

Vegetation Management and RCM on the CVL Network

26 November 2025

Amey —

Life's better connected

PWI West of England Section - 26 November 2025 - Agenda

- Introductions
- Introduction to Amey Infrastructure Wales Ltd is Infrastructure Manager of the CVL Network
- Vegetation Management
- Earthworks and Drainage RCM
- Q&A

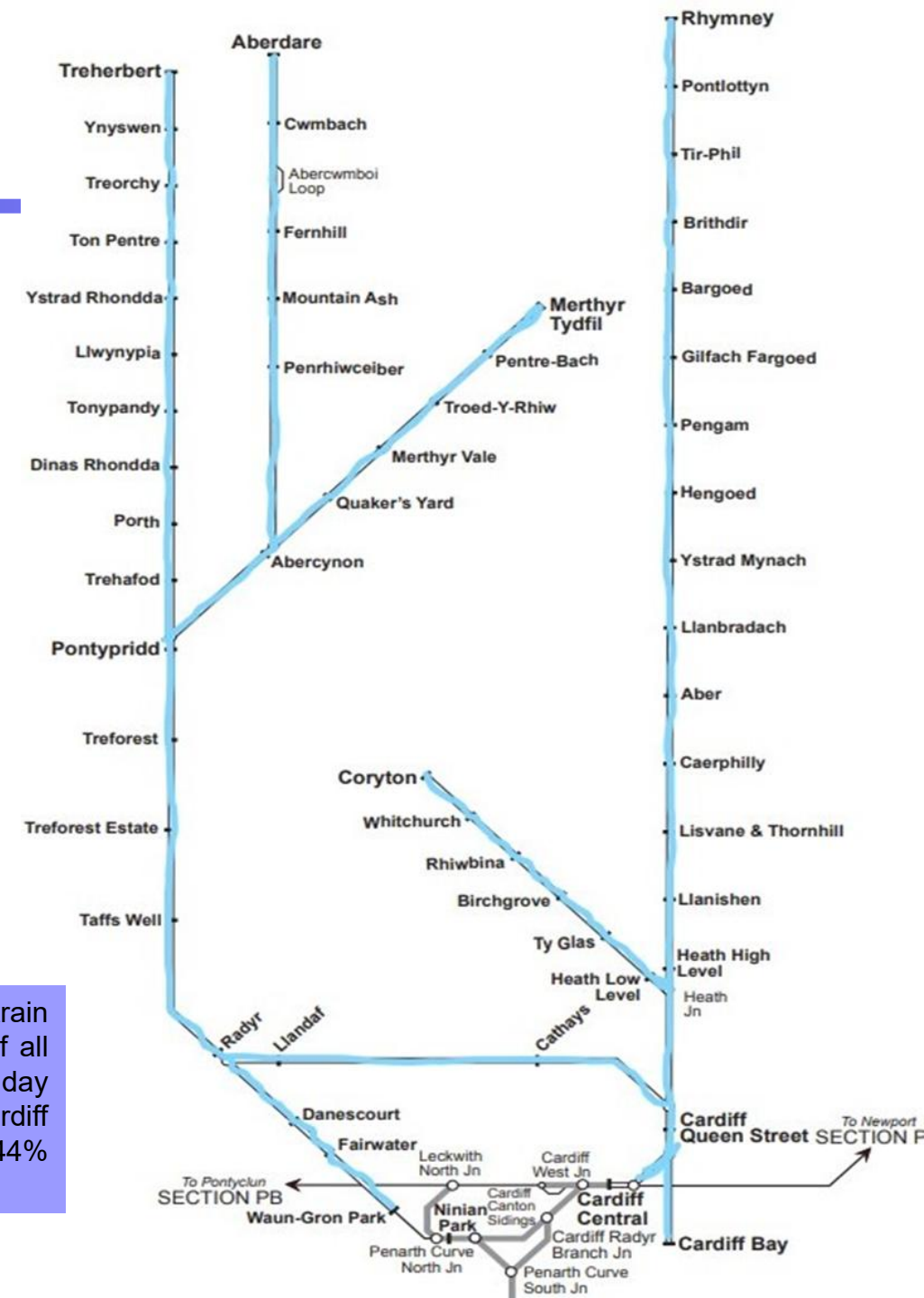
AIW as IM of the CVL Network

Amey Infrastructure Wales Ltd is IM of the CVL Network

1. Asset Management
2. Projects
3. Railway Operations
4. Safety, legal, contractual and regulatory obligations
5. Transformation Programme



The CVL accounts for 15% of train miles in Wales but it carries 56% of all W&B TfW passenger services each day where commuting into the Cardiff Capital Region is set to grow by 144% by 2043*



Railway Operations

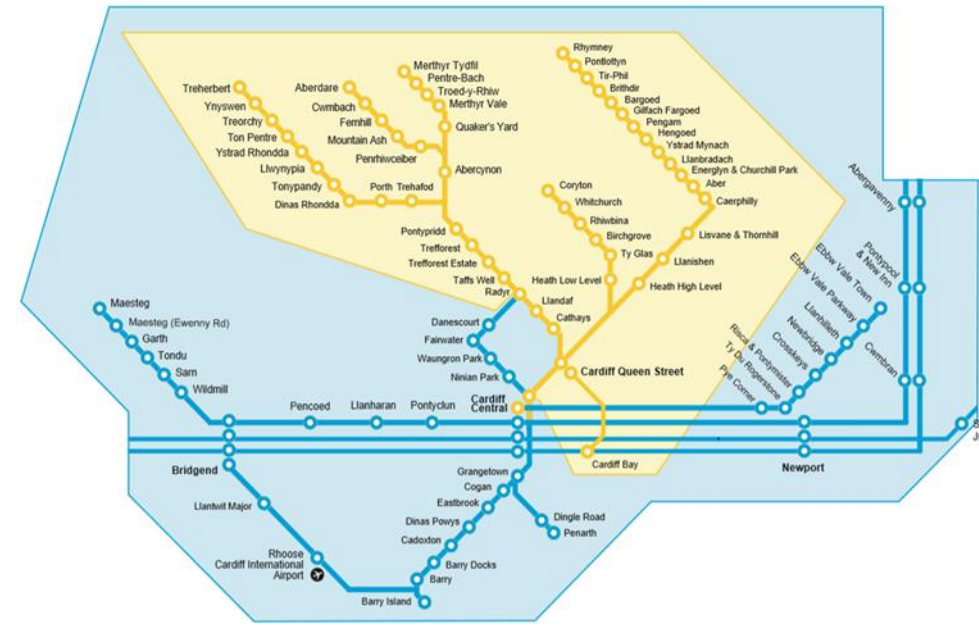
- Capacity Allocation
 1. Performance modelling
 2. Engineering Access
 3. Allocate trains “for the network”
 4. Bids from train operators and produce the timetable
- CVL Integrated Control Centre
 - Signalling
 - Command, control & comms (especially during perturbation)
 - Flight Engineers
 - Traction electricity control
- Train Performance (Tripartite strategy with Network Rail and TfW Rail Ltd to drive improvement)
 - JPIC and On-Time-To-Three (Valleys)
 - Joint Seasons Management Group
 - Continuous improvement and collaboration



South Wales Metro and the Transformation Programme

South Wales Metro

The Welsh Government (including part-funding by the European Regional Development Fund) is spending £1bn to “transform” the Cardiff Core Valley Lines (“CVL”) into a network capable of operating the “South Wales Metro” high capacity/high intensity service. To compliment this TfW Rail is introducing two new bi/tri-mode fleets



**More regular
services and faster
journey times**



Cheaper fares and greater accessibility



Metro will help workers be more mobile



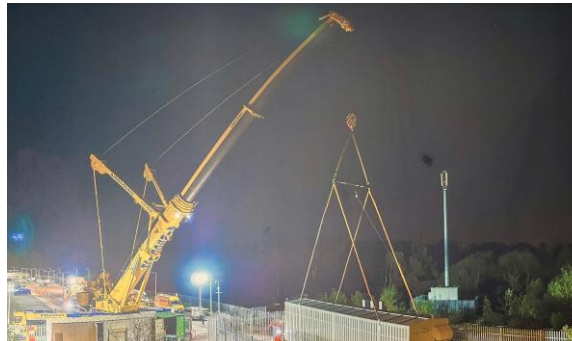
Metro will help ease congestion on roads



- 4 TPH to each valley head, over the entire service day (doubling current service)
- A “turn-up-and-go” style service for customers
- This requirement drove the scope of the “Transformation Programme”

Scope of the Transformation Programme

- More tracks
- Line speed increases
- Structural enhancements
- Resignalling
- Non-continuous electrification with Auto Power Changeover
- New Integrated Control Centre (at Taff's Well)
- New SCADA network
- Removal of most Signal Post Telephones (GSM-R available)
- General improvements at all stations
- Accessibility improvements
- Level boarding at all stations
- Two new stations (Crwys Road and Butetown)
- Tram operation to Cardiff Bay
- New fleet depot (Walnut Tree)
- Timetable changes
- Operational changes
- PLC for signalling applications
- Entry in Service



