Open Data Roadmap

December 2023

Open Data Roadmap – Executive Summary

There is a growing movement towards openness in the UK water industry and progress is already being made both in individual companies and at a sector level.

This roadmap is a next step for the sector and is the output of the first Water Open Data Forum, which was held in September 2023. The roadmap outlines the activities and outputs that we believe need collective action and adoption by the water sector to maximise the value generated while at the same time minimising any risks and harms from open data publication.

There are three main reasons why it is beneficial to come together as a sector to work on opening water data:

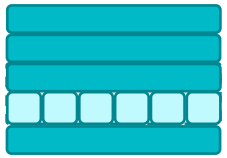
- The challenges faced by water companies don't stop at company borders, some problems demand a national approach, which requires national level data. If we are to do this effectively and efficiently, we need to deliberately facilitate this.
- Collective and collaborative upskilling for companies will get the sector to a more mature state faster.
- Consistency of approach will help provide maximum benefits for users of water data.

To make sure the roadmap is both realistic and fit for purpose, we have included a consultation step and are seeking feedback from water companies, their close stakeholders and a broader audience such as potential data users, customers, open data subject matter experts and those who have experience in opening private sector data.

Once all feedback has been reviewed and incorporated, a second iteration of the roadmap will be present to the Water UK Board meeting in December 2023 and proposed for adoption and delivery. The roadmap will continue to be reviewed and iterated every quarter, with a major review undertaken annually at an in-person Water Open Data Forum event.

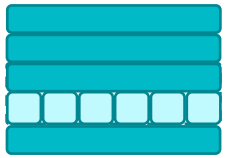
The roadmap itself comprises a common strategy and set of principles, a shared toolkit and common events to ensure best practice is identified, documented and published to help accelerate progression, ensure consistency and provide a fast-track to value creation.

A tabular summary of the roadmap items and associated success criteria can be found on the next three pages.



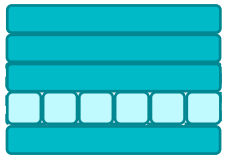
Open Data Roadmap Summary Table

Themes and components	Now - 3 months	3 - 6 months	9 - 12 months
Open Data Strategy	Draft strategy with clear authors and input or review from each water company and selected stakeholders **Success criteria:** A draft strategy supported by all companies and selected stakeholders	Water companies to agree a target maturity level and cadence for publishing open datasets in an iterative way, according to agreed, common KPIs, linked to our principles **Success criteria**: Target maturity level agreed for each company, agreement and documentation regarding publication timelines best practice and evidence of adoption of best practice	We have a common open data strategy and framework that guides the sector with a narrative ready to go and engage with stakeholders **Success criteria:** A published sector strategy and evidence of alignment in individual company open data strategies. Further evidence of adoption of best practice regarding publication timelines in individual companies
Open Data Principles	Agree initial set of principles, linking across best practice from Open Government, Open data Charter, Stream and Water sector **Success criteria:** Draft principles prepared and issued for consultation	Receive feedback on principles from public and key stakeholders, redraft in a forum-style Data Principles Workshop **Success criteria:** Incorporation of feedback and agreement by all companies on a set of principles to be published	Publish final agreed principles, with commitment to revisit annually **Success criteria:** Principles published and evidence of adoption in individual companies. Review cycle schedule established.
Toolkit - Value Framework	Commit to the creation of a value framework that considers financial and non-financial value, openness, technical feasibility and risk **Success criteria:** Agreement on draft framework for consultation	Publish value framework for open consultation and update according to feedback. Commence publishing backlog of datasets according to the framework **Success criteria:** Complete consultation, updated framework published, some evidence of adoption	Publishing open data according to the publicly consulted and industry standardised value framework is BAU **Success criteria:** Evidence of adoption across water companies



Open Data Roadmap Summary Table

Themes and components	Now - 3 months	3 - 6 months	9 - 12 months
Toolkit - Data Triage Process	Review other triage processes and develop key principles to develop a water sector triage process **Success criteria:** Review completed and agreed draft process and principles available ready for pilot	Test the triage process through the first datasets for Day 1 service in Stream **Success criteria:** Completed pilot and learning incorporated into processes ready for adoption	Established industry wide open data triage process, supported by a working group to review and iterate the process, with published assessments **Success criteria:** Triage process published and evidence of adoption and continual feedback loops are in place and informing refinement of processes
Toolkit – Trust Framework	Agree Stream is the correct vehicle to lead the development of a sector trust framework **Success criteria:** Decision made and remaining companies onboarded	Define and prioritise the trust framework components and begin delivery **Success criteria:** Agreed plan in place with evidence of delivery aligned to the plan	Complete delivery and make framework available to the sector. Establish feedback loops to continually improve the framework **Success criteria:** Framework in place with evidence of adoption with evidence that continual feedback loops are in place and informing refinement of processes
Toolkit – Data Capability - Skills and Culture	Share existing best practice on materials, guides and courses around data skills and culture – commit to regular data maturity assessments **Success criteria:** Compilation of relevant training material and documented best practice	Establish an active cross-functional user group on open culture, with a focus on data skills and culture **Success criteria:** Group established and action plan agreed	Every relevant member of every company is aware of what open data means, that the public is aware that data is available for use, for free **Success criteria:** Evidence of adoption of training and best practice guidance



Open Data Roadmap Summary Table

Themes and components	Now - 3 months	3 - 6 months	9 - 12 months
Toolkit – Ecosystem Engagement	Each company establishes a feedback loop for data already published and identifies a named ecosystem engagement lead to work together with other leads **Success criteria:** Evidence of feedback loops and a named lead	Develop a fully mapped out ecosystem to identify three priority groups for engagement and a group wide comms engagement plan to support **Success criteria:** Completed ecosystem map and comms plan. Evidence of engagement	Run a data innovation event with key ecosystem actors for an agreed high value use case and associated datasets **Success criteria:** Outputs and outcomes documented and published from use case hackathon and learning documented to support best practice identification
Toolkit – Other tools and best practices	Create an initial list of tools and best practice guides and ask the sector and wider community for further suggestions **Success criteria:** Initial list of tools and best practice guides agreed and inputs sought and received	Review feedback and incorporate **Success criteria:** List of tools and best practice guides published and available for use	Review toolkit list for active vs inactive tools and review needs for tool gaps **Success criteria:** Updated list of tools and best practice guides. Evidence of use and adoption.
Common events	Identify a list of prioritised events to attend throughout the year **Success criteria:** Draft list of events published	Design and schedule the annual Water Open Data Forum **Success criteria:** Date and outline agenda set	Have a rolling events calendar of priority events and annual water data forum **Success criteria:** Continually updated events calendar published. Evidence of attendance at key events

Open Data Roadmap - Introduction

There is a growing movement towards openness in the UK water industry.

This comes from a grass roots movement among many of the water companies themselves, including those who are members of the **Stream** initiative[1] and from Ofwat, actively encouraging the sector to accelerate towards openness.

The water sector is in an era of unprecedented challenge. Public trust is at an all-time low and companies are facing increasingly complex and novel challenges, much of which is driven by volatile and uncertain factors such as climate change. Coupled with increasing demand for higher standards of service at the same time as lower bills, the need for increased and faster levels of innovation and adaptability have never been higher.

It is also becoming increasingly clear that water companies cannot solve this challenge alone. The approaches and interventions that led to improved performance since privatisation are no longer sufficient on their own to address the new era challenges facing the sector. The sector needs to increase collaboration with others, in a systems-focussed way, leveraging broader pools of innovative talent and data to help accelerate the speed at which the sector can adapt and keep pace with the challenges ahead. Opening sector data is a key enabler of this.

