AUTODESK

aws Australian Water School

From Planning Models to Digital Twins

End-to-End Water Management Series – Part 2

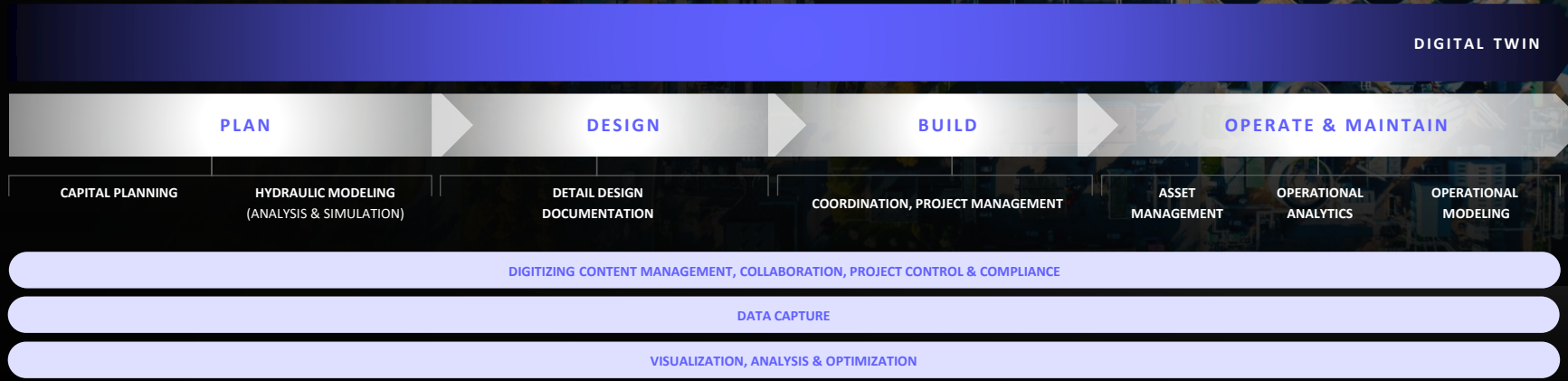
Water Infrastructure - APAC

Agenda

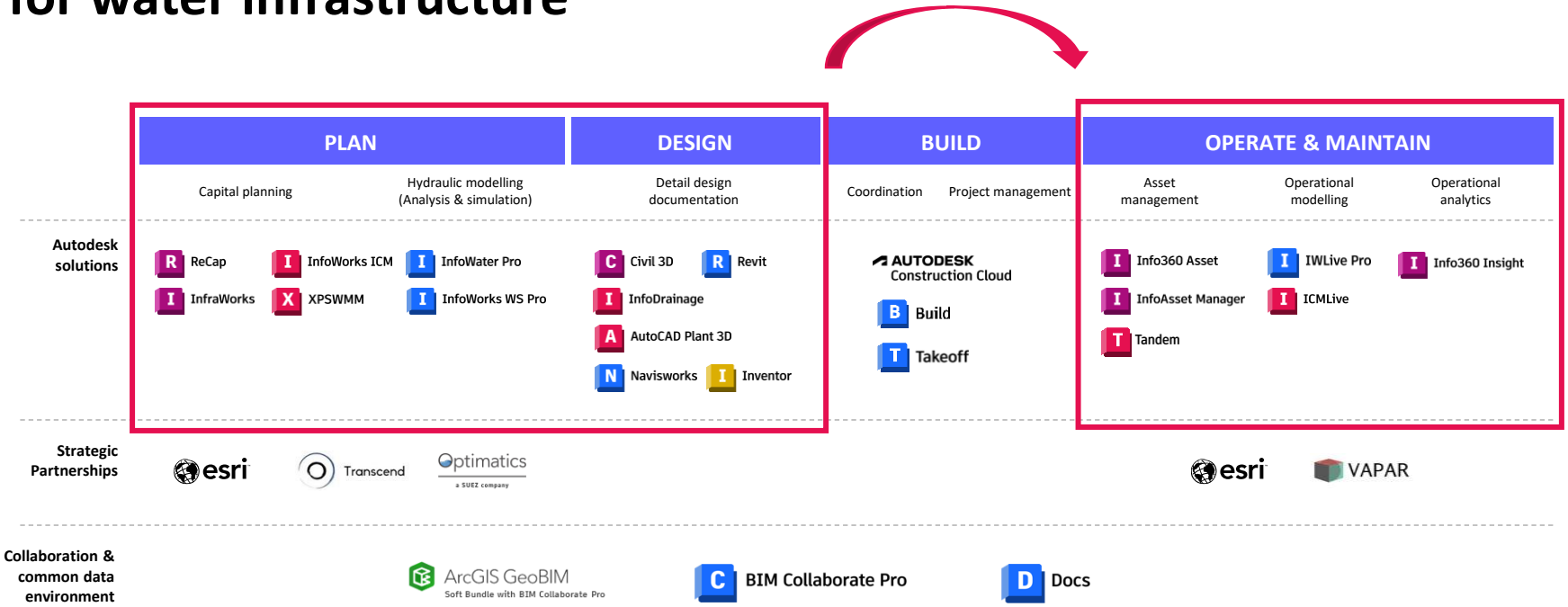
1. Autodesk Water Infrastructure - Recap
2. Digital Twin - Industry context
3. Operational Modelling – Physics Based
4. Operational Analytics – Data Driven
5. Questions

Our vision: End-to-end water asset management

Enable the water industry with the solutions needed to make the best decisions possible at every stage of a water asset's lifecycle

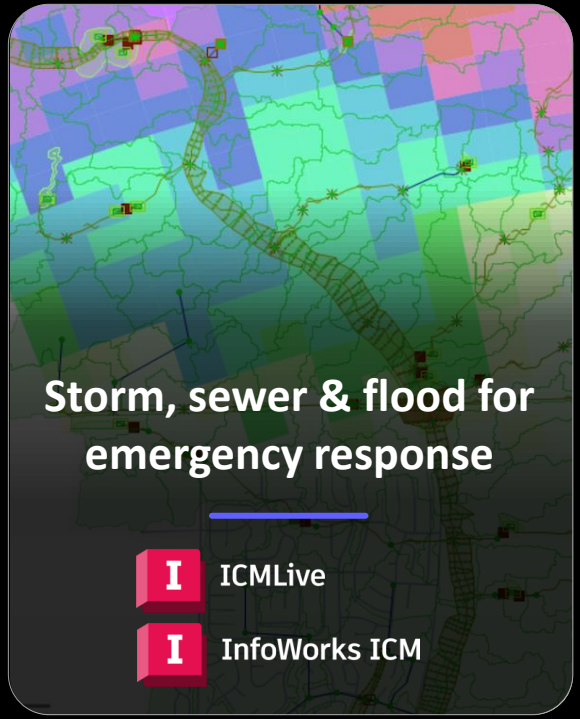


Our full ecosystem of solutions for water infrastructure



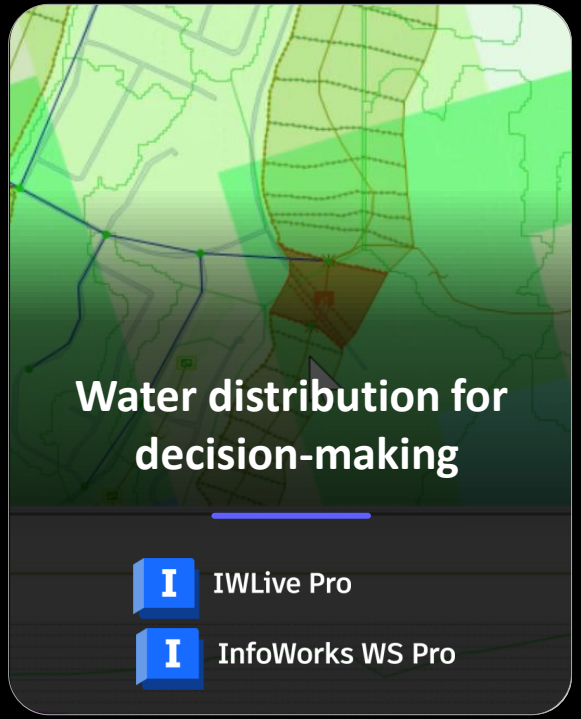
Operational Modelling and Analytics

Ensure resiliency against adverse storm and overflow events, reduce leaks, improve water quality, and deliver positive outcomes to your clients and communities.



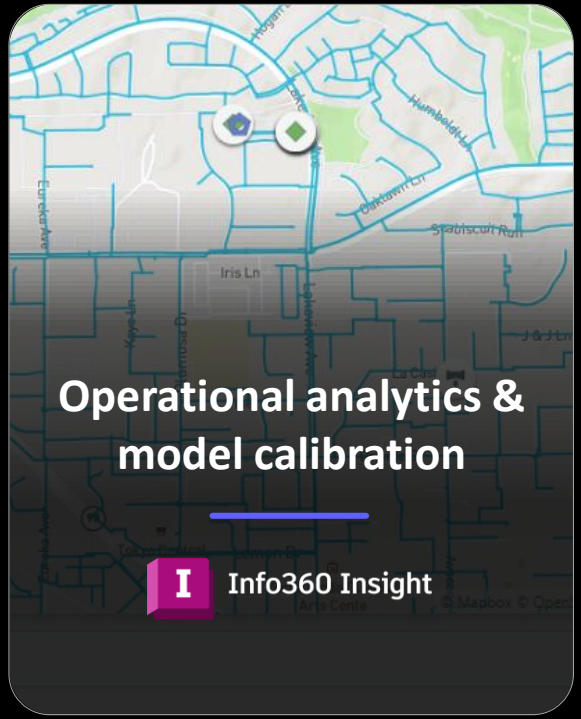
Storm, sewer & flood for emergency response

- ICMLive
- InfoWorks ICM



Water distribution for decision-making

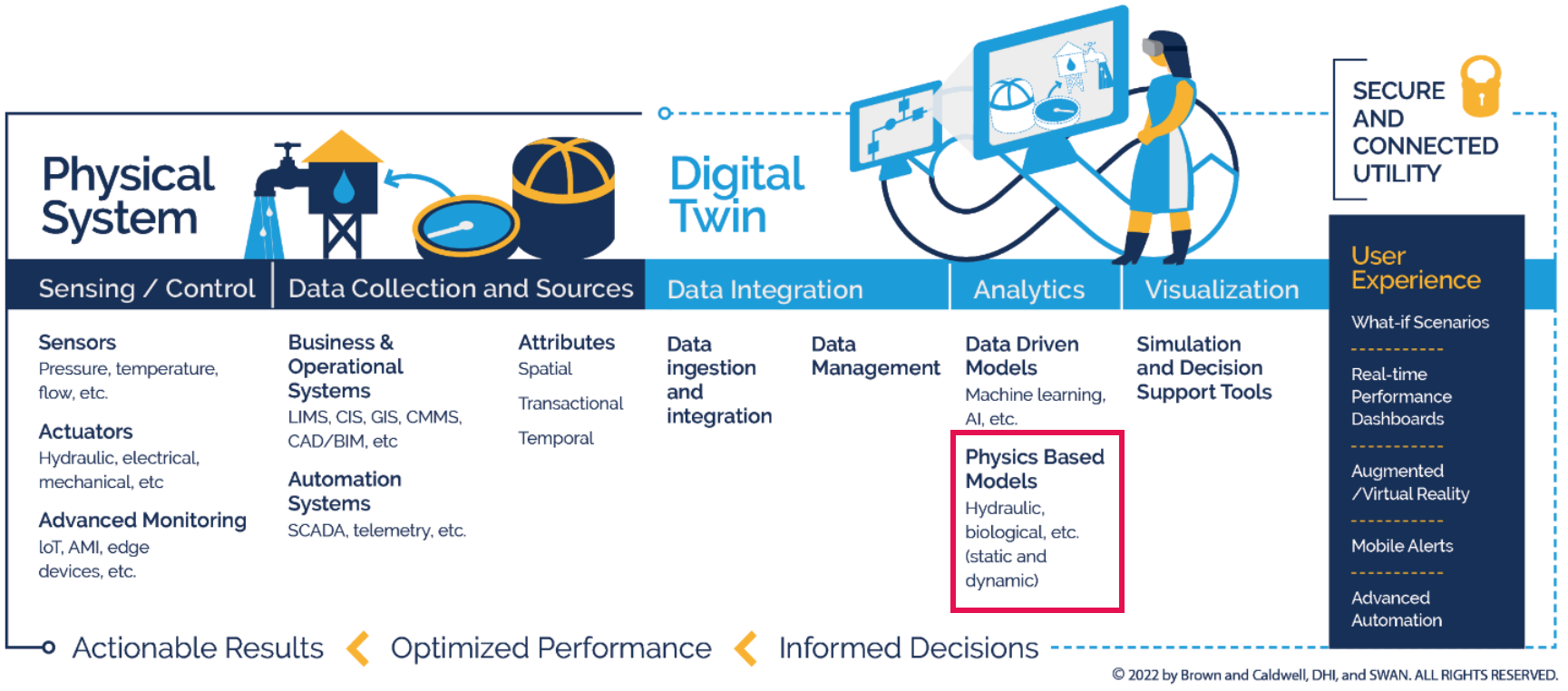
- IWLive Pro
- InfoWorks WS Pro



Operational analytics & model calibration

- Info360 Insight

SWAN Digital Twin Architecture



Connect Planning and Operations teams

InfoWorks ICM

InfoWorks WS Pro

ICMLive

IWLive Pro

What you can do with ICMLive

- Integrates hydraulic models, SCADA historians, and GIS data
- Automatically harvest and quality check data
- Provides automatic alerts for proactive actions
- Analyzes scenarios for optimal flood and overflow management
- Conducts real-time risk assessments
- Provides model calibration and prediction accuracy monitoring

