Asset Management in Practice

UK & Ireland

Diarmaid Ó Culáin, Irish Water, Asset Management Development Manager

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EY, Senior Manager Asset Management Specialist.

Mark Macauley
Irish Water, Asset Planning Manager
What is Asset Management

Diarmaid Ó Culáin,
Irish Water, Asset Management Development Manager
Overview

• Why Asset Management?
• What is Asset Management?
• Development of the Irish Chapter of the Institute of Asset Management
Why Asset Management?

Source: ISO/TC 251 Committee

Integrating asset management and sustainability (March, 2018)

Link: https://www.raconteur.net/risk-management/integrating-asset-management-sustainability
We all do Asset Management

• If you had just 100 Euro to invest in your Car:
  – Where would you spend it? (not fuel, tax or insurance)

• Now imagine you are travelling at 120 kmph and have to stop suddenly:
  – Where would you want to have spent it?

• Key points:
  – Asset and Risk Management are fundamentally connected (integrated)
  – Situations and priorities change over time and so may our decisions
### Managing Assets Vs Asset Management

**Source:** ISO.org Newsletter - “Managing Assets in the context of Asset Management” May 2017

#### Managing Assets

<table>
<thead>
<tr>
<th>Your <strong>colleagues</strong> are focused on:</th>
<th>Asset Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Asset data, location and condition assessment</td>
<td>• Information supported decisions (strategic context and related to customer needs)</td>
</tr>
<tr>
<td>• Current KPIs</td>
<td>• Strategies to select and exploit assets over their lifecycles to support business aims</td>
</tr>
<tr>
<td>• Department budget</td>
<td>• Collaboration across departments to optimise resources allocated and activities</td>
</tr>
</tbody>
</table>

#### Stakeholders

<table>
<thead>
<tr>
<th>Your <strong>stakeholders</strong> are focused on:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Costs, Current performance, Response to failures</td>
<td>• Triple bottom line and value</td>
</tr>
<tr>
<td></td>
<td>• Clarity of purpose of the organization</td>
</tr>
<tr>
<td></td>
<td>• Focus on impact of activities on organization’s objectives</td>
</tr>
</tbody>
</table>
## Managing Assets Vs Asset Management

<table>
<thead>
<tr>
<th>Managing Assets</th>
<th>Asset Management</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Your top management</strong> is focused on:</td>
<td><strong>Your top management</strong> is focused on:</td>
</tr>
<tr>
<td>• Short term gain / loss</td>
<td>• Long term value for the organization</td>
</tr>
<tr>
<td>• Departmental / individual performance</td>
<td>• Developing competence and capability across workforce</td>
</tr>
<tr>
<td>• Savings, especially OPEX</td>
<td>• Business risks understood and mitigated</td>
</tr>
<tr>
<td><strong>Your suppliers</strong> are focused on:</td>
<td><strong>Your suppliers</strong> are focused on:</td>
</tr>
<tr>
<td>• Short term contracts and performance</td>
<td>• Long term contracts and/or partnering relationships in support of client value and objectives</td>
</tr>
<tr>
<td>• Service level agreements are focused on contract specifications</td>
<td>• Understanding client strategy and needs in 5-10 years</td>
</tr>
</tbody>
</table>
Good Asset Management practice involves understanding the key AM capabilities required and how they work together.
39 Subjects (Capabilities) of Asset Management

**Group 1 - Strategy & Planning**
1. Asset Management Policy
2. Asset Management Strategy & Objectives
3. Demand Analysis
4. Strategic Planning
5. Asset Management Planning

**Group 2 - Asset Management Decision-Making**
6. Capital Investment Decision-Making
7. Operations & Maintenance Decision-Making
8. Lifecycle Value Realisation
9. Resourcing Strategy
10. Shutdowns & Outage Strategy

**Group 3 - Life Cycle Delivery**
11. Technical Standards & Legislation
12. Asset Creation & Acquisition
13. Systems Engineering
14. Configuration Management
15. Maintenance Delivery
16. Reliability Engineering
17. Asset Operations
18. Resource Management
19. Shutdown & Outage Management
20. Fault & Incident Response
21. Asset Decommissioning & Disposal

