

River Test Drought Permit application

Responses to questions from the Inspector

1 August 2022



from
**Southern
Water** 

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1 Background

Southern Water submitted an application for a drought permit on 19th July. Five objections were received during the 7-day consultation period from 21st to 27th July. A Public Hearing is planned for 3rd August.

On 29th July, Initial Questions from the Inspector were forwarded to Southern Water from the Environment Agency.

This document sets out our responses to the Inspectors questions which are directed at Southern Water and, Southern Water's responses to the points raised within the five objections, including those points that are not reflected in the questions from the Inspector.

For completeness, the document also includes responses to clarifications sought by the EA on 22nd July, which the EA indicated were required to aid their determination of the permit.

2 Responses to inspector

Responses to the Inspector's initial questions which are directed at Southern Water are set out below.

Q5

Which parts of the “emerging” drought plan have been relied upon by SWS and do the Agency have any dispute with this? What is the Agency's view in relation to the status of the 2022 drought plan?

Our Drought Plan is in the final stages of being updated, to be published later in 2022. Our previous Drought Plan was published in 2019.

Overall, we believe the only material changes between the two plans which are of relevance to the River Test Drought Permit application relate to 'drought triggers' for the River Test which are used to inform when actions are taken in response to a developing drought. Since the 2019 Drought Plan we have undertaken further review of the flow triggers used on the River Test and made changes to them, to make them more precautionary.

As set out in the S 20 agreement, we are required to start the pre-application phase 60 days before it is anticipated that the drought permit will be required, and to submit the formal application 35 days before the permit is needed.

For the 2019 Drought Plan, we developed triggers to alert us at 60 and 35 days before the HOF might be breached, as well as a 90-day trigger to act as an internal alert for us to start our preparations.

The development of triggers for potential future events (the need for a permit) based on existing flows is inherently difficult because of the uncertainty about future rainfall, how the flows are going to fall and what abstraction needs will be.

For the 2022 Drought Plan we undertook further review and analysis of the triggers, and we adjusted each of the triggers upwards – i.e. so that the triggers are more precautionary and should give us more time to act within the timeframes required.

In our weekly meetings with the EA on 6th and 13th July we discussed the fact that we are using the 2022 drought triggers. On the 14th July we shared a briefing note with the EA which sets out these

changes and includes the old triggers and the new (see Annex 1). We have not yet received a response from the EA to confirm that they are supportive of the new triggers.

The most recent forecast for when we might need the permit (assuming Testwood abstraction at 55 Ml/d) is 16 August. In relation to this date, the 2019 '60-day' trigger gave a lead-in time of 43 days, as compared with exactly 60 days for the 2022 trigger, whilst the 2019 '35-day' trigger gave a lead-in time of 27 days, compared with 39 days for the 2022 trigger. This indicates that the new triggers have performed better than the old triggers.

It is worth noting that an alternative to the triggers is to take the (worst case) forecast of when the permit will be needed and count back to determine the 35-day or 60-day periods.

Q6

In relation to comments from objectors regarding future planning for infrastructure – Mr Dodd (1.5 and 1.6), Mr Cole and HIWWT (comments re draft Water Resource Management Plan for 2024) – can the parties provide comments on how these matters might be addressed by the hearing (I note some details of this in doc 2.3 section 3).

On 27 and 28 July, Nigel Hepworth had telephone conversations respectively with Mr Cole and Mr Dodd, listening to their concerns and providing verbal explanation of Southern Water's approach to water resource and water supply infrastructure planning and how this sat relative to the regulatory and permitting systems the company must operate in and, relative to identifying, developing and pursuing feasible and acceptable options. This explanation included summary description of the relevant current investment programme, Southern Water's 'Water for Life Hampshire' programme. Mr Hepworth followed up with separate summary emails to Mr Cole and Mr Dodd, including links to further information on the company water resources management and the planned WfLH programme. The content of emails are copied below:

Email response to Mr Cole

Dear Michael,

Thank you for giving me some time on the phone earlier today to talk over and understand your concerns about Southern Water's River Test drought permit application.

I hope you can consider the following points in deciding whether you want to maintain a formal objection to be heard at Public Hearing or not.

