scan - Dec2020 - Confidential • PAL RRP ATT44 - ClickSoftware End-of-Life schedule - Aug2020 - Public • PAL ATT153 - IT external labour rates - Mar2019 - Public

Over the current regulatory period, we successfully transformed our approach to field operations as part the World CLASS program delivering major field productivity gains reflected in the benchmarking performance of our businesses. This was achieved through careful and strategic investment in IT systems, applications and deployment of mobile devices across our field staff. These initiatives together comprised our Automated Integrated Works Management (**AIWM**) program. The functionality of our AIWM program relies on our Field Service Management (**FSM**) software application.

Key changes to field operations enabled by the FSM solution included:

- automated, centralised and optimised works scheduling, remote crew dispatch, live onsite reporting of works completed and live fault monitoring
- workflow automation functionality, improving our ability to integrate and manage the end-to-end works life cycle
- high performance integration between FSM and other customer-facing systems, providing two-way, near-instant information updates and real time works visibility for all field works
- enabling visibility of the entire scope of tasks to be undertaken on-site and ability to capture and publish on-site safety hazards.

This transformation in field service delivery has delivered industry leading benefits for our customers:

- lower costs of delivering field services through better utilisation of field crews, reduced back office support (e.g. scheduling and dispatch functions) and better utilisation of heavy fleet
- real time works visibility for all field users, to enable them to understand scope of tasks and completion
- improved network reliability through optimised and automated dispatch of fault crews and remote live fault monitoring
- reduced safety risks as field staff have ready access to safety notifications and technical safety standards, safety monitoring apps and safety incidents log while in the field
- real time information for estimated restoration times for our customers.

It is important to remember that these benefits were delivered for our customers despite no funding being provided by the Australian Energy Regulator in the 2016-2020 final determination.

Since we completed our AIWM program, the current vendor of our FSM solution, ClickSoftware, has been acquired by Salesforce. As a consequence of this acquisition, Click v8 (our current FMS application) will be withdrawn by Salesforce from the market in December 2023.

As our FSM product is a cloud-based solution, we have no means for continuing to use the product following its withdrawal from the market. This creates an identified need that is addressed in this business case.

In preparing our revised proposal, we considered the following options:

- **Option 1** — revert to manual processes — do not replace the FSM solution
- **Option 2** — scheduled replacement, which provides for the replacement of the FSM solution to ensure continued optimisation and automation in field delivery processes
- **Option 3** — deferred replacement, which is effectively a combination of option 1 in 2021-2026 period followed by option 2 in the 2026-2031 period.

Table 1 summarises the options considered in addressing the withdrawal of our existing FSM solution from the market from December 2023.

Table 1: Options analysis summary (\$ million, 2021, direct cost)

Option	2021-2026 cost	2021-2031 NPV
1 Revert to manual	21.3	41.4
2 Scheduled replacement	16.4	17.7
3 Deferred replacement	21.3	46.5

Source: Powercor

Note: Cost comparison before removing Click refresh allowance, and unless otherwise stated, represents combined CitiPower and Powercor expenditure

We recommend **option 2** — scheduled replacement. This option is consistent with maintaining our current levels of performance in relation to productivity, safety and reliability by ensuring that the benefits of optimisation and automation are not lost to our customers.

A comprehensive assessment of replacement options has been undertaken through a market scan and assessment process. We have based on our cost forecasts on the results of that market scan.

Our original proposal included recurrent expenditure on our Enterprise Management System business case to refresh our existing FSM solution. The AER accepted our recurrent spend, subject to a top down reduction of 22 per cent for CitiPower and 7 per cent for Powercor (in direct cost terms). We have netted the recurrent allowance off the total cost of replacing our FSM solution.