**Group 4 - Asset Information**
22. Asset Information Strategy
23. Asset Information Standards
24. Asset Information Systems
25. Data & Information Management

**Group 5 - Organisation & People**
26. Procurement & Supply Chain Management
27. Asset Management Leadership
28. Organisational Structure
29. Organisational Culture
30. Competence Management

**Group 6 - Risk & Review**
31. Risk Assessment & Management
32. Contingency Planning & Resilience Analysis
33. Sustainable Development
34. Management of Change
35. Asset Performance & Health Monitoring
36. Asset Management System Monitoring
37. Management Review, Audit & Assurance
38. Asset Costing & Valuation
39. Stakeholder Engagement

* Source – Asset Management; an Anatomy (2016), The Institute of Asset Management (IAM)
The key challenge of asset management is to integrate disciplines and balance stakeholder needs.
People are at the centre of how to develop AM capability

Coordinated activities of an organisation to realise value from assets (ISO 55001)
Institute of Asset Management
Irish Chapter
- Update
The Institute

“To be recognised as the leading, international, professional body for asset management”

Individual & Corporate Members
Finance / accountants as well as engineers
Source of good practice & cross-industry thinking.
Alliancing and collaborating world-wide

The Institute of Asset Management is grateful for the support of our Patrons
IAM Irish Chapter Development Team*

<table>
<thead>
<tr>
<th>Name</th>
<th>Company</th>
<th>Email</th>
</tr>
</thead>
<tbody>
<tr>
<td>Des Swale</td>
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<td><a href="mailto:Des.Swale@daa.ie">Des.Swale@daa.ie</a></td>
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<td>Mutual Energy</td>
<td><a href="mailto:Sam.Gibson@mutual-energy.com">Sam.Gibson@mutual-energy.com</a></td>
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<td>Ervia</td>
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</tr>
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</tr>
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<td>Irish Rail</td>
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</tr>
</tbody>
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*Please feel free to get involved
IAM Irish Chapter – Current Status and Events

- **Aim:** To share best practice and promote good Asset Management across Ireland, within all sectors.

- **History:** Commenced in 2016

- **Current Focus:** Development of formal entity and start-up business plan setting out activities etc.

- Please get involved!
Asset Management in Practice
Case Study 1 – Highways England

Orla Maher, Senior Manger - Asset Management Specialist
Building Asset Management Plans
Highways England
► Supply chain lead maintenance contracts.

► HE becoming an intelligent client by understanding needs on the asset base.

► Asset management plan to move from reactive to a proactive approach.

► Historic underinvestment leading to increased investment required - £133M required Y1-5.
Building Asset Management Plans
Highways England

Whole Life Cost Models
- Pavements
- Drainage
- Technology
- Environment

Structures
- Geotech
- Lighting
- Highways

Rationalisation Model
- Grouping of cross-asset schemes by location and timing

Projects

Customer Value
- Improved safety through reduced site access
- Road user delay reductions
- Visualisation of long term needs of the asset
- Fewer unplanned failures
### Building Asset Management Plans
Highways England

<table>
<thead>
<tr>
<th>Risk Level</th>
<th>Recommended Geotechnical action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Severe</td>
<td>Remedial actions must be undertaken with highest priority and the H&amp;S/Traffic Management requirements considered and kept under constant review. Consider VFM of preventative works on adjacent Class 2 assets and potential impact on other Routine or Capital maintenance activities.</td>
</tr>
<tr>
<td>High</td>
<td>Remedial actions required, timescale to be determined by the Overseeing Organisation Geotechnical Advisor and Overseeing Organisation Area Manager, but within 5 years. Interim monitoring /inspection may be called for and the H&amp;S/Traffic Management requirements considered. Consider VFM of Preventative works on adjacent Class 2 assets and potential impacts on other Routine or Capital maintenance activities.</td>
</tr>
<tr>
<td>Medium</td>
<td>Remedial action may not be required but preventative action advisable within 5 years. Review inspection and and/or monitoring regime and potential impact on other Routine or Capital maintenance activities.</td>
</tr>
<tr>
<td>Low</td>
<td>No Immediate action required. Review inspection and/or monitoring regime. Consider VFM of Preventative works. Review potential impact on other Routine or Capital maintenance activities.</td>
</tr>
<tr>
<td>Negligible</td>
<td>No immediate action required. Re-inspect in five years.</td>
</tr>
</tbody>
</table>
Building Asset Management Plans
Highways England