Storm, sewer and flood live model configuration

Real-time data

- Rain gauges
- Radar
- Weather forecast
- Flow meters
- Telemetry
- Level data
- Pump status
- Sluice status
- Tide data

+more

Timeseries data

Live server

ICMLive

- Runs continuously
- Harvests & checks data
- Forecasts whole system

Simulation

Hydraulic model

InfoWorks ICM

Notification system

Email, HTML

Command center

- Emergency response
- Emergency preparedness
- Work order management
- System event reporting

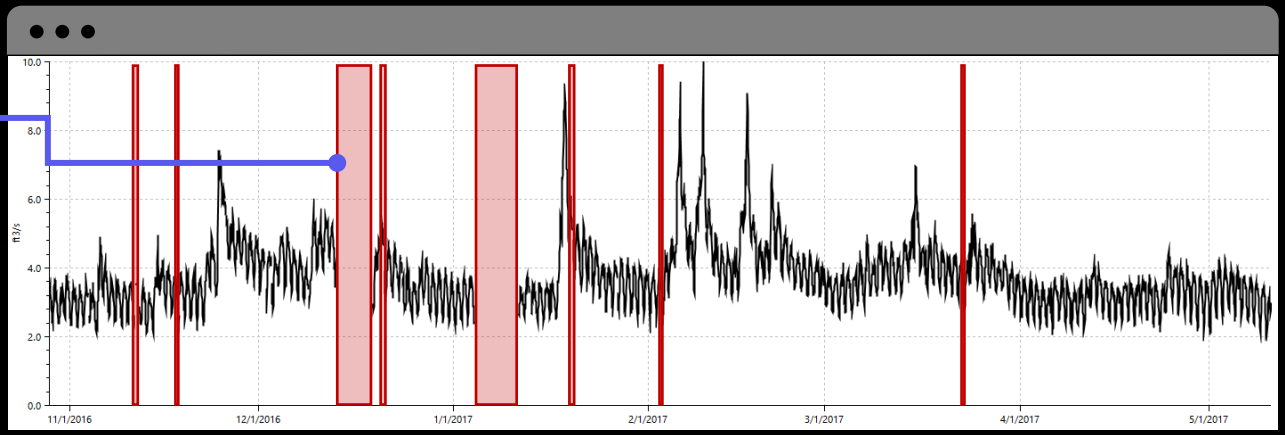
Timeseries data (TSD)

Efficiently store all raw data in the InfoWorks ICM database

Data is continuously recorded at specified intervals, creating a detailed record of system conditions over time

Report on anomalies, data gaps, and data conversions; Perform data smoothing

Understand past system behaviour and identify patterns or trends



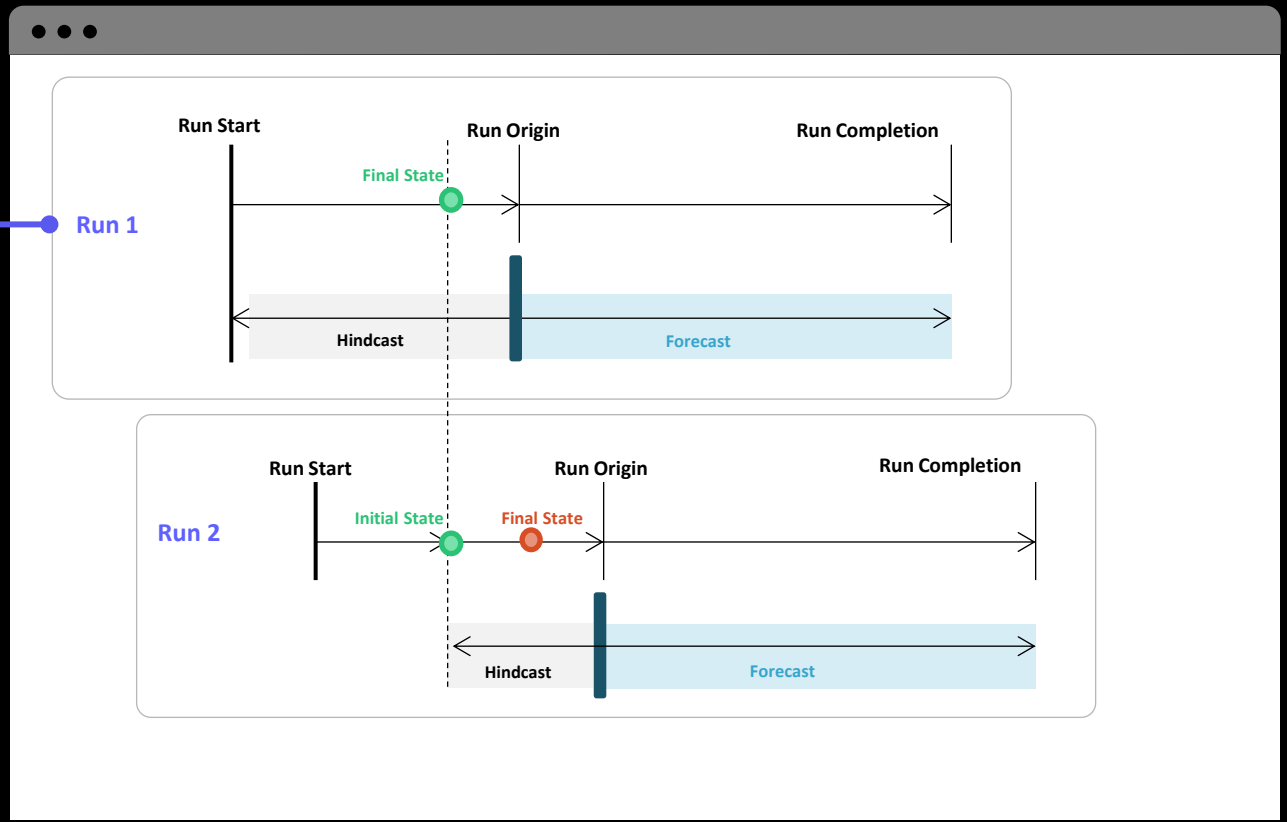
Successive simulation approach

Run multiple, consecutive model simulations to create a continuous and comprehensive forecast

Stitch together the results of individual model runs by using the output of one simulation as the input for the next

8,760 hourly simulations are equivalent to 1 year-long simulation

Ensure forecast data remains updated and accurate over extended periods



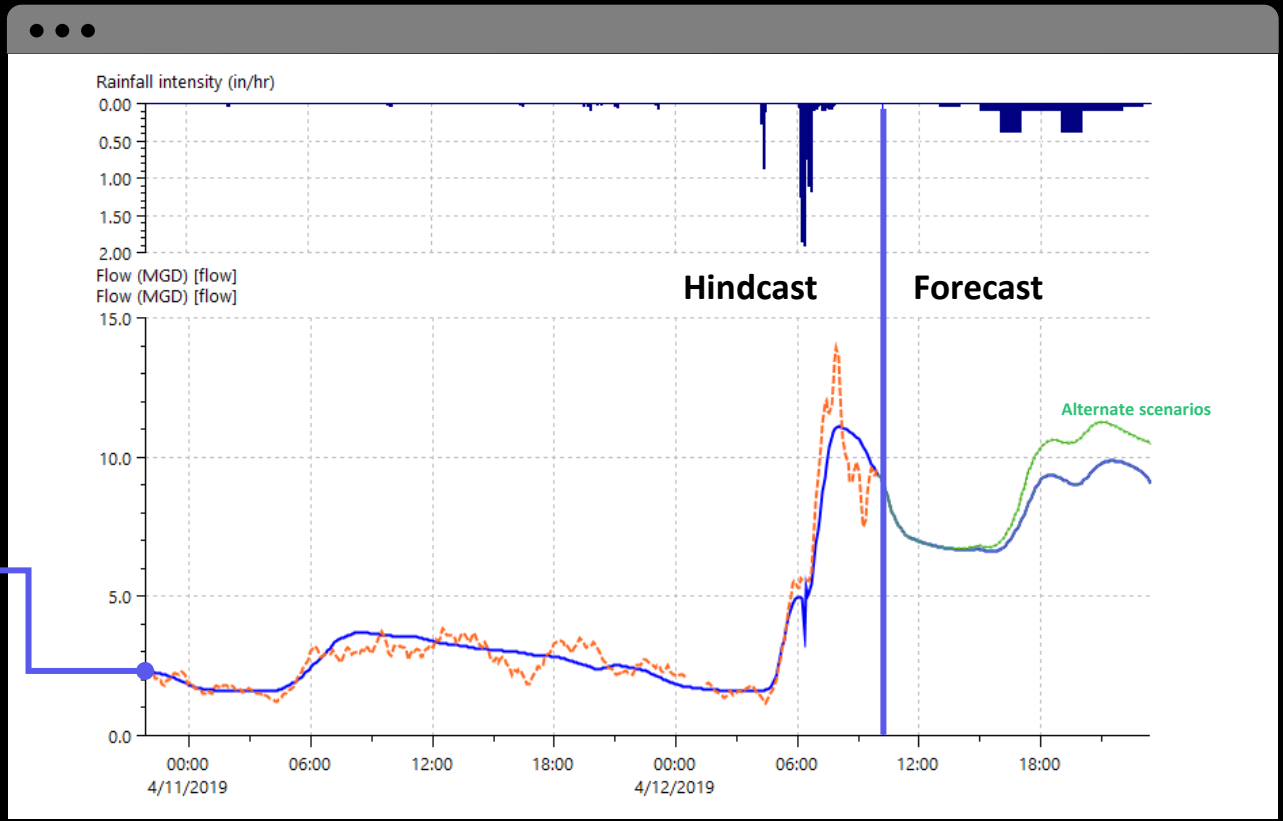
Real-time modelling

Keep your model up to date with automated sensor comparisons to the model

Integrate model with telemetry for high accuracy

Run simulations that predict future conditions, such as water levels, flow rates, and potential flood events

Use assimilation or auto-regressive corrections to improve forecast based on observations