Table 2: Option 2 scheduled replacement, total costs minus recurrent allowance (\$ million, 2021, direct cost)

	2021/22	2022/23	2023/24	2024/25	2025/26	TOTAL
Replacement cost	2.2	10.9	3.2	-	-	16.4
Less recurrent costs allowed by AER	-0.7	-0.7	-1.0	-1.9	-	-4.3
Net replacement cost	1.5	10.2	2.2	-1.9	-	12.0

Source: Powercor

Note: Figures may not add due to rounding

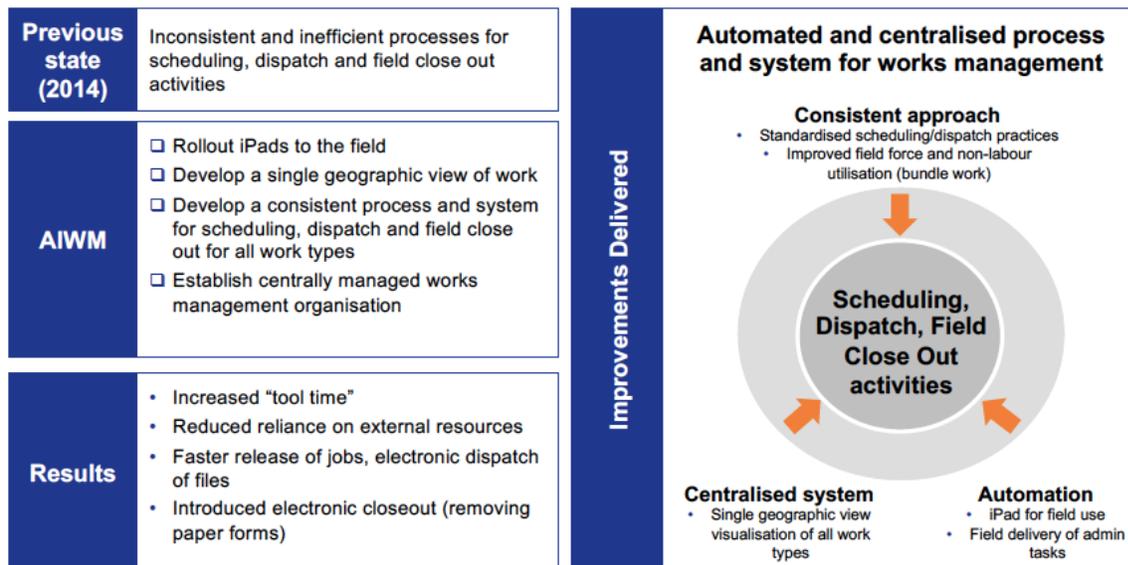
2 Background

2.1 Transformation of field services through automation

Through investment in IT systems, Field Service Management (FSM) software applications and mobile devices in the field, which together comprise our Automated Integrated Works Management (AIWM) program, we have moved from a predominately manual approach to planning and delivery of field services, to a highly automated more responsive approach.

The figure below provides a high-level summary of the changes that were made through the AIWM program.

Figure 1: Summary of improved outcomes from AIWM implementation



As indicated in the figure above, the implementation of the AIWM recognised the potential to achieve significant benefits for our customers through standardisation of processes for different types of work, including:

- works planning
- augmentation & asset replacement
- maintenance
- connections
- asset inspection
- faults.

Standardised processes allow for the efficient packaging of work through the application of scheduling software, combined with the use of mobile devices, for all field crews to receive and closeout all work types. By automating previously manual processes, significant benefits have been secured in terms of lower costs, improved network reliability and enhanced safety.