### Geotechnical Structures - HD41/03 Risk Level

<table>
<thead>
<tr>
<th>Length (km)</th>
<th>Negligible</th>
<th>Low</th>
<th>Medium</th>
<th>High</th>
<th>Severe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length (km)</td>
<td>5.56</td>
<td>4.40</td>
<td>105.74</td>
<td>15.17</td>
<td>5.15</td>
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<table>
<thead>
<tr>
<th>Geotechnical</th>
<th>Intervention</th>
<th>Yr 1 - 5</th>
<th>Yr 6 - 10</th>
<th>Yr 11 - 15</th>
<th>Yr 16 - 20</th>
<th>Yr 21 - 25</th>
<th>Yr 26 - 30</th>
<th>Total*</th>
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<tbody>
<tr>
<td>At Grade</td>
<td>Preventative</td>
<td>0.1</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.1</td>
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<tr>
<td>Bunds</td>
<td></td>
<td>0.9</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.9</td>
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<tr>
<td>Embankments</td>
<td></td>
<td>13.4</td>
<td>26.5</td>
<td>14.9</td>
<td>27.9</td>
<td>21.6</td>
<td>12.9</td>
<td>117.3</td>
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<tr>
<td>Cuttings</td>
<td></td>
<td>10.5</td>
<td>1.3</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>11.7</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td>24.9</td>
<td>27.8</td>
<td>14.9</td>
<td>27.9</td>
<td>21.6</td>
<td>12.9</td>
<td>130.0</td>
</tr>
</tbody>
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Building Asset Management Plans
Highways England
Building Asset Management Plans
Highways England

Whole Life Cost Models
- Pavements
- Drainage
- Technology
- Environment
- Structures
- Geotech
- Lighting
- Highways

Rationalisation Model
Grouping of cross-asset schemes by location and timing

Projects

Customer Value
- Improved safety through reduced site access
- Road user delay reductions
- Visualisation of long term needs of the asset
- Fewer unplanned failures
Asset Management in Practice
Case Study 2 Irish Water

Mark Macaulay – Irish Water
Overview

• Context and Aim
• Development Approach
• Key Capabilities
  – Framework
  – People
  – Process
• Next Steps and Lessons Learned
The size and scale of the challenge is significant

- Serving 1.6m households and 200,000 businesses nationwide
- €459m capital expenditure
- 1.7bn litres of water processed daily, enough to fill over 680 Olympic sized swimming pools
- Serving 63,000km of water mains and 32,000km of wastewater network – Our combined pipe network could circle the earth twice
- €500m capex savings by 2022
- Over 7,000 Water and wastewater assets including 2,000 Water and wastewater treatment plants
- 1.6bn litres of wastewater is treated daily
- €13bn Investment required to address all known deficits
- 1.25bn opex savings by 2022
- 1.25bn litres of wastewater processed daily, enough to fill over 680 Olympic sized swimming pools
Optimised Whole Life Management?

Are you ready? Keep watching……
We quickly identified that the normal project format and management techniques were not suitable due to:

- **Very high volume and rate of organisational change underway**
- **Large overlap with other big programmes**
- **Changing priorities, often with external factors**
- **Lack of existing ‘baseline’ management system**
Background – Project Team Approach

We quickly identified that the normal project format and what was needed was agility and adaptability in the team and the plan, whilst also maintaining an overview of the final goal – the Asset Management system in 2021.

