

DIGITAL SYSTEMS INTEGRATION TO IMPROVE MAINTENANCE RESPONSE TIME AND KPI METRICS

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DIGITAL SYSTEMS INTEGRATION

Agenda

- An overview of the Confluence Water partnership
- Technology adopted to deliver services on the program
- **Email and SMS alerts** for field maintenance technicians
- **Maintenance MapApp Environment**
- Next steps and learnings

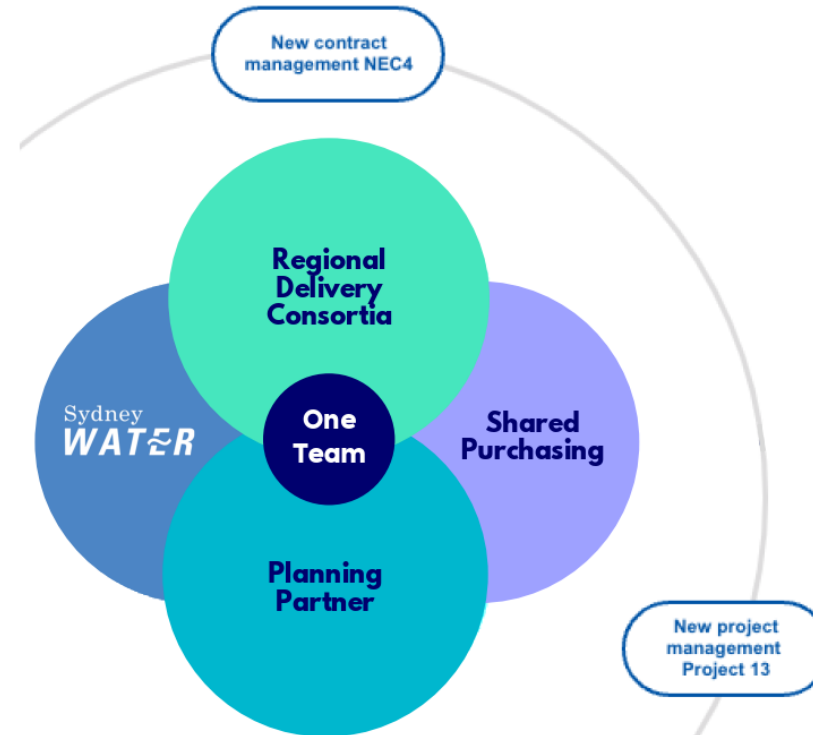
An overview of the Confluence Water partnership

An overview of the Confluence Water partnership

Introducing the Partnering for Success (P4S) delivery model

Sydney Water identified a need to undertake an enterprise-wide view of its supply chain and conceived and implemented the Partnering for Success (P4S) procurement model.

P4S was designed to help Sydney Water simplify procurement, optimise value throughout the supply chain and drive better outcomes for customers.



North
Delivery Team

The primary objectives of Partnering for Success (P4S)



Improve collaboration and integration across the value chain



Outcomes that customers value



Enhance management of lifecycle costs across all stages of asset lifecycles



Promote innovation for new and improved solutions



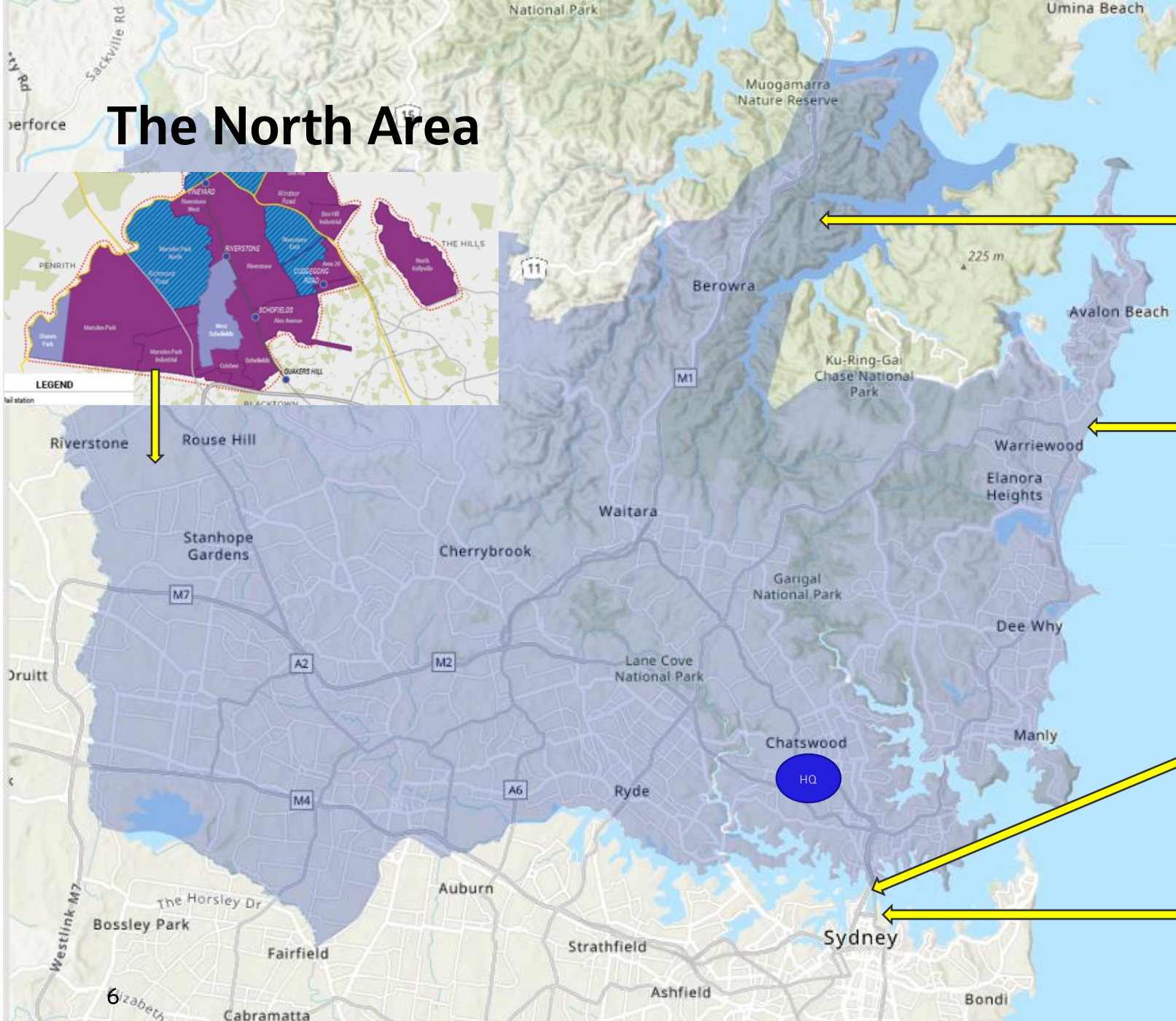
Effective management of safety



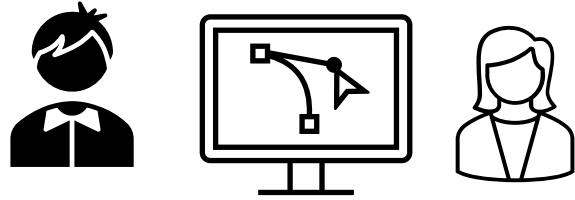
Develop flexible model providing long term stability and promoting partnerships



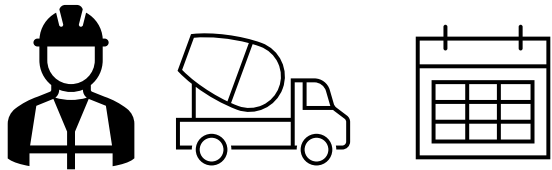
The North Area



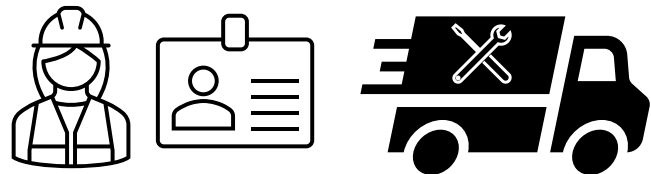
The primary services which Confluence Water provides



Design and Engineering



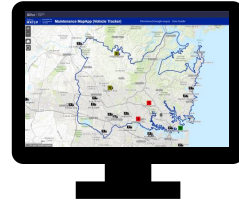
Project Delivery and Project Management (Networks, Treatment and Network Facilities)



Facilities and Operational Maintenance

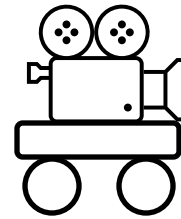
Our Journey

Go Live: July 2020. Approx. 70 Field Maintenance Technicians
GIS System Established
Maintenance System and Sydney Water Connectivity achieved
Echo Digital Forms Launched
"Better Ways" Innovation Program Established



Maintenance MapApp Launched for Maintenance Planners
Change in Vehicle IOT provider.
April 2022

In-house Camera Centraliser Trialled
August 2022



Contract Award:
December 2019 and Mobilisation:



SMS Automated Alert Trialled then implemented for High Priority Reactive Maintenance work Orders. July 2021:



Drones used for FM roof inspection.
March 2023



Technology adopted on the program

Technology adopted to deliver services on the program

We have a range of spatial and GIS (geographic information system) tools at our fingertips, to help us plan, present and track our work in the North region



MapApp

Our interactive viewing application with access to all of our GIS data layers

Launch



Community & Stakeholder Hub

Launch



Environment Hub

Launch



Maintenance Hub

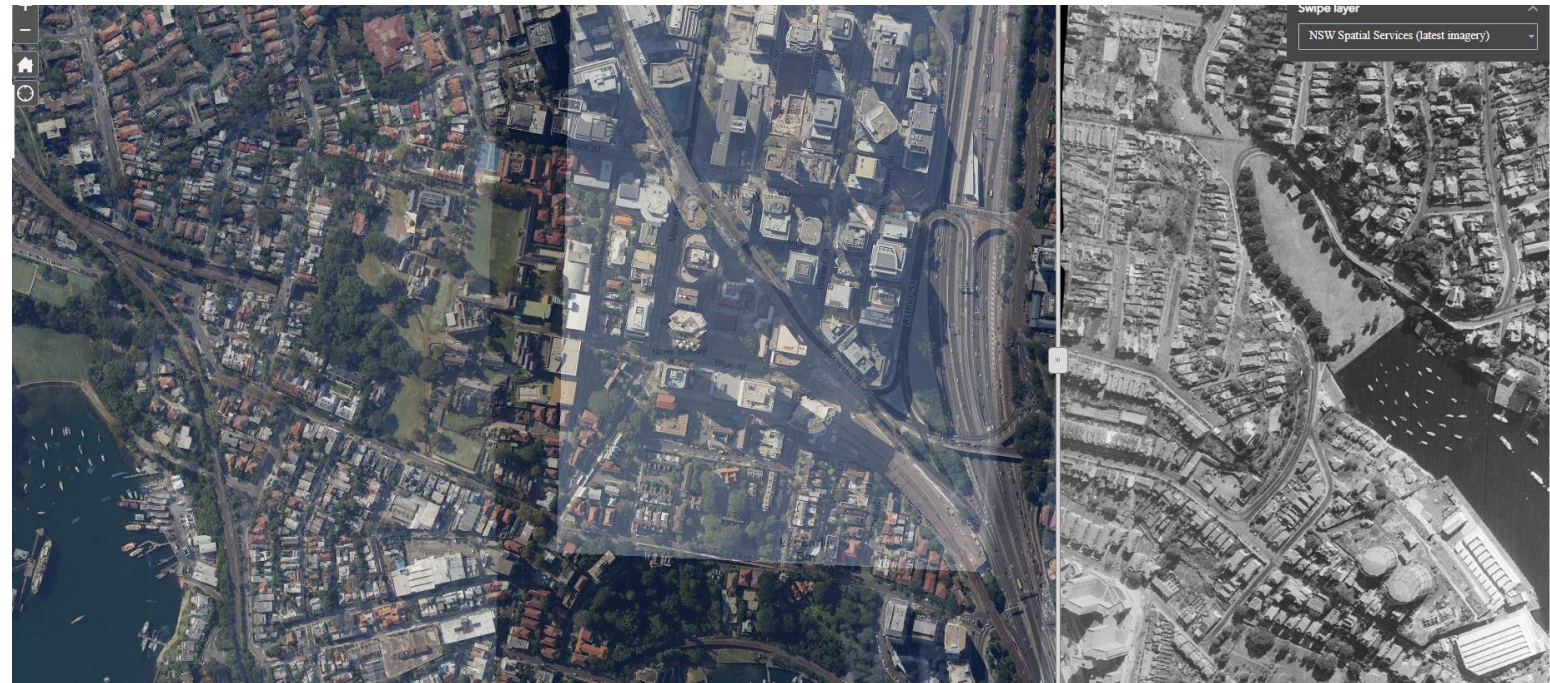
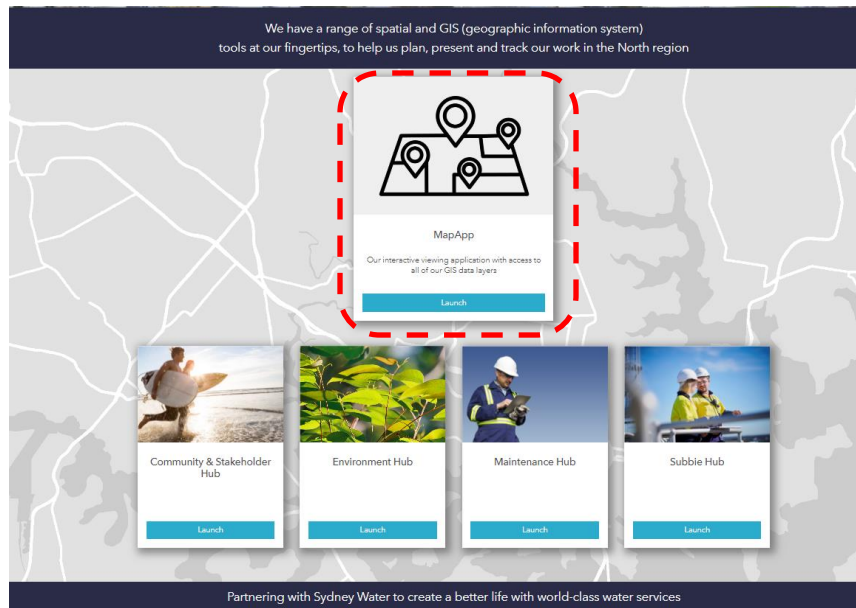
Launch



Subbie Hub

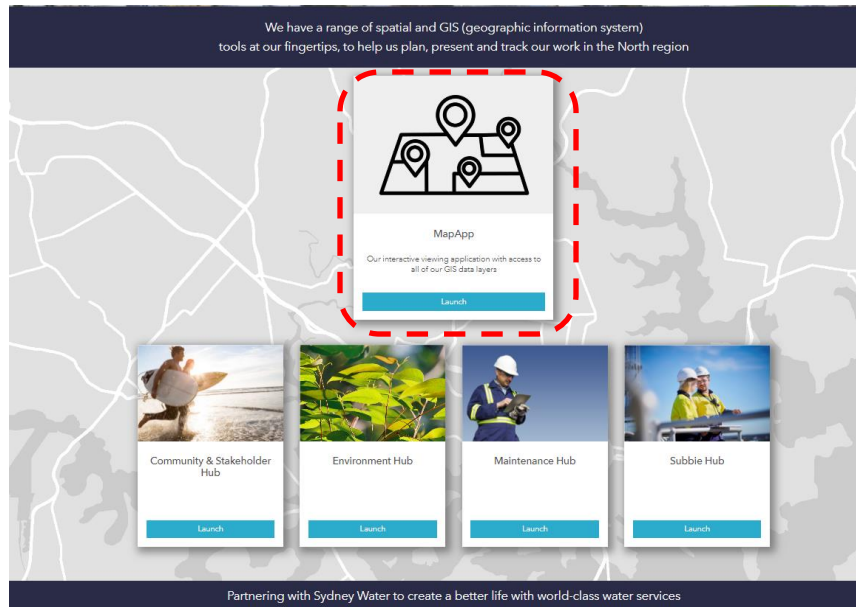
Launch

GIS Environment with legacy data sets and client data



GIS Environment with legacy data sets and client data

We have a range of spatial and GIS (geographic information system) tools at our fingertips, to help us plan, present and track our work in the North region



The screenshot shows a web-based GIS application interface. At the top, a dark blue banner contains the text: "We have a range of spatial and GIS (geographic information system) tools at our fingertips, to help us plan, present and track our work in the North region". Below this is a light gray map background. A central white card with a red dashed border features a map icon with location pins and the text "MapApp" and "Our interactive viewing application with access to all of our GIS data layers". Below this card are four smaller white cards, each with a "Launch" button: "Community & Stakeholder Hub" (with a person carrying a surfboard), "Environment Hub" (with green leaves), "Maintenance Hub" (with a worker in a hard hat), and "Subbie Hub" (with two workers in high-visibility gear). At the bottom, a dark blue banner reads: "Partnering with Sydney Water to create a better life with world-class water services".