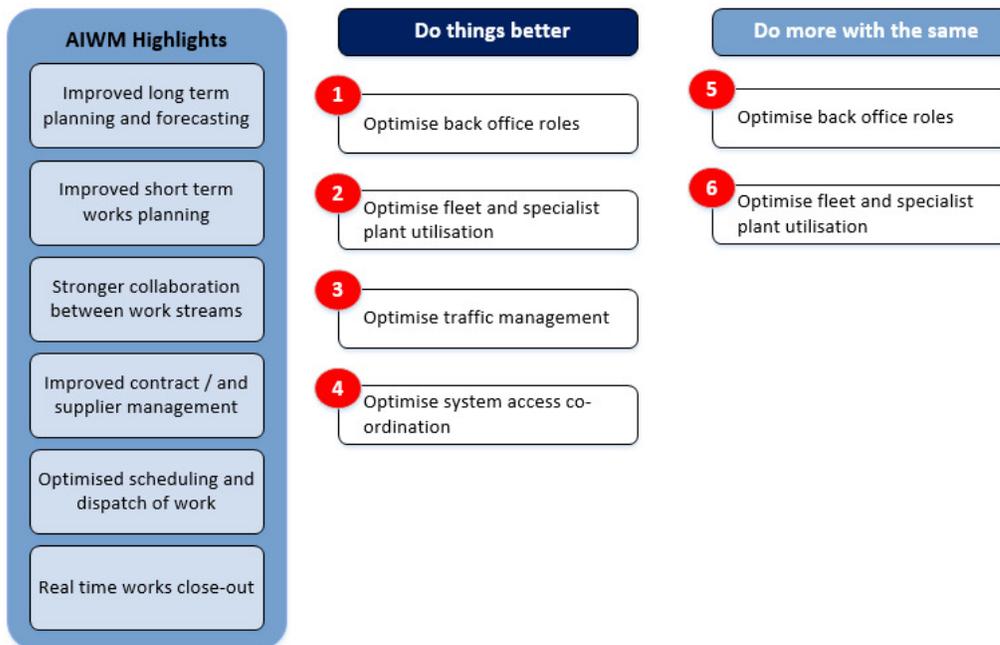
The enhancements in safety arise from field staff having ready access to safety grams and technical safety standards, safety monitoring applications and safety incident logs whilst in the field. It has also allowed the control room access to real time geospatial mapping of field crews permitting informed decisions to be made before switching actions are undertaken.

Cost reductions and network reliability improvements arise from:

- rationalisation of back-office roles through centralised scheduling, reductions in administration support and improvements in access coordination
- better utilisation of heavy fleet and plant, in addition to reductions in travel time as work commences off-site rather than at depots
- increased utilisation of field staff by minimising planning meetings and depot visits, increasing efficiency in staff training and avoiding delays incurred through sub-optimal planning.

The figure below depicts the direct productivity improvements that were provided by automation of field services. These cost savings are further augmented by additional benefits in providing safer and more reliable network services.

Figure 2: Summary of productivity improvement from AIWM implementation

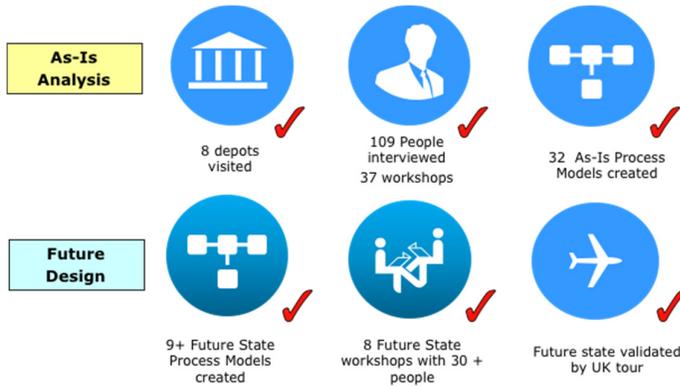


The success of the AIWM implementation and the new organisational arrangements is reflected in the expenditure savings achieved over the current regulatory period. These benefits are embedded in our expenditure forecasts for 2021-2026.