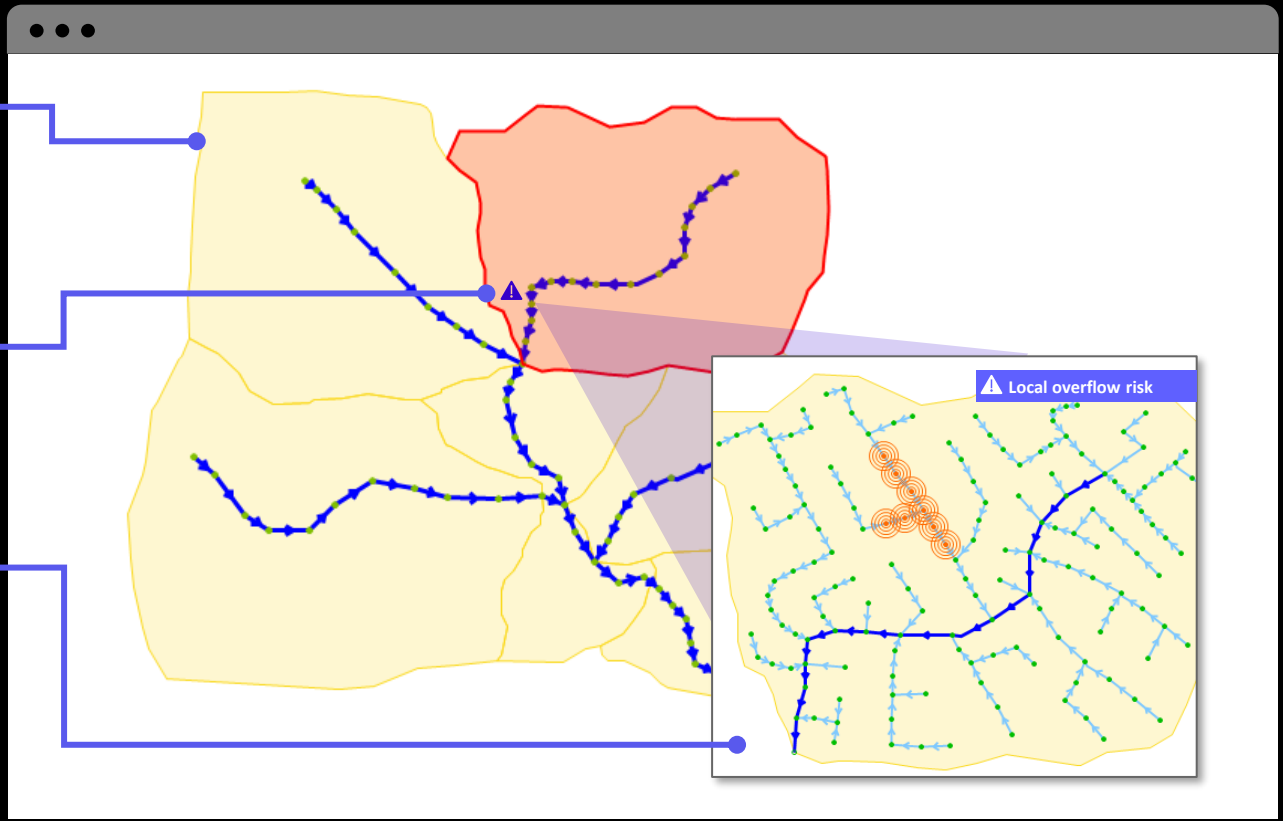
System-wide live modelling

Get a holistic view of catchment behaviour

Simplified system-wide model;

Alert detected in a catchment

Triggers smaller detailed simulation



Early warning and prediction system

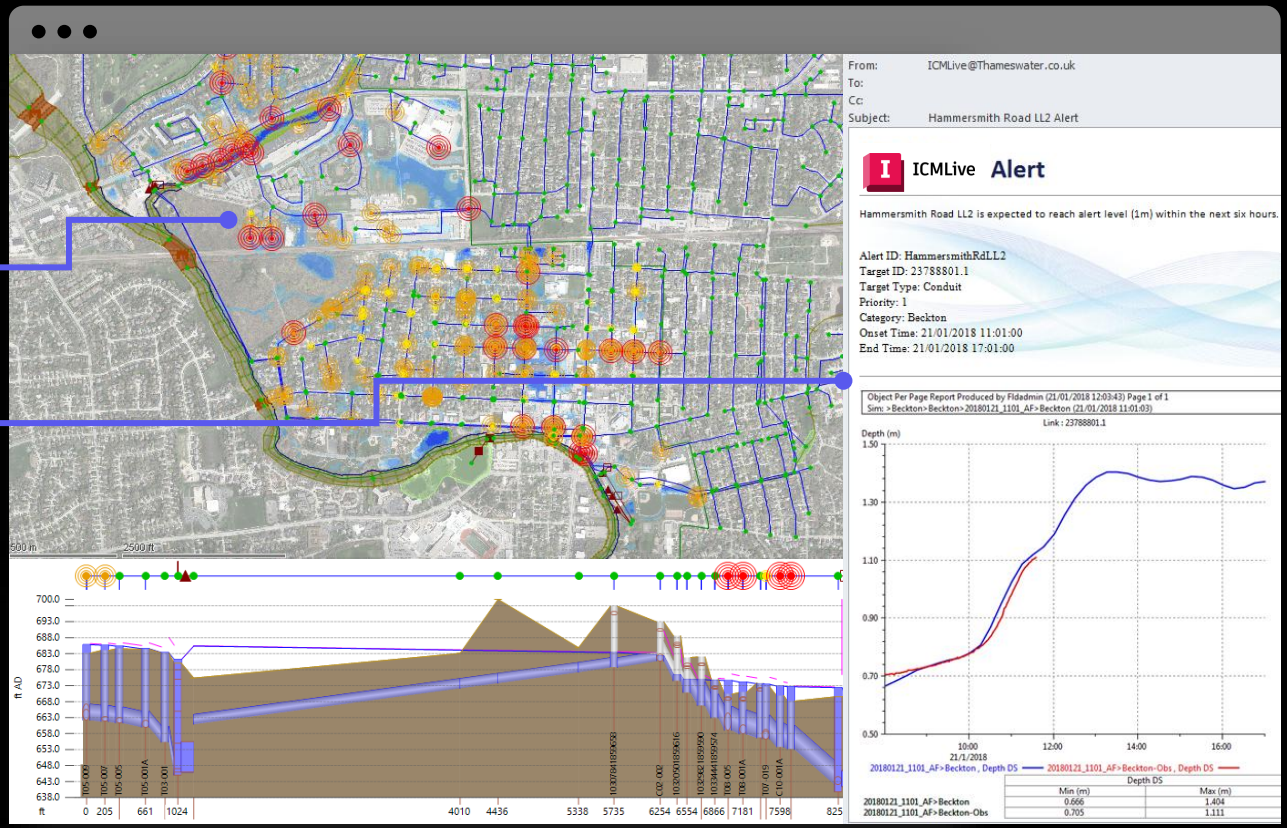
Keep customers safe and minimize disruptions

Configure alert logic with custom thresholds and durations

Use model to detect anomalies

Dispatch alert emails with corresponding graphs

Configure Alert Maps for export



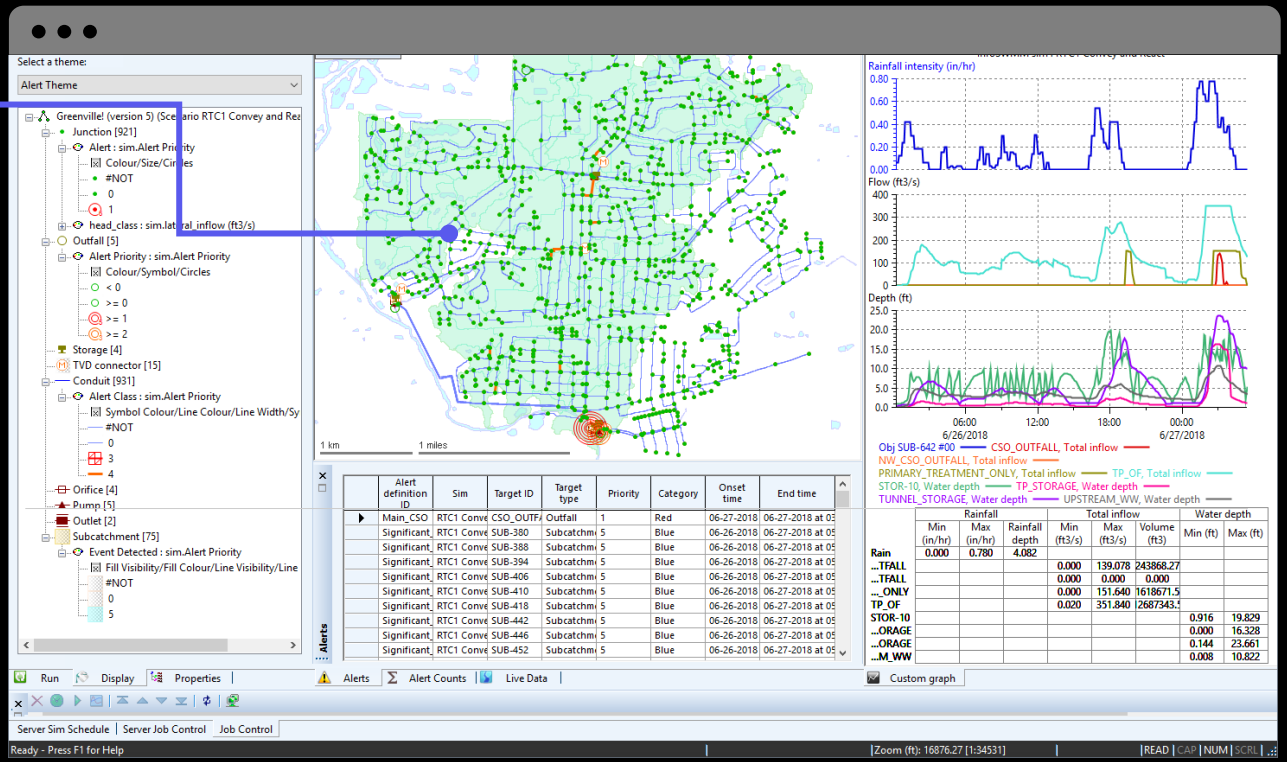
What-if scenario analysis

Simulate different scenarios to understand potential outcomes and optimize cost and risk

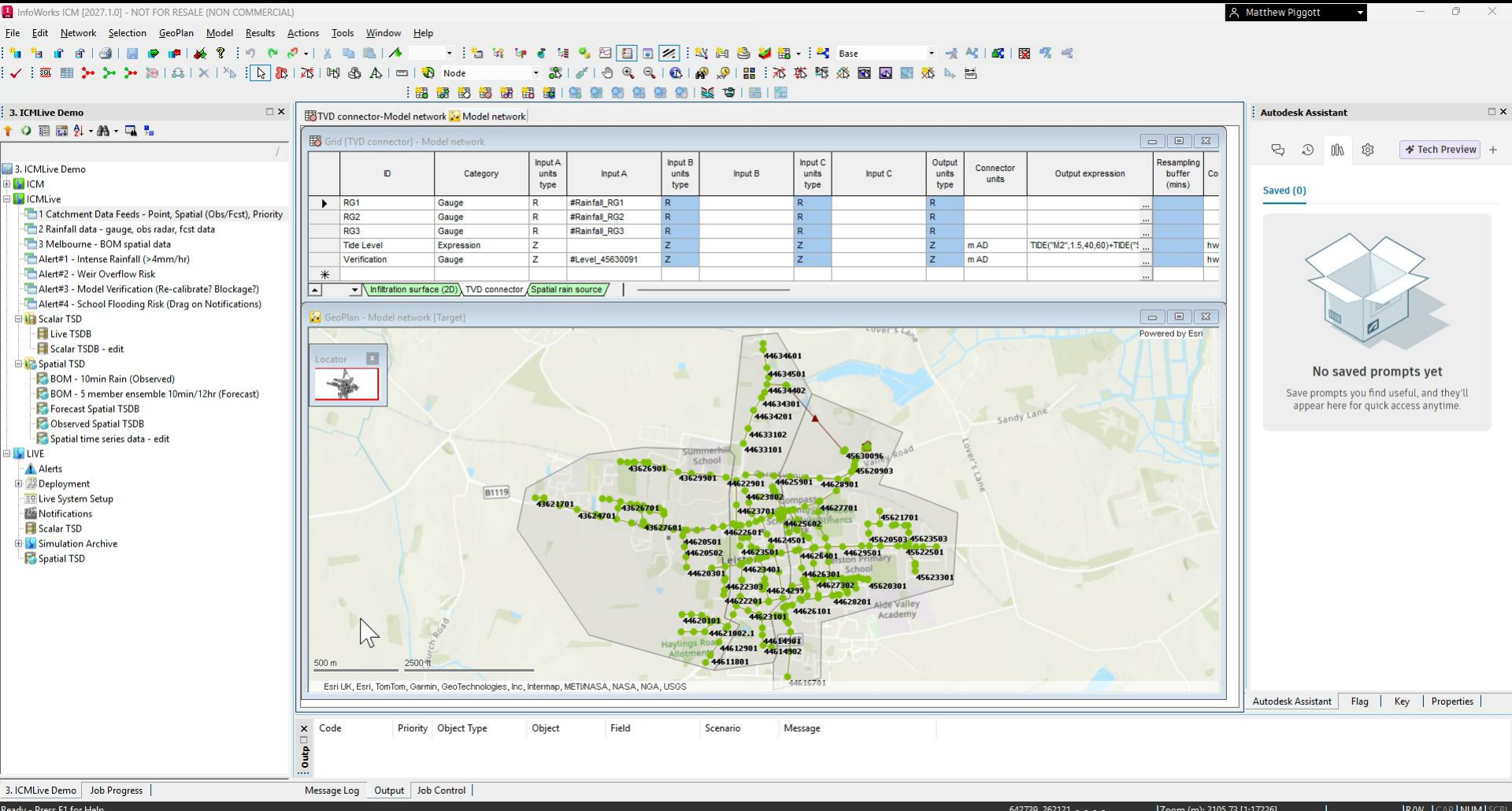
Simulate the impact of changes in weather patterns, infrastructure modifications, or emergency events

