



Counters Creek AMP7
Performance Commitment
Assurance Report



Thames Water
Clearwater Court,
Vastern Road,
Reading RG1 8DB.

30 June 2023

Dear Sirs

ASSURANCE OF THAMES WATER'S RESPONSE TO AMP7 PERFORMANCE COMMITMENT RELATING TO COUNTERS CREEK DRAINAGE AREA.

Introduction

As part of the PR19 Final Determination Ofwat set a Performance Commitment (unique Reference PR19TMS_CC) in respect of "Understanding the risk of flooding and level of resilience within the Counters Creek catchment".

The Performance Commitment is a pass/fail metric consisting of two elements which in summary are:

- For Thames Water to provide a fully assured report, for the Counters Creek catchment which sets out its understanding of the risk in the catchment and outlines its long-term strategy for alleviating flooding in the area.
- For Thames Water to report, via the Annual Performance Report, on how it is managing its network to ensure long term resilience and reduce flood risk for customers, and how it is progressively developing its understanding of flood risk in the catchment.

WSP UK Ltd was commissioned to undertake assurance of the first item and this is reported on below. In respect of the second item assurance of the Annual Performance Report has been undertaken by others and WSP comments no further.

Scope of Assurance of the Counters Creek Report (Counters Creek: Understanding Flood Risk and Long Term Strategy, Thames Water, May 10, 2023)

The Counters Creek report has been developed by Thames Water and their consultants over the period mid-2022 to June 2023.

The requirement for assurance of the report is set out in Annex A and is summarised as:

- Ensure that Thames Water have responded to all of the questions set out in PRTMS_CC.
- Consider each question set out in the section "Additional detail on measurement units" and verify if each question has been satisfied.



No review or assurance of the hydraulic modelling was required as part of the scope, but how the output from the modelling has been used in developing the responses has been necessarily considered in assessing the degree of confidence in the responses.

Information and Data Sources Referred to in the Assurance Report

The principal data and information used in the assurance commission were:

- Thames Water's Draft Drainage and Wastewater Management Plan (DWMP) 2025-2050 (June 2022).
The DWMP follows the Defra/WaterUK structured approach to assessing current and future risks to customers and the environment from current and emerging system deficiencies against evolving planning objectives over the planning horizon. As such it is a core data source documenting the current understanding of the system at a strategic and catchment level and is undergoing internal and external assurance by others before publication. The level of granularity does not extend down to the scale of the Counters Creek sub-catchment but the detailed assessment of risks, and options for resolution of risk, included hydraulic modelling of the overall Beckton catchment within which the Counter Creek catchment lies. This first-cycle DWMP describes some of the hydraulic modelling evolution and data collection required to address information needs and notes some specific areas where future evolution will be required in future cycles, especially in respect of impacts of increased surface water flow on the capacity of Thames Water's network, prior to any mitigation.
- The London Flooding Review (LFR) reports (July 2022)
These reports relate to the investigation of the July 2021 flooding events. The reports: documented the events of July 2021; collated the available data from a wide range of sources including social media and customers; reviewed the applicability and performance of the hydraulic modelling approaches and software packages for the catchment characteristics; considered and modelled a range of sensitivity tests to further understand potential vulnerabilities of the system to large storm events; reviewed and modelled the performance of Thames Water's principal flood management assets across the catchment against the design standards; examined in detail the root causes of flooding at all reported hotspots including the development of 2D surface flow models; considered the future impact of the Thames Tideway Tunnel on flooding risk; supported the development of a plan for field surveys of flooded properties to improve granularity of level data for at risk properties; and made recommendations for future activity for improving understanding of the catchment and customer flooding, and improvements to inter-agency working and strategic flood risk management.

These main data sources were supplemented by presentations by the technical leads on the work done on the Counters Creek Flood Alleviation Scheme, on modelling relating to the future operation and impact of the Thames Tideway Tunnel, on the DWMP and discussion sessions with the relevant Thames Water and consultant technical leads responsible for development of the report responding to the Performance Commitment.



We have not checked and reviewed the source information as this has been provided as base information but have focussed on the evidence for assertions and the validity of conclusions drawn based on the evidence provided.