2.2 Conceptual design and implementation

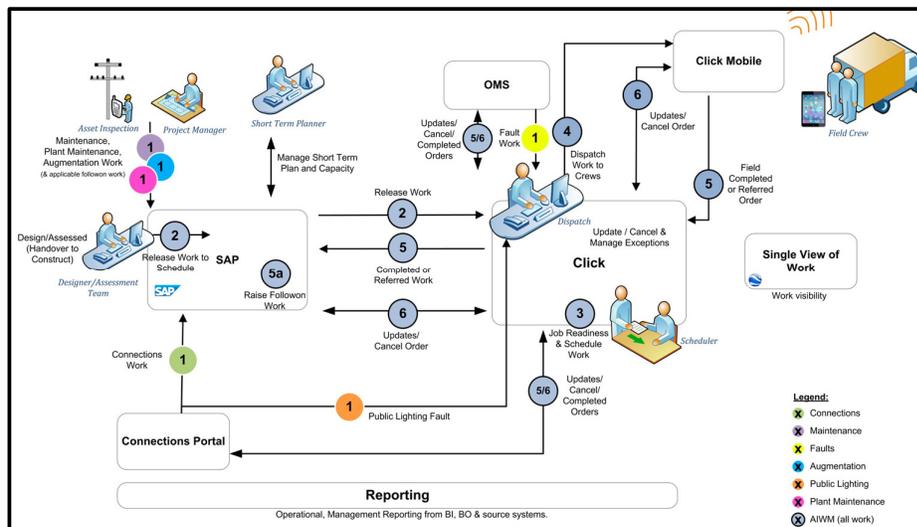
To implement AIWM, in 2014 we embarked on a major cross-business program that examined our current working practices and developed future state process models based on extensive workshops, interviews and analysis, as shown below.

Figure 1: Process for understanding current and future state



The figure below provides a conceptual overview of the AIWM implementation, and a snapshot of the extent of its impact across our business.

Figure 2: Conceptual overview of AIWM implementation, developed in 2014



The implementation of AIWM had a wide-ranging impact on our systems, processes and people. Our FSM solution, which incorporated works management, works scheduling, dispatch and delivery, was implemented through the implementation of ClickSoftware's Service Optimization. This included ClickSchedule, ClickMobile and ClickDashboard.

The initial AIWM program integrated our internal systems including SAP, Outage Management System (OMS), Salesforce, Geographical Information System (GIS) and Google Earth Enterprise (GEE), with the ClickSoftware package. Phases 1 and 2 of the project:

- delivered iPads to the field staff, primarily to manage fault works through Click Mobile
- integrated our internal systems, particularly SAP, with the Click Software package to manage works planning, scheduling and delivery.

A subsequent phase was undertaken in 2017 - 2018, which involved the migration of our asset inspection regime and process onto the ClickSoftware suite.

In addition to new systems and processes, the introduction of AIWM required significant change across the business, including the design of new roles and teams. To ensure that the changes were properly understood and bedded down, we undertook an extensive change management processes that included the following initiatives:

- developing ownership and commitment to changes through meaningful employee engagement
- planning and communicating the need for change
- building the knowledge, tools and support needed to deliver the required change
- providing training to ensure changes to processes and systems are performed correctly
- updating process and system documentation
- amending KPIs and reports to help managers and team leaders to monitor the effectiveness of the changes.

2.3 AIWM implementation costs

Funding for the AIWM project was not provided through the 2016-2020 final determination.

The below table provides details of the original AIWM program costs.

Table 3: Total AIWM program costs (\$ million, 2021)

Expenditure Type	Cost
Labour cost	6.6
Contract costs	15.8
Materials costs	0.3
Total investment	22.6

Source: Powercor

As the FSM application, functionality and processes have now been embedded for several years, and the replacement system will deliver like-for-like functionality, we would deliver the proposed replacement project utilising our internal expertise and for lower cost than the original AIWM program costs.

3 Identified need

ClickSoftware publicly announced that its product will be withdrawn from the market as of December 2023.