Evaluate the likelihood and severity of potential issues such as overflows, flooding, or blockages

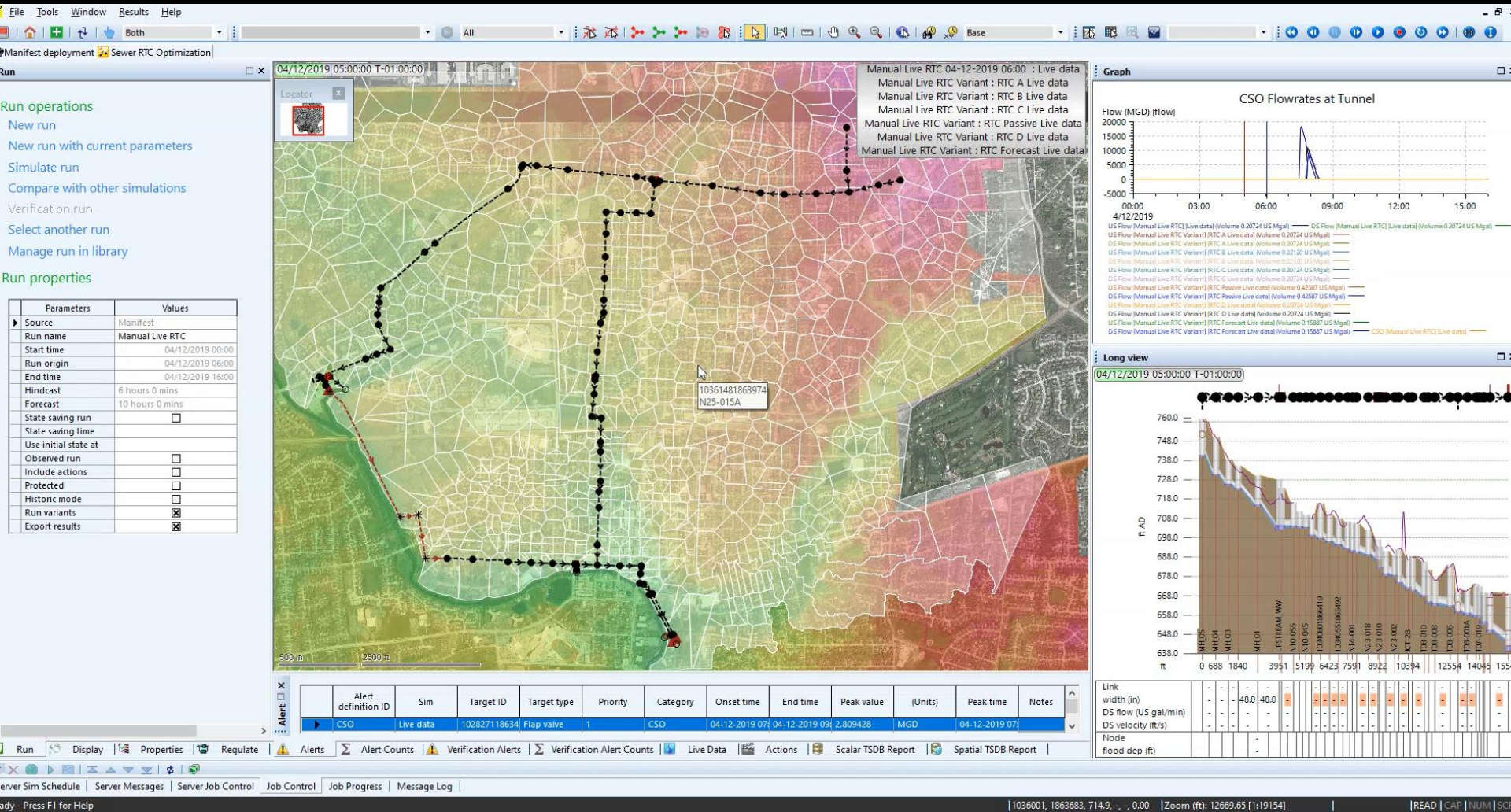
Test different operational strategies to find the most effective solutions



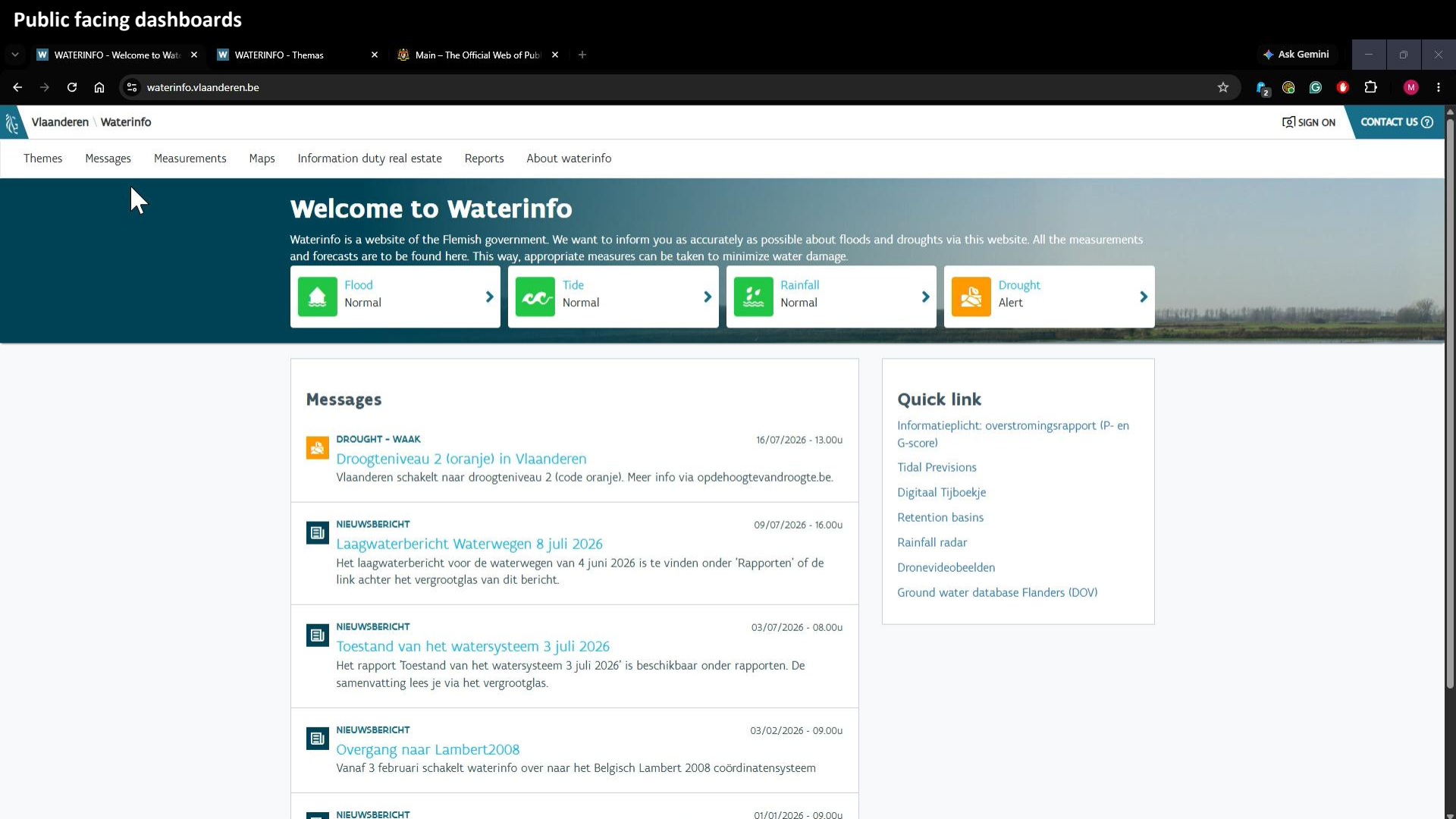
ICMLive setup



Operator client

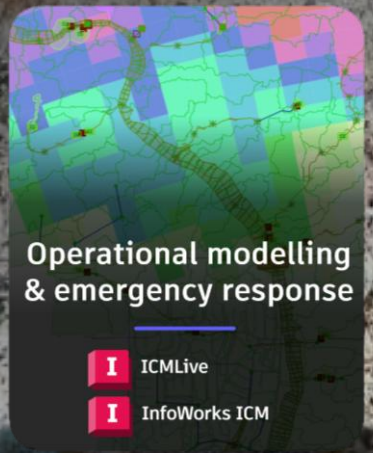


Public facing dashboards



South East Water, Melbourne Australia

Advanced warning and mitigation of network spills and pump failure - Elster Creek Catchment



Challenge

Elster creek catchment commonly experiences blockages, burst mains, sewer spill in WWE and pump station failures

Solution

Implementation of monitoring technologies (Advanced Blokaid) and ICMLive to provide operators with information on real-time and future catchment response

Impact

Help operational teams understand the key areas in the catchment that require resources to carry out the most effective mitigation actions

Tasmania State Emergency Service & WMA Water

Extraordinary flood mapping project influencing flood preparation in Australia

"An ambitious project to roll out one of the largest flood mapping projects in Australia is using InfoWorks ICM for flood modelling and data management. The Tasmanian Flood Map Project, supported by the expertise of WMAwater, SES Tasmania, Indicium Dynamics and Innovyze, will use a modern technology platform and up-to-date methodology to support and benefit the residents of Tasmania - assisting them to better understand their flood risk."

- Flood Policy Unit Manager, Tas State Emergency Service

Challenge

Roll out one of the largest flood mapping projects in Australia to improve flooding intelligence for entire State of Tasmania.

Solution

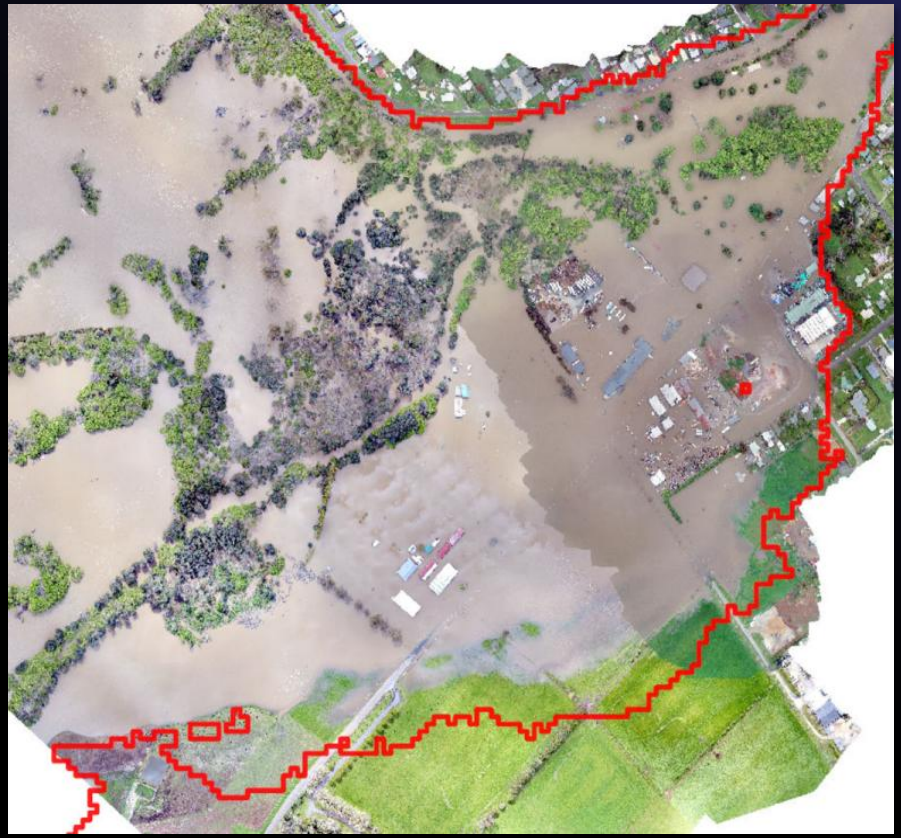
A hydrodynamic model with the ability to handle large datasets combined with powerful data management tools in a single platform.