Assurance Team

The assurance was led by Mike Woolgar and supported by Dr Jonathan Cutting.

Mike Woolgar is a director at WSP, an Independent Member of the Thames Regional Flood and Coastal Committee and was latterly the Chair of the Independent Expert Group for the London Flooding Review referred to above.

Dr Jonathan Cutting is the technical authority for WSP's sewerage and stormwater modelling team, and is responsible for the technical delivery of all wastewater modelling projects in the UK. He chairs WSP's Urban Drainage Academy, providing structured training to staff and clients in the fields of wastewater modelling and wider asset management. He regularly contributes to developments within the industry, including the latest updates to CIWEM Urban Drainage Group guidance.

Assurance Findings

Overall we find that:

- the report (Ref.: Counters Creek, Understanding Flood Risk and Long Term Strategy) is well structured with a clear summary document and technical appendices which support the summary findings with more detail where pertinent. The report also references a wide range of other previously assured documents such as the DWMP and LFR which as noted above are principal sources of information from which the report has been developed. Assurance of the DWMP has followed Thames Water's internal governance process, and will comply with additional governance required by Regulators. The LFR report was produced outside of Thames Water's governance and was assured through internal review and approval by the consultant engaged to undertake the work, and by external review and approval by the Independent Expert Group who set the terms of reference of the work.
- the report responds satisfactorily to each of the questions set by Ofwat in PR19TMS_CC.
- there are acknowledgements in the reporting of current deficiencies in information, computer models or modelling for which recommendations for future work have been made. Data and modelling can always be improved so this is an expected and desirable recommendation.



More detail on our assessment of the responses to each of the questions is attached as Annex B.

We trust that this letter plus annexes meets the scope of our commission and we remain available to respond to any questions or clarifications from Thames Water or Ofwat.

Yours faithfully

For and on behalf of WSP UK Ltd

A handwritten signature in black ink, appearing to read 'Mike Woolgar'.

Mike Woolgar
Water Strategy Director
WSP UK Ltd.



ANNEX A

Date: 17th October 2022
Thames Water Project Reference: P0494_Counters Creek
From: Eric Ireson
Issue to: Mike Woolgar

Specification for Assurance of Counters Creek Performance Commitment Response

This document specifies the requirements for the independent assurance of the report produced to respond to the Performance Commitment set by OFWAT in the PR19 Final Determinations: Thames Water – Outcomes Performance Commitment Appendix, December 2019¹.

The commitment detailed in section 1.2.37 is entitled – “Understanding the risk of flooding and level of resilience within the Counters Creek catchment”.

Thames Water have engaged Mott MacDonald to collate information and produce a report to meet the detailed expectation of the Performance Commitment.

The task of the independent assurance is to assure the output documentation to meet the commitment, and upon completion of the report, ensuring that the methodology is complete and sound and that it correctly interprets and responds fully to the questions asked by OFWAT in the performance commitment.

Thames Water has an assurance process for all performance commitments as part of our Annual Return process. This is currently delivered by PWC. They have confirmed that the assurance technical required by the PC will not undertaken by PWC.

Pricing

Thames Water will require a fixed price for this contract.

Deadline

Thames Water must produce a fully assure report no later than end of July 2023. We are aiming to produce a draft report well ahead of that deadline – by February 2023. Assurance of the final product would follow that and should be completed by the end of May 2023. This gives the project contingency time. Our expectation is that much of the assurance work will have been done by the end of February as the work will be available section by section as the project progresses through 2022. The appended Mott MacDonald schedule includes the timetable we will work to.



Date: 17th October 2022

Thames Water Project Reference: P0494_Counters Creek

From: Eric Ireson

Issue to: Mike Woolgar

OFWAT queries

The independent assurance should ensure that we have responded to all questions set by OFWAT paying particular attention to the section on ***Additional detail on measurement units*** in the PR19 document.

The independent assurer should verify these point by point and state whether each point has been satisfied.

We do not require assurance of the hydraulic modelling as part of this process.