Their decision to withdraw our FSM solution follows the acquisition of ClickSoftware by Salesforce. In announcing its acquisition¹, Salesforce explained that it intended to build on its earlier partnership with ClickSoftware in developing its own flagship offering - Field Service Lightning (an entirely separate offering that Salesforce had developed prior to the acquisition of Click).

As already noted, ClickSoftware provides our current FSM solution which is used for all our internal field work. Our internal scheduling and dispatch teams utilise this system for the delivery of the work for field mobile execution for faults, public lighting faults, augmentation (customer and network initiated), connections, electrical plant and test, and supply quality (including voltage complaints). We also schedule and dispatch work to our resource partners through ClickSoftware's package (e.g. local service agents and contractors). There are approximately 100 scheduling and dispatch users and 2000 licenses for internal and external field users.

The circumstances described above create an 'identified need' in relation to replacing our FSM solution because, in the absence of taking any further action, the benefits obtained from the AIWM program would be unwound and we would need to revert to manual processes in place prior to 2014.

¹ <https://www.salesforce.com/company/news-press/press-releases/2019/08/190708-d/>

4 Options analysis

We identified and analysed three options to address the identified need. A 'do nothing' option has not been proposed in any scenario as to operate an electricity distribution network, we must have some form of process for scheduling and dispatching field works.

4.1 Option 1: Revert to manual

This option involved not replacing the FSM solution. This option minimises IT capital expenditure but results in significant additional expenditure to manage field scheduling and dispatch manually, as well as detrimentally impacting network reliability and safety.

The costs of the 'revert to manual' option include:

- additional back office costs that would have to be incurred in order to plan, schedule and dispatch work, as the functionality of the existing FSM system is wound down
- additional costs due to less efficient utilisation of fleet and mobile plant, and reduced workforce utilisation as inefficient manual systems are reinstated to replace the existing automated systems
- minimum IT system changes required to support a manual option
- additional change management costs to safely transition the work force to manual processes
- additional field worker costs that would have been incurred to manage associated forms and manually record field completion data, as the functionality of the existing FSM system is wound down.

The cost impacts of these changes have been estimated through the development of detailed impact analysis on back office and field resources, as well as identifying the minimum level IT system changes required to support a manual option. We estimate an additional 16 back-office full time equivalents (FTEs) and 12 field-based FTEs would be required to support the manual option.

Given the costs of the manual process exceed the costs of a scheduled replacement, we have not valued the loss in network reliability and field crew safety from reverting to manual processes. The loss in network reliability results from the loss in the optimisation function which ensures the closest available crews are dispatched to unplanned works. The loss in field crew safety results from the loss of real time geospatial field crew location mapping and loss of digital access to up-to-date site schematics.

The table below summarises the key advantages and disadvantages of option 1.

Table 2 Advantage and disadvantages of option 1

Advantages	Disadvantages
<p>Lower costs to customers in the first two years of the next regulatory period (albeit offset by higher costs thereafter)</p> <p>Avoids the need to select and implement a new FSM solution (although manual processes and minimum IT system changes would need to be developed and implemented)</p>	<p>Reversion to manual processes. This would lead to:</p> <ul style="list-style-type: none"> • Poorer reliability and safety outcomes. For example, delays in dispatch of field crew would lead to longer outage times and potentially unsafe electricity supply. Without the FSM solution, field staff would be unable to receive job allocations remotely and would need to return to the depot, significantly delaying their response to outages. • Increased costs as we would require additional labour to complete manual based tasks both in the field and for corporate services. For example, field crew would incur greater travel times returning to depots to receive job allocations, would spend more time completing paper forms for works completed and may need to undertake more repeat site visits if network information is not available remotely. • Poorer customer service, for example delays in responding to customer requests and queries, leading to customer dissatisfaction and loss of time and effort in obtaining information. Customers seeking information about an outage would not be able to get an update quickly or accurately, resulting in wasted customer time. • Higher safety risks for field workers without access to safety training, safety monitoring and technical standards onsite.
	<p>We would be increasingly unable to deploy new business applications and innovations, which rely on automated field management capabilities. This option would therefore limit our ability to develop innovative approaches to network management, resulting in higher long-term costs to our customers.</p>

Source: Powercor

4.2 Option 2: Scheduled replacement

This option provides for the replacement of the existing FSM solution following its withdrawal from the market in December 2023. This option maintains current levels of operational performance in terms of costs, reliability and safety by ensuring the capability of the existing FSM solution is maintained.