Solution;

- **Core Team** all able to ‘apply’ Asset Management and with common understanding of the Goal - the ‘Cell’ model
- **More Agile** approach to planning including weekly update, alignment, planning and issue resolution meetings
- **Building and maintaining** a ‘Birds eye view’ of all the change projects underway within the organisation
The Framework

Organisational Strategic Plans (WSPS, WSSP)

Requirements
- Standards (Prescriptive, Code of Practice, Guidance)
- Specifications

Policy
- Level 1
- Level 2

Strategy & Objectives

Plans (inc AMPs)

Process
- Process Map
- Protocol
- Manual
- Procedure
  - SOP

Guidance
- Guidelines
- Alerts

Activity
- Work Instructions
- Task Sheets

Forms/ Templates

Draft Asset Steward – Asset Stewardship Team

Asset Owner

Asset Management Plan(s)

AMP Development

AMP Owner (III Strategy)

Process Optimisation

Regional Asset Strategy

B - Data and Information

Maintenance and Reliability

Ops - Operate Budget

SLA

Delivery (Capex / Opex)

Detailed Plans

Capital/Maintenance Delivery

E - Capital Maintenance Budget

E - Portfolio (Capital Programme)

LA - Line Assets

E - Operate Maintenance Budget

E - Line Assets

E - Line Assets

Regional Asset Stewardship Group

Draft IRISH WATER MANAGEMENT FRAMEWORK
- Draft Asset Stewardship Team/Group -
People & Culture

Introduction to Asset Management
30 minutes Elearning

Foundation Asset Management
1 Day Classroom

Certificate Asset Management
3 Day Classroom

Diploma Asset Management
7 Day Classroom

What is Asset Management
People – pulling it together

What is Asset Management

WSSP Priority
"Reducing the excessive leakage from our water mains through our water conservation programmes. Completion of the domestic metering programme in line with Government policy will create customer awareness of their water usage and support behavioural changes in water consumption. It will identify the location of customer side leaks which can be addressed through our “first fix policy”. In addition, the programme is adding to our knowledge of where lead service connection and supply pipes are located."

Water Conservation Policy
In draft and being developed.

Water Conservation Strategy
In development – building on existing strategies.

Functional Specification & Requirements
- Metering
- Network
- Telemetry
- Pumping
- Others TBD

Standards & Specifications
- Meter replacement specification
- Pipe Materials Standards
- Burst Main Reporting Procedure

Asset Management Plan (AMP)
- Greater Dublin Area AMP
- Eastern Region AMP
- Site specific AMP

Project Charters

PEOPLE & GROUPS

Water Conservation Community of Practice

Related Tech Hubs
- Metering
- Water Networks
Using an end-to-end Asset Management approach to deliver safe and reliable water services.
What is Asset Management

Documents – Wiki ‘Water-pedia’

Treatment Processes (Water) Function Homepage (FSR)

1) Function Description
2) Scope of Function
3) Alignment
4) Key performance Metrics for Function
5) Summary of Current Asset Base
6) Overall Lifecycle Strategy
7) Life Cycle Detail
8) Asset Information Requirements
9) Governance & Technical Hub

Function Description

The treatment of raw water to comply with the European Union Drinking Water Regulations 2014 and the EU Drinking Water (Amendment ) Regulations 2017.

Scope of Function

The scope of the function includes all the drinking water treatment process from barrier 1-8 for both new and upgrade works and processes listed in the Irish Water Treatment Specifications and strategies covering the pre-treatment of water by both chemical (coagulation, pH correction etc.) and physical (clarification, filtration etc.) treatment. This includes disinfection, sludge residuals in addition to pH correction and orthophosphate dosing.

This function has boundaries with Abstraction and Pumping and Water Residuals Management (Sludge). See the FSR Homepage for a map of all functions.

The function does not include raw water abstraction, raw water storage and chemical storage.
Summary

AMS/UMS Framework

- Assets
- People & Groups
- Outputs
- Process Framework
- Document Framework

Culture
- Discipline & Behaviours

Organisational Objectives & Strategy

Document Framework

People & Groups

Outputs
In terms of asset management maturity score across the 39 areas we are in the ‘Aware’ and ‘Developing’ stage.

Integrated good practices in Asset Life Cycle Management (to independently certifiable standard ISO 55001)
We have a clear 5 year roadmap for developing our capability for 2016 – 2021
Lessons Learned

People are priority

Used lots of tools

Building WITH the business

Tough things have delayed benefits

It’s not linear

Small team in the business

You can’t ‘sell’ management systems
Thank you for your time