Collaboration with Network Rail

Collaboration with Network Rail

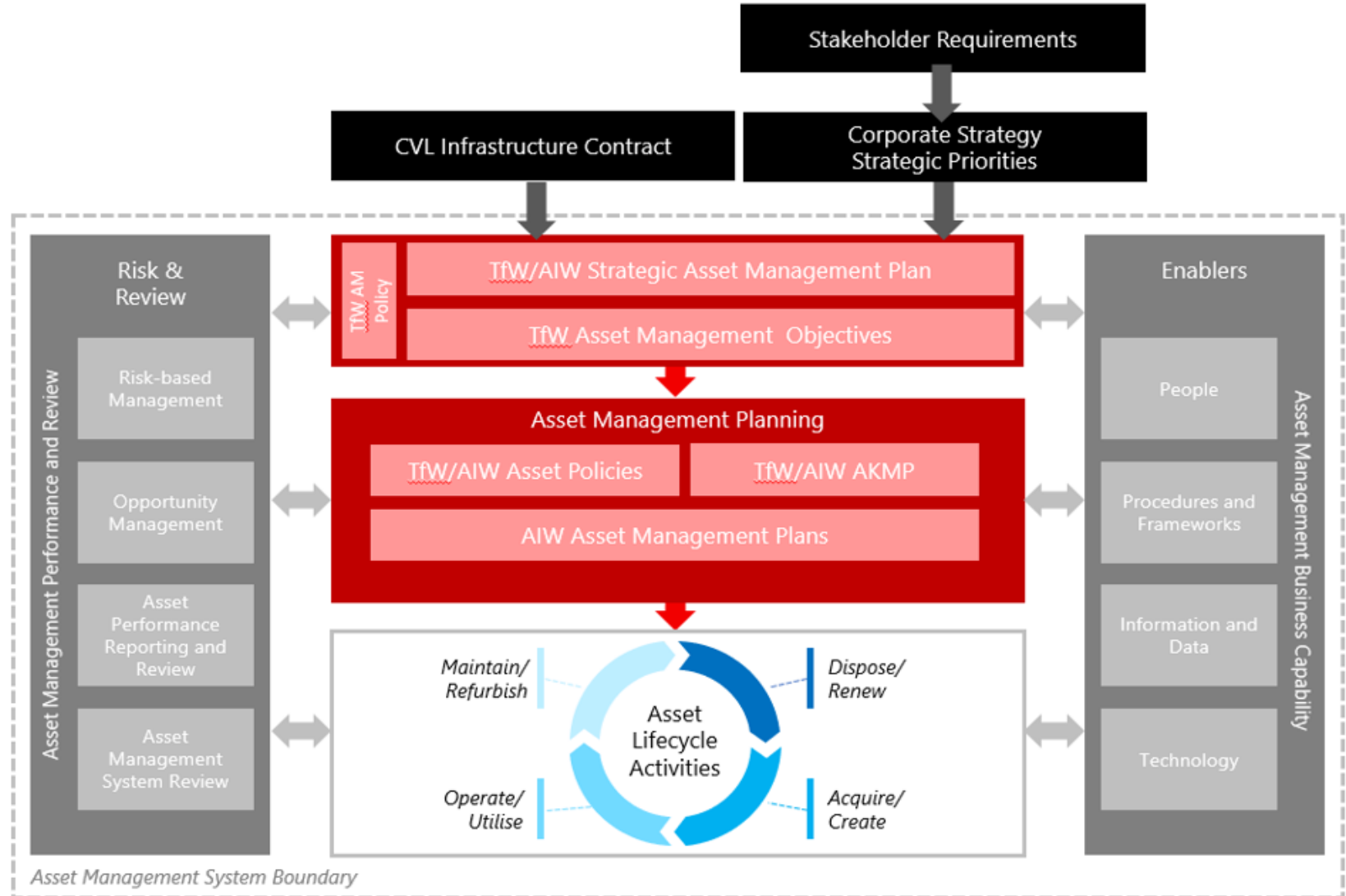
- Boundary interfaces
- Possession planning & line blockages via PPS
- Timetable Working Group – timetable development and performance modelling and new TPRs
- Tri-partite train performance improvement strategy
- Sectional Appendix, EAS, Hazard Directory, TDA, TMV
- Transformation
 - ✓ Canton substation traction electricity supply
 - ✓ Canton Depot alterations
 - ✓ Canton Stabling Sidings electrification
 - ✓ ASDO beacons
 - ✓ Cardiff Central Shore Supply
 - ✓ Cardiff Central signal relocation
 - ✓ General improvements and accessibility improvements



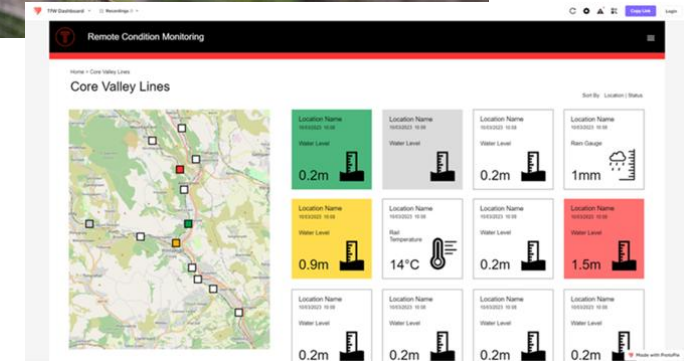
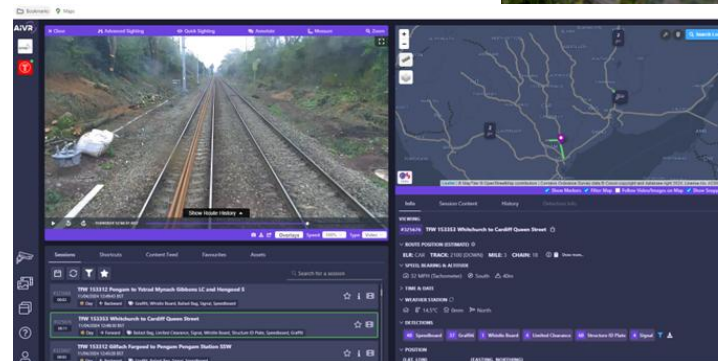
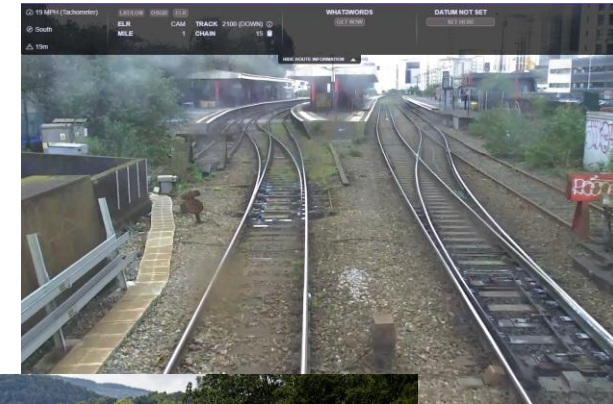
Asset Management

Asset Management Framework

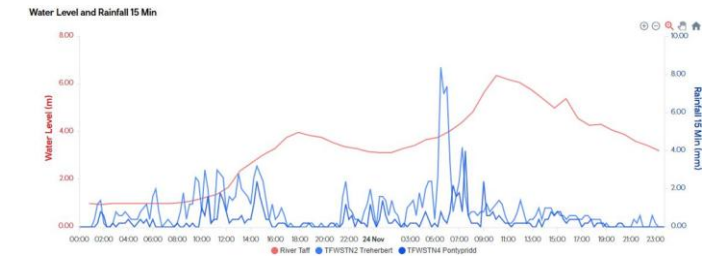
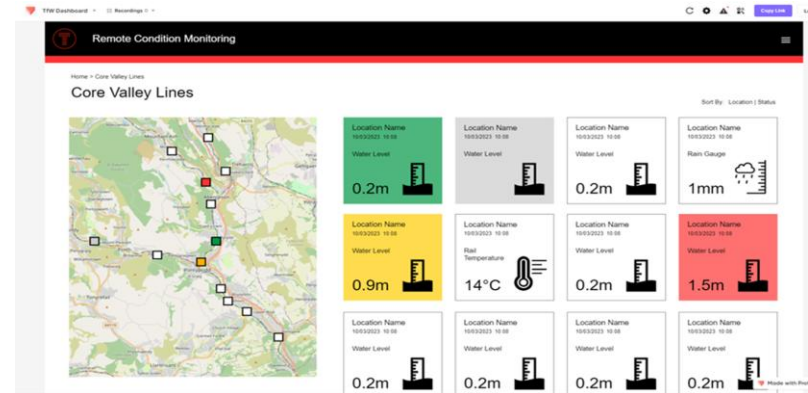
Bridges	356
Other Buildings	226
Platforms	96
Tunnels	1
Track (KMs)	258.53
Level Crossings	20
Retaining Walls	654
Culverts	514
Stations	55



- Asset Management Plans per discipline and Asset Knowledge
- Activities: Inspection, Planned, Emergency and Projects
- Flight Engineers in the CVLICC monitoring data feeds and alarms
- Rapid response
- Data-led decision-making
 - Maximo is our EAMS (developed at Tube Lines Ltd & DLR)
- Supply chain and strategic spares
- Continuous improvement, KPIs and reporting
- Skills transfer and enhancement
- Seasonal preparedness
- **Vegetation Management**
- Asset Management roundtable
- ISO55001 certification next year