Impact

Improvement in emergency response times and planned evacuations before peak flow events (2022 Floods).

https://www.autodesk.com/blogs/water/2023/02/28/extraordinary-flood-mapping-project-influencing-the-way-we-prepare-for-floods-in-australia/

Tasmanian floods October 2022



What you can do with IWLive Pro

Representation of the network in real time

Forecast system performance & demand in the upcoming hours/days

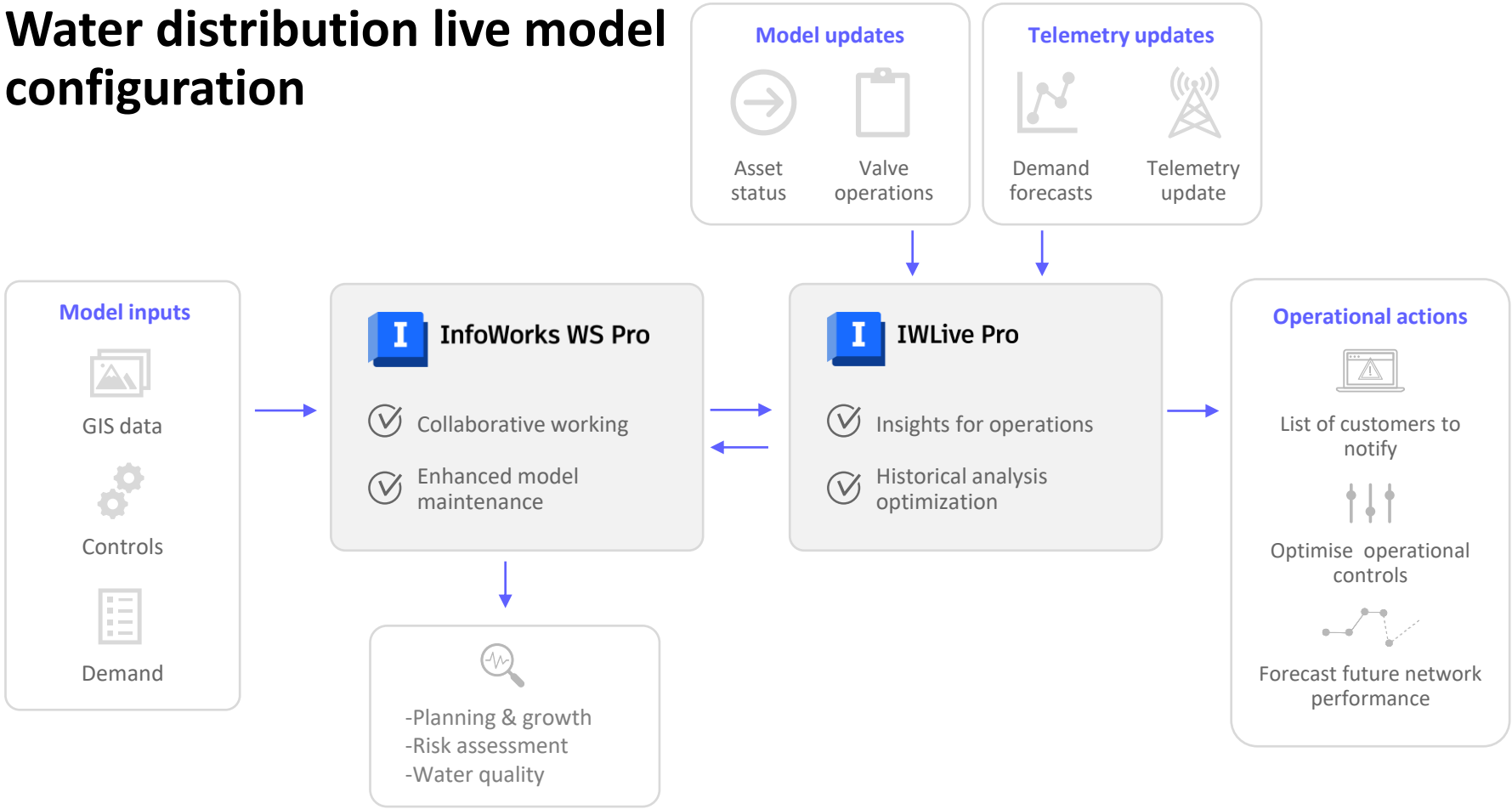
Warn of service level failures

Create multiple what-If scenarios for incident management

Monitor efficiency and optimize controls

Proactive standardized approach

Water distribution live model configuration

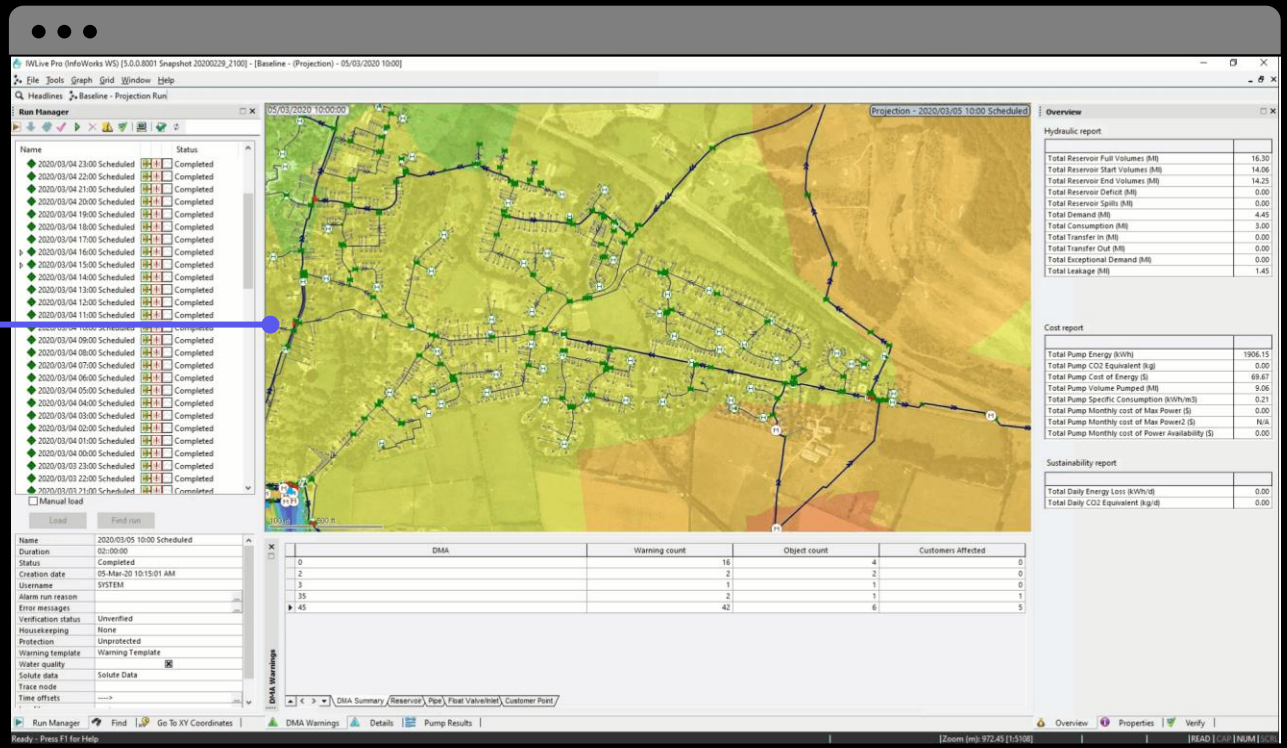


Real-time alert system

Maintain and optimize system operations efficiently

Real-time comparison between predicted and observed data

User-defined warning generation in case of deviation from telemetry (verification) or thresholds (simulation)



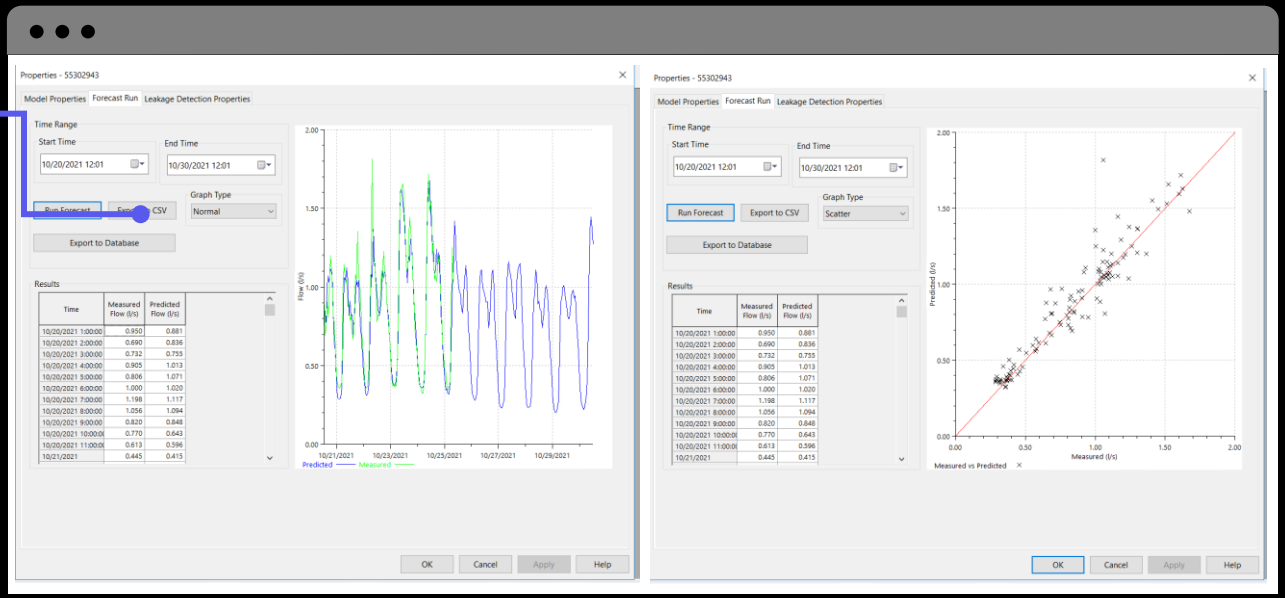
Demand forecasting

Predict one to two days of DMA demand with historical and forecast data

Using historical data, current live data and temperature to give forecasting in the next 24-48 hours with a direct feed into the live operational model

Capabilities included within InfoWorks WS Pro and extended to IWLive Pro

Predict water demand based on population growth, seasonal variations, and consumption patterns

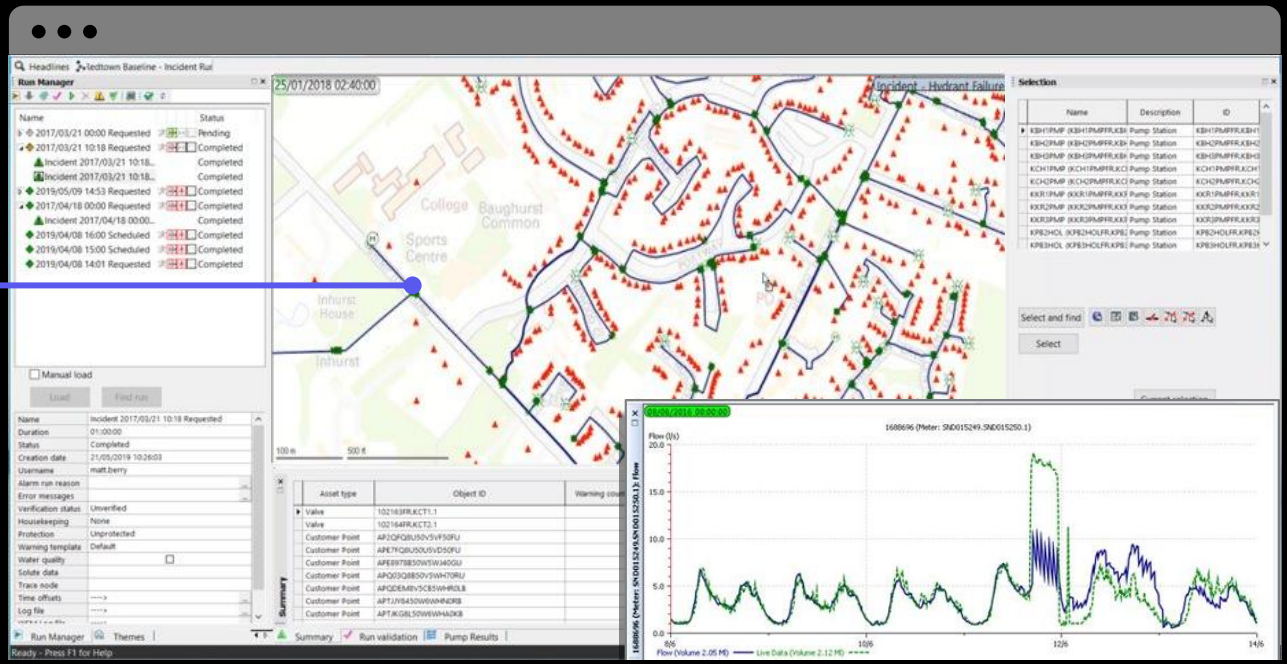


Projection run

Forecast the future system performance based on various input parameters

Constantly performed by updating calibrated hydraulic models from telemetry data and using demand forecast

Assess the impact of planned infrastructure changes, such as new pipelines or storage facilities