Progress is already being made. Since the first maturity assessment, conducted by PwC on behalf of Ofwat in December 2022, many companies have been putting in place strategies, processes and capabilities and have begun to publish more open data.

The **Stream** initiative was granted delivery funding this year and its members are on target to deliver up to three standardised datasets by the end of 2023. It is also developing a pipeline of valuable use cases and associated datasets to publish from April 2024 onwards, along with a trust framework and portal to facilitate search, understanding and access to published water data and information.

Finally, the very first Water Open Data Forum was convened in September this year, bringing the water companies, their stakeholders and subject matter experts together to create the first iteration of this roadmap.

[1] *A collaborative initiative involving 13 of the English, Welsh and Scottish water companies, funded by the Ofwat Water Breakthrough Challenge Transform fund with the express aim to facilitate the opening of datasets to drive transparency, trust and innovation in the water sector. See Appendix A for more detail.*

Open Data Roadmap - Introduction

"[Data] value is strongly linked to access: all other things being equal, the more accessible data is, the greater the value that can be created from it"[1].

Best practice recognises that the act of data publication on its own neither guarantees accessibility nor value creation. Also, at a sector level, water companies acting alone to improve accessibility will only achieve limited progress.

To go far, fast *and* efficiently as a sector, we recognise that we need to go together.

There are three main reasons why it is beneficial to come together as a sector to work on opening water data:

- The challenges faced by water companies don't stop at company borders, some problems demand a national approach, which requires national level data. If we are to do this effectively and efficiently, we need to deliberately facilitate this.
- Collective and collaborative upskilling for companies will get us to a more mature state faster.
- Consistency of approach will help facilitate users of water data.

To do this, we need to take a deliberately co-ordinated approach in establishing a range of common elements, for example, shared principles, frameworks and toolkits.

We also need to identify, document and share learning and best practice so that we can maximise data accessibility and, as a result, provide both data publishers and consumers a fast-track to value creation.

[1] The Open Data Institute Dec 2022 (from Understanding the social and economic value of sharing data | The ODI)

Open Data Roadmap - Introduction

In their recent publication on Open Data[1], Ofwat has also made the following recommendation (for all 8 recommendations, please refer to Appendix B):

"Industry-wide collaboration is helpful for development of data portals, facilitation of knowledge sharing and development of common standards that enhance interoperability of data.....Such collaboration should also involve engagement with independent experts to draw on learnings from other sectors. Importantly, companies should not rely solely on collaborative groups for ensuring progress"

Like Ofwat, we recognise that a combination of independent and collective action will yield the best outcomes.

For example, an individual company should be accountable for putting in place appropriate strategic oversight and capabilities to support open data publication. In parallel, it should also seek to collaborate with other water companies. This is to facilitate users who seek to understand or tackle issues at a national scale, to demonstrate sectoral responsibility to customers and communities through transparency and innovation or simply to drive overall efficiency in data publication and use.

We seek to align as much as possible on publishing the same data openly to maximise value, and encourage open data more broadly. A significant area to coordinate activity on is on developing open data 'enablers', which, once developed collaboratively, empower individual companies to publish much more data.

[1] **https://www.ofwat.gov.uk/wp-content/uploads/2023/06/Open-data-in-the-water-industry-making-the-change.pdf**

Open Data Roadmap

About this roadmap

On 14th September 2023, Stream, the Open Data Institute and Microsoft convened a cross-industry event, the first Water Open Data Forum, to begin the process of drafting a sector open data roadmap. Every water company was invited to send up to three representatives. Other key stakeholders and guest speakers also attended to ensure a variety of perspectives and subject matter expertise was incorporated. A series of workshops were run, and the draft outputs taken forward by a series of water company volunteers to refine the outputs into this first iteration of the sector roadmap. A list of companies who were represented at the event can be found in Appendix C.

The roadmap outlines the activities and outputs that we believe need collective action and adoption by the water sector to maximise the value generated while at the same time minimising any risks and harms from open data publication. The roadmap does not seek to act as a publication timeline for when water companies will publish specific datasets either individually or collectively, but it will set out the need for each individual company to create and publish such a timeline.

The roadmap is also a public and constructive response to the work that Ofwat has been focussed on regarding open data, very clearly articulated in both H2Open – Open data in the water industry: a case for change in 2021 and Open data in the water industry: making the change in 2023. Therefore this document is similarly focussed on the open data needs and opportunities of the sector, and may omit discussion on other important topics within the water, best covered elsewhere.

As we 'learn through doing', the roadmap will continue to be refined and iterated as we incorporate learning discovered during delivery. The roadmap is intended to begin as a high level document, with more specific content and milestones unfolding as the sector undertakes the necessary first steps. Formal review and iteration sessions with water companies and close stakeholders will be conducted every quarter online, with a major review and iteration conducted once a year at an in-person Water Open Data Forum event. We propose to publish any updates to the roadmap, along with associated learning so that we continue to work in the open on this important matter.

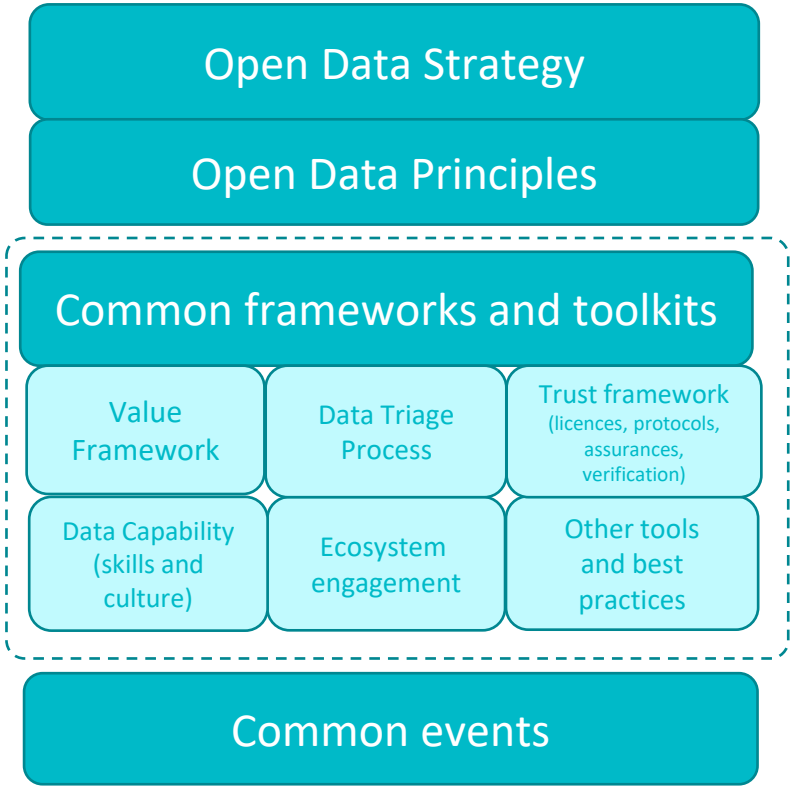
Open Data Roadmap

The structure of the roadmap and how to provide feedback

The roadmap is made up of nine component parts as shown in the diagram to the right:

Each component has a dedicated section which sets out:

- Our vision for the component
- Information on the related recommendation from Ofwat's report on sector maturity progress[1] (see Appendix B for more information)
- Goals and key information
- Next steps to achieve the goals and vision
- Timeline
- Specific consultation questions (if any) where we would like additional feedback on the section proposals
- In some sections, further detail has been developed this has also been added for visibility, consultation and feedback



We have created a Microsoft Form to allow for comment against a set of general consultation questions, as well as an opportunity to provide feedback and response to specific section content and questions. You are free to answer as many or as few of the questions as you feel are relevant to your area of interest and expertise.