MapApp
Our interactive viewing application with access to all of our GIS data layers
Launch

Community & Stakeholder Hub
Launch

Environment Hub
Launch

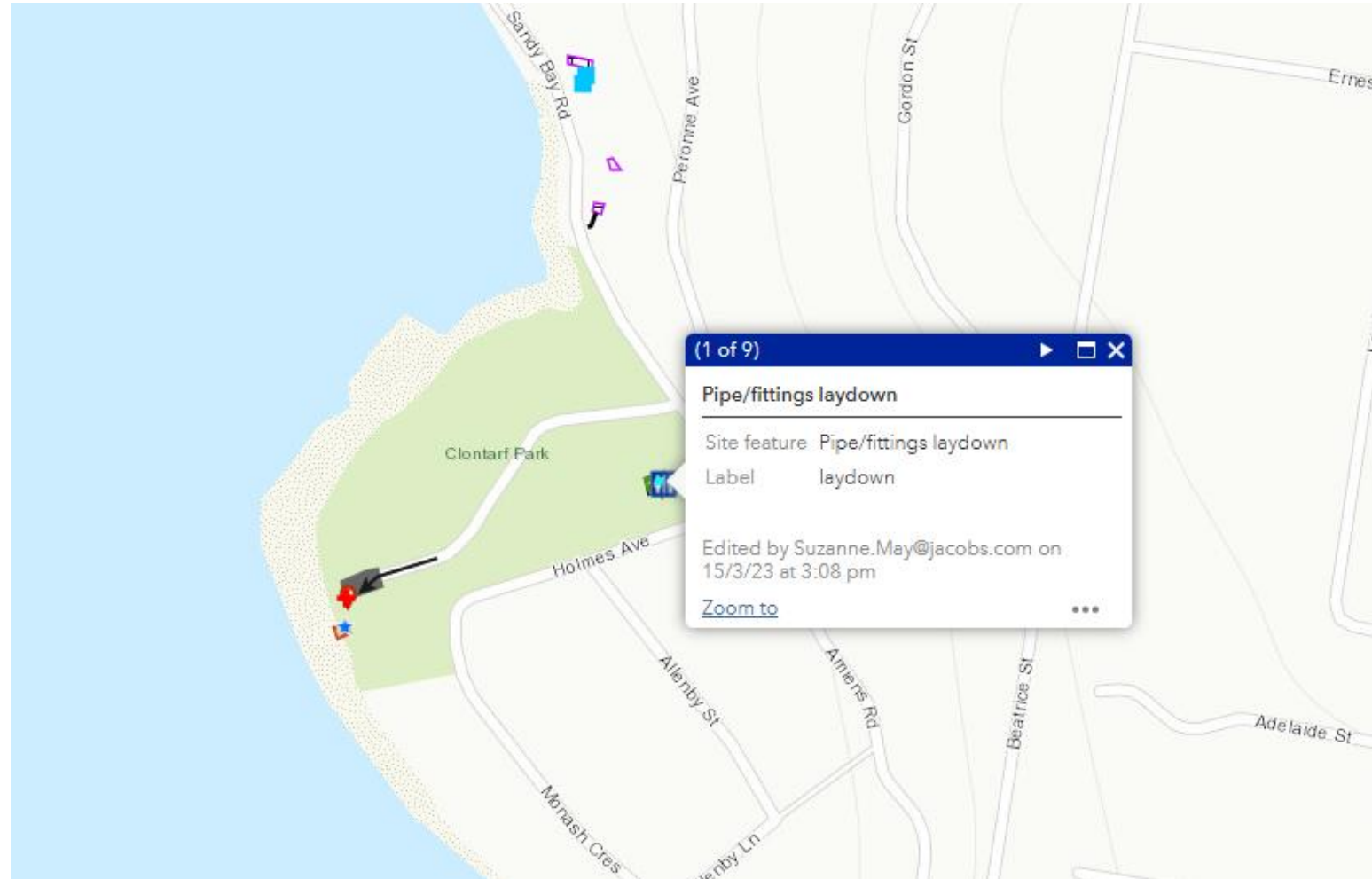
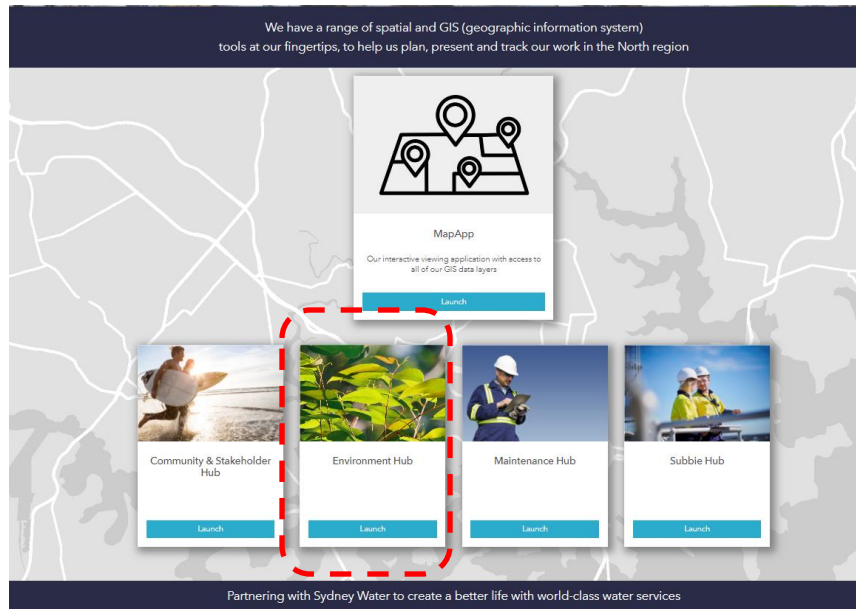
Maintenance Hub
Launch

Subbie Hub
Launch

Partnering with Sydney Water to create a better life with world-class water services

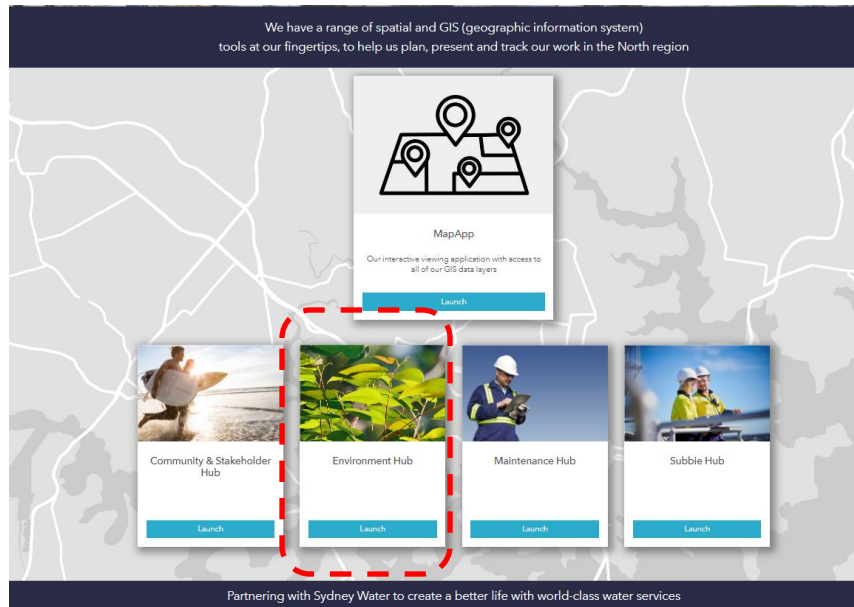


GIS Environment MapApp with enviro data sets and project data



GIS Environment MapApp with enviro data sets and project data

We have a range of spatial and GIS (geographic information system) tools at our fingertips, to help us plan, present and track our work in the North region



MapApp
Our interactive viewing application with access to all of our GIS data layers
[Launch](#)

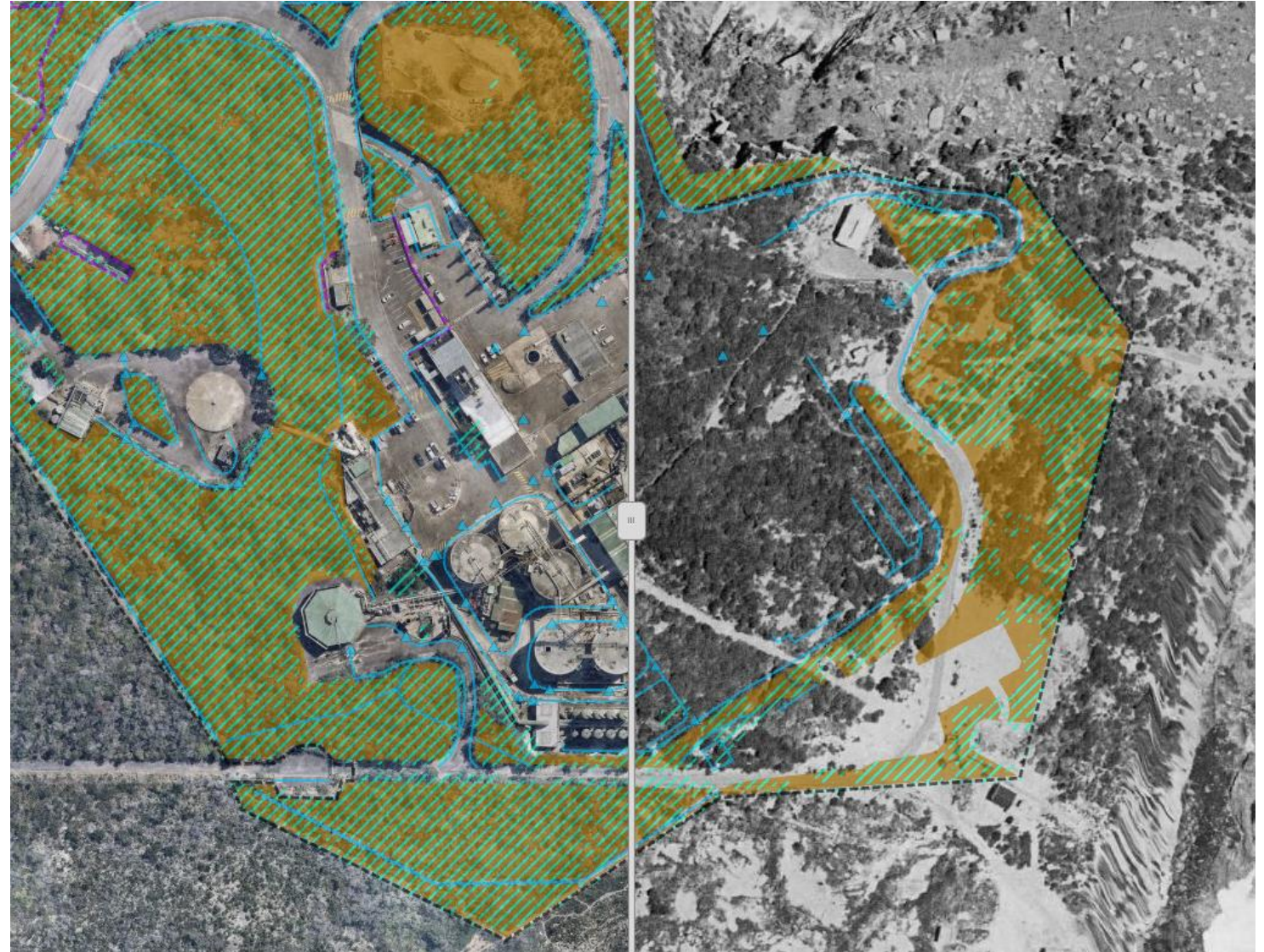
Community & Stakeholder Hub
[Launch](#)