Communication and Work Organisation

Thames Water and Mott MacDonald are both working on the tasks. Thames Water will pass information and data to Mott MacDonald to collate and compile into the report. In addition Mott MacDonald will use the work they have previously completed as part of the development of the Counters Creek project to answer some of issues we intend to address (as specified in the Performance Commitment). The report is to be drafted in sections to allow more time for review and assurance. As each section is reviewed it will be handed over to the assurer for an initial assessment. At this stage the independent assurer (IA) is expected to point out any gaps or issues with the information produced so that these can be addressed during the course of the project rather than all at the end.

To facilitate this process the IA will need to:

- a) Meet with TWUL and MM at the inception of the IAs work to organise a timetable and procedure for the handling and reviewing of the draft sections
- b) Agree with TWUL and MM how the IA comments will be recorded in the report
- c) Meet at appropriate times (as per timetable) to allow for assessment of sections with TWUL and MM to discuss any issues relevant to these sections
- d) During this process draft the final assurance report in stages as the sections come in with a view to producing one final assurance report
- e) Complete the final assurance of the final fully compiled draft report

Reporting and Assessment

The IA reporting on sections should be done in good time to allow for responses to comments to be incorporated in the revised sections. Timing for IA section responses should be agreed with TWUL and MM during initial discussions and if necessary adjusted when the draft report sections are handed to the IA.

We envisage 5-10 meetings (physical or virtual) to enable the assurance to be carried out effectively. The frequency of the meetings will depend on the magnitude of any revisions required by the IA.



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For minor changes it would be appropriate to respond with a commentary on the documents – for example it could be as simple as tracked changes on MSWord. For significant changes involving, for example, a change in methodology an explanatory note should be produced. This would be followed by a meeting to resolve any queries.

Reports – including any comments on draft documents - should be sent to both TWUL and MM communicated through a project specific SharePoint site.

The final IA assessment will be a summary of all previous comments and explanatory notes together with actions taken to resolve any issues. The IA should state, in their final assessment whether they are satisfied that the queries from OFWAT have all been addressed appropriately. The IA should allow time for a review of the draft report to OFWAT following their comments before the final report goes to OFWAT. The final report to OFWAT will have the IA final assessment appended to the report and will state where changes have been made following the IA assessment.

We propose a “no surprise” approach to the final assurance report. Any issue raised needs to be highlighted early enough to allow for incorporation into the documentation.

To prepare Ofwat for a soft landing of the assured report, it is proposed a meeting will organised to brief Ofwat on the approach adopted to addressing the Outcomes of the Performance Commitment and provide a non-technical overview on the content and findings. Allowance should be made to work with MM to develop a presentation pack and to lead the meeting.



Table of supporting documents

Item	File name/link
AMP7 Performance Commitment Methodology Statement 2020-2025	CC_MS_Counters Creek_Signed-FINAL SIGNED.pdf
Performance Commitment	https://www.ofwat.gov.uk/publication/pr19-final-determinations-thames-water-outcomes-performance-commitment-
2021 Annual Performance Report	https://www.thameswater.co.uk/media-library/home/about-us/investors/our-results/previous-reports/2020-
2022 Annual Performance Report	https://www.thameswater.co.uk/media-library/home/about-us/investors/our-results/current-reports/annual-
Programme	Counters Creek assured report - programme 20221006.p



ANNEX B

Item	Description	Finding	Assurance Comment
1	By no later than the end of July 2023, the company must deliver a fully assured report, for the Counters Creek catchment (the Report), which sets out its understanding of the risk in the catchment and outlines its long-term strategy for alleviating flooding in the area.	Satisfactory	<p>The report has been produced and QA'd by consultant, assured by WSP and meets the overall objective set. A record of the assurance comments and the resolution of the comments is available in the review copies produced by consultant.</p> <p>The Report is titled: Counters Creek: Understanding Flood Risk and Long Term Strategy, Thames Water, May 10, 2023, and consists of:</p> <ul style="list-style-type: none"> • Main Report • Technical Appendix for Information • Technical Appendix for Modelling • Technical Appendix for Flooding Investigations • Technical Appendix for Resilience • Technical Appendix for Connectivity
Additional Detail on Measurement Units			
2	Wider considerations and developments, including flips, creep, population growth should be considered. It is expected that to demonstrate a sufficient level of understanding, the company will undertake further model improvement work and information gathering that may include, although not be limited to, the following:	N/A	These matters are dealt with under the more detailed questions from 2a to 2m below.
2a	A general improvement in the depth, scale and quality of information available to the company, making use of information from both its own datasets as well as from third party stakeholders and organisations	Satisfactory	The range of data that Thames collect for use in risk and resilience assessment is provided in the Technical Appendix for Information. This is a wide range of data and information which is updated regularly as shown in the Appendix to improve extent, granularity and quality of data, and used to improve the understanding of risks of flooding.