- Comprehensive RCM
 - ✓ signalling equipment inclu axle counters
 - ✓ Points and points heating
 - ✓ earth leakage detectors
 - ✓ CRT sites
 - ✓ **Flood risk sites**
 - ✓ **Bridge risk sites**
 - ✓ **Earthworks drainage risk**
- Convective rainfall monitoring
-and coming with the new fleet
 - ✓ Pan cams (Camlin Rail Pantobot 3D)
 - ✓ Track geometry measurement
 - ✓ PLPR with machine learning

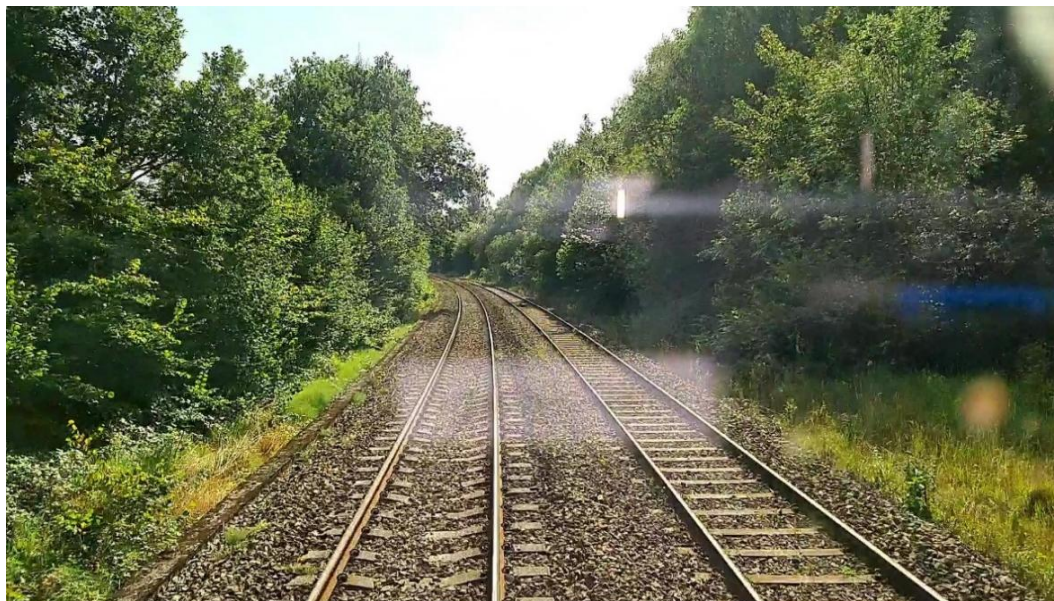


Vegetation Management

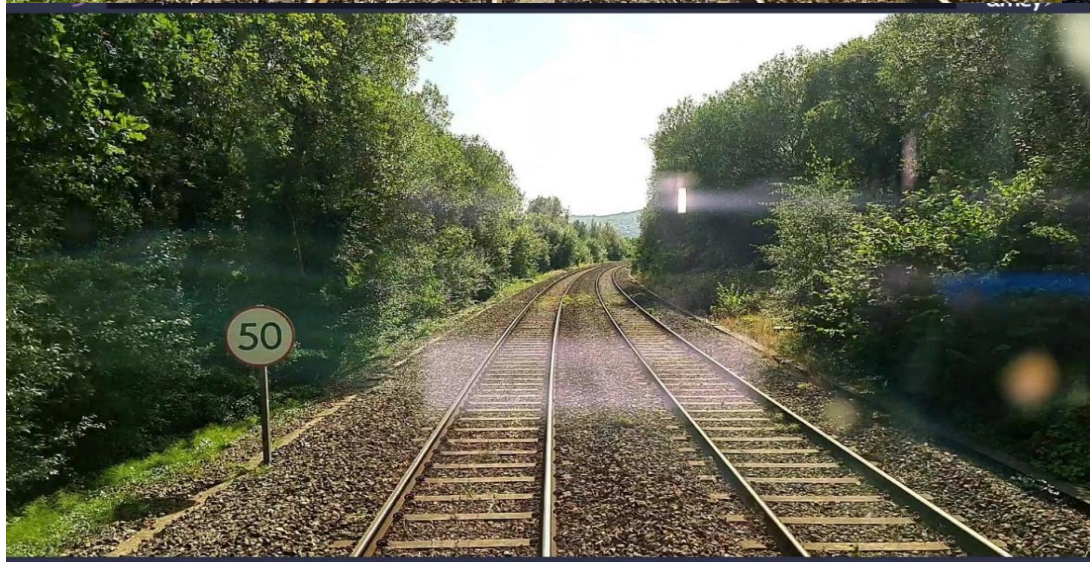
Paul McJennett
Project Manager

Lineside Vegetation Management

Before

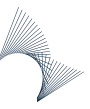


After



Dangerous Trees





Drone arb flight



Flight Pattern



Drone Arb System

DroneArb

Amey TRAFNIDIAETH CYMRU
TRANSPORT FOR WALES

Home ELRs Map Matrix DDD Strikers Overview Monday 12th May 2025, 15:00 UK Paul McInerney

SURVEYED
977

DDD STRIKERS
41

ASH STRIKERS
0

Search DroneArb ID

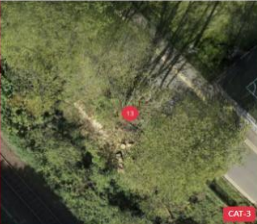
Year 2 2025

Route	Maps Count	Tree Count	Actioned	Compliant / Non-Compliant	Map	Action
ABD	44			0 / 44		View >>
ALK	3			0 / 3		View >>
MOA	4			0 / 4		View >>
VON	14			0 / 14		View >>

Map Overview

[Cards View](#) [Table View](#) [Map View](#) [Map Photos](#)

Map 7 Issue 13 (ABD) 556
DDD Striker



Google Map What3Words

Mileage: 0000.0000

Tree Status (reduced or removed):
Open

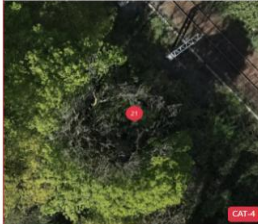
Planned:
No

Risk Analysis:

Created: 02/05/2025, Last Updated: 02/05/2025

[Actions](#)

Map 7 Issue 21 (ABD) 545
Third Party DDD Striker



Google Map What3Words

Mileage: 0000.0000

Tree Status (reduced or removed):
Open

Planned:
No

Comments
Letters
Document Upload
Generate Thumbnail

Created: 02/05/2025, Last Updated: 02/05/2025

[Actions](#)

Map 7 Issue 26 (ABD) 543
Third Party DDD Striker



Google Map What3Words

Mileage: 0000.0000

Tree Status (reduced or removed):
Open

Planned:
No

Risk Analysis:

Created: 02/05/2025, Last Updated: 02/05/2025

[Actions](#)

Map 7 Issue 3 (ABD) 566
Other Striker



Google Map What3Words

Mileage: 0000.0000

Tree Status (reduced or removed):
Open

Planned:
No

Risk Analysis:

Created: 02/05/2025, Last Updated: 02/05/2025

[Actions](#)

