Question	Response
Rising main operation	
The simple hydraulics diagram in the slide pack shows a low point in the middle of the rising main, where it appears to be travelling downward then changes to moving up again. Is that common?	The data we've published is the ground profile. Rising mains tend to stay close to the ground profile, except when they're crossing under a river or over a river as a pipe bridge. But if a main goes deep into the ground, the data won't give the exact depth of the main.
Sewage pumping stations (SPSs) appear to vary significantly by topology and operation (e.g. pump types, rising main profile). Does Wessex Water classify these sites into types or tiers? Does sensor availability or control logic differ across them? This will inform whether a single model is viable or if multiple model classes are needed.	We generally have pressure and flow monitoring on more critical rising mains that may be crossing rivers for example, and on mains that we're particularly interested in in terms of their performance and condition. Our simpler sites tend to only have wet well level and pump run-stop telemetry data. We don't categorise based on topography.
Are outfalls from rising mains free discharges or are they influenced by downstream water level?	All outfalls are assumed to be free discharges.
Data	
The CSV files for the rising mains flow data, rising mains pressure data and SPS wet well data have the maximum number of records that CSV and Excel files can display. When opening the files, the warning 'This file is too large for the Excel grid' appears. The rising mains flow file only has data for two values of SignalID: 43014_PFFlow1_WASTE_E4578 and 44070_PFFlow1_WASTE_E5622. Where are the data for the other SPSs?	The CSV files are too large to be opened in Excel. Suppliers are advised to select an alternative tool that can work with larger datasets.
Is the full suite of data available for all SPS sites i.e. wet well level, run/stop status, pressure, flow, rainfall?	No - the 24 sites for the Marketplace challenge do, but the majority of our SPSs only have wet well level and pump run stop information. So we are interested to see what suppliers can do without pressure or flow information, as that's not available on all our sites.
Does Wessex Water use any other data points across the pump?	No, just wet well level, run/stop status, pressure, flow.
Please can you provide pump running data?	This has already been published as part of the data release for the challenge.
There are values in the stop start file with duplicate time stamps. Do you have a preference for how these are handled?	No preference
Could Wessex Water provide the pump philosophy, by site, for each of the 24 SPSs? Specifically whether duty/standby, duty/assist, fixed-duty (and if so, fixed-duty rotation cycle) etc.	Most sites are assumed to run duty/standby. Each site is unique and has different operational requirements; this should hopefully be evident in the historical data provided.
Do any of the sites have Variable Speed Drive (VSD) pumps in operation? If so, which sites and pumps?	Some sites may have VSDs; this should hopefully be evident in the historical data provided.
Where are flow meters positioned in relation to the pumps? Are the locations of the flow measurements available, or similarly to the pressure, is this information not available?	In general, flow meters are located within the pump station compound. To minimise noise within signals, they aren't installed too close to the pumps. Flow meters are usually located after the non-return valves, on the common main, so that only one flow meter is required.

Question	Response
Data continued	
Could the following information be made available to assist with developing a solution or prior to any POC? (i) dimensional information for the wet wells e.g. the relationship between height, percentage full & volume (ii) pump work order (maintenance) data (iii) any further pump information (iv) condition scores or inspection results (e.g. CCTV or risk grading) (v) specific location data for individual equipment at a site (vi) half hour electricity metering data for each site	(i) The focus of the Marketplace challenge is the use of telemetry data to detect anomalies. Provision of dimensional information in a consistent format is challenging so this data will not be made available. For example, wet wells may not have a consistent cross-section, so the relationship between volume contained and percentage full (by depth) is not linear in many cases. (ii) We do keep a record of this data, but it's based around when teams have closed jobs on our corporate system, rather than the time that the specific work was done. Hence it doesn't align particularly well with telemetry data, so is likely to be of limited benefit in developing a solution. (iii) It's unclear exactly what pump information is being requested, but the focus of the Marketplace challenge is around the use of telemetry data. Feel free to clarify what further pump information may be beneficial, either before submitting your proposal or as part of your submission. (iv) The focus of the Marketplace challenge is the use of telemetry data to detect anomalies, and not all of our assets have condition scores. Therefore this data will not be provided. (v) All of the equipment at the site is considered to be at the start point of the rising main. (vi) The focus of the Marketplace challenge is the use of telemetry data to detect anomalies. Furthermore, electricity metering data is not available in a consistent format or frequency across our sites, and therefore is likely to be of limited use for a potential tool. As a result this data will not be provided.
The data description states that the two years worth of data contain instances of bursts. Are they specifically labelled in the data as burst events? Will information on when burst events occurred become available? Are suppliers expected to find bursts in historical data that Wessex Water is already aware of? How can suppliers identify when rising mains have burst or what caused the burst e.g. excessive pressure due to high flow or blockages?	We have a list of known bursts but this won't be made available – we want suppliers to identify them and what the cause might be. The bursts are easy to spot within the data as they have subsequently been repaired.
You had previously mentioned that it would be quite easy to identify a burst pipe in the historical data, from looking at a drop in the typical pressure across a pump's operational period. From looking at the plots across numerous sites, it is not immediately obvious where a drop of pressure occurs in these datasets, as the minimal value of pressure for a majority of the low values tends to sit around 0 bar. Can you elaborate further on how we can use this data to identify bursts?	To repair a burst, we switch off the pump. These instances may not always be visible from the pressure data alone, but will be clearer when considering the telemetry data as a whole for the site.
Is pressure the most trusted parameter for early detection of rising main bursts and SPS issues?	We would like suppliers to define that as part of their proposals.
Are suppliers expected to perform substantial data cleansing? Are there instances of noisy signals from sensors or sensors being inconsistent?	We have not performed any cleansing on the published data, so it mirrors what would be provided in a POC or operational system. Suppliers will likely need to perform some degree of cleansing.