			<p>An assessment of the availability and usefulness of data sets is provided in LFR Report 1 along with methods proposed to further improve data quality and hydraulic model performance, including a range of sensitivity tests. New data and improved data recovery procedures after flood events were also reported in the LFR Report 1 and Report 4.</p> <p>Technical Appendix for Information also includes a report on collecting improved data on Network Rail assets which could affect flooding risk, improved information on flood risk from the Environment Agency and updated records of road gully locations and types, and has made comment on to what extent these assets may impact flooding risk for Thames Water customers.</p>
2b	<p>Further model build and verification work, applying industry best practice throughout, to improve its understanding of the risk of flooding in the Counters Creek catchment as a whole and in localised flooding areas. It is considered likely that this would include an improved understanding of both localised as well as more strategic catchment wide flooding mechanisms, following guidance from the CIWEM UDG (2017) Code of Practice for the Hydraulic Modelling of Urban Drainage Systems (COP) or successors as well as other guidance where required.</p>	Satisfactory	<p>Technical Appendix for Modelling describes the types of model developed and the appropriate uses of the different model types. It describes the development and assurance of the Beckton catchment model (within which Counters Creek lies) from a high level and strategic model in the 1990s to the current day models which contain a high proportion of the sewers in hotspot areas like Counters Creek, and an ICMLive™ model which allows near real-time assessment of flooding.</p> <p>The latest model builds include all the local solutions, FLIPS and sustainable urban drainage work that has been undertaken to date, and as new works are completed these will also be added to provide more detail.</p> <p>Thames Water confirms that in accordance with CIWEM Urban Drainage Group (2017) Code of Practice, the whole of the Beckton catchment is modelled at Type II – meeting the recommended granularity for determining the level of flood risk at a more strategic level - and at Type III in the many areas where they have undertaken investigations or design work, to improve localised understanding.</p>
2c	<p>Consideration of the risk of flooding from rainfall across a widespread area, both within and external to, the Counters Creek catchment. It is expected this would demonstrate understanding of how rainfall of different event types across a widespread area impacts</p>	Satisfactory	<p>Technical Appendix for Modelling refers to the way in which Thames Water assesses flood risk across a wide area and the impacts of such rainfall on the risks of customers flooding in the Counters Creek catchment.</p> <p>The Beckton model is very large and complex and covers the whole of the area of the north bank of the Thames which drains to Beckton WWTW. Due to its scale</p>