Apr 28, 2025 - Map 7

Layers

- Overlays 0
- Locations 0

Map Analysis

- Map
- Plant Health

2.3 ha 0 ha

Export Help

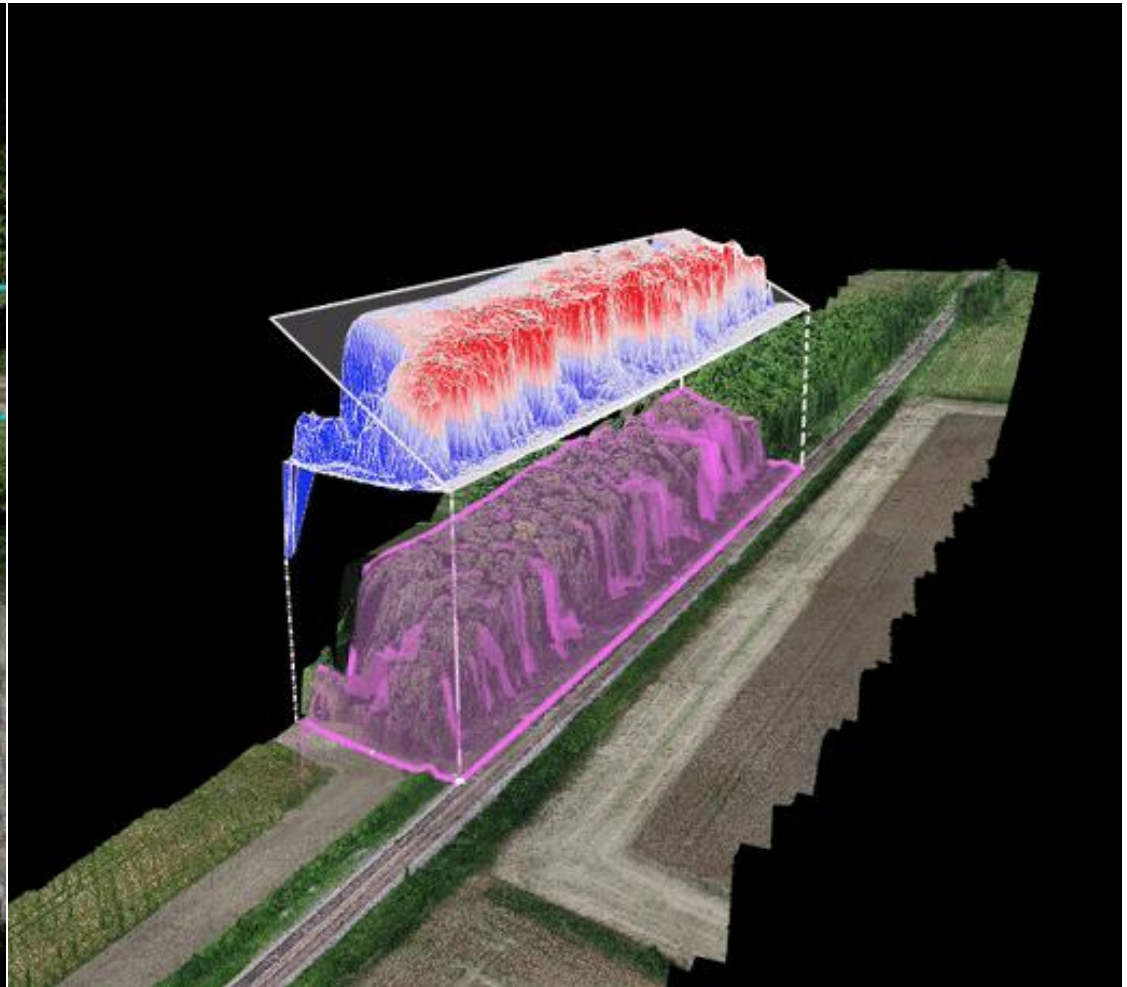
Apr 28, 2025 Exterior Interior 3D



123

mapbox

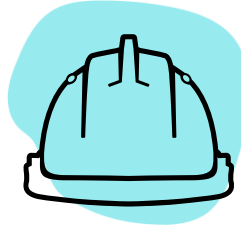
Drone arb modelling



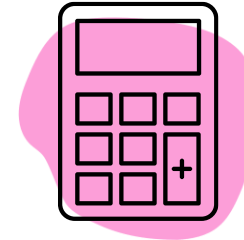
Efficiencies



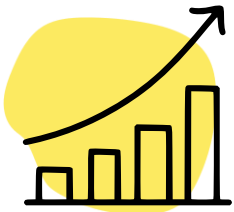
Single survey results in multiple virtual studies



The removal of Boots on Ballast



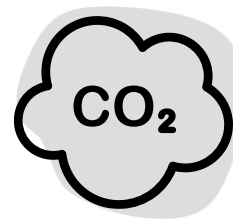
Substantial cost reductions organisation-wide



408% increase of trees identified compared to on-foot



Evidence-driven forecasting & budget planning



Emission reduction & carbon footprint minimisation



Environmental savings through targeted felling

AI Powered Ecology



Artificial Intelligence

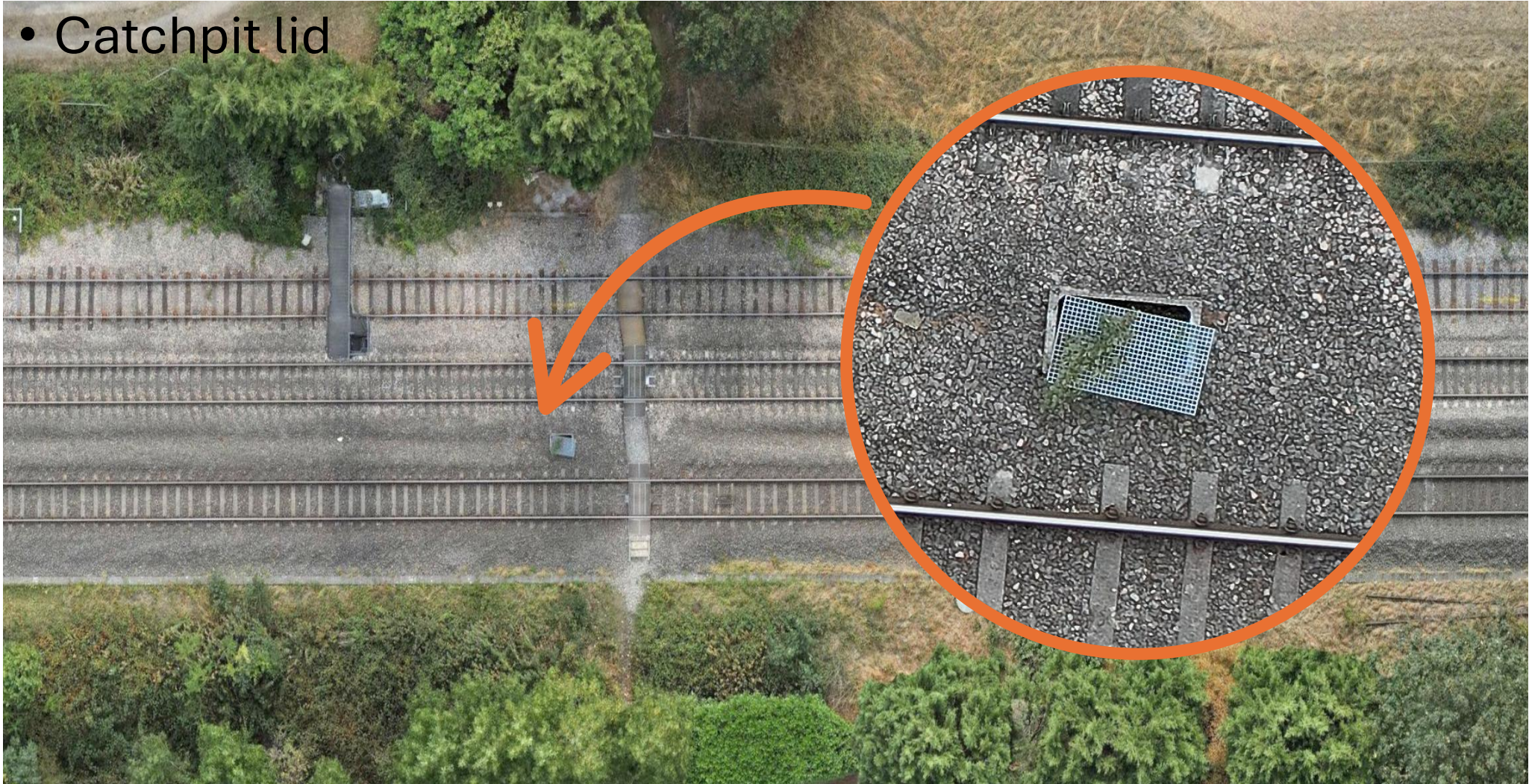
Habitat Classification & BNG Assessment

Artificial intelligence analyses drone imagery to classify habitats and assess Biodiversity Net Gain (BNG) quickly and accurately. This automated, remote approach enhances consistency, reduces manual workload, and accelerates ecological reporting.



Used by other disciplines Eg Close Calls

- Catchpit lid



Lineside Weed Spraying –Mechanised Approach



- 127 miles of track treated twice a year (Spring and Autumn). CVL treatment completed within 5 weeks for entire route
- Reducing impact of vegetation on lineside structures. Making access for staff safer and maintainers
- Controlled management of the levels of lineside vegetation reducing impact on trains.



Coryton Station Weed Spray Progress

Pre Spray



1st Spray



2nd Spray





Before

First Spray

After

Earthworks and Drainage Remote Condition Monitoring “RCM”