The costs of this option include:

- internal resources, with work effort based on experience with projects of similar functionality, size and scale and independently benchmarked labour rates
- vendor implementation quotes and
- quoted on-going vendor licencing costs.

We have undertaken a market scan process to assess the availability and suitability of different FSM solutions. Our revised proposal costs are based on the outcomes of the market scan process. The outcomes of our market scan are provided in attachment PAL ATT40 - Field service management market scan - Dec2020 - Confidential.

The table below summarises the key advantages and disadvantages of option 2.

Table 3 Advantage and disadvantages of option 2

Advantages	Disadvantages
Current performance would be maintained in terms of operating and capital costs, network reliability and safety risk.	Upfront capital expenditure and costs associated in selecting and implementing new systems.
The risks associated with the withdrawal from market of the existing FSM solution can be managed efficiently.	On-going licensing costs associated with the new systems, and future upgrades and/or renewals.

Source: Powercor

4.3 Option 3: Deferred replacement

This option combines the 'revert to manual' option 1, and replacement option 2, by evaluating the deferral of replacement expenditure until the 2026-2031 regulatory period. Under option 3, we would defer replacement expenditure until 2027.

During the period of deferral, the costs of the 'revert to manual' option will be incurred in order to bridge the gap between the withdrawal of the current solution and the deferred deployment of the new implementation, and this is factored into the evaluation. An increase in change management costs would also be incurred as these processes later return to full automation.

Table 4 Advantage and disadvantages of option 3

Advantages	Disadvantages
Allows capital expenditure to be deferred	Costs associated with deteriorating operational, safety and reliability performance will be incurred over the period in which the replacement capital expenditure is deferred.
	Additional costs are incurred in reverting to manual processes and then subsequently returning to automated systems.

Source: Powercor

4.4 Evaluation of Options

The table below summarises the cost of each option over the 2021-2026 regulatory period and the net present value over a ten-year period.

Table 4 Summary of options (\$m, June 2021, direct costs)

Option	2021-2026 cost	2021-2031 NPV
1 Revert to manual— do not replace FSM solution	21.3	41.4
1 Scheduled replacement of FSM solution	16.4	17.7
2 Deferred replacement	21.3	46.5

Source: Powercor

5 Recommendation

We recommend Option 2 (scheduled replacement of the existing FSM solution) because it has the lowest present value cost of the three options considered. This option ensures we maintain our current level of operational performance, including retaining the cost efficiencies already realised in the current period, whilst also maintaining current levels of network reliability and safety.

Our original proposal included recurrent expenditure on our Enterprise Management System business case to refresh our existing FSM solution. The AER accepted our recurrent spend subject to a top down reduction of 22 per cent for CitiPower and 7 per cent for Powercor. We have netted the recurrent allowance off the total cost of replacing our FSM solution.

The table below summarises the capital expenditure required to deliver the recommended Option 2.

Table 5 Recommended option: expenditure profile (\$ million, 2021)

	2021/22	2022/23	2023/24	2024/25	2025/26	TOTAL
Replacement cost	2.2	10.9	3.2	-	-	16.4
Less recurrent costs allowed by AER	-0.7	-0.7	-1.0	-1.9	-	-4.3
Net replacement cost	1.5	10.2	2.2	-1.9	-	12.0

Source: Powercor

Note: Figures may not add due to rounding