Responses received will be reviewed and incorporated into the second iteration of the roadmap which will be recommended for adoption at the December 2023 Water UK Board meeting.

[1] **https://www.ofwat.gov.uk/wp-content/uploads/2023/06/Open-data-in-the-water-industry-making-the-change.pdf**

Open Data Roadmap

How we propose deliver the roadmap

The roadmap calls for individual and collective activity.

For individual activity, the responsibility for ensuring the activities are completed lies with the individual water companies themselves.

For collective activity and the collection and dissemination of best practice, it is proposed that **Stream** acts as both the co-ordinator and custodian of the roadmap and any other sector level artefacts. **Stream** will also help to facilitate the adoption of Open Data processes and practices for different companies, with different resources and capabilities through the pooling and sharing of best practice.

Stream is a sector wide initiative, aimed at facilitating the opening and sharing of water sector data to improve transparency, trust and facilitate innovation. It is currently funded as part of the Ofwat Water Breakthrough Challenge and was already set to deliver several of the sector level artefacts called out in this roadmap. Stream has two major milestones in the next 12 months:

1) Minimum viable platform and publication of datasets by the end of Dec-23 – from which learning will be taken into the next milestone;

2) Day 1 Service – where further datasets will be published via the Stream platform (currently in procurement). After this milestone, further uses cases and associated datasets will continue to be published and processes refined through 'learning by doing' and seeking feedback from users

The initiative is already well supported across the sector, with 12 out of the 16 regulated English and Welsh water companies plus Scottish Water already members. We propose the remaining four water companies also join, so that Stream can act as the industry forum on matters relating to Open Data.

The initiative has a robust governance structure, established with the support of Icebreaker One, (one of the five delivery partners working with **Stream**) comprising of a steering group and a range of advisory groups. The governance structure enables strategic oversight by regulators and special interest groups and allows input from many open data subject matter experts including representation from the financial and energy sectors.

The **Stream** steering and advisory groups meet monthly, and it is proposed that is it via these established groups that the quarterly review of the roadmap is conducted. The initiative's programme management office will use existing processes to co-ordinate activity and ensure any internal and external dependencies, risks and issues associated with delivery of the roadmap items are managed appropriately.

Further information on **Stream** can be found in Appendix A.

Responsible Data Stewardship

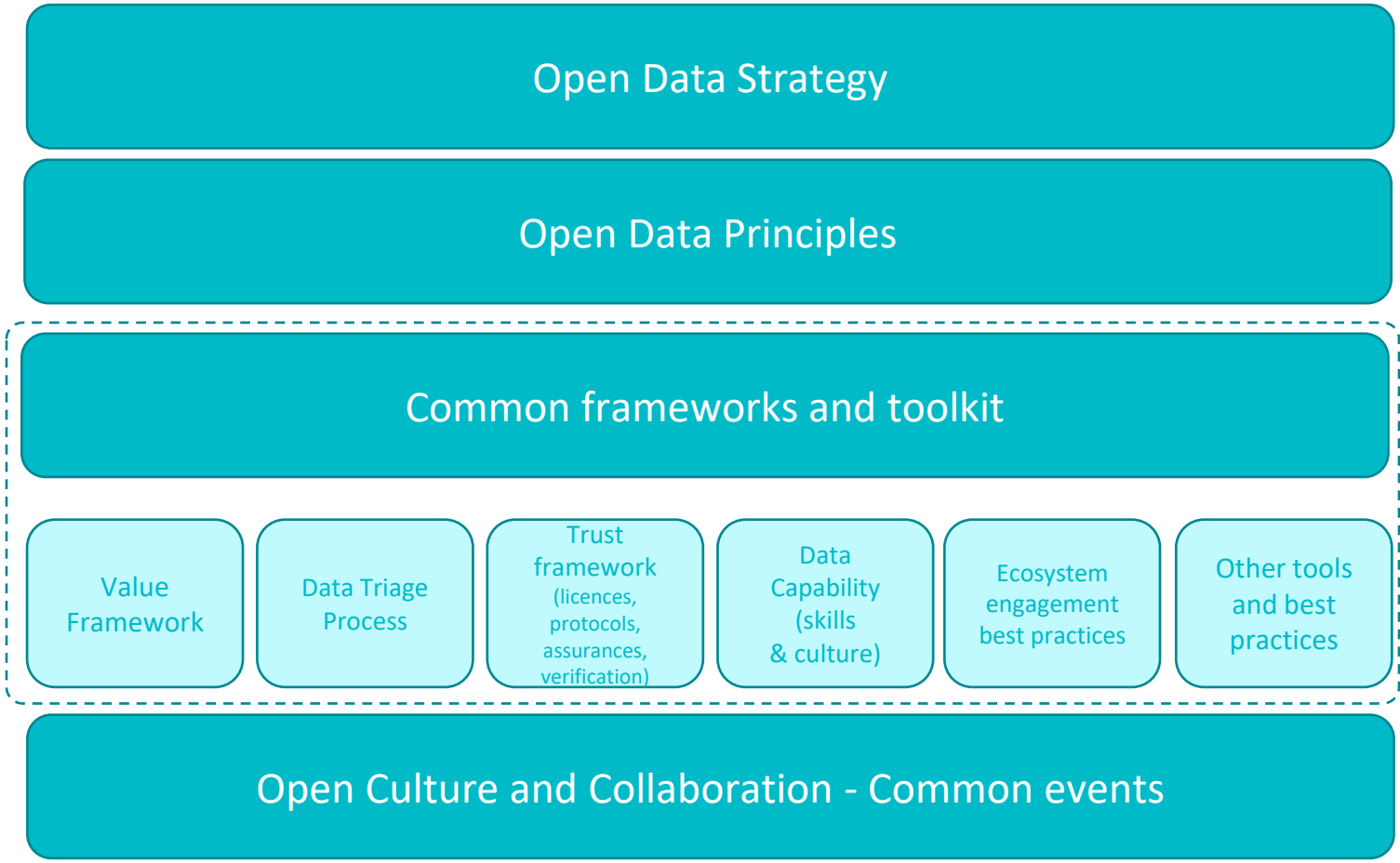
As water companies, we are the custodians of valuable data and information about not only water and wastewater services, but also how those services interact with individuals, communities, the environment and how we live.

Data stewardship involves collecting, maintaining, and sharing data. How data is stewarded ultimately affects what types of products, services and insights it can be used to create, what decisions it can inform and which activities it can support. Organisations that steward data make important decisions about who has access to it, for what purposes and to whose benefit.

The **responsible** stewardship of data is an iterative, systemic process of ensuring that data is collected, has context, and is used and shared for public benefit, mitigating the ways that data can produce harm, and addressing how it can redress structural inequalities. This can take different forms, including creating open datasets that anyone can access, use and share to further a particular mission or cause.

As stewards of this data, we have a responsibility to maximise its value by making it openly available, whilst also ensuring we minimise the risk of harm that can come from sharing data. We will balance the need for data sharing and transparency with considerations of privacy and security. By being responsible stewards, and building the tools, knowledge, culture and processes to open access to our data in a safe and appropriate way, we can realise our vision to unlock its potential to benefit customers, society, and the environment.

The Roadmap Themes and Components



Open Data Strategy

Our vision

We will create and publish an overarching open data strategy for the water sector. The strategy will articulate the collective vision and mission for the publication and use of open data. The strategy will set out *how* the vision and mission will be achieved, with clear milestones and measures of success. Individual company open data strategies will clearly link to the sector strategy.