**Track
Flooding**

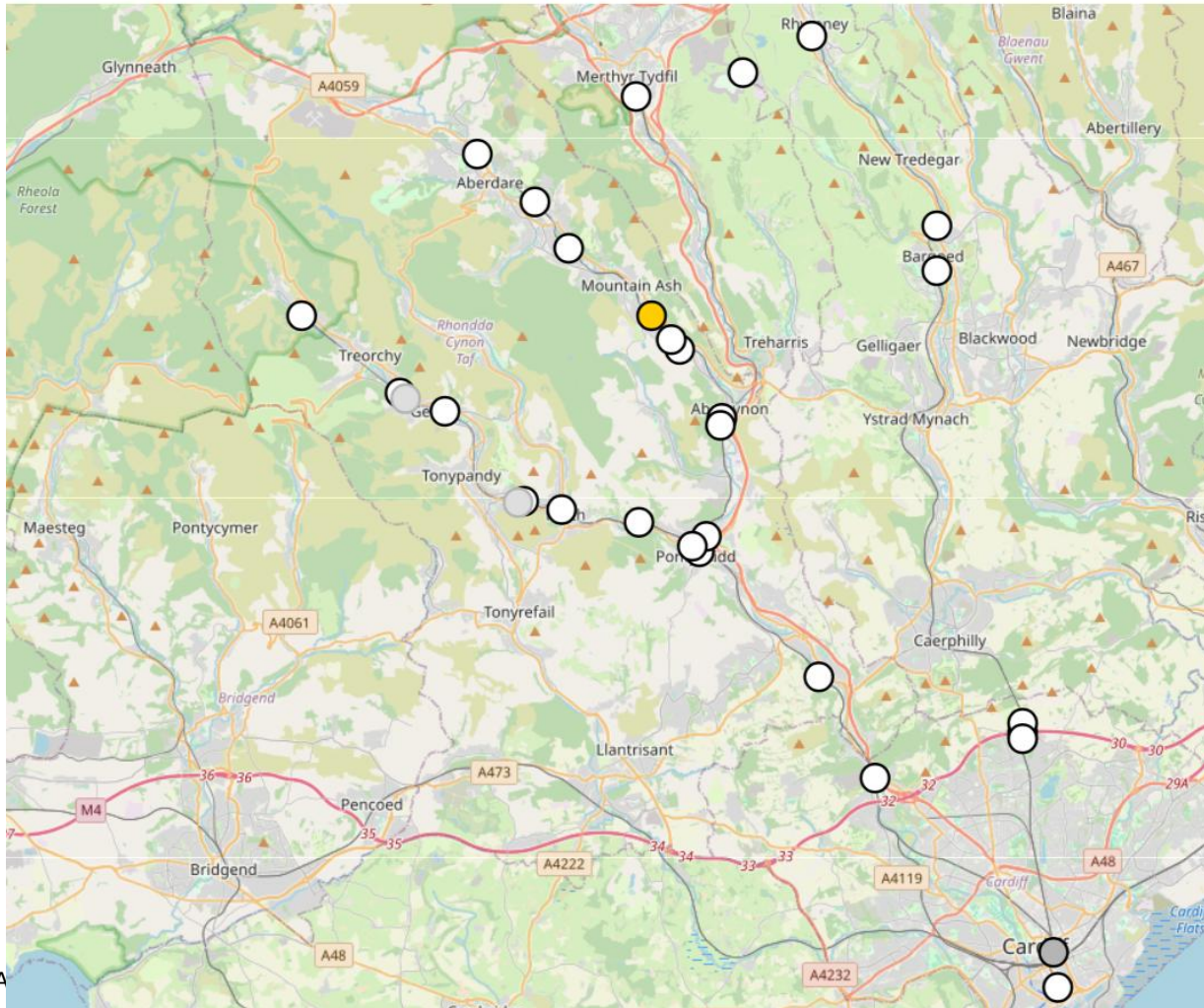
**Bridge-related
Flooding**

**Critical Rail
Temperatures**

**Earthwork
Drainage**

- Traditional
 - Extreme weather can be forecast with little notice, requiring planned work to be cancelled at short notice, to allow pre-event checks at known problem sites
 - Staff often have to travel to and remain on site in poor conditions to perform 'watch-person' duties
 - Reliance on train drivers reporting issues at which point safety and performance risk has likely already occurred
- With RCM
 - Transition to a proactive approach
 - Better forecasting/predictive
 - Prevent incidents before they occur
 - Safety performance improvements because of less on site inspections

MAP



26 sites monitored

7 weather stations

All RCM feeds go to the “Flight Engineer” at the CVL ICC (Taff’s Well)

Faults and Alarms are monitored 24/7

EWAT events triggered by weather alarms

Latest Status

Yellow Alarm

Debris Screen Monitor

Water Level

10:39 on Wed 21 Feb 2024

0.29 m

BDT Level

10:39 on Wed 21 Feb 2024

1

Battery Voltage

10:39 on Wed 21 Feb 2024

13.90 V

10:39 on Wed 21 Feb 2024

Data

Mon 19th Feb 2024 - Wed 21st Feb 2024

Debris Screen Monitor

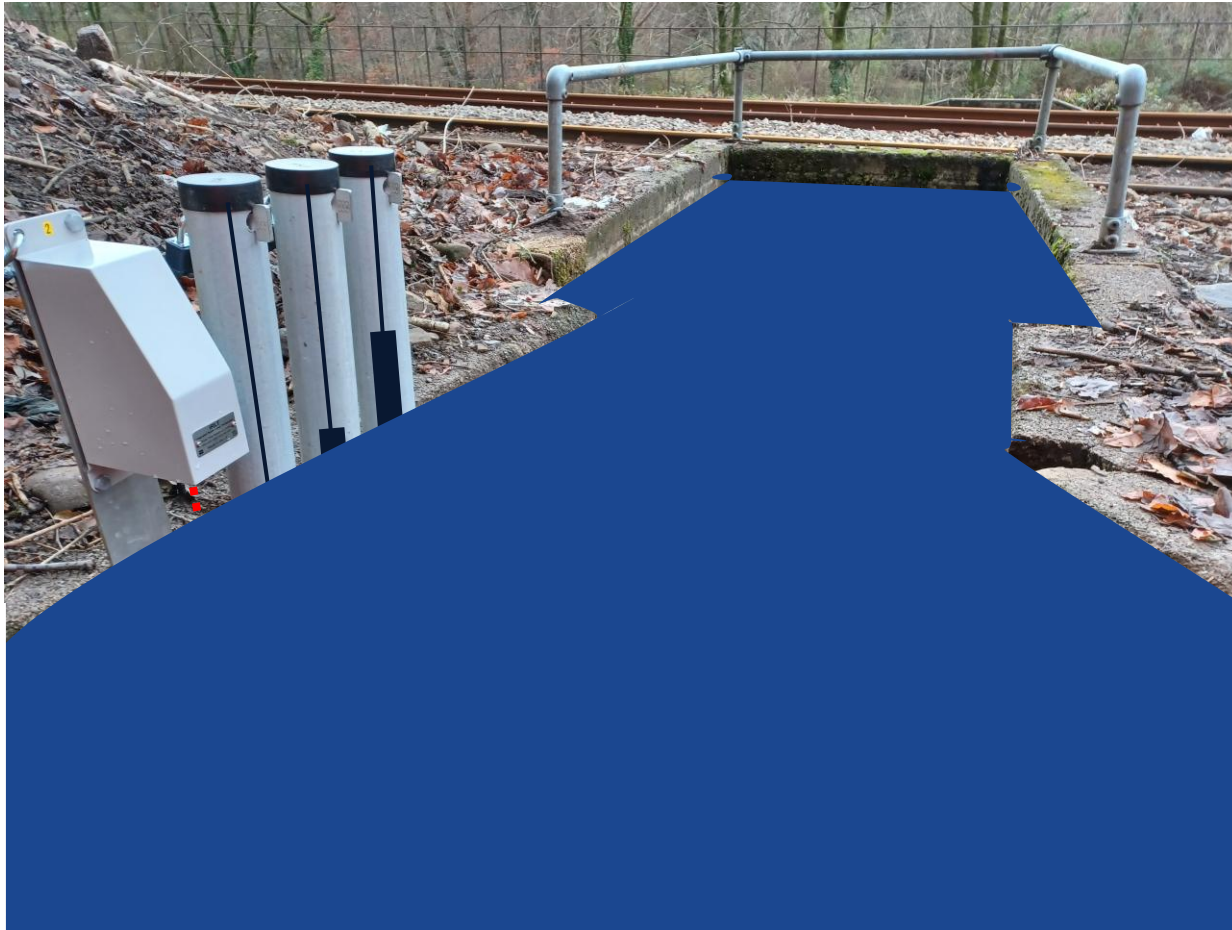
10:39 on Wed 21 Feb 2024



RCM Solutions – Track Flooding, Trehafod

Amey

Often driven by debris screens becoming blocked rather than insufficient capability of the drainage system. Single annual maintenance is not enough at some assets due to the characteristics of the watercourse.