	<p>upon the effectual drainage of and flooding within the Counters Creek catchment. Best practice should be applied in line with the CIWEM UDG (2016) Rainfall Guide or successor or recognised equivalent, to assist any further verification, within the Counters Creek catchment and surrounding regions, where necessary.</p>		<p>and high degree of internal connectivity defining a “design storm” for assessment of flood risk is not straightforward; short duration, high intensity storms in one location may cause more flooding than if the storm is centred over another area, while longer duration, less intense storms across a wider area may produce far more water and cause flooding due to backing up of water in areas of sewer confluence. Thames Water have developed rainfall models which combine small area high intensity storms with larger area lower intensity storms to stress test the system against local and more regional sewer capacities. This goes somewhat beyond guidance from CIWEM but is a conservative approach more appropriate to the scale and complexity of the Beckton catchment.</p> <p>The approach was reviewed in the LFR Report 2 by an external subject matter expert (Peter Ede, Consultant Hydrologist) and it was concluded that in the absence of formal guidance for such a complex system the approach taken was acceptable and probably conservative.</p> <p>This approach, coupled with a good understanding of the internal and external connectivity (refer to Technical Appendix for Connectivity), allows a sound assessment of the local and regional risks of flooding, within the limitations of current modelling technology.</p>
2d	<p>A sufficient level of understanding in regard to the interaction of the company’s drainage assets with Lead Local Flooding Authority (LLFA) and third party assets, where relevant, in relation to flood prevention in the Counters Creek catchment.</p>	Satisfactory	<p>Thames Water has improved collection of asset data from LLFAs. Technical Appendix for Information and LFR Report 1 both refer. LLFA assets are principally road gullies and some surface drainage assets which have a direct impact on the volume and location of storm water entering the sewer system. The activation of the London Surface Water Strategic Group, which is partly funded and attended by Thames Water, will support better data integration in the future as one of the principal tasks of the Group will be to improve co-ordination in the development of surface water management scheme which will require data consistency and interoperability.</p> <p>Technical Appendix for Information also refers to recent improvements in collection of data and information about Network Rail and Environment Agency</p>



			<p>assets, with an assessment of the relatively low or benign influence of these assets on flood risk.</p> <p>Technical Appendix for Information Table 2 and LFR Report 1 refer also to collection of information on TfL assets such as pumping stations to keep their Underground rail system free of water, to allow assessment of any impacts on flooding risk to customers.</p>
2e	<p>A sufficient level of understanding of historic flooding within the Counters Creek catchment and how the company will ensure it has processes in place to allow it to investigate and understand future flooding incidents when they occur. This applies to flooding incidents, whether reported to the LLFA, Thames Water and/or any other body. It is expected the company will pursue a co-operative approach working with and sharing knowledge with stakeholders as required by Section 13 of the Flood and Water Management Act (2010).</p>	Satisfactory	<p>Thames Water has been responsible for the operation and management of the combined sewer system in the Counters Creek area since privatisation and has records of flood events for at least this period. Significant flood events occurred several times between 2004 and 2007, in 2016, 2018 and a very large event in July 2021. These, and other, events have been used in the historic verification of the catchment model in accordance with the Code of Practice. As the number of event duration and depth monitors placed into the system has increased and as SCADA systems have been introduced the amount and quality of information from such events has been improving and confidence in the ability of the evolving model to replicate storm events has grown.</p> <p>The Main Report and Technical Appendix for Flooding Investigations refer to current and planned procedures for collecting post event information such as areas of flooding, properties flooded and cause of flooding, and field survey data of properties flooded.</p> <p>Technical Investigation for Flooding Investigations provides background into how Thames Water deals with flooding reports and how investigations of such flooding are structured and resulting information and insight managed.</p> <p>LFR Reports 1 and 4 refer to deficiencies in data collection procedures found after the July 2021 flood events and make proposals for improved and more collaborative methods for collection. Although Thames Water does pursue a co-operative approach as required by s13 FWMA (2010) it has been acknowledged that the procedures need improvement. Co-ordination with LLFAs is to be improved and increased “door to door” activity has been undertaken to capture</p>



			information about the July 21 floods, but it remains an issue that some property owners do not wish to report flooding.
2f	The inclusion in the model of basements and domestic connections at key flooding locations, to a Type III level of detail, as per the COP, where necessary, to predict the onset of flooding at property level	Satisfactory	<p>Main Report, Technical Appendix for Modelling Section 3 and LFR Reports 1, 2 and 3 refer.</p> <p>There is no data source publicly available which provides detail of basement connections (level and diameter of sewer and waste water fitting connection levels). Thames Water has made assumptions about the connections based on evidence of potable water supplies to basements, complemented by street level confirmation that basements exist and are likely occupied. When properties report flooding Thames Water surveys the property to get details of the connections and uses the information to expand the actual data set (to Type III level) for connections included in the model.</p> <p>The assumptions made by Thames Water where survey data are not available are consistent with Type III level of detail but are considered to be conservative such that even 1mm of surcharge above the assumed sewer elevation indicates flood risk. The assumptions made for inclusion of basements in the model have been reported as reviewed and agreed by the Independent Advisory Group.</p> <p>The assessment that the assumptions are conservative is borne out as shown in LFR Report 2, where the model of the July 2021 flood in the area predicted the sewer surcharge levels well but hugely over-estimated the number of flooded basements.</p> <p>Thames Water confirm that in accordance with CIWEM Urban Drainage Group (2017) Code of Practice, the Counters Creek catchment is modelled at Type III in the areas where they have undertaken investigations or design work to more fully understand how individual customers' properties are affected.</p>
2g	Sufficient understanding and representation within the model of any variable control strategies within the catchment - in particular, any new interactions, such as those presented	Satisfactory	Currently there are no variable control strategies available in the Beckton and Counters Creek catchments.