Related Ofwat recommendation

Companies should develop comprehensive open data strategies, clear roadmaps for delivery with associated delivery KPIs, and set up sufficient accountability and strategic oversight to ensure company board and senior/executive management buy-in, for example by tying delivery of strategy to executive performance.

Goals and key information

Agreed goals

- We have a common, high level open data strategy and framework that guides the sector with a narrative ready to engage with stakeholders.
- We will establish a sector wide approach to the publication timelines associated with individual and collective release of data and agree a set of common KPIs linked to our principles
- We will ensure individual water company open data strategies align with the sector level strategy
- We will agree a target level of maturity to deliver a step change in capability across the sector (for example, minimum overall state of 'Developing' within 12 months)
- We will agree and document in the strategy how we will work collaboratively as a mechanism to address the differences in maturity starting points and resourcing so that the sector overall makes faster progress

Next steps

- Propose and seek support that overall ownership and responsibility for the development and maintenance of the sector strategy sits with Stream
- Use the outputs from the principles work (see next section) and subject matter input available via Stream to draft and publish a strategy that works across the sector with clear authors and input from all relevant stakeholders
- Understand individual water company timelines for publishing or updating individual company Open Data strategies, share and document best practice and ensure there is alignment to the sector high level strategy

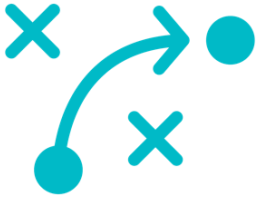
Open Data Strategy

Agree Stream's role and produce a strategy plan with clear authors and input or review from each water company and selected stakeholders

Now-3 months

Have established a target maturity level and cadence for publishing open datasets according to agreed, common KPIs, linked to our principles

3-6 months



Finalise and publish sector level Open Data Strategy

9-12 months

Stream

open data institute

Ofwat

Microsoft

Open Data Strategy

Detailed information and links to other commitments

Agree Stream's role and produce a strategy plan with clear authors and input or review from each water company and selected stakeholders

- Propose and seek support at the December Water UK Board meeting for Stream's role as the sector level co-ordinator for Open Data
- Bring Chief Data Officers (or equivalent roles) together to draft the sector open data strategy, including proposing a target maturity state for the sector (what by when), a set of common KPIs and agreeing how individual companies will work collaboratively to address differences in maturity starting points and resourcing.
- Dependency on conclusion of Principles work (see next section) as key input to the strategy

Have established a target maturity level and cadence for publishing open datasets according to agreed, common KPIs, linked to our principles

- Work with individual companies to agree best practice regarding publication timelines and agree a plan, involving pilot releases and a learn-by-doing approach, to implement this across all companies. Companies will ensure appropriate resources to deliver to their timelines.
- Understand and document a timeline for publication/update of individual company open data strategies and facilitate alignment to sector open data strategy through the sharing of best practice

Finalise and publish sector level Open Data Strategy

- Create a sector-wide strategy that is broad enough to contain the different needs of the communities of different water companies, while providing clear steering to drive their own data strategies

Open Data Principles

Our vision

We have a shared set of open data principles that communicate what is important and necessary to the success of an open data initiative. They will serve as a foundation for making decisions, developing underpinning policies and strategies and to drive culture change

Related Ofwat Recommendation

Companies should develop comprehensive open data strategies, clear roadmaps for delivery with associated delivery KPIs, and set up sufficient accountability and strategic oversight to ensure company board and senior/executive management buy-in, for example by tying delivery of strategy to executive performance.

Goals and key information

Agreed goals

- Publish final agreed principles, with commitment to revisit yearly for iteration, feedback and update

Next steps

- Agree initial set of principles, linking across best practice from Open Government, Open Data Charter, Stream and Water sector, drawing from drafts on the following slides
- Publish initial set of principles for feedback from ecosystem stakeholders and public
- Incorporate feedback and agree and publish a working set of principles

Stream open data institute Ofwat Microsoft

Common Principles

Approach 1 – Communally defined based on FAIR

DRAFT PRINCIPLES FOR FEEDBACK

Findable	**Data is easy to find for both humans and computers, with a globally unique and persistent identifier, rich metadata, and registered or indexed in a searchable resource, such as a company open data portal, and/or an external platform.**
Accessible	**Data is retrievable by identifier using a standardised communications protocol that is open, free, and universally implementable and metadata is accessible, even when the data is no longer available**
Interoperable	**Data uses a formal, accessible, shared, and broadly applicable language for knowledge representation that is standardised across the water sector and as linkable as possible to data infrastructure in other sectors related to utilities, the built environment, and the natural world**
Reusable	**Data is defined and richly described with a plurality of accurate and relevant attributes, is released with a clear and accessible data usage license, associated with detailed provenance and meets domain-relevant community standards, including around quality, provenance, accuracy and more.**
Open	**Data will be published according to the ODI open data definition - to be accessed, used and shared by anyone.**
Ethical	**The positive and negative impact of collecting, using and sharing data, and relevant mitigations, will be assessed throughout all stages of the data lifecycle, with findings transparently and openly published.**

Common Principles

Approach 2 – Communally defined based on Ofgem Data Best Practice

DRAFT PRINCIPLES FOR FEEDBACK

1. Identify the roles of stakeholders of Data Assets.
2. Use common terms within Data Assets, Metadata and supporting information.
3. Describe data accurately using industry standard Metadata.
4. Enable potential Data Users to understand Data Assets by providing supporting information.
5. Make Data Assets discoverable for potential Data Users.
6. Learn and deliver to the needs of current and prospective Data Users.
7. Ensure data quality maintenance and improvement is prioritised by Data User needs.
8. Ensure Data Assets are interoperable with Data Assets from other data and digital services.
9. Protect Data Assets and systems in accordance with Security, Privacy and Resilience (SPaR) best practice.
10. Store, archive and provide access to Data Assets in ways that ensure sustained benefits.
11. Treat all Data Assets, their associated Metadata and Software Scripts used to process Data Assets as Presumed Open.
12. Ensure that data assets, metadata and software scripts are collected, used or shared with due consideration for data ethics. (Recommended by ODI and Energy Systems Catapult in recent Ofgem consultation)

Note: OFGEM DATA BEST PRACTICE PRINCIPLES TO BE CONTEXTUALISED TO WATER

Stream ODI open data institute Ofwat Microsoft

Common Principles

Agree initial set of principles, linking across best practice from Open Government, Open data Charter, Stream and Water sector

Now-3 months

Receive feedback on principles from public and key stakeholders, redraft in a forum-style Data Principles Workshop

3-6 months

Publish final agreed principles, with commitment to revisit yearly

9-12 months

Stream

open data institute

Ofwat

Microsoft

Common Principles

Detailed information and links to other commitments

Agree initial set of principles, linking across best practice from open data movement and water sector

- ODI and water companies took inspiration from existing principles in Open Government, the Open Data Charter and Stream
- Created a first draft for feedback at the Water Open Data Forum
- Produced this initial set for inclusion in the roadmap and feedback from public

Receive feedback on principles from public and key stakeholders, redraft in a forum-style Data Principles Workshop

- Feedback from the roadmap public consultation process to be incorporated into redrafting the principles
- ODI to convene a Data Principles Workshop to gather key stakeholders across the industry and help incorporate the consultation feedback on the principles into a new set of official Water Sector Open Data Principles