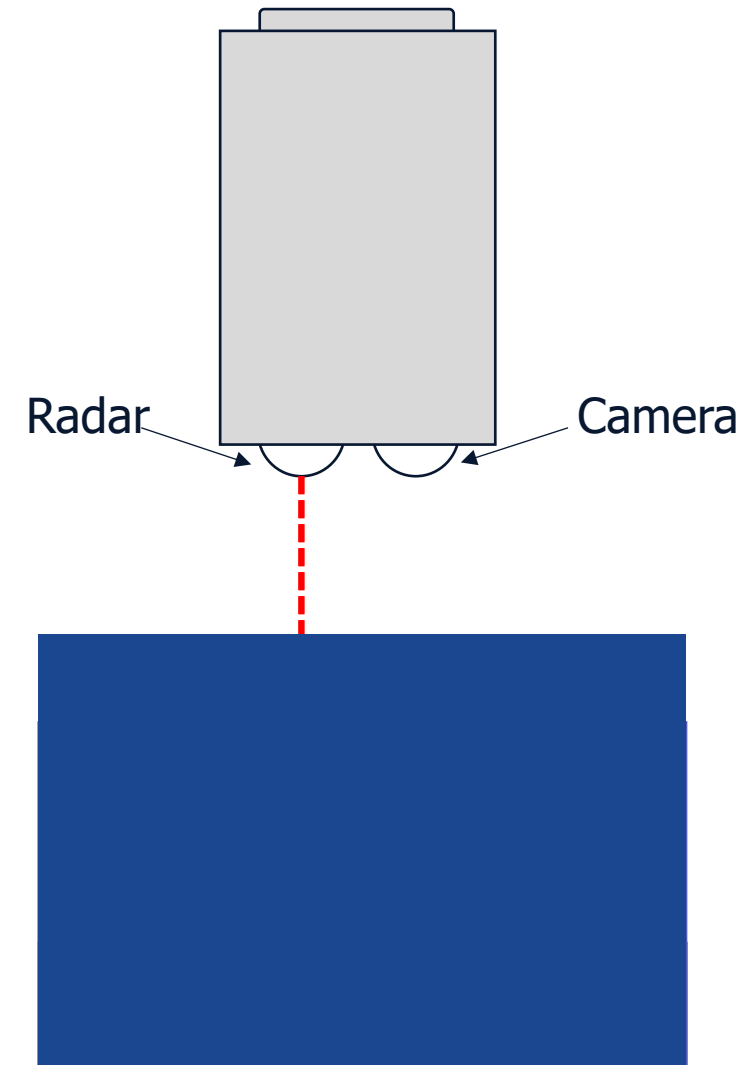
RCM Solutions – Bridge Flooding

Amey



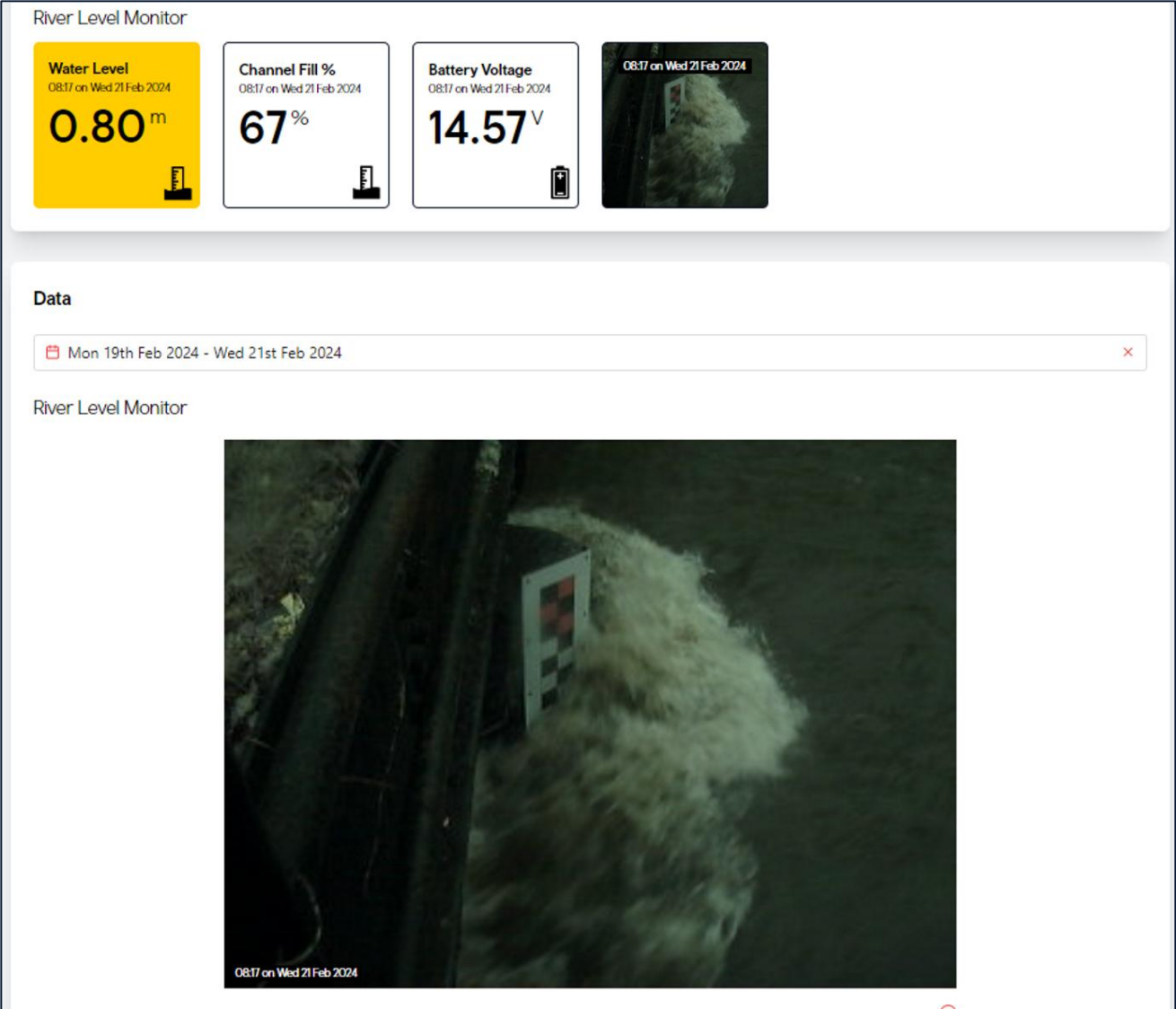
RCM Solutions – Bridge Flooding

Amey



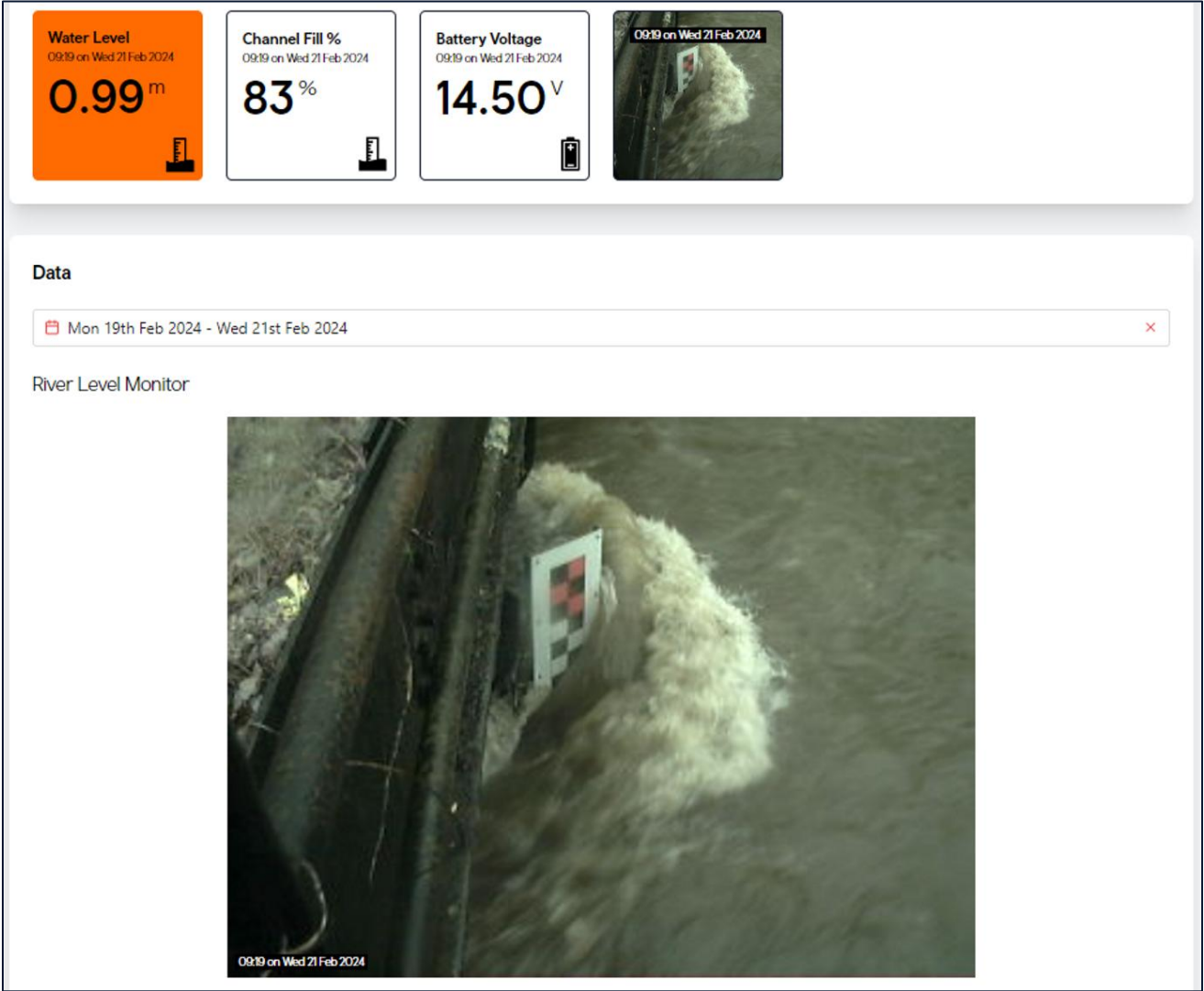
Dashboard Event Examples – Rhondda Fach, Porth