Environment Hub
[Launch](#)

Maintenance Hub
[Launch](#)

Subbie Hub
[Launch](#)

Partnering with Sydney Water to create a better life with world-class water services



GIS Community and Stakeholder MapApp to aid stakeholder consultation and planning

We have a range of spatial and GIS (geographic information system) tools at our fingertips, to help us plan, present and track our work in the North region

MapApp
Our interactive viewing application with access to all of our GIS data layers

Launch

Community & Stakeholder Hub

Launch

Environment Hub

Launch

Maintenance Hub

Launch

Subbie Hub

Launch

Partnering with Sydney Water to create a better life with world-class water services

Site recon complete

74.9%

Active contact

259
customers

Powered by Esri

Access approved

94
private properties

Work complete

100%

Customer contact status

N/A	41
Not made contact with yet	7
Passive	3
Active (phone or email)	6
Active (meeting held)	60
Active	12
Null	332

Property access status

N/A	40
Access confirmed	98
Permission pending	323

Status of work

Recon (complete)	100
Recon (in progress)	160
Recon (not started)	0
Null	0

Location of asset

Nature Strip	10
Private Front yard	20
Road	10
National Park	10
Null	700
Foot Path	10
Private Back yard	10
Other	10
Park / Reserve	10

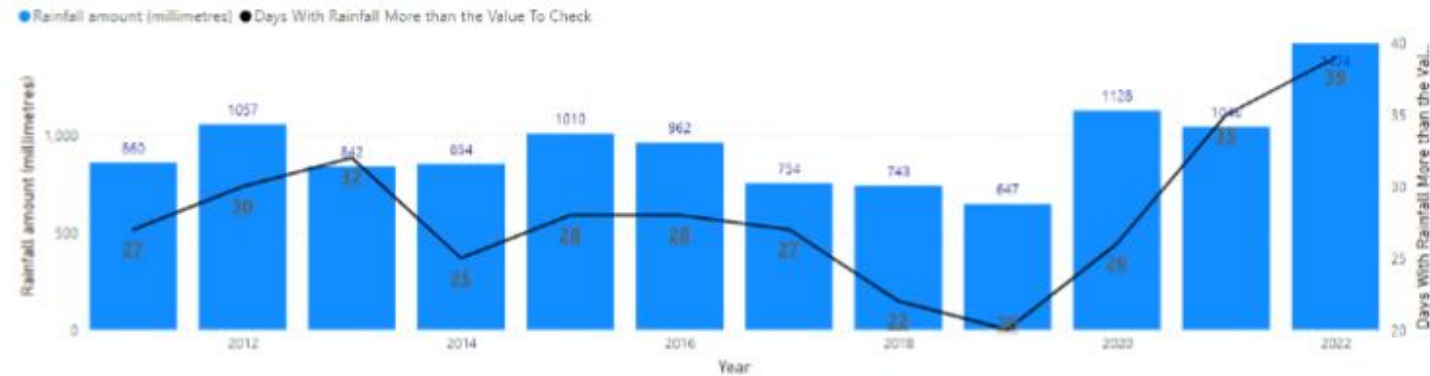
- North West Metro (RW DW WW) ...
- NWGA Package 4a Bundle 1 ...
- NWGA Package 4a Bundle 2 ...
- Mirvec Willoughby ...
- Epping to St Leonards (ESL 6 Projects) ...

Rainfall data dashboards for planners and estimators

- Location
- Belrose
 - Castle Cove
 - Collaroy
 - Mona Vale Golf Club
 - North Rocks
 - North Ryde Golf Club
 - Palm Beach
 - Parramatta North
 - Richmond
 - Seven Hills
 - St Ives
 - Sydney Olympic Park
 - Wahroonga



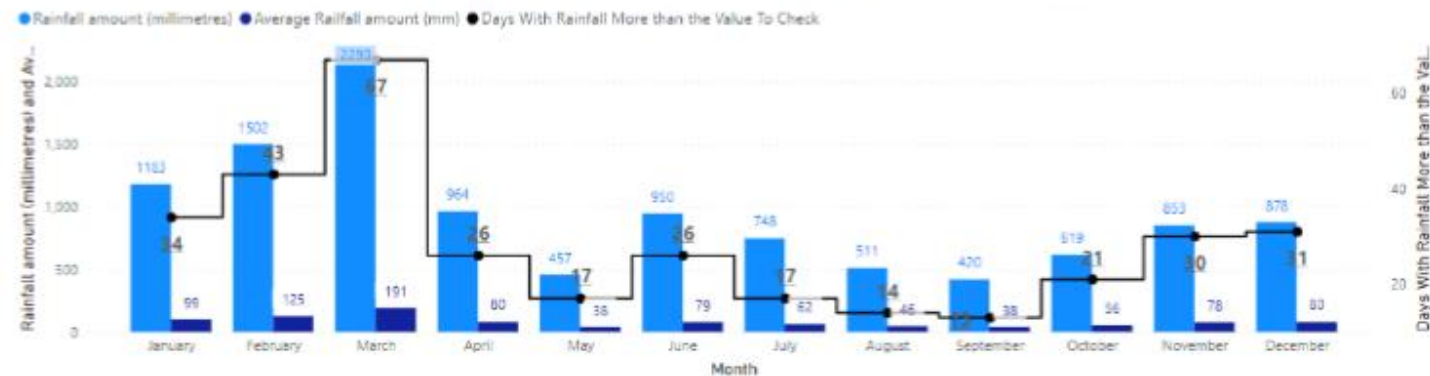
Rainfall amount (millimetres) and Days With Rainfall More than the Value To Check by Year



rainfall to check

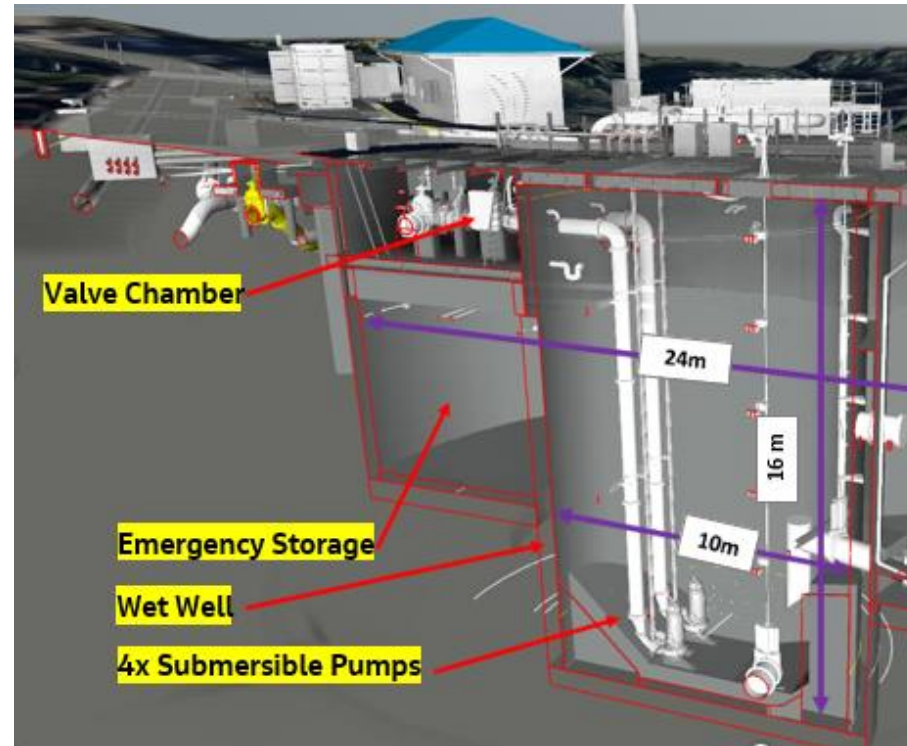
Year

Rainfall amount (millimetres), Average Rainfall amount (mm) and Days With Rainfall More than the Value To Check by Month



Digital Delivery for Design

Digital Developments: Digital Delivery (BIM) adopted for treatment and network facilities green and brownfield projects.