<p>by the Thames Tideway Tunnel (TTT). In regard to the TTT, there should be a sufficient level of understanding regarding how the current system (and any future changes to that system) will interact with the TTT and what impacts it may have, if any, upon resilience and flood risk within the Counters Creek Catchment.</p>	<p>The catchments are designed to gravitate west to east, with relief weirs at set levels allowing excess water to overflow from surcharging areas into storm relief sewers, and combined sewer overflows to take excess water to discharge to the river Thames. When gravity outfalls to the river are tide-locked pumping stations are turned on to clear water from the surcharged sewers.</p> <p>Commissioning of the TTT will occur in 2024 with operation commencing in 2025 in accordance with control rules (“operating techniques”) agreed with Environment Agency in 2012. Detailed modelling of the Beckton catchment and the TTT has been undertaken to underpin the development of the “operating techniques”.</p> <p>The Main report notes that as part of the DWMP process the full detailed Beckton Model (including the Counters Creek Catchment) and was combined with the Tideway Tunnel and Strategic Crossness Catchment Model of south London, to allow assessment of flood risk currently and for the future under the predicted effects of climate change. The DWMP process reviews the risk and resilience for each catchment; the Beckton catchment was reviewed and reported on at L3 and options for mitigating flood risk and improving resilience were studied at a detailed level for the Options Appraisal (see Appendix 4 to DWMP). The Main report notes that when the TTT is in operation impacts from tide locking will be reduced in the Counters Creek area as the combined sewer overflows will normally pass directly to the tunnel.</p> <p>LFR Report 2 reviewed the effect of operating TTT in accordance with agreed operating techniques for the July 2021 storms. This assessment showed that sewer flood elevations would have been reduced to some extent but that the overall impact on houses flooded would have been minor due to the extreme nature of the storm. For design storms of 1:30 and/or 1:50 AEP the impact of the TTT is more significant in reducing flooding. The operating techniques will be re-assessed following commissioning of TTT to account for any deficiencies found.</p>
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2h	Assessment of the impact tide/river levels and groundwater / infiltration have upon the effectual drainage and flooding within the Counters Creek catchment to ensure a network resilient to these risks	Satisfactory	<p>LFR Report 2 assessed the impact of tide-locking, groundwater infiltration and presence of blockages (fatbergs and collapses) on the flooding resulting from the July 2021 storms, by undertaking hydraulic model runs to test sensitivity.</p> <p>The Main report and Technical Appendix for Resilience consider the effects of groundwater infiltration and tide locking on flood risks and resilience.</p> <p>Records of pump run times across the year demonstrate satisfactorily that groundwater baseflow into the sewers is not significantly seasonally dependent, responding mainly to rainfall events. The proportion of flow which comes from infiltration is generally low and is not considered to have a significant impact on flood risk, with storm flows being the main determinant of flooding onset.</p> <p>The report also notes the effect that tide locking has on flood risk. Low lying areas near to the outfalls face higher likelihood of flooding when the tide is up as the pumping stations which are used to clear the water from tide-locked sewers have lower capacity than unobstructed gravity outfalls, hence leading to local backing up of sewers.</p>
2i	A full understanding of where flood prevention within the catchment is highly dependent upon the operation of pumps and/or other assets.	Satisfactory	<p>The Main report, Technical Appendix for Modelling, and Technical Appendix for Resilience report on the major pumping stations and their duties. The areas of Counters Creek catchment which are highly reliant on the operation of pumping stations are the low-lying areas in the vicinity of gravity outfalls which may be tide-locked. The principal pumping stations in this category are Hammersmith PS and Lots Road PS.</p> <p>Technical Appendix for Modelling refers to the modelling undertaken as part of LFR Report to assess root cause of flooding for the July 2021 event, showing the areas which are principally affected by pumping station operation.</p> <p>As part of LFR Report 3 the operation of pumping stations associated with recently installed flood alleviation schemes (storage tanks) was assessed. The assessment demonstrated that the pumps are set to only operate to drain flood tanks when</p>