Publish final agreed principles, with commitment to revisit yearly

- Water Sector Open Data Principles to be published by Stream and to be connected to the open data strategies of all water companies in the sector, regardless of their connection to Stream
- Principles will be sent out for consultation with industry stakeholders, open data leaders and the public every year

Common Principles

Consultation questions

- Is the Ofwat recommendation being met and will our proposed activity plan deliver on our ambition? If no, what is missing?
- Do these **principles** reflect the need and ambition of the sector and of wider stakeholders? Is one set more appropriate than the other? Is there a need to draw from both?
- Do the **descriptions** reflect the need and ambition of the sector and of wider stakeholders? Do they make sense based on the principles? Note: FAIR come from an existing definition (GO FAIR) as does Open (ODI)
- Are they at a sufficiently high level to be applied to the range of maturity in open data which exists across the sector and hence the potential differences which may need to be reflected in the individual open data strategies?
- Any other comments

Shared Toolkit

Overview

- Throughout the Water Data Forum we discovered that many of things we need to unlock the potential of open data, and were committed to producing for the roadmap, could be packaged as an openly published toolkit for the sector
- This toolkit will be collaboratively developed with the sector, open to public consultation and feedback from key stakeholders, it will include things such as:
  - A Value Framework to prioritise high value datasets
  - A Data Triage process to assess and mitigate the risks of data sharing
  - A Trust Framework to guide the development of standards
  - Recommended avenues to improve data capabilities
  - Best practices for data user and stakeholder engagement
  - Other tools and best practices.

Toolkit - Value Framework

Our vision

The value of datasets, open data and data sharing is a complex concept, where value is often relative or contextualised, and is potentially economic, social and environmental.

A shared Value Framework will help set out the specific ways in which data will be 'valued' for a particular purpose, such as publishing open data held by the water sector to help achieve their public task. Although we seek to align around a value framework, it should be noted that water companies will not be prevented from publishing data using their own prioritisation methods in the meantime.

Related Ofwat Recommendation

Identify priority datasets and set stretching targets to release them such that they accelerate the development of companies' general open data capabilities to support further data releases in the future. Pilot releases should be conducted and a 'learn by doing' approach should be adopted to iteratively improve on each subsequent data release

Goals and key information

Agreed goals

- Devise and agree a water open data Value Framework (a 4-axis prioritisation framework which considers: value (through the lens of the 5-capitals[1]), an openness suitability score, technical feasibility to release and risk
- Create and publish a prioritised backlog of datasets
- Within a year, all water companies will be publishing open data according to the framework

Next steps

- Agree overall water company lead
- United Utilities, Welsh Water and Yorkshire Water to define and socialise the framework
- Define other recommended goals further for roadmap
- Publish value framework for consultation, following delivery of Stream Minimum Viable Product datasets (test & learn approach)

1 - The Five Capitals - a framework for sustainability | Forum for the Future

Toolkit - Value Framework

Commit to the creation of a Value Framework that takes into account financial and non-financial value, openness, technical feasibility and risk

Now-3 months

Publish Value Framework for open consultation

Publish backlog of datasets according to the framework

3-6 months

Business-as-usual (BAU) high value data publishing

12 months+

Stream

open data institute

Ofwat

Microsoft

Toolkit - Value Framework

Detailed information and links to other commitments

Devise and agree a water open data Value Framework

- Create an initial 4-axis prioritisation framework which considers: value (through the lens of the 5-Capitals), an openness suitability score, technical feasibility to release and risk. The Value Framework should also account for regional variation in needs and therefore value. Provide this as feedback for the initial consultation period
- Explicitly link the value framework to the data triage process as part of a comprehensive and joined-up approach to open data publishing

Publish Value Framework for open consultation and create a prioritised backlog of datasets

- Publish a more detailed value framework, taking into account initial consultation feedback and best practice from mature open data publishing environments
- A backlog of datasets should be prioritised according and published at a cadence as determined within individual organisations open data strategies, using the value framework to support prioritisation with inputs from both the wider sector and local context
- Leverage feedback mechanisms used to improve the data publishing processes across the industry to input into the improvement and iteration of the value framework.

Business-as-usual high value data publishing

- Publishing open data according to the publicly consulted and industry standardised Value Framework is BAU, with a standardised process used across the industry and that is regularly reviewed and iterated upon

Toolkit - Value Framework

Value Identifies value to companies, stakeholders, customers and the wider environment. Utilises the five capitals model to provide a balanced approach to defining value.	**Openness** Values openness and ensuring data are made available using the method best suited to the dataset – measured by position on the open data spectrum and the five star open data maturity model.
Feasibility Ensures feasibility - to encourage companies to learn by doing and publish data early. Assesses the technical feasibility of a given dataset being made available by an organisation.	**Risk** Assesses high level risk - to protect security, intellectual property and ensure data protection. Utilises a risk assessment that addresses legal and regulatory, ethical, reputational and commercial risks.

Toolkit - Value Framework

Consultation questions

- Is the Ofwat recommendation being met and will our proposed activity plan deliver on our vision? If no, what do you consider is missing?
- Are there any established frameworks we should consider as an alternative?
- Any other comments

Toolkit - Data Triage Process

Our vision

We will share an Open Data Triage process to ensure consistency across the sector. Open data triage is a process to systematically identify issues with a dataset which limit their potential openness and then identify what techniques can be used to mitigate these issues. It is the process currently used in the energy sector to support wider open data publication and data sharing and covers both open and shared data scenarios.

Related Ofwat Recommendation

Review datasets that have been shared with only specific user groups or organisations, and where appropriate assess the steps required to make these openly available

Goals and key information

Agreed goals

- The water companies will gain consensus in defining a sector wide, standardised triage process, with common metrics and underlying principles (including protecting personal, critical infrastructure and commercially sensitive data).
- We will test the data triage process in a controlled environment to ensure it is fit for purpose for an industry rollout
- We will benchmark our progress against our KPIs across the water sector and other connected sector

Next steps

- Review other triage processes and develop key principles to develop a water sector triage process
- Test the triage process through the first datasets for Day 1 service in Stream
- Established industry wide open data triage process, supported by a working group to review and iterate the process, with published assessments alongside data that has been openly published

Toolkit - Data Triage Process

Review other triage processes and develop key principles to develop a water sector triage process

Now-3 months

Test the triage process through the first datasets for Day 1 service in Stream

3-6 months

Established industry wide open data triage process, supported by a working group to review and iterate the process, with published assessments alongside data that has been openly published

9-12 months

Stream

open data institute

Ofwat

Microsoft

Toolkit - Data Triage Process

Detailed information and links to other commitments

Review other triage processes and draft a water sector triage process

- Develop an initial Open Data Triage process based on best practice from the sector and other more established sectors, taking the Energy Networks Data Triage Playbook as a starting point due to its similarity and open publication
- The draft triage process will need to take into account elements specific to the water sector such as the impacts and effects for the non-household market and the role and potential effects on downstream competition
- Include the appropriate selection of an open data licence, such as CC-BY or the Open Government Licence, as a key part of the Open Data Triage process

Test the triage process through the first datasets for Day 1 service in Stream

- In order to initially test if the Open Data Triage process for the water sector is fit for purpose, we will put the Stream Day 1 Use Cases through the data triage process, and 'learn by doing' if this process works, making note of changes to be made

Established industry wide open data triage process

- Through testing of new datasets individually among water companies and collectively through Stream, we will create an open data triage process for all stakeholders int the ecosystem to use. Companies using the process will commit to publishing their own triage assessments. The Triage process will be reviewed every year for improvement and alignment with the needs of the sector.