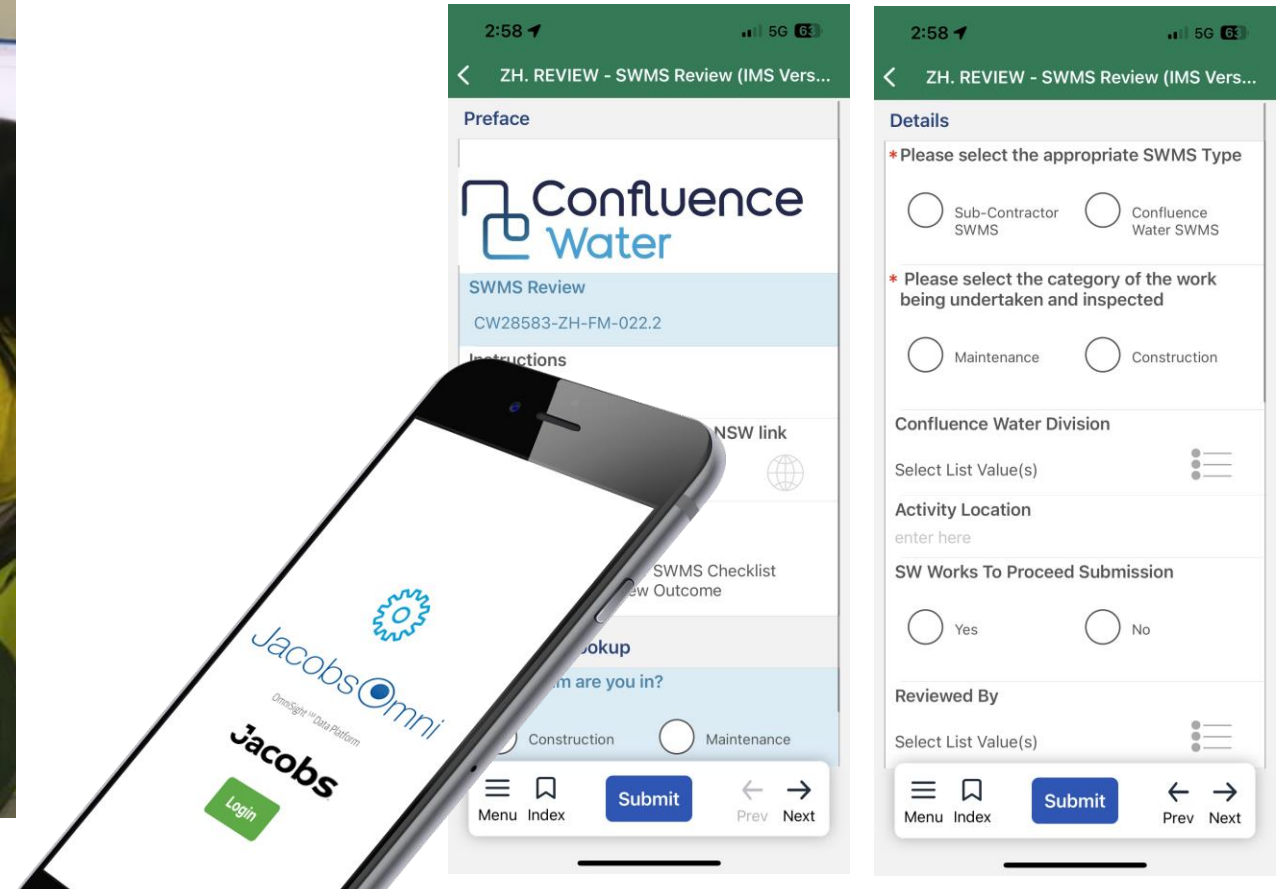


Digital Forms and Mobility

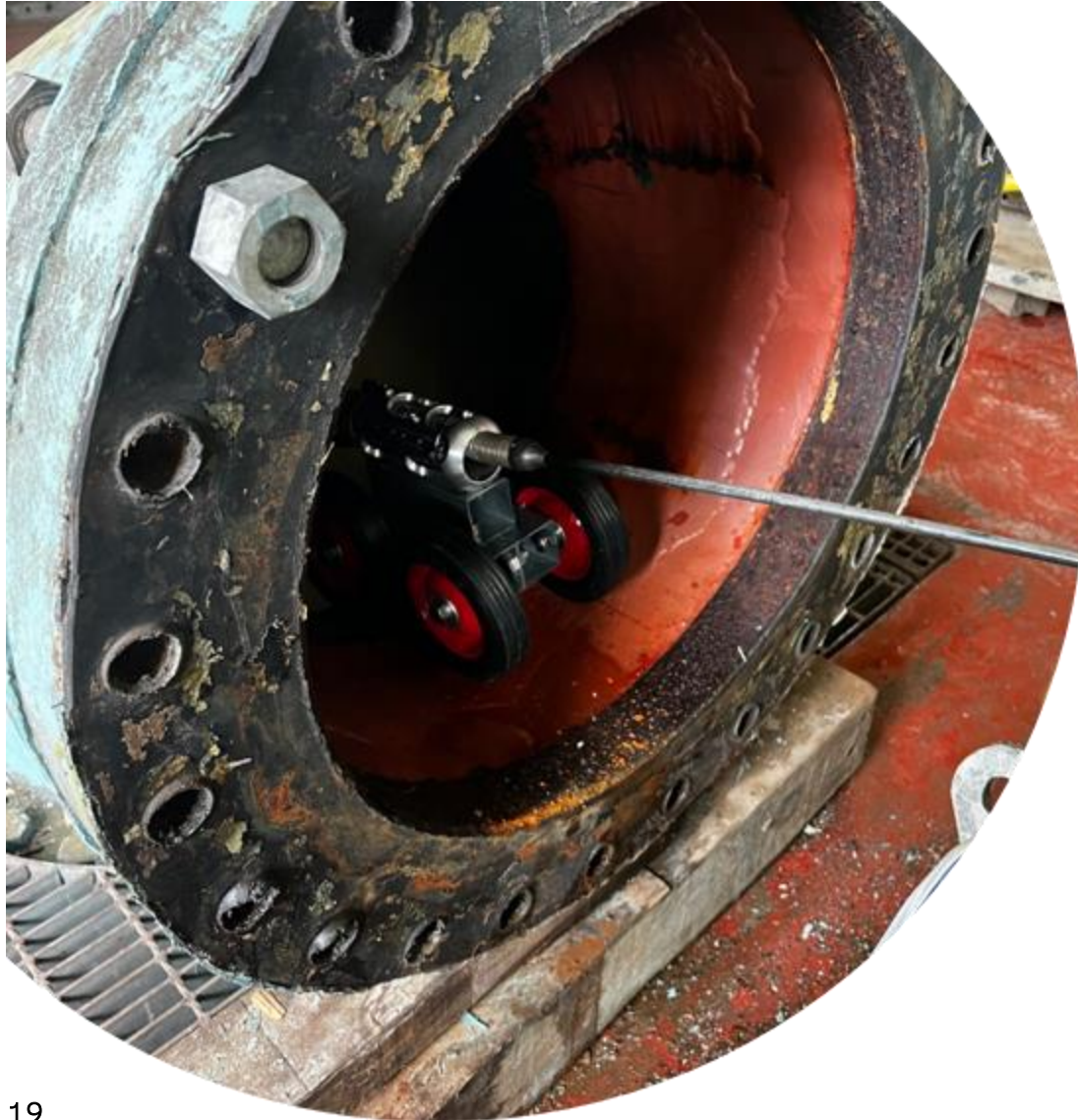
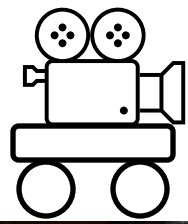
Training given to site teams to access 3D model files



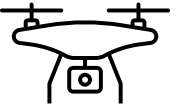
Jacobs Echo Digital Forms have been used since the outset of the contract for safety inspection, SWMS review and various permits