Question	Response
Data continued	
Was there any monitoring of sensor drift (pressure, flow, level) over the two-year test period?	No - in general this is not a significant issue for the instruments we use.
Assuming that the X Y coordinates are easting and northing, the first X Y coordinate for site 43014 places the site in Okehampton. This is outside of the Wessex Water region. Please can you confirm the coordinate reference system being used and if you are applying any offset to this?	The coordinates are easting and northings. As per the explanatory information provided alongside the published data, for security purposes the coordinates have been anonymised by translating them to a different location. Therefore this data represents the relative locations of SPSs and rising mains, NOT their true locations.
Solution performance	
Do proposals need to demonstrate the solution in action? Or will this simply be tested during the POC?	Ideally proposals need to demonstrate the solution in action.
What are the acceptable levels of telemetry data beyond which solutions should provide an alert?	Suppliers should identify patterns within the data that indicate a developing anomaly. A judgment should then be made about an appropriate point during that development to provide an alert, recognising the need for an appropriate balance between false positives and false negatives.
What lead time would be considered actionable for early burst detection?	Alert latency will be one of the metrics for the assessment of the POC, but we haven't specified a target level at this stage.
What metrics will be used to evaluate model success, e.g. accuracy, recall, false positives, lead time?	This is specified in the additional information document published on the challenge webpage.
Will solutions be compared against existing in-house analytics?	The historical data we've provided (for 2022 and 2023) includes known incidents or operational issues. We'll compare what suppliers can identify from that data with these known incidents / issues. We don't have substantive in-house analytics results from that period so this will not form part of the comparison. For the POC, we will compare solution performance against our in-house analytics, with verification by inspecting assets.
What proportion of false positives and false negatives are associated with existing in-house analytics?	At this stage we estimate that, for a solution to provide business benefit, at least 80% of its alerts should be for genuine issues, with 10% false negatives (missed events) and 10% false positives (non-real events). Alert accuracy is one one of the metrics we are developing to allow a consistent and fair approach for the POC trial. We will calculate the percentage of correct detections from our in-house analytics for the 24 trial sites. This will be calculated both at the start of the trial, and on a fortnightly basis during the trial period.
Solution specification	
Is Wessex Water looking for any hardware to be installed or just a software solution?	We are looking for a software solution so that we can make better use of our data. We are not looking for further hardware.
Is there a preference for an on-premise or off-premise solution? If cloud, is there a preference for which one?	There is not a preference for on-premise or off-premise, although we anticipate proposals are likely to be for off-premise solutions. There is no preference for a particular cloud provider.

Question	Response
Solution specification continued	
At this stage in the process, what sort of compatibility / connectivity with Wessex Water systems (Ovarro Scope telemetry system, Microsoft Azure, business reporting tools) are you looking for? How do you currently use these systems and how do you envision optimal integration? Before POCs begin, will there be the opportunity to fully integrate into your system or should this be fully handled at the point of proposal submission?	For the POC we don't expect to integrate a solution into our systems. Instead we expect alerts to be sent by email at this stage. Integration into our systems is the ambition for a proven solution.
In an ultimate solution, how will Wessex Water want to integrate inbound data with corporate systems?	In an ultimate solution, we would like the data to be able to integrate seamlessly with our current work and alarm management systems. This connection into corporate systems would be subject to us having suitable confidence in the solution.
For an ultimate solution, how will Wessex Water want to present and report on this data in their corporate systems? Is Wessex Water expecting a user interface to be provided with the solution as part of any POC or is the expectation for alerts to be fed into an existing front end?	We will expect an ultimate solution to integrate with our existing systems to give a single view. We don't want to use lots of different dashboards.
Are suppliers required to have a specific certified IT security standard?	At this stage, when suppliers are using historical, anonymised data, there's no required standard. Any suppliers participating in a POC trial with non-anonymised near real time data would need to complete Wessex Water's cyber security questionnaire. This ensures that suppliers meet an appropriate cyber security standard and would be a viable partner. We conform to ISO 27001; we would expect suppliers to follow similar types of principles. This is sensitive corporate data so we need to ensure appropriate measures are in place to protect it.
Is Wessex Water open to the provision of a solution that does not use machine learning but other data analysis methods to detect rising main bursts?	Yes
POC trial	
Does 'live integration during the 3 month POC' mean live connectivity to SCADA and then providing near real time alerts on potential bursts?	Yes, we will provide a near real time data feed for ingestion to allow real time email alerts to be generated by POC trial suppliers.
During the POC trial, are suppliers able to commission or optimise the solution?	Yes. Metrics around alert volumes & accuracy, alert severity categorisation and alert latency will be calculated fortnightly. Suppliers will be expected to use this feedback to progressively improve their solution.
What specific telemetry signal IDs or schema mappings will be made available during the POC trial (including any metadata definitions)?	The additional information document published as part of the challenge details the data that will be provided for the POC trial. Further details around data for an ultimate solution will be formulated as we review solutions and undertake the POC.
What is the latency for the real-time data feed e.g., 2 mins, 5 mins?	Data is sent from site to Wessex Water core systems at least every hour. Some sites supply data more frequently. The data will then be transmitted as quickly as possible to POC trial participants.

Question	Response
Procurement phase	
Is there an indicative budget for potential procurement after the POC trial?	Budget depends on companies' indicative costs and performance during a POC. Provided we see positive output from a POC, we would offer a competitive fee.
Is there an implementation plan for the successful solution? Will Wessex Water work with a third party or look to implement any solution internally?	This will be informed by the solutions submitted and their performance during a POC.