Amey



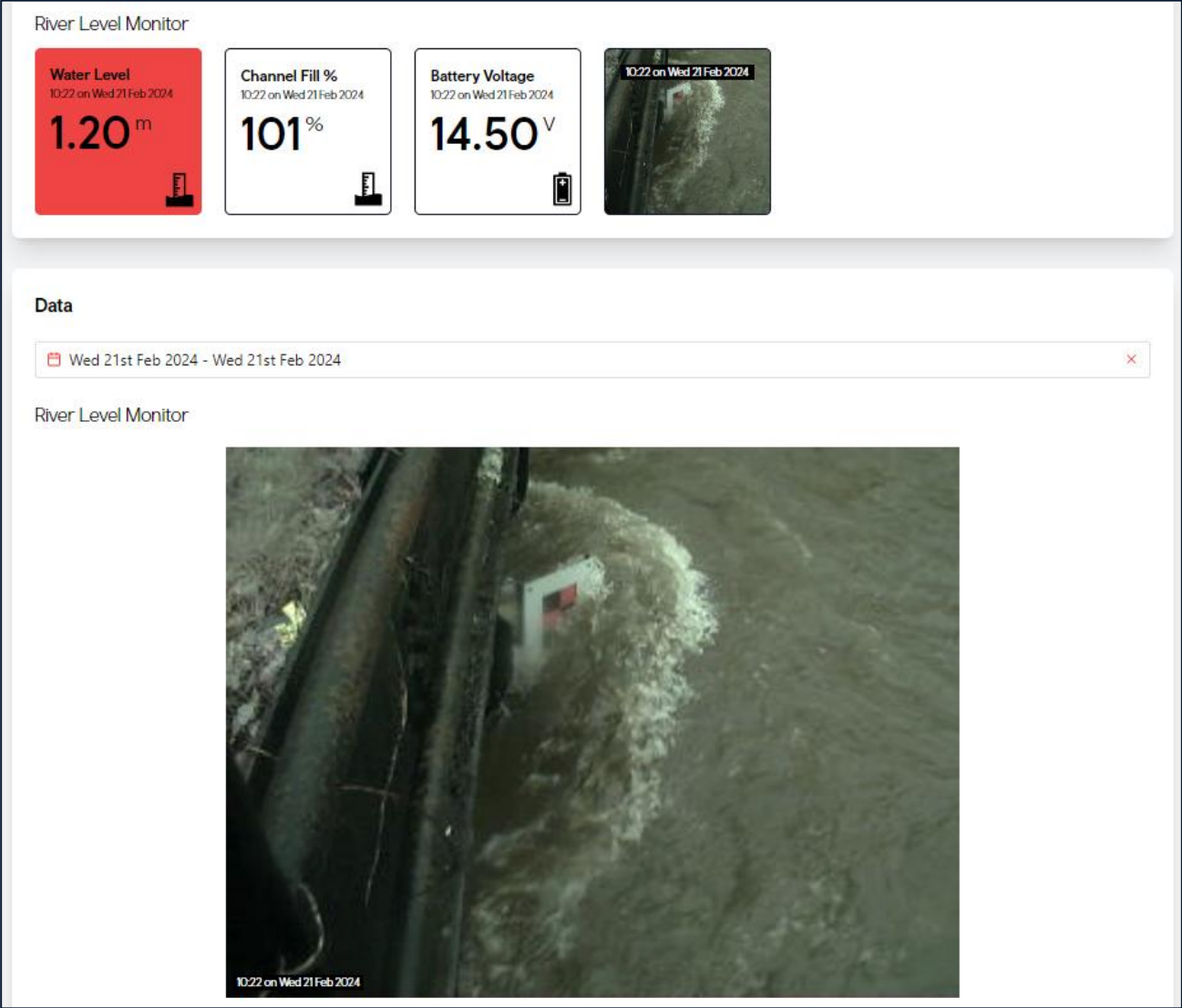
Dashboard Event Examples – Rhondda Fach, Porth

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Dashboard Event Examples – Rhondda Fach, Porth

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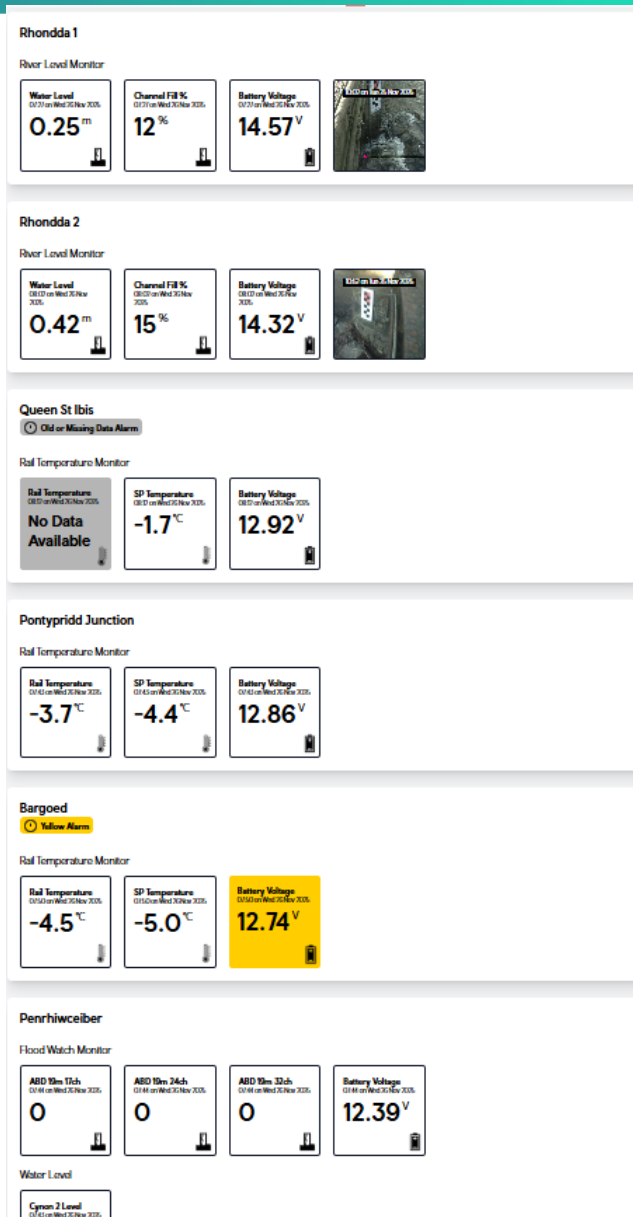
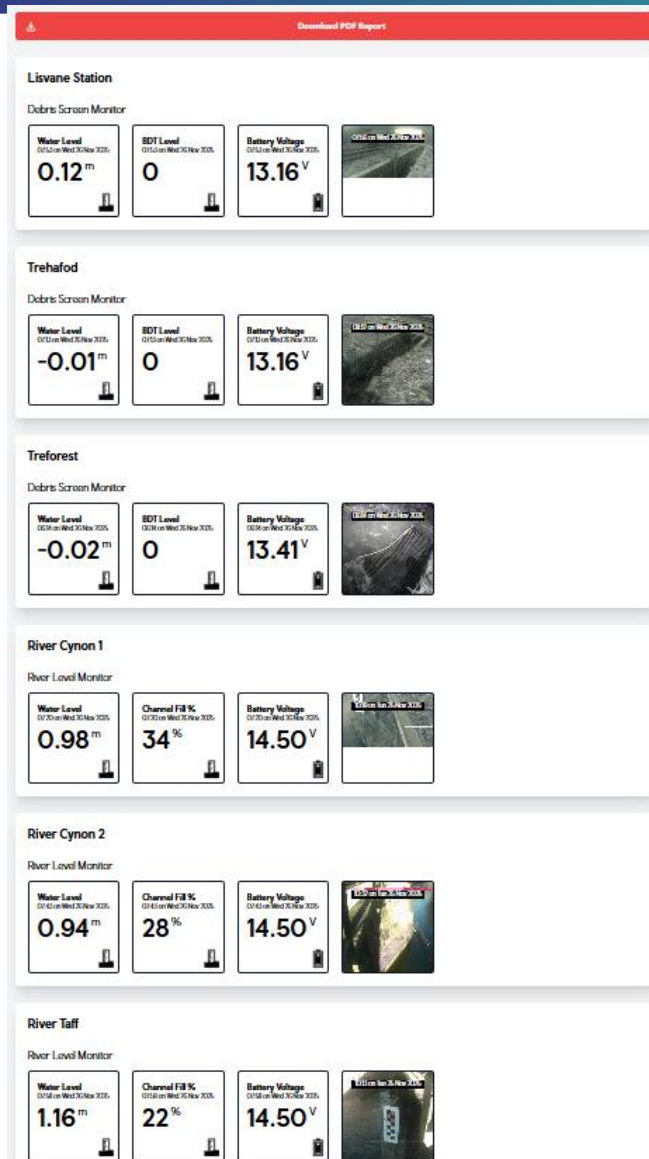


Dashboard Event Examples – Rhondda Fach, Porth

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Earthworks and Drainage RCM and Weather Portal