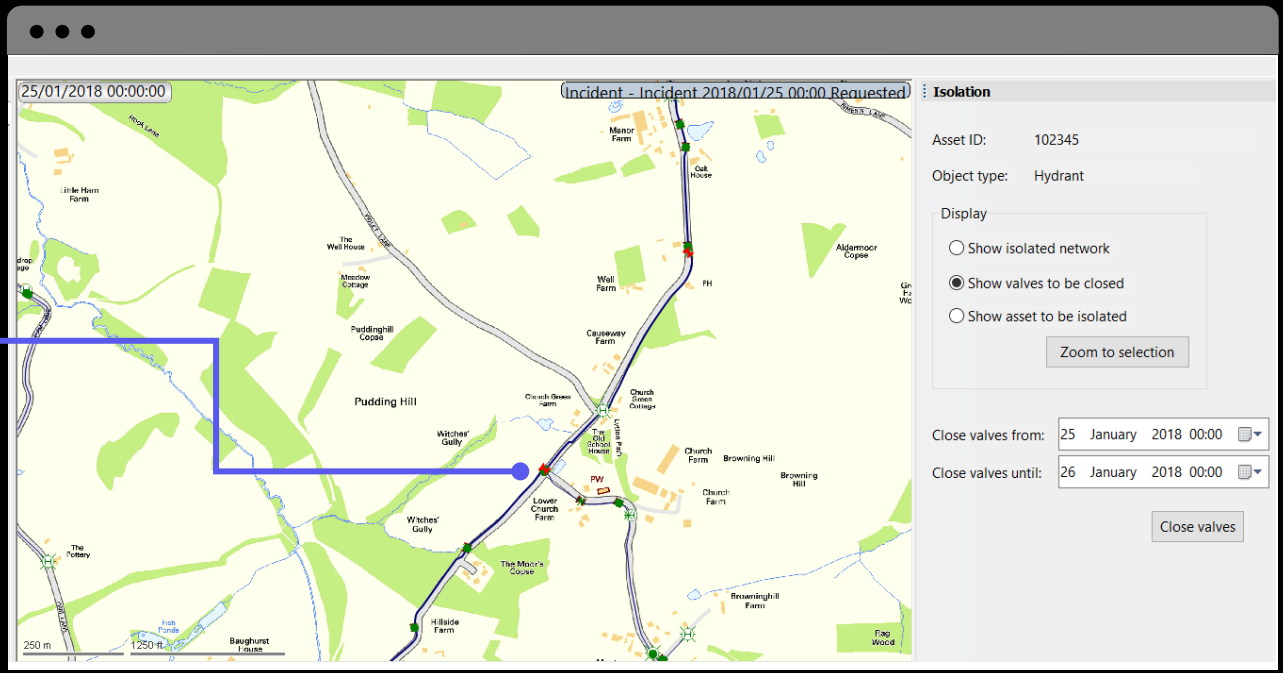


Scenario responses

Make informed operational decisions with model-based performance results

Replicate an incident such as a pipe burst, pump shutdown, increase in flow, or a closed valve

Try multiple scenarios to ensure you are making the best decision for customers and assets

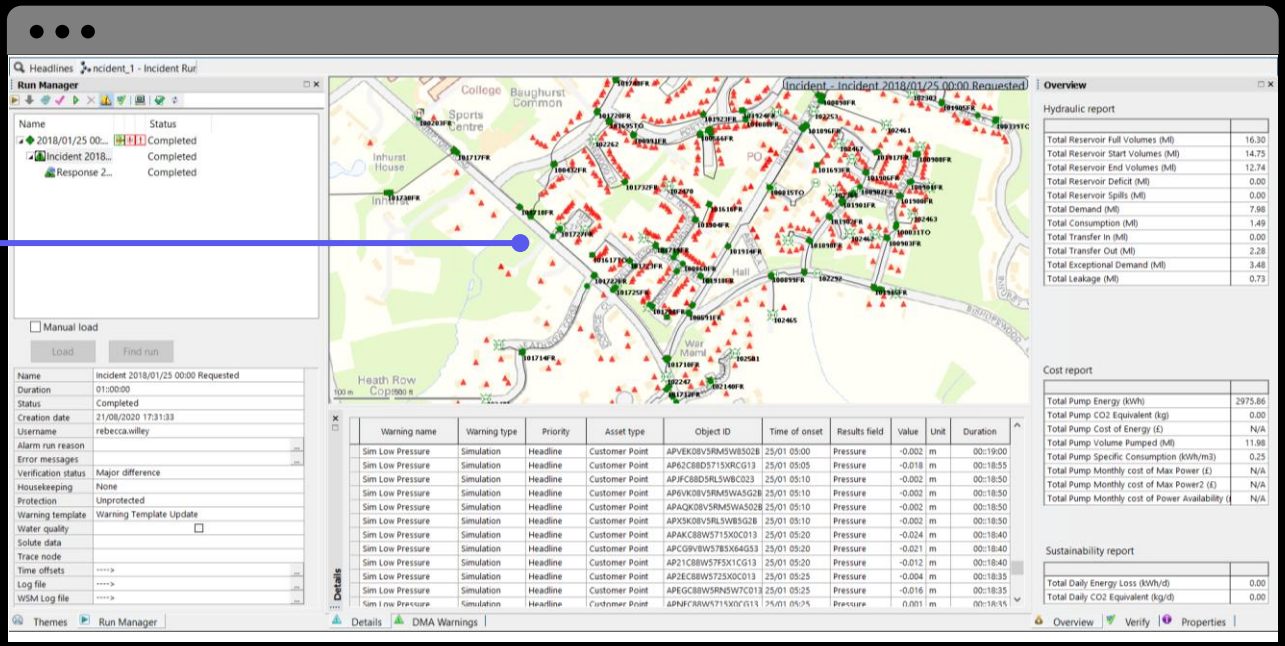


Model calibration

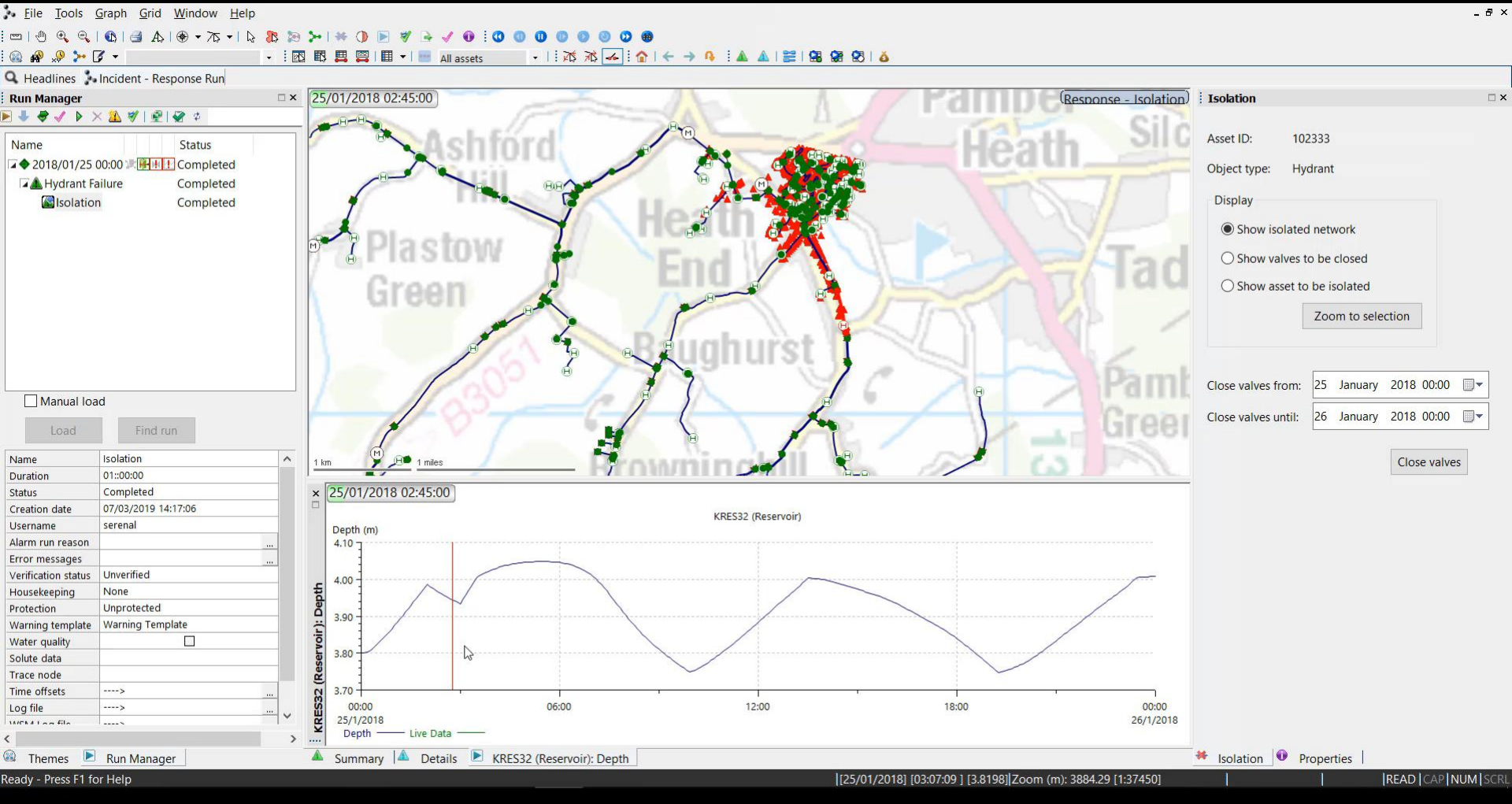
Connect people and processes with an up-to-date model shared across the utility

Models are continuously validated with live data to ensure accuracy

Build confidence in your model data to make proactive operational decisions



IWLive Pro Example



CUSTOMER STORY | OPERATIONAL MODELLING

South Australia Water advances digital maturity with live network modelling

Live hydraulic modelling embedded in the **Operational Control Centre** helps move network decisions from reactive to proactive.

Challenge

Expanded infrastructure created more transfer options — and more operational complexity. Static planning models could not reflect automatic, real-time network changes.

Solution

IWLive Pro integrates live operational data into the network model inside the OCC. Live conditions can be copied into InfoWorks WS Pro to run safe offline what-if scenarios.

Impact

Faster, clearer decisions; fewer supply interruptions; stronger field and OCC coordination; better outage, shutdown and drought response planning.