			the receiving sewer flows and levels are reduced. The pumps therefore have only an indirect impact on flood risk.
2j	A sufficient understanding of predicted flooding and flows in the extremities of, and external to, the Counters Creek catchment so that any transfer of flows or risk from outside the Counters Creek catchment to within the Counters Creek catchment are fully understood.	Satisfactory	Technical Appendix for Connectivity demonstrates that the Counters Creek catchment model is entirely integrated into the Beckton model so the interaction between sub-catchments is properly understood within the limitations of the modelling. It also shows the connections between Beckton and other catchments, assesses the potential for interference and/or influence and demonstrates that influences are minimal and can be safely ignored.
2k	A sufficient level of understanding and confidence regarding operational issues and how factors like silt are likely to influence the risk of flooding within the network.	Satisfactory	<p>Technical Appendix for Information refers to the Thames Water Vistec system which is an on-line record of all sewer network maintenance tasks including notified and cleared sewer blockages, sewer collapses and repairs, manhole repairs, sewer cleaning. This is the data set which Thames Water relies upon for input to risk appreciation and which guides the assessment of blockage “hotspots” which are prioritised for proactive cleaning.</p> <p>The Main Report notes that silt is not currently a significant factor in exacerbating flood risk due to the large volumes of rainfall/runoff water which tend to flush the silt. The LFR Report 2 also studied the possible impacts of silt and FOG build-up on flood risk by testing the flood events of July 2021 with a model assumption of completely unobstructed sewers; the differences in the flooding were very marginal overall, but clearly “fatbergs” may have a local effect and Thames Water needs to be vigilant in locating and clearing these.</p>
2l	A sufficient level of understanding regarding legacy flap valves or other control devices within the network and the impact they are having, or may have, on flooding.	Satisfactory	<p>The intent of the flap valves is well understood as devices installed to prevent backflow into property basements when sewer levels rise above the foul sewer outlet level from the basement. The ability of the flap valves to perform this function is affected by the condition of the flap valves; it is known that many of the older valves will have deteriorated to the extent that they cannot create a perfect seal against backflow.</p> <p>The Main report reflects the current position where the condition and performance of legacy flap valves is primarily obtained from survey following reported flooding, to establish whether condition or performance has affected</p>



			<p>flooding and to what extent. Due to current H&S standards more stringent than those in place when these older flap valves were installed, many of the sewers are too small for safe man entry so routine inspection is not possible.</p> <p>The report acknowledges that to continue to improve understanding of the condition and performance a move to a more proactive survey approach will be needed, with inspection prioritised on a “risk of flooding” basis, conditioned by the recorded vulnerability of customers.</p>
2m	Emerging risks	Satisfactory	<p>Main report (section H) refers to the DWMP modelling undertaken to understand the emerging risks of population growth, urban infill/creep and climate change on flooding risk, taking account of the beneficial impact of the TTT when it comes into service from 2025.</p> <p>In the first-cycle DWMP information for the assessment of emerging risk is from publicly available economic development plans such as the London Plan, 2021 for population growth and infill, Local Authority development plans and ONS population forecasts and UKCP 18 for climate change impact forecasts (the DWMP uses RCP2.6 for base future risk assessment as recommended by Ofwat in PR24 and beyond; Long term delivery strategies and common reference scenarios and a sensitivity test at RCP8.5). Future cycles of DWMP will need to review outcomes against forecasts and revise the assessment basis.</p>