Camera Centraliser



Drone image capture and photogrammetry models



SMS and Email Alerts for Maintenance Technicians

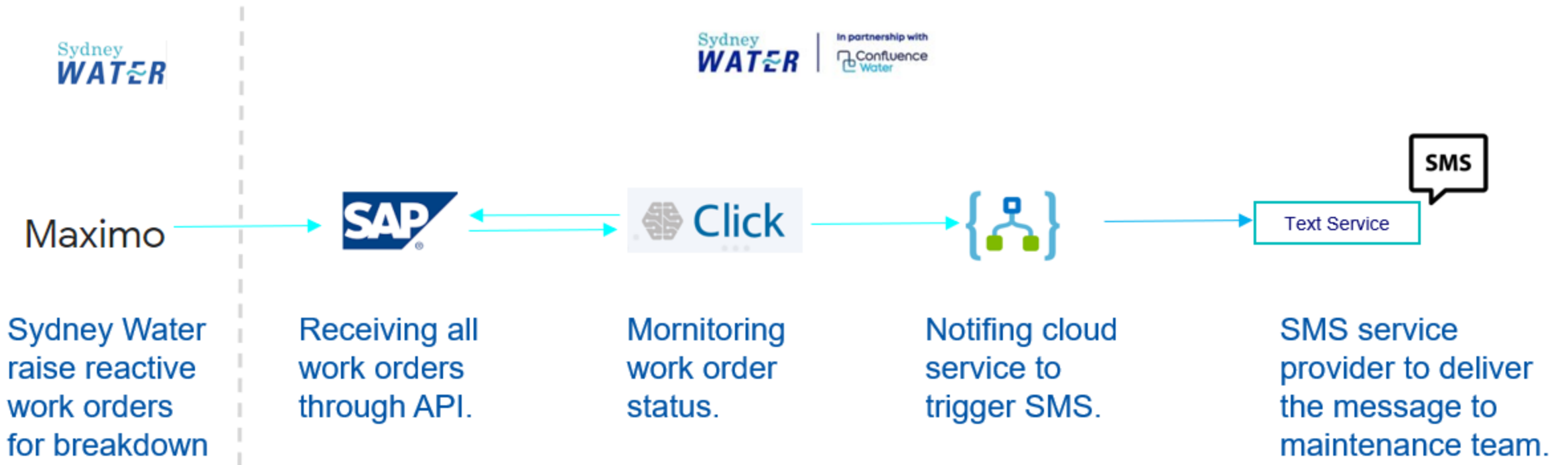
Maintenance SMS Alert: Design Considerations

- We need to raise awareness of high priority work-orders to Technicians and Managers to improve KPI performance
- SMS alert needs to be sent automatically in a timely manner.
- Solution needs to work 24/7, like our crews
- Solution needs to be easily configurable
- Need to transmit key data from the existing Work-order system within the SMS

TABLE 12: TASK ORDER RESPONSE TIMES

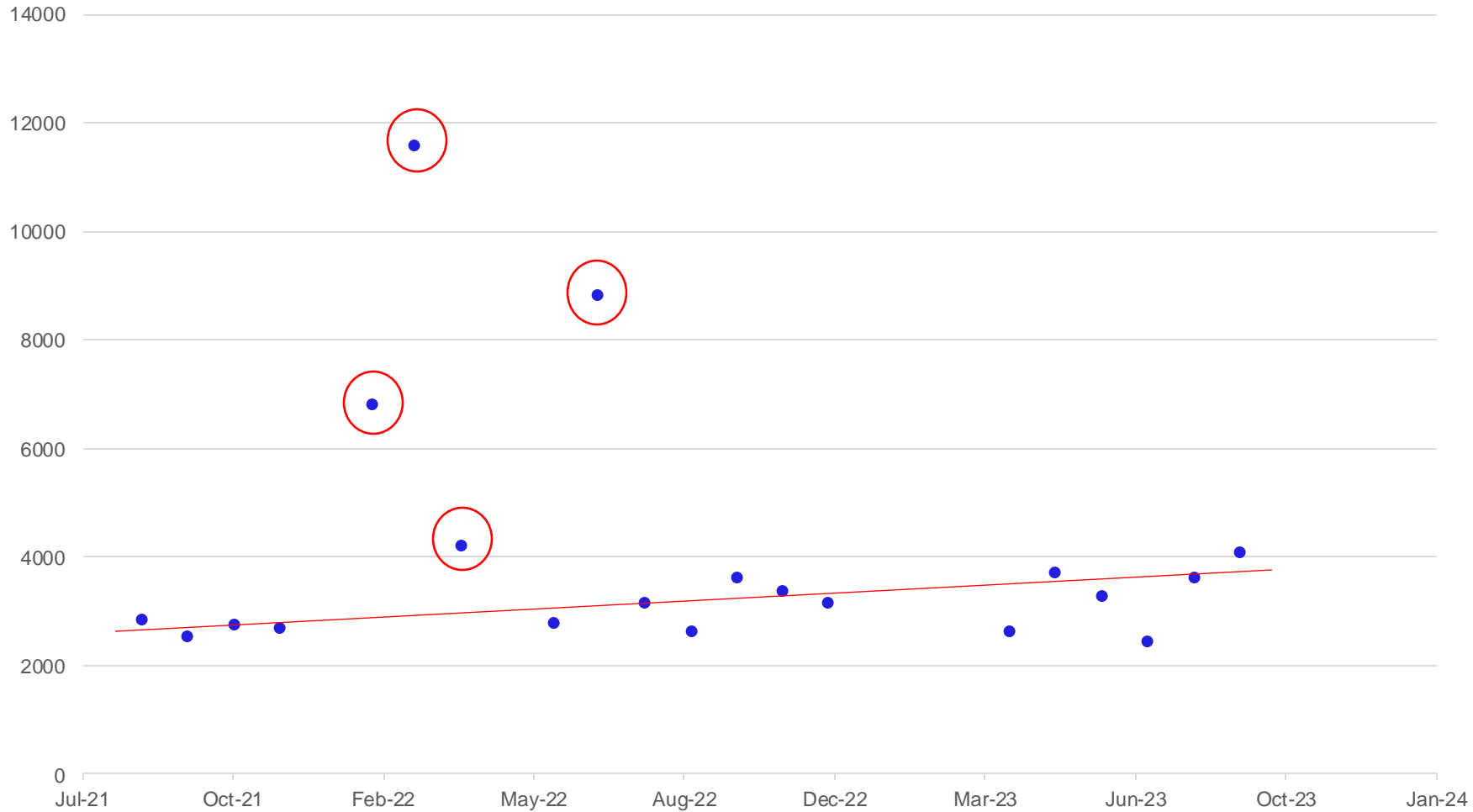
Priority	Task Order Created	Confluence Water Response Time ¹
Breakdown Works		
Urgent Maintenance	Retrospectively	1 business day for Confluence Water to request a Task Order
Priority 6	Prior to Commencement	Maximum 1 hour
Priority 5	Prior to Commencement	Maximum 3 hours
Priority 4	Prior to Commencement	Maximum 24 hours
Priority 3	Prior to Commencement	Next working day (Monday after a weekend)

Information flow process



Automated Text Alerts Sent by Month

Text Message Alerts sent by Month



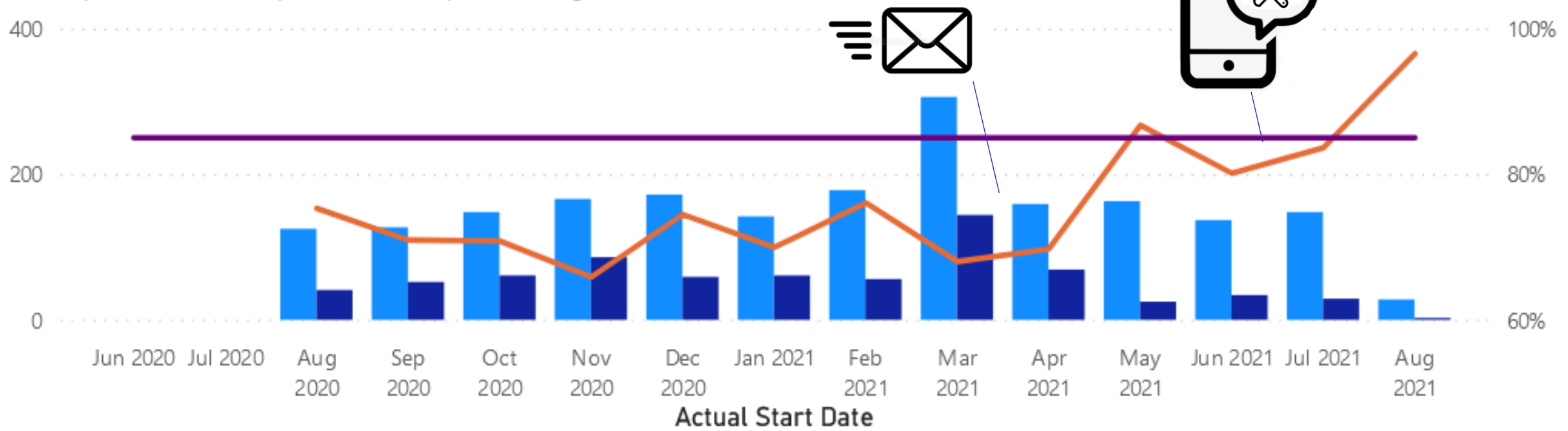
Email and SMS alerts for field maintenance technicians

Sunday 1:35 pm

A new P6 Work Order
 SAP No.: [000116432867](#)
 Maximo No.: [84294430](#)
 Location: , Palm Beach
 Area: AU-CON-SP0529
 Start Time: 08/08/2021 13:32
 Respond By Time: 1 Hour(s)
 Description: SP0529: VACUUM TEST LINES AVAILABLE