1.8M+

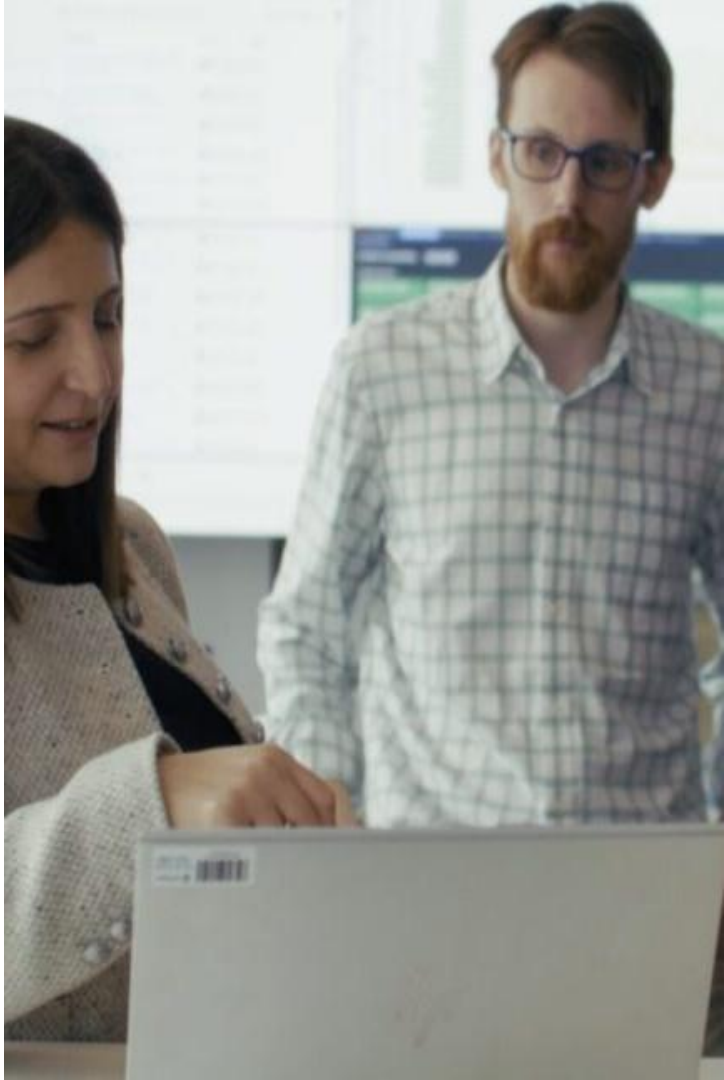
South Australians served

Why it matters

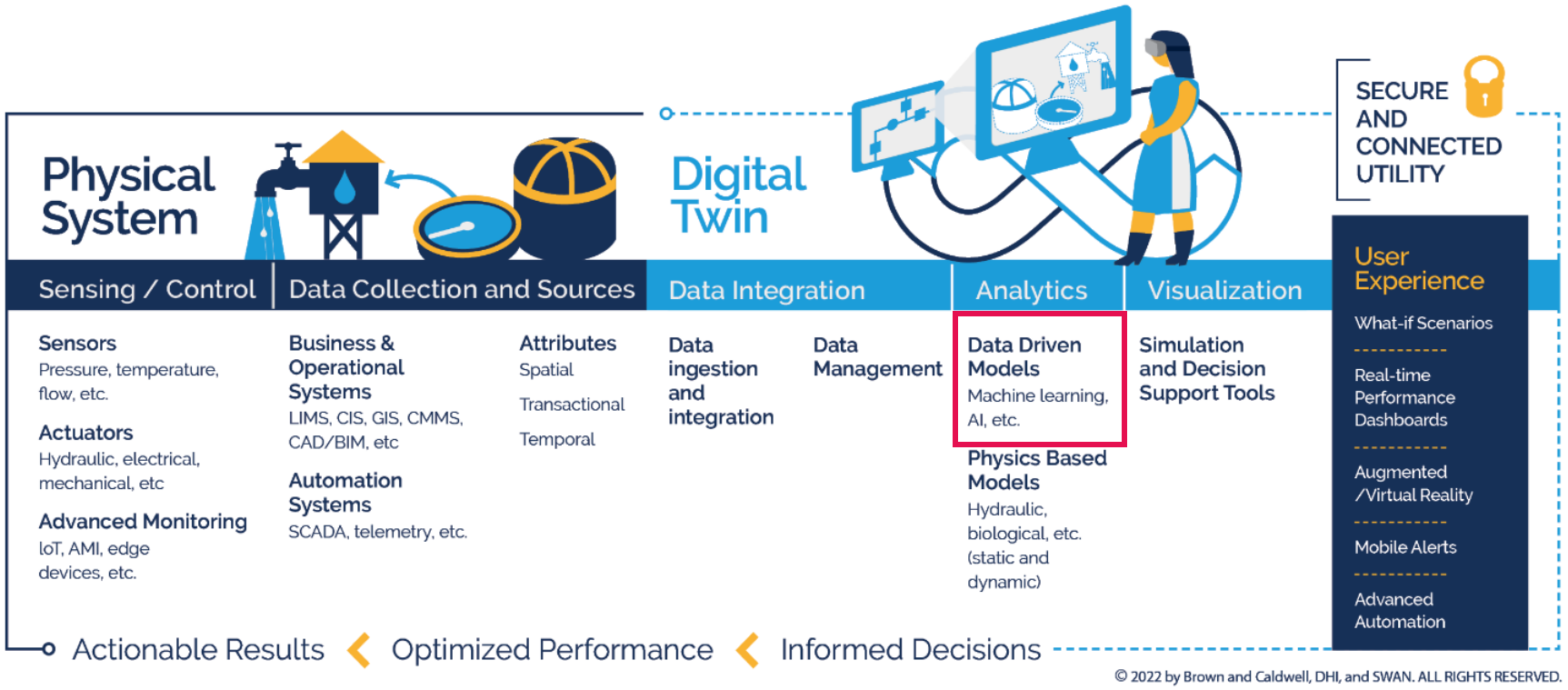
A validated, shared model bridges planning and operations — turning live network behaviour into risk-informed decisions.

Autodesk Water Infrastructure: IWLive Pro + InfoWorks WS Pro

Source: https://www.autodesk.com/blogs/water/2026/03/03/sa-water-is-advancing-their-digital-maturity-with-live-water-network-modelling/

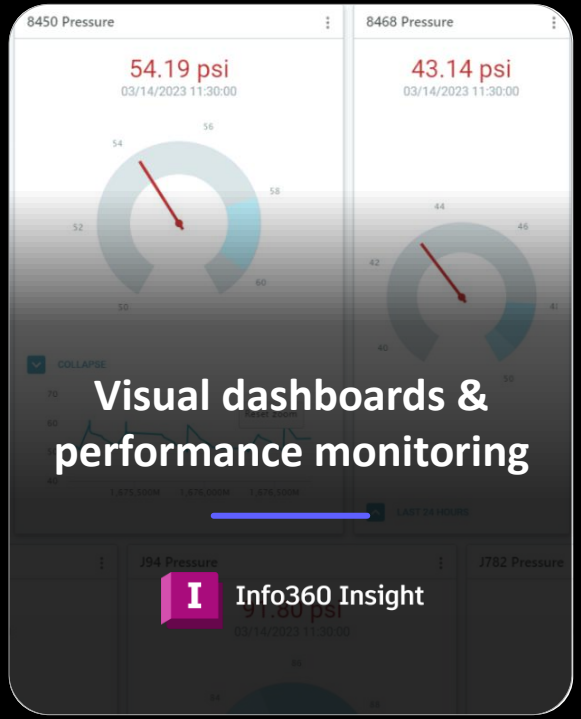


SWAN Digital Twin Architecture



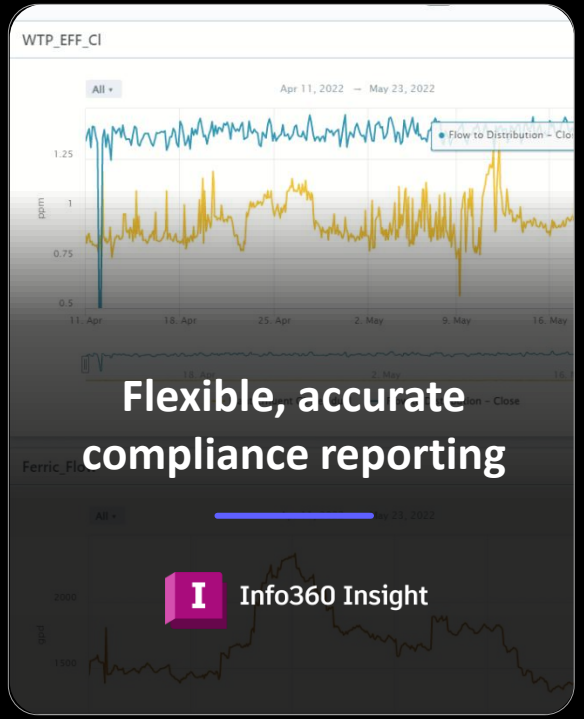
Operational analytics | Key capabilities

Make data-driven decisions for proactive operations and ensure regulatory compliance



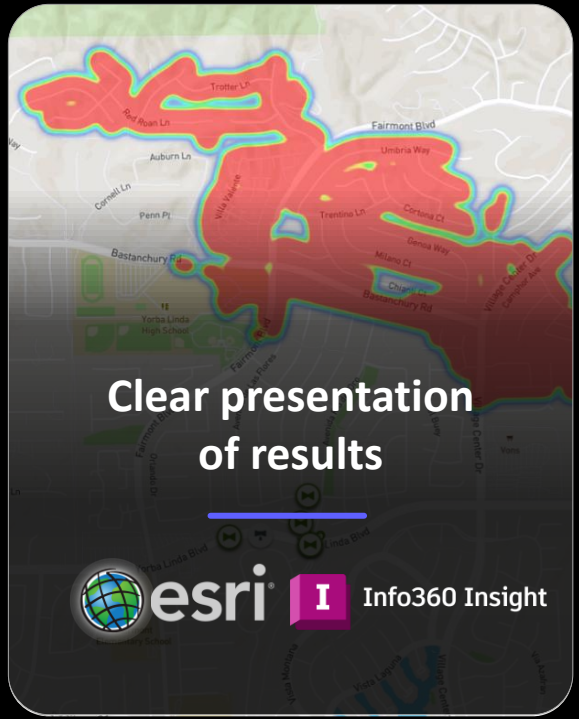
Visual dashboards & performance monitoring

Info360 Insight



Flexible, accurate compliance reporting

Info360 Insight



Clear presentation of results

esri Info360 Insight

Info360

info360.com/workspace/82c5f1da-0524-4406-860e-d054704e48aa

Info360

Water Treatment Demo

AU

DASHBOARD
MAP
FACILITIES
ALERTS
WORKSPACES
TOOLS
INCIDENT MANAGER
PUMP STATIONS
DATA
ADMIN

All workspaces

Emerald Water Utility Dashboard

Water Treatment Plant Dashboard

SAVE

Add Component

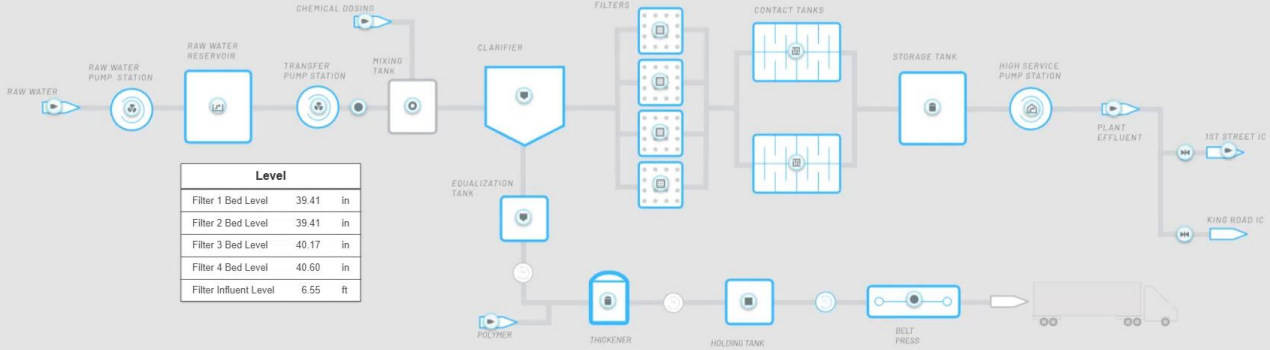
Workspace time range: Off

Theme: Default

Emerald Water Utility

Search

List



Level		
Filter 1 Bed Level	39.41	in
Filter 2 Bed Level	39.41	in
Filter 3 Bed Level	40.17	in
Filter 4 Bed Level	40.60	in
Filter Influent Level	6.55	ft