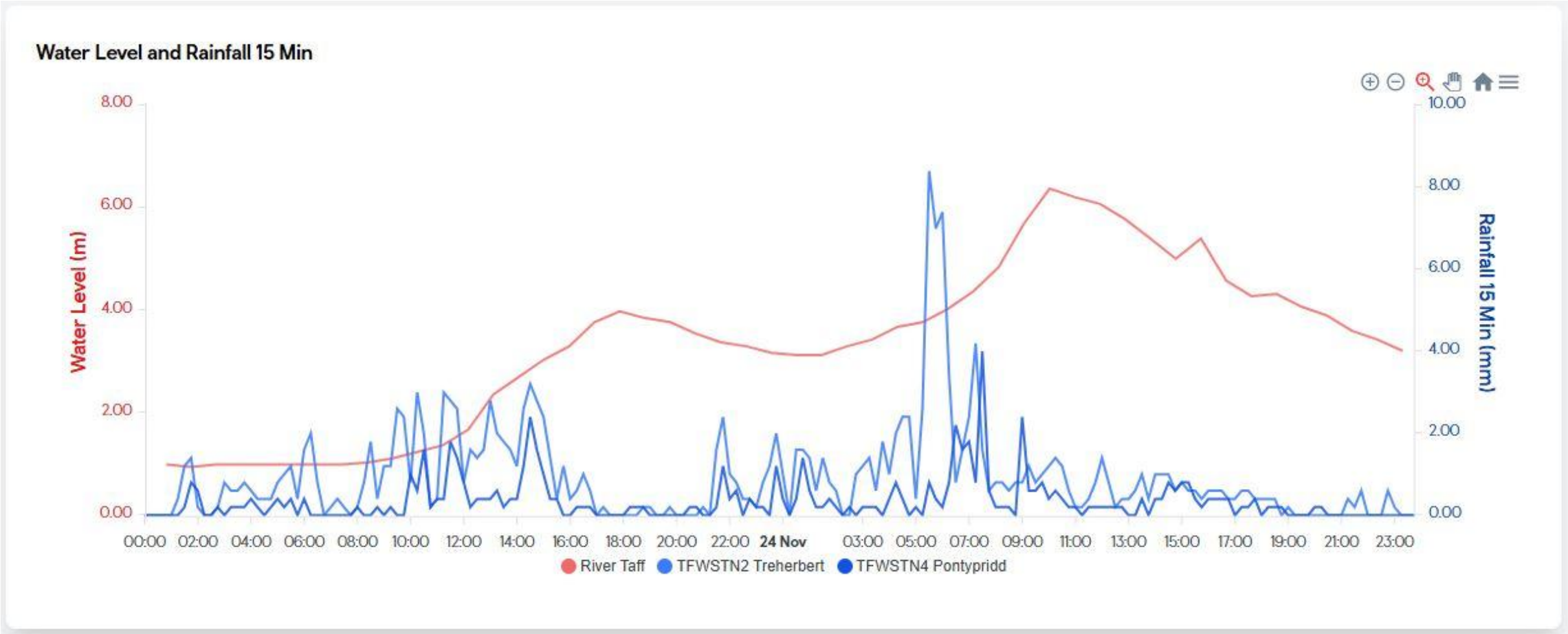


- Dashboard
- Map
- Weather
- Sites
- Alerts
- Analysis

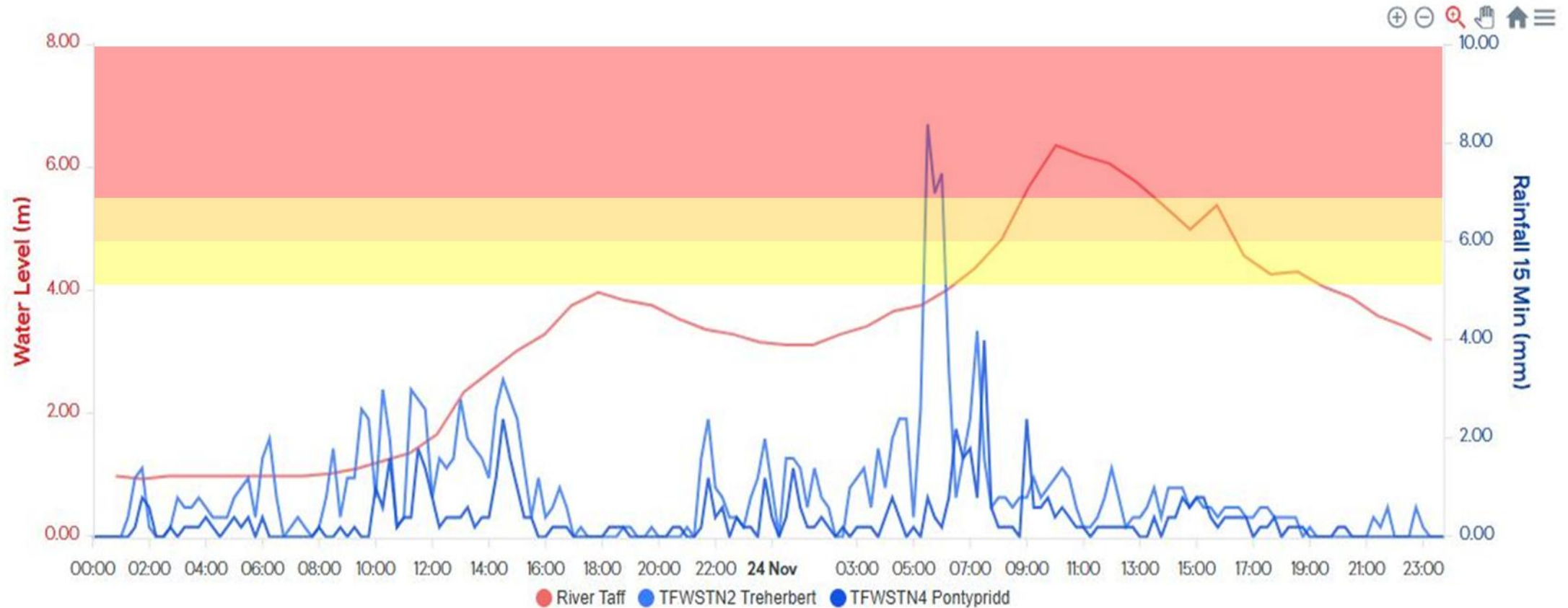
[Dashboard - TfW Amey RCM](#)

Earthworks and Drainage RCM

Innovation



Water Level and Rainfall 15 Min



Train Performance Autumn 2025

Industry Table

TOC		Latest Period	Prior Period	MAA	Latest Period Rank	Prior Period Rank		Latest Period	Prior Period	MAA	Latest Period Rank	Prior Period Rank
		▼										
TfW Rail (CVL)	On Time (to 3 minutes)	91.2%	92.2%	89.0%	1	1	On-the-day Cancellations	2.9%	3.7%	5.5%	11	17
Merseyrail		90.7%	91.5%	90.5%	2	2		3.3%	3.2%	3.4%	17	14
Greater Anglia		90.6%	89.7%	92.3%	3	6		2.3%	2.3%	1.8%	8	6
c2c		90.1%	90.5%	92.2%	4	3		1.9%	1.1%	1.8%	4	1
London Overground		89.0%	90.5%	90.7%	5	3		4.2%	2.9%	3.5%	20	10
Elizabeth line		88.0%	86.8%	89.9%	6	9		4.2%	4.7%	3.9%	20	23
Heathrow Express		87.0%	88.0%	89.2%	7	7		2.7%	3.1%	3.0%	10	13
Chiltern Railways		86.9%	90.2%	89.7%	8	5		1.7%	1.6%	1.9%	2	2
ScotRail		84.2%	87.0%	88.9%	9	8		1.9%	3.0%	2.1%	4	11
Govia Thameslink Railway		82.2%	84.9%	84.9%	10	10		5.2%	5.3%	5.5%	22	25
TfW Rail (Whole Network)		82.2%	83.9%	82.4%	10	12		2.9%	3.9%	4.7%	11	21
Southeastern		81.1%	83.7%	84.3%	12	14		1.8%	2.3%	2.5%	3	6
West Midlands Trains		78.3%	83.8%	83.2%	13	13		4.0%	3.2%	3.9%	18	14
South Western Railway		77.7%	84.8%	83.0%	14	11		5.6%	3.8%	4.0%	24	19
Northern Trains		73.0%	77.3%	78.6%	15	15		3.0%	3.8%	4.3%	13	19
London North Eastern Railway		72.6%	74.7%	72.8%	16	18		2.3%	1.7%	2.7%	8	3
Great Western Railway		72.0%	75.8%	78.5%	17	16		4.1%	3.0%	4.3%	19	11
East Midlands Railway		71.7%	74.8%	75.6%	18	17		2.2%	3.7%	3.5%	6	17
TfW Rail (WCB)		71.6%	74.0%	74.9%	19	19		3.0%	4.1%	3.9%	13	22
Caledonian Sleeper		65.9%	64.6%	71.7%	20	25		3.0%	2.8%	3.0%	13	9
Hull Trains		64.8%	71.4%	69.8%	21	21		2.2%	2.6%	1.8%	6	8
Grand Central		64.1%	68.0%	65.5%	22	24		3.2%	1.9%	3.4%	16	4
Lumo		63.5%	72.2%	69.6%	23	20		0.0%	2.0%	1.3%	1	5
TransPennine Express		63.4%	68.4%	67.7%	24	23		5.3%	3.5%	4.6%	23	16
CrossCountry		62.5%	69.8%	68.8%	25	22		6.2%	5.4%	7.5%	26	26
Avanti West Coast		52.6%	57.4%	57.3%	26	26		6.1%	4.7%	5.1%	25	23

For more information please visit

 **amey.co.uk**