Toolkit - Data Triage Process

Consultation questions

- Is the Ofwat recommendation being met and will our proposed activity plan deliver on our vision? If no, what do you consider is missing?
- Are there any other established processes, besides the processes for sharing EIRs and the Data Triage process, consider as inputs into our process?
- Any other comments

Toolkit - Trust Framework

Our vision

We will have a shared trust framework. A trust framework provides a set of unifying standards, policies and mechanisms for **shared** data interchange between all organisations within the Framework. A trust framework also provides common rules, formats and licences that create a consistent, assured basis for publishing **open** data to anyone within or outside the Framework. A sector wide trust framework can greatly improve interoperability and reusability of datasets.

Related Ofwat Recommendation

Identify datasets that have been released for public but not in machine readable format and convert these to appropriate formats which can be readily processed by a computer so that individual elements can be accessed and modified by users.

Release datasets with an open licence to encourage use and reuse of the information freely and flexibly.

Goals and key information

Agreed goals

- We will work together as a sector to develop and adopt a single trust framework applied across the industry within 12 months

Next steps

- Seek agreement that Stream is the right forum to lead the development and adoption of a water sector trust framework
- Prioritise the definition and delivery of the trust framework components and plan for delivery
- Deliver the components of the trust framework according to the agreed prioritisation, building in feedback and learning loops to refine the framework through its application and use

Stream

open data institute

Ofwat

Microsoft

Toolkit - Trust Framework

Agree Stream is the correct vehicle to lead the development of a sector trust framework

Now-3 months

Define and prioritise the trust framework components and begin delivery

3-6 months

Complete definition and make framework available to the sector and have established feedback loops to continually improve the framework

9-12 months

Stream

open data institute

Ofwat

Microsoft

Toolkit – Trust Framework

Detailed information and links to other commitments

Agree Stream is the correct vehicle to lead the development of a sector trust framework

- Seek confirmation and support from Water UK that Stream is the correct vehicle to lead the delivery of the Trust Framework (and other open data roadmap commitments) - Water UK December meeting

Define and prioritise the trust framework components and begin delivery

- Work with water companies and subject matter experts accessible via Stream to build upon learning and artefacts from other sectors to define and prioritise the components (policies, processes, standards, rules and definitions) needed to create a comprehensive trust framework sitting at the heart of open and shared data exchange for the water sector.
- The framework is likely to include the following components (as defined by Icebreaker One):
  - Facilitating discovery of shared and open data – described by standard metadata and indexed in the open
  - Access control for sharing data between organisations with access conditions published openly and based on frameworks already created for other sectors
  - Agreed definitions and rules for licensing terms, data access and data sensitivity
  - Assurance levels defined for data and organisations
  - Governance processes through steering and advisory groups with supporting policy and regulatory oversight
  - A common data model, iteratively developed to support known use cases for open data in the sector, building off of existing standards where they have already been developed

Define and publish framework with established feedback loops for continual improvement

- Complete the definition and delivery of the framework and have established continuous improvement loops to ensure the framework continues to remain fit for purpose. Continue working to support adoption by all companies.

Toolkit – Trust Framework

Consultation questions

- We believe the adoption of a trust framework for the sector goes above and beyond the recommendation made by Ofwat but do you think we have missed out anything critical from our proposed timeline?
- Do you think the timeline suggested is achievable given the scale of the challenge, aligning 16+ companies around a single trust framework?
- Do you have any experience or lessons in respect of either defining or implementing a trust framework within another sector that you think would be valuable to share
- Do you foresee any risks associated with the proposed approach that you think we will need to consider mitigation for

Toolkit - Data capability – skills and culture

Our vision

We will share useful and relevant training content to support the development of skills and culture in relation to open data. Data literacy is the ability to think critically about data in different contexts and examine the impact of different approaches when collecting using and sharing data and information

Related Ofwat Recommendation

Companies should develop a culture of open data in their organisation, for example by developing and delivering open data literacy training to create greater understanding of open data across all levels of their organisation.

Goals and key information

Agreed goals

- Establish an active cross-functional user group on open culture, with a focus on data literacy and training
- Every relevant member of every company is aware of what open data means; the public is aware that data is available for use and senior leaders are aware of and supported in their role in fostering the development in our data user communities
- We will consider opportunities to open relevant training content to support skills development in our data user communities

Next steps

- Commit to working together through a common goal and link to Stream
- Commit to a shared language and open communication between companies
- Sharing training materials, including guides and courses

Toolkit - Data capability – skills and culture

Share existing best practice on materials, guides and courses around data skills and culture – commit to regular data maturity assessments

Now-3 months

Establish an active cross-functional user group on open culture, with a focus on data literacy skills and culture

3-6 months

Every relevant member of every company has the opportunity to become open data literate

9-12 months

Stream

open data institute

Ofwat

Microsoft

Toolkit - Data capability – skills and culture

Detailed information and links to other commitments

Now-3 months: Share guides and learning resources for building a data capability plan, and supporting a data-driven culture, as part of committing to the implementation of a regular open data maturity assessment

- Data capability needs are unique to each organisation. A data maturity assessment helps an organisation understand where they are with their data practices now, and identify where they need to be to embed an open data culture. On the following page are some openly available tools and frameworks for assessing the organisation's data maturity.
- Following the data maturity assessment, each organisation can develop a plan of action to build the appropriate level of data capability across teams to support a data-driven culture which will underpin the open data initiative. This may span capabilities in data management/governance, skills in advanced analytics, and data literacy across the wider workforce. It is helpful to build learning pathways suitable for different groups of roles across the organisation - to support this, links to a selection of learning guides and resources are provided below. In addition, a programme of active engagement and communications will help build awareness and align teams around the organisation's open data ambitions.

3-6 months: Establish an active cross-functional user group on open culture, with a focus on data literacy and training

- Each water company will volunteer a member to an Open Culture Working Group: 1-2 months: Establish project lead and secretariat, recruitment of members; 3-4 months: Initial group meeting and establish ToRs; 5 months onwards: bi-monthly meetings with rotating chair: topics to include: open collaboration, innovation, literacy and training, internal open data 'campaigns', sector open data communities of practice, events etc.
- Leverage this group to explore the needs and opportunities to jointly create open data training and awareness, including through peer-to-peer sharing

6-12 months: Every relevant member of every company has the opportunity to become open data literate

- Water companies will have established capability plans and learning pathways to build the right skills to enable an open data culture in their organisation. This training will either be delivered by and in-house team, such as the Dŵr Data Academy, or through free and paid courses made available to companies by organisations such as the ODI.
- Data communities of practice encouraged within organisations, via the open culture working group
- Engaging with other open data communities in different sectors and geographies to learn and share best practices

Toolkit - Data capability – skills and culture

The capability plan will be specific to each organisation. Here are some helpful links to support data maturity assessments and build learning pathways:

Assessing the organisation's data maturity:

- ODI Open Data Maturity Model
- PwC Open Data Progress Review - the mechanism Ofwat have put in place to measure progress
- Data Orchard Data maturity self assessment tool
- ODI Data Ethics Maturity Model
- UK Power Networks Open Energy Data Maturity Framework
- UK Government Data Maturity Assessment
- European Commission - Open Data Maturity in Europe

Data literacy and open data resources from the ODI and other providers:

- Free: Discovering open data, Finding stories in data, Data ethics essentials
- Core: Open Data in a Day, Introduction to Data Ethics, Strategic Data Skills (tutor, self-paced)
- Advanced: Building healthy data ecosystems, Data Ethics Professional
- Datacamp: What is Data Literacy? A Comprehensive Guide for Organisations
- School of Data by Open Knowledge Foundation
- Data Literacy by State of Open Data
- The Data Warehouse Toolkit by Kimball Group