Plant Capacity %

Latest value
71.75
06/29/2022 17:15:00

COLLAPSE

Treatment Plant Intake

Latest value
31.47 MGD
07/24/2022 16:59:00

COLLAPSE

System Demand

Latest value
31.13 MGD
07/24/2022 16:59:00

COLLAPSE

Pressure to Distribution

Latest value
105.90 psi
07/24/2022 16:59:00

COLLAPSE

Effluent Chlorine Residual

Latest value
0.82 ppm
07/24/2022 16:59:00

COLLAPSE

Effluent pH

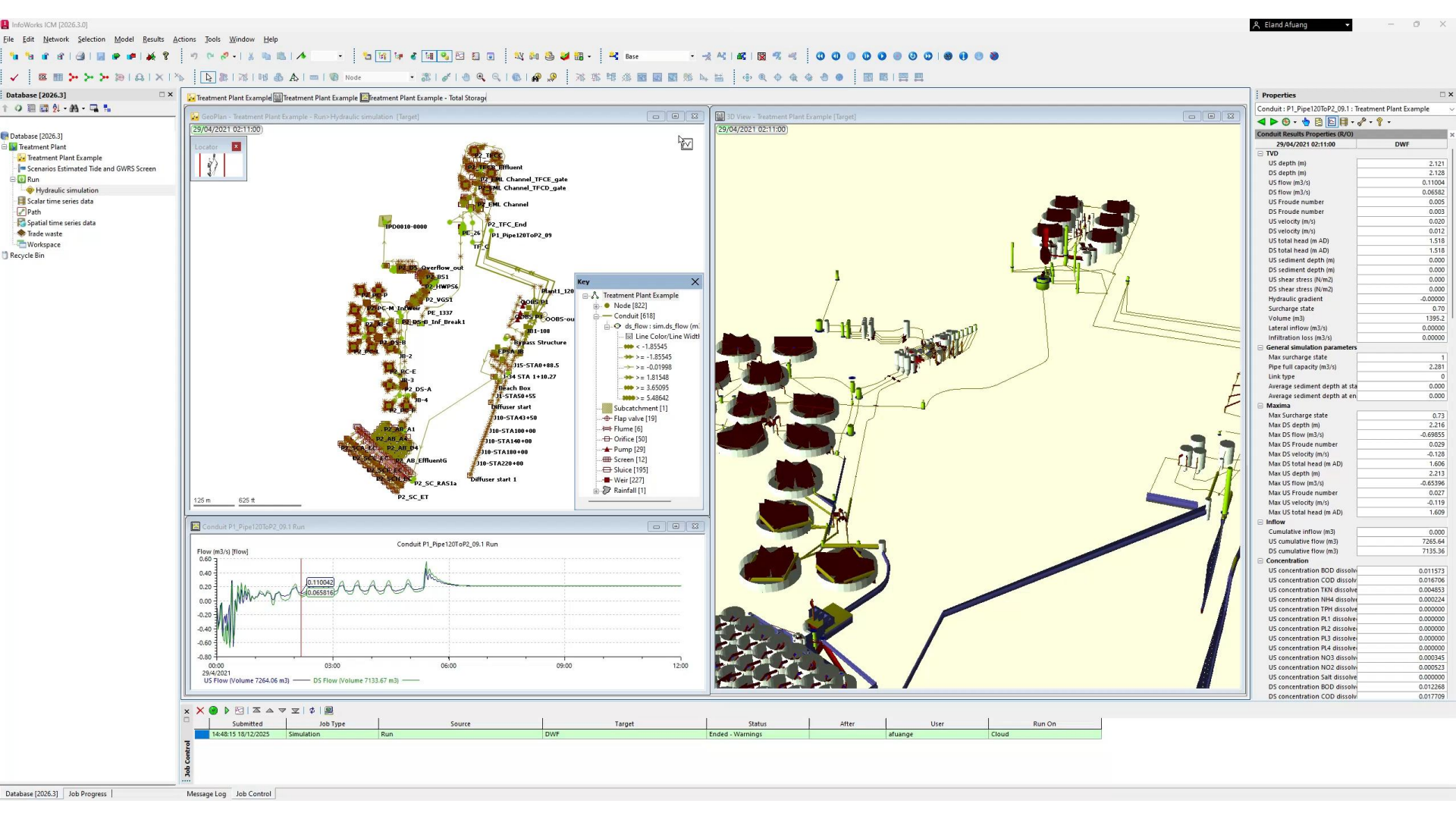
Latest value
7.57 pH
07/24/2022 16:59:00

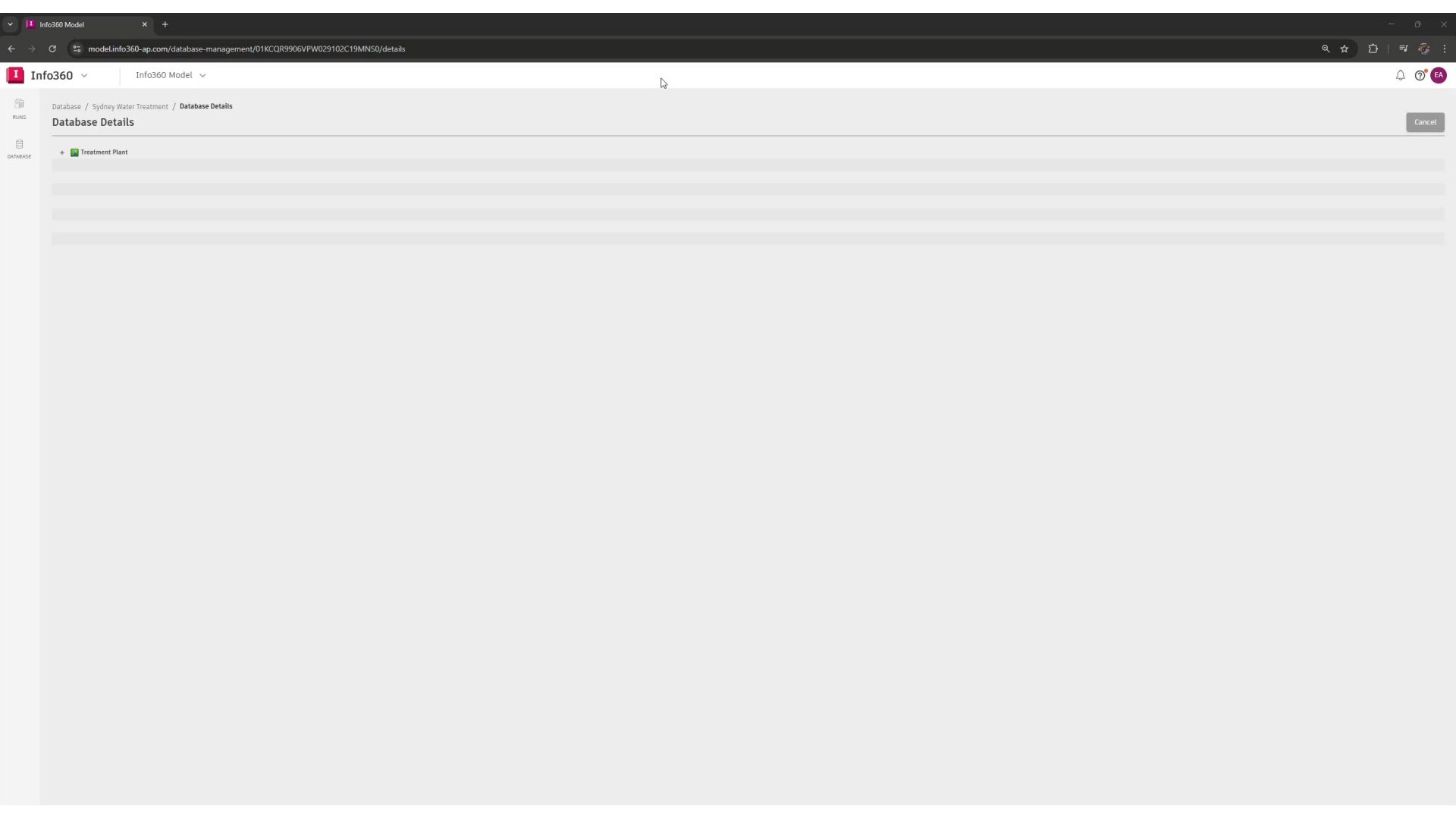
COLLAPSE

Effluent Turbidity

Latest value
0.04 NTU
07/24/2022 16:59:00

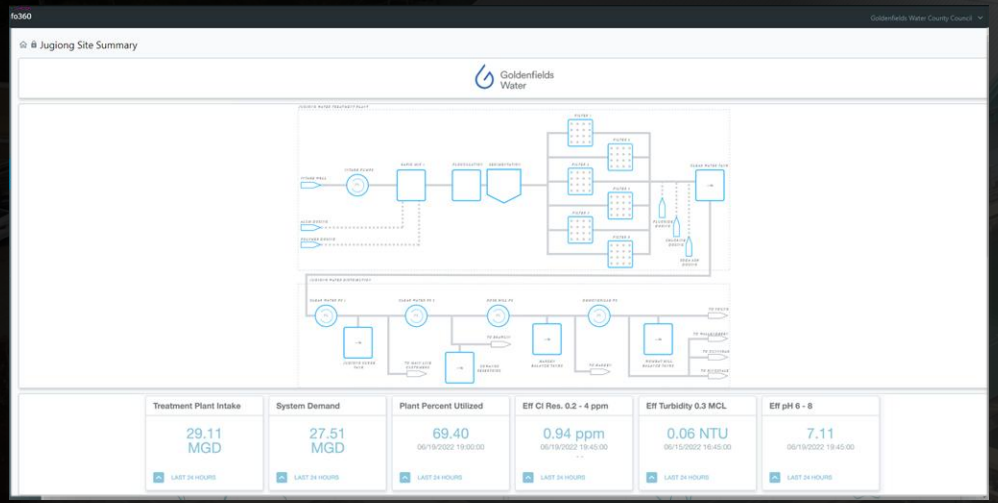
COLLAPSE


InfoWorks ICM [2026.3.0]
Eland Afuang
File Edit Network Selection Model Results Actions Tools Window Help
Database [2026.3]
Database [2026.3]
Treatment Plant
Treatment Plant Example
Scenarios Estimated Tide and GWRS Screen
Run
Hydraulic simulation
Scalar time series data
Path
Spatial time series data
Trade waste
Workspace
Recycle Bin
Treatment Plant Example
Treatment Plant Example
Treatment Plant Example - Total Storage
GeoPlan - Treatment Plant Example - Run>Hydraulic simulation [Target]
29/04/2021 02:11:00
Locator
Key
Treatment Plant Example
Node [822]
Conduit [618]
ds_flow : sim.ds_flow (m
Line Color/Line Width
< -1.85545
>= -1.85545
>= -0.01998
>= 1.81548
>= 3.65095
>= 5.48642
Subcatchment [1]
Flap valve [19]
Flume [6]
Orifice [50]
Pump [29]
Screen [12]
Sluice [195]
Weir [227]
Rainfall [1]
125 m
625 ft
3D View - Treatment Plant Example [Target]
29/04/2021 02:11:00
Conduit P1_Pipe120ToP2_09.1 Run
Conduit P1_Pipe120ToP2_09.1 Run
Flow (m3/s) [flow]
0.60
0.40
0.20
0.00
-0.20
-0.40
-0.60
-0.80
0.110042
0.065816
00:00
03:00
06:00
09:00
12:00
29/4/2021
US Flow (Volume 7264.06 m3)
DS Flow (Volume 7133.67 m3)
Properties
Conduit : P1_Pipe120ToP2_09.1 : Treatment Plant Example
Conduit Results Properties (R/O)
29/04/2021 02:11:00
DWF
TVD
US depth (m) 2.121
DS depth (m) 2.128
US flow (m3/s) 0.11004
DS flow (m3/s) 0.06582
US Froude number 0.005
DS Froude number 0.003
US velocity (m/s) 0.020
DS velocity (m/s) 0.012
US total head (m AD) 1.518
DS total head (m AD) 1.518
US sediment depth (m) 0.000
DS sediment depth (m) 0.000
US shear stress (N/m2) 0.000
DS shear stress (N/m2) 0.000
Hydraulic gradient -0.00000
Surcharge state 0.70
Volume (m3) 1395.2
Lateral inflow (m3/s) 0.00000
Infiltration loss (m3/s) 0.00000
General simulation parameters
Max surcharge state 1
Pipe full capacity (m3/s) 2.281
Link type 0
Average sediment depth at sta 0.000
Average sediment depth at en 0.000
Maxima
Max Surcharge state 0.73
Max DS depth (m) 2.216
Max DS flow (m3/s) -0.69855
Max DS Froude number 0.029
Max DS velocity (m/s) -0.128
Max DS total head (m AD) 1.606
Max US depth (m) 2.213
Max US flow (m3/s) -0.65396
Max US Froude number 0.027
Max US velocity (m/s) -0.119
Max US total head (m AD) 1.609
Inflow
Cumulative inflow (m3) 0.000
US cumulative flow (m3) 7265.64
DS cumulative flow (m3) 7135.36
Concentration
US concentration BOD dissolv 0.011573
US concentration COD dissolv 0.016706
US concentration TKN dissolve 0.004853
US concentration NH4 dissolve 0.000224
US concentration TPH dissolve 0.000000
US concentration PL1 dissolve 0.000000
US concentration PL2 dissolve 0.000000
US concentration PL3 dissolve 0.000000
US concentration PL4 dissolve 0.000000
US concentration NO3 dissolv 0.000345
US concentration NO2 dissolv 0.000523
US concentration Salt dissolve 0.000000
US concentration BOD dissolv 0.012268
DS concentration COD dissolv 0.017709
Job Control
Submitted
Job Type
Source
Target
Status
After
User
Run On
14:48:15 18/12/2025
Simulation
Run
DWF
Ended - Warnings
afuange
Cloud
Database [2026.3]
Job Progress
Message Log
Job Control


Info360 Model
model.info360-ap.com/database-management/01KCQR9906VPW029102C19MNS0/details
Info360
Info360 Model
EA
RUNS
DATABASE
Database / Sydney Water Treatment / Database Details
Database Details
Cancel
Treatment Plant

DIGITAL WORKSPACES WITH DESCRIPTIVE ANALYTICS

Goldenfields Water County Council (GWCC), Australia



Data access and digital workspaces

Democratize access and collaborate across teams

Image credit: Jugiong Water Treatment Plant - Courtesy of Goldenfields Water

Resources

- **Technical Hubs**
  - Autodesk Water Solutions
- **Autodesk Viewer licences**
  - https://www.autodesk.com/viewers
- **Educational licences**
  - Autodesk Education Community
- **Trial downloads**
  - InfoDrainage Free Trial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