% Compliant by Month Priority 3, 4, 5, 6

● Compliant
 ● Non Compliant
 ● % Compliant
 ● Target 85%



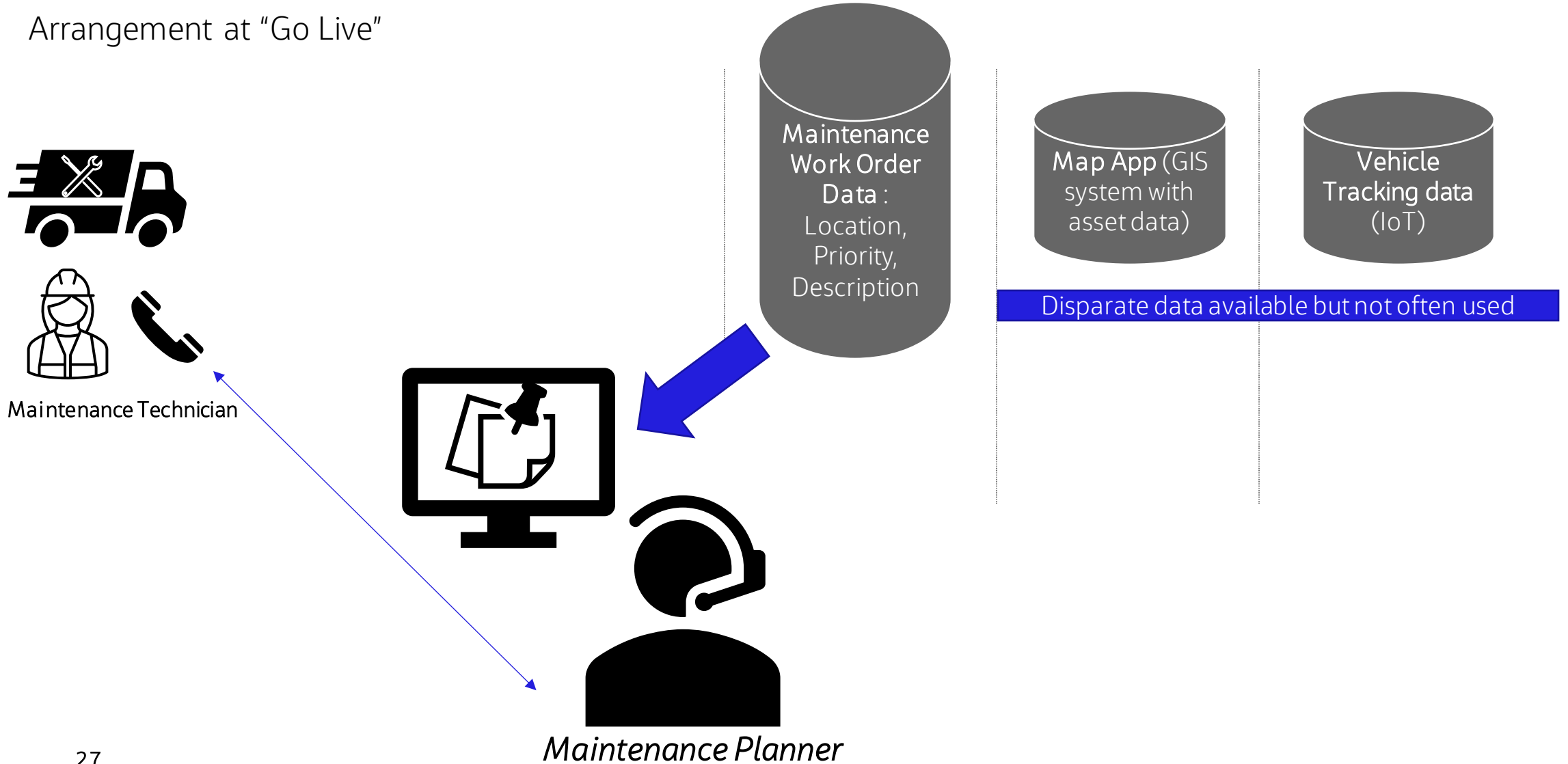
Maintenance MapApp

Maintenance MapApp: Design Considerations

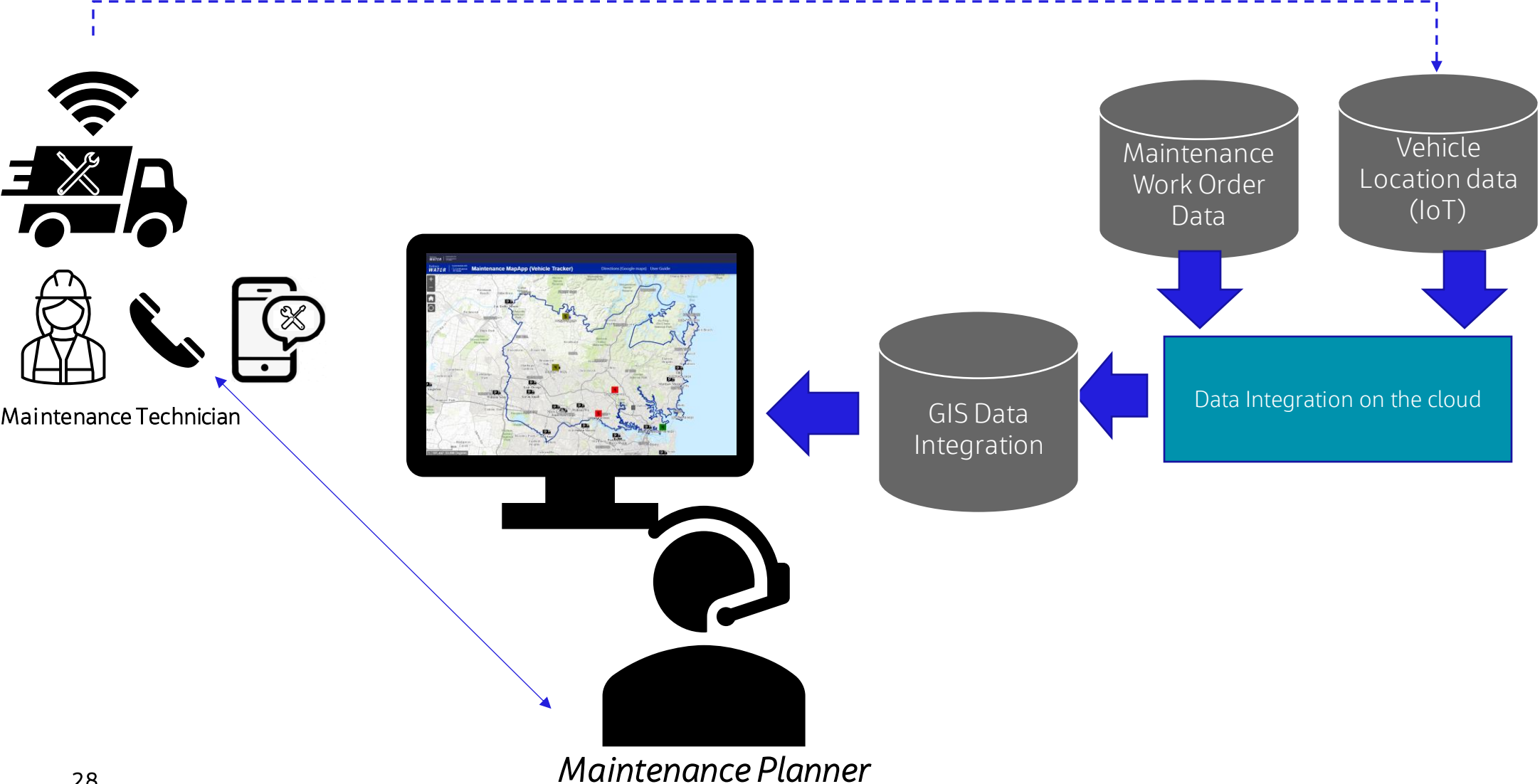
- **Security** and access control to the system: **Designed only for Maintenance Planners**
- **Ease of use** – it needs to be intuitive and easy to use for non-IT experts
- **Leverage of existing, class leading and mature systems, such as the GIS system built on ESRI**
- Use of **API** connections to arrange disparate data in a single screen
- **Frequency of Update - Near-Real-Time** vehicle location sharing. Essential due to the speed of response required for high priority work-orders
- Needs to be **mobile enabled** to work in case of a Business Continuity event (loss of office) and enable remote working.
- Solution needs to be robust and only require **minimal updates** once deployed

Maintenance Planner App Environment

Arrangement at "Go Live"



Maintenance Planner App Environment



Maintenance Planner App Environment

WATER Confluence Water Maintenance MapApp (Vehicle Tracker) Directions (Google maps) User Guide