Data governance free resources:

- Data Governance Institute - Data Governance Framework
- Oval Edge - Implementing Data Governance Guide

Toolkit - Data capability – skills and culture

Consultation questions

- Is the Ofwat recommendation being met and will our proposed activity plan deliver on our vision? If no, what do you consider is missing?
- Are there any other established training material that should be tested for inclusion in the water open data roadmap?
- Any other comments

Toolkit - Data capability – skills and culture

[Data literacy framework]

- The framework is a tool to help understand the skills needed to work with data across your organisation
- It helps to assess your organisation's current data skills and ensure that data capability plans align with organisational goals
- The sector will commit to creating a version of the framework to ensure alignment and a standardised level of data literacy across the sector
- It will be developed, maintained and iterated upon by the Open Culture Working Group, working collaboratively with key stakeholders within water companies, and across and beyond the sector

Stream

open data institute

Ofwat

Microsoft

Toolkit – Ecosystem engagement best practices

Our vision

We will identify, document and adopt best practices for engaging with key stakeholders across a data ecosystem, such as data users, end users, other beneficiaries, and influencing actors such as regulators and policymakers.

Related Ofwat Recommendation

Companies should actively engage with data users and have a well-defined feedback loop, especially to identify priority datasets and for improving the quality of data releases and associated documentation

Goals and key information

Agreed goals

- To identify and share best practice around establishing a functioning ecosystem with diverse stakeholder groups and feedback loops
- Identify best practices to facilitate greater user engagement in the data publishing prioritisation process, in turn driving informed and constructive public discourse
- Identify best practices in engaging users on access needs and iteratively developing those using the ethos of data-as-a- service, focussing on simple portals first (learn through doing)
- Identify best practices in providing supporting narratives and context alongside published data to aid understanding

Next steps

- Each company establishes a feedback loop for published data and identifies a named ecosystem engagement lead to work together
- Engage with lead and develop a fully mapped out ecosystem to identify 3 priority groups for engagement and a group wide comms engagement plan to support
- Run a hackathon with key ecosystem actors for a high value use case

Toolkit – Ecosystem engagement best practices

Establishing feedback loop for published data already by named ecosystem engagement leads

Now-3 months

Ecosystem mapping to identify three priority groups for engagement supported by an organisational engagement plan

3-6 months

Run an innovation event with key ecosystem actors for an agreed high value use case and associated datasets

9-12 months

Stream

open data institute

Ofwat

Microsoft

Toolkit – Ecosystem engagement best practices

Detailed information and links to other commitments

Establishing feedback loop for published data already by named ecosystem engagement leads

- Each company will draw on both global best practice for user-centric open data publishing as well as local user needs and opportunities to create a feedback mechanism for data published openly, with a named lead for ecosystem engagement within the company

Ecosystem mapping to identify three priority groups for engagement supported by an organisational engagement plan to inform BAU engagement activities

- Each engagement lead will develop a fully mapped out data ecosystem in order to identify three priority groups for engagement based on the type of value they receive from data openly published by the company. This will be supported by and a comms engagement plan at the organisational level, that is locally contextualised but leverages shared best practice in the sector
- Coordination with organisations outside of Stream that publish open data about the water sector, such as MOSL, with a view to harmonise or align open data policies and strategies
- Based on ecosystem mapping, we will consider forming communities of practice that bring together different users of the data to support solving widespread problems in the sector, or to improve sector-wide data activities.

Support BAU data user and community engagement with ad hoc events such as running an innovation event with key ecosystem actors for an agreed high value use case and associated datasets

- Following on from the ecosystem mapping exercise, each company will run an innovation event, such as a hackathon, hackday, or other data innovation challenge targeted at prioritised ecosystem actors in order to further develop high value use cases for data that has either been published or will be published.

Toolkit – Ecosystem engagement best practices

Consultation questions

- Is the Ofwat recommendation being met and will our proposed activity plan deliver on our vision? If no, what do you consider is missing?
- Are there any established ecosystem engagement best practices we should consider in addition or as an alternative?
- Any other comments

Toolkit - Other tools and best practices

Our vision

A range of data capabilities and best practices underpin our ability to achieve the goals around open data, such as wider data literacy, data ethics, and responsible data stewardship.

We seek to create, update and publish a set of best practice links to a range of tools and resources to support the development of wider data capabilities.

Related Ofwat Recommendation

N/A

Goals and key information

Agreed goals

- Have a robust, dynamic toolkit with tools, guidance, case studies and other best practice to help achieve the goals around open data, data ethics, and responsible data stewardship in the water sector

Next steps

- Create an initial list and ask the public for others

Toolkit - Other tools and best practices

Create an initial list and ask the sector and wider community for further suggestions

Now-3 months

Review feedback and incorporate

3-6 months

Review toolkit list for active vs inactive tools and review needs for tool gaps

9-12 months

Stream

open data institute

Ofwat

Microsoft

Toolkit - Other tools and best practices

Detailed information and links to other commitments

Create an initial list and ask the public for others
Free tools from the ODI:

- Mapping data ecosystems: methodology
- The Data Ethics Canvas
- Assessing risk when sharing data: a guide
- User-centric data publishing toolkit
- Open Data Certificates
- How to publish open data: a list of advice and tools
- Guide to data practices

Other free tools and resources

- Data Triage Playbook - Energy Networks Association
- Data Sharing Toolkit – Centre for Agriculture and Bioscience International (CABI)
- UK Statistics Authority Data Ethics Self-assessment Tool
- Choose a License – Creative Commons
- Open Data Watch - Open Data Resource Guide

Toolkit - Other tools and best practices

Detailed information and links to other commitments

Other free tools and resources (cont)

- Profusion - The Good Data Guide
- Data Governance Institute - Data Governance Framework
- Oval Edge - Implementing Data Governance Guide
- GO FAIR data principles
- 5* Open Data
- UK National Data Strategy
- Mendelow's stakeholder matrix

Review feedback and incorporate

- Process for gathering feedback and suggestions from the wider community to be established by the Open Culture Working Group.

Review toolkit list for active vs inactive tools and review needs for tool gaps

- A continuous review and maintenance process to be led by the Open Culture Working Group

Toolkit - Other tools and best practices

Consultation questions

- Are the tools and best practices included fit for purpose for the needs of the water sector open data ambition?
- What other tools and best practices should be included in the toolkit?
- Any other comments

Open Culture and collaboration: Common events

Our vision

To ensure consistent collaboration across and beyond the industry, and sufficient engagement and transparency with the public, we will seek to utilise or create opportunities for key personnel from water companies to attend, host and participate in events throughout the year. Having a robust events calendar and hosting an annual forum will help to achieve this.

Related Ofwat Recommendation

Industry-wide collaboration is helpful for development of data portals, facilitation of knowledge sharing and development of common standards that enhance interoperability of data. However, such initiatives should be supported with adequate funding, resources and active participation from all companies in order to be effective.

Goals and key information

Agreed goals

- Design and schedule an annual Water Open Data Forum
- Have a robust events calendar of priority events including cross-sector open data events

Next steps

- Identify a list of prioritised events to attend throughout the year
- Maka a commitment for significant levels of attendance and participation across those events

Open Culture and collaboration: Common events

Identify a list of prioritised events to attend throughout the year

Now-3 months

Design and schedule the annual Water Open Data Forum

3-6 months

Have a rolling events calendar of priority events and annual water data forum

9-12 months

Stream

open data institute

Ofwat

Microsoft

Open Culture and collaboration: Common events

Detailed information and links to other commitments

Identify a list of prioritised events to attend throughout the year

- Create an initial list of events within the water sector and adjacent sectors such as energy, the built environment and net zero, as well as within the wider data topic space (such as information management) and ensuring coverage in more data mature sectors, to support an annual event calendar
- Make a commitment for members of the water companies, especially those in the Open Culture Working Group and Stream, and Stream affiliates such as the ODI and Icebreaker One, to attend

Design an annual Water Open Data Forum

- Leveraging the success and the learnings from the Water Open Data Forum, hosted at the Microsoft offices in London in 2023, we plan to proactively design an annual event following on from and improving on the original to help align across and beyond the sector on the topics around open data.
- The annual forum will be designed to be iterative to match the trends year on year, as well as to be inclusive demographically and geographically, reflecting the water sector in the UK

Have a robust events calendar of priority events and annual water data forum

- Through feedback and iteration throughout the year, create an annual events calendar spanning relevant sectors and topic areas to ensure ongoing engagement and dialogue
- Situate an annual Water Open Data Forum within the events calendar, run by the water sector, potentially rotating hosts and regions
- Use these events to actively disseminate progress on open data in the water sector, as well as receive feedback and guidance from within and beyond the sector
- Assess the need for additional, smaller events focussed on user communities, topic spaces and regions that may not involve all of the water companies, but can be collectively coordinated and aligned

Open Culture and collaboration: Common events

Initial list of prioritised events

- AI & Data4Good - UK Authority
- Connected Digital Twins Summit - Connected Places Catapult
- DataConnect - Central Digital and Data Office (CDDO)
- DEI Data Summit – Global Inclusion Online Forum
- Global Leakage Summit - LBC Group
- Government Data Summit - GovNet
- GovTech Summit - GovNet
- London Data Week - London Office of Technology and Innovation (LOTI)
- London Tech Week - The Informa Group
- Northumbrian Water Innovation Festival - Northumbrian Water Group (NWG)
- ODI Summit – Open Data Institute (ODI)
- State of Open Con (SOOCon) - Open UK
- Tech and Net Zero Conference - techUK
- Utility Week Live - Faversham House
- Women in Data Forum - Women in Data

Open Culture and collaboration: Common events

Consultation questions

- Are the events included fit for purpose for the needs of the water sector open data ambition?
- What other events should be included in the toolkit?
- Any other comments?

Appendix A – Stream Overview

Stream formed in April 2020 when Northumbrian Water brought a group of 11 interested water companies together and validated the need for open data in the sector. This group felt that if the benefits of open data were to be maximised then collaboration would be the best way forward.

One of the major drivers of working together is the fact that data interoperability (i.e. the ability to easily join data from different sources up) doesn't happen by accident. The Stream group could see a future where data consumers were always faced with 16 different company versions of what *should* be the same data and the ability to read across or join up data would be at best difficult and at worst impossible and this would be a major impediment and potential blocker to innovation and insight.

Stream believed that working together for the sake of interoperability would unlock scenarios where national scale data can:

- create new insight by fuelling big data analytics
- help to highlight and evidence potential regional differences
- help to increase transparency and trust in the sector overall and
- create a solid empirical basis to underpin sectoral policy discussions.

Stream secured funding from the Ofwat Water Breakthrough challenge in 2022 to conduct a blueprint phase (research, design and delivery planning) and further implementation funding in August 2023. The funding covers a 2-year delivery period, concluding in late summer of 2025.

An initial minimum viable product data release is planned for the end of December 2023, with up to three datasets being planned for publication on an interim platform (water company boundaries, annual performance data and drinking water quality data).

Stream open data institute Ofwat Microsoft

Appendix A – Stream Overview

Stream adopted an MVP approach to test the process start to finish (from use case definition, data set identification, data governance, standardisation and preparation, publication and engagement) and transfer learning into the delivery of the Day 1 operating model service which is due for launch in April 2024.

To support the delivery of the Day 1 service, a use case research team has been busy engaging a range of stakeholders from the data consumer ecosystem and are currently evaluating and prioritising the use cases and associated datasets to create a prioritised pipeline for Day 1 and beyond.

Procurement is also underway for the underlying technology and a contract start is planned from early January 2024.

After the launch of the Day 1 service, Stream will move into a sustain and embed phase continuously reviewing and incorporating learning and feedback to refine the end-to-end processes. In parallel, preparations will take place to enable Stream to move to a long-term business model to sustain the service once the current competition funding runs out.

Stream is currently supported by 13 English, Welsh and Scottish water companies, five experienced delivery partners (the Open Data Institute, Icebreaker One, Sia, Aiimi and Costain/Pinsent Mason), two regulators (Ofwat and the Environment Agency), one consumer body (Consumer Council for Water), a very wide network of supporters and advisors from the open data community and a whole range of stakeholders who are potential open and shared data consumers.

Stream's overarching vision is to unlock the potential of water data to benefit customers, society and the environment.

Appendix B - Ofwat recommendations

Ofwat has provided 8 recommendations to accelerate the release of open datasets (**https://www.ofwat.gov.uk/wp-content/uploads/2023/06/Open-data-in-the-water-industry-making-the-change.pdf**):

1. **Identify priority datasets** and set stretching targets to release them such that they accelerate the development of companies' general open data capabilities to support further data releases in the future. Pilot releases of datasets should be conducted and **a 'learn by doing' approach** should be adopted to iteratively improve on each subsequent data release.
2. Review datasets that have been shared with only specific user groups or organisations, and where appropriate assess **the steps required to make these openly available**.
3. Identify datasets that have been released for public but not in **machine readable** format and convert these to appropriate formats which can be readily processed by a computer so that individual elements can be accessed and modified by users, for example releasing the data in .csv format.
4. Release datasets with an **open licence** to encourage use and reuse of the information freely and flexibly.
5. Companies should develop comprehensive **open data strategies**, clear roadmaps for delivery with **associated delivery KPIs**, and set up sufficient accountability and strategic oversight to ensure company board and senior/executive management buy-in, for example by tying delivery of strategy to executive performance.
6. Companies should develop **a culture of open data** in their organisation, for example by developing and delivering **open data literacy training** to create greater understanding of open data across all levels of their organisation.
7. **Industry-wide collaboration** is helpful for development of data portals, facilitation of knowledge sharing and development of common standards that enhance interoperability of data. However, such initiatives should be supported with **adequate funding, resources and active participation** from all companies in order to be effective. Further, **priority-based, measurable and time-specific targets** should be set to ensure maximum progress is achieved through these collaborative efforts. Such collaboration should also involve engagement with **independent experts** to draw on learnings from other sectors. Importantly, companies should not rely solely on collaborative groups for ensuring progress
8. Companies should **actively engage with data users** and have a well-defined feedback loop, especially to identify priority datasets and improving quality of data release and associated documentation

Appendix C – Open Data Forum Attendees

Affinity Water Ltd	Energy Systems Catapult	Ofwat	Severn Trent	The People Perspective
Aiimi Ltd	Environment Agency	Open Data Institute	Sia Partners	UK Power Networks
Anglian Water	GitHub	Pinsent Masons LLP	South East Water	United Utilities
Arup	Icebreaker One	Portsmouth Water	South West Water	Cosán Króga
Condatis	Microsoft	Scottish Water	Southern Water	Wessex Water
Defra	Natural Resources Wales	SEPA	Stream	Yorkshire Water
Dŵr Cymru Welsh Water	Northumbrian Water	SES Water	Thames Water	Zühlke Group

Stream

open data institute

Ofwat

Microsoft