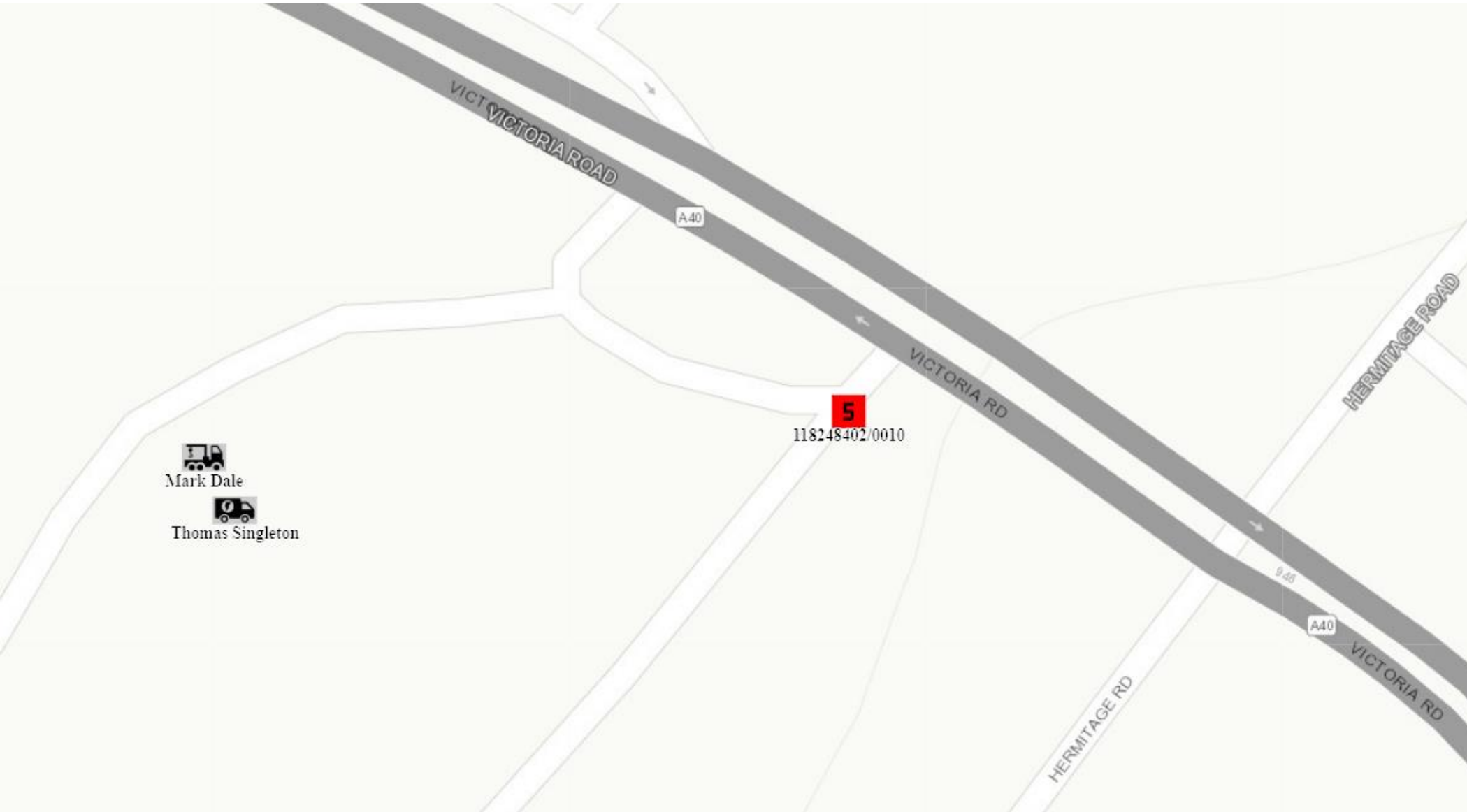
The screenshot displays the Maintenance Planner App Environment, which is a web-based interface for managing maintenance tasks. The main component is a map of Sydney, Australia, showing various suburbs and their boundaries. The map is overlaid with a blue outline representing a specific maintenance area. Several maintenance locations are marked with icons of a truck and a person, each accompanied by a unique ID number. The locations are color-coded: some are in yellow boxes (e.g., 118253993/0020, 118252275/0020), some in red boxes (e.g., 118253984/0010, 118248402/0010), and some in green boxes (e.g., 118246706/0020). The map also shows major roads, parks, and water bodies. On the right side, there is a 'Layer List' panel with a search icon and a list of layers. The layers are: Base data (checked), Drone photos, Hazards and safety, Existing assets, Property, Grounds maintenance, Environmental, Nearmap (latest imagery) (checked), and NSW Spatial Services (latest imagery). The bottom left corner shows the coordinates 151.442 -33.898 Degrees.

Layer List

- Base data
- Drone photos
- Hazards and safety
- Existing assets
- Property
- Grounds maintenance
- Environmental
- Nearmap (latest imagery)
- NSW Spatial Services (latest imagery)

151.442 -33.898 Degrees

Maintenance Planner App Environment



User Interface

Vehicles Reactive WorkOrder

All Open Progress Completed




OperationCode	Priority	Status	Resource
	4	COMP	Firas Aleid
	4	COMP	James Nedeljkov
	4	REJT	Fadi Maroki
	4	PLND	NA
	5	COMP	Barry Welsh
	5	COMP	Maurice Roa
	6	COMP	Maurice Roa
	5	PLND	NA
	5	COMP	Nathan Baker
	5	COMP	James Gewargis

Technicians assigned to WOs

Vehicle tracker

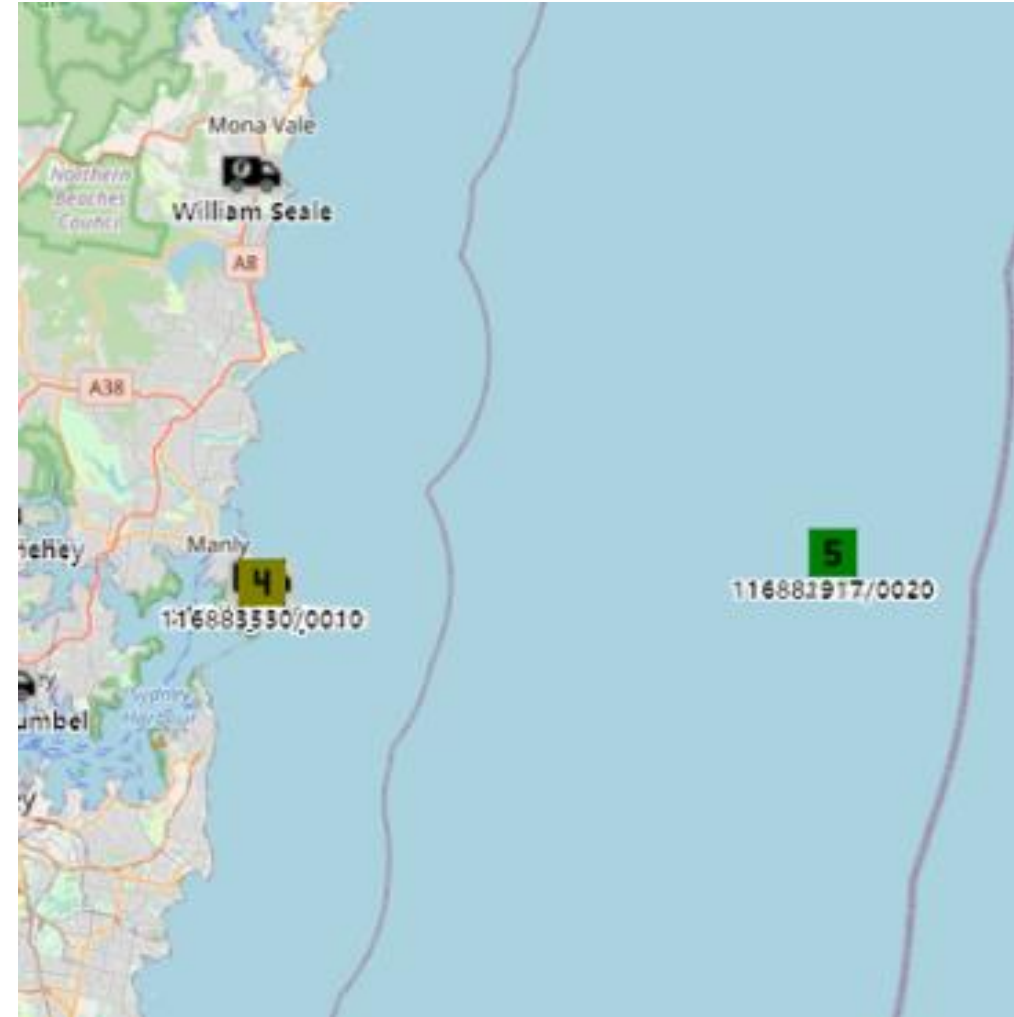
Confluence Water Maintenance Team
Live vehicle locations
Connected from Thu, 17/08/2023, 21:49:39
Vehicle Data Updated at Thu, 17/08/2023, 21:48:25

Vehicles Reactive WorkOrder

All   

Driver	Ignition	Vehicle Tag
Ashley Compson	OFF	
Barry Welsh	OFF	
Blake Rumbel	OFF	
Chris Butler	OFF	
Colby Moore	OFF	
David Stewart	OFF	
Edward Docherty	OFF	
Fadi Maroki	OFF	
Gary Leuthwaite	OFF	

Vehicle type for each technician



WOs without co-ordinates placed in the ocean.

Lessons Learned and Next Steps

Lessons Learned

SMS Alert Integration:

- SMS is often seen more quickly by technicians compared to email.
- Need to update and maintain accurate records (onboarding/offboarding, org structure)

Vehicle Maintenance Tracker:

- Solution is used daily and has achieved the agreed objectives
- Additional Benefit: Provides the Maintenance Planners estimate and advise the customer (client) how far off a technician may be. I.e. far greater oversight than previous solutions
- Useful in inclement weather events where planners receive an influx of high priority jobs.
- Changes in system selection and API maturity changes system solution and extent of in-house development and processing required
- New process has facilitated more agile approaches to staff management and less dependency on old-style allocations of technicians to specific geography

33 Opportunity to extend data integration to include Technician credentials data to support planning.

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Challenging today.
Reinventing tomorrow.