In terms of your overall point that Southern Water should not rely on taking water from the River Test and River Itchen during low flow periods, I can reassure that Southern Water agrees with that. However, in terms of timing we are not able to achieve that now or as quickly as you would obviously like.

Concerning the point in your email the "At this moment, Southern Water should stop the pumping to rely on alternative sources, desalination plants, reservoirs and the like to maintain supplies to homes and businesses", I should confirm that the drought permit application is to allow abstraction to continue to lower flow of the River Test at Testwood. That river abstraction feeds immediately to our water treatment works there. At present we have no other means of sourcing water to that Works and, some 160,000 people are entirely dependent on supply from it. However, I know your point is that it is lack of previous investment that has created this predicament.

We do have a live programme of investment in new resources and supply network capacity and connectivity improvements for Hampshire and the Isle of Wight. It is being promoted as our "Water for Life Hampshire"



programme. The overall programme value is of the order of £1 billion, with the overall beneficial outcome expected by around 2030 but, with interim benefits realised by and from 2024-25. These earlier benefits include increased supply support from Portsmouth Water and connectivity improvements to our Southampton West supply areas to remove its current whole dependency on the River Test abstraction.

Progress of the water for life Hampshire programme is under the regulatory governance of a new body – RAPID – standing for Regulators' Alliance for Progressing Infrastructure Development, a partnership of three water regulators: Ofwat, the Environment Agency (EA) and the Drinking Water Inspectorate (DWI).

Originally the main strategic resource development intended within the investment programme was a large desalination plant, expected to be located in the Fawley area. That scheme was the preferred strategic option included Southern Water's 2019 water resources management plan, which was approved for publication by Defra, with the EA advising. However, upon trying to take the scheme into implementation (planning permission application) concerns were raised by the EA, Natural England, local environmental groups and residents such that we concluded we had to stop that promotion and re-plan. The revised strategic resources option of the programme is an expanded version of the Havant Thicket reservoir scheme that was a part of the original solution, though originally in a smaller version. The revised version involves conjunctive use with a water recycling support scheme. The reservoir scheme is real and live; it has planning permission; Southern Water has signed high value contracts with Portsmouth Water for its joint development and long-term shared use; work has started on site and beneficial use is expected in and from 2029-30. On 31st May 2022 the Secretary of State directed that the overall scheme – 'the Hampshire water transfer and water recycling project' - was a project of national significance and therefore must be consented through a Development Consent Order. This should be helpful to overall surety of progress and the programme team is currently working on the submission for that consent.

I recognise this still leaves some time before we can remove our current dependency on abstraction from the rivers during low flow periods but, I can assure you that is our aim and plans now being implemented are a firm programme to achieve that aim, not just a plan.

Also, recognising that we do currently have undesirable dependency on the rivers during low flow periods, we are investing £ millions in environmental monitoring, river and riparian habitat improvements and ecological resilience work. For example, within this effort, Wessex Rivers Trust, acting with our funding support, implemented nine river improvements schemes on the River Test in autumn 2021 and, they have another eight under preparation for implementation this autumn.

I can provide more details of any of the things I mention above if you would like and would be very happy to include you when we do progress bulletins – which we have been doing for catchment stakeholders. We also hold occasional 'stakeholder' briefing meetings on progress of the Water for life Hampshire programme and we could invite you to these if you would like.

I hope this might have reassured you that things are moving in the direction you have challenged about and, though we are still a few years from the solution, it is in sight.

Also (2nd email)

Further to my email of just now following up on our conversation of earlier today, here (below) also, a link to more information about the Hampshire Water Transfer and Water Recycling Project within the Water for Life Hampshire investment programme.

I hope this may also reassure as to real status of the programme and be of interest in extra detail.

The link to the live consultation on our new strategic resource for Hampshire:-

[Have Your Say Today - Understand the project and have your say! - Hampshire Water Transfer & Water Recycling Project \(commonplace.is\)](#)

You are welcome to contribute into this consultation with your views on the long-term solution.

Or, if I can provide any further clarification or explanation, please do get back to me.

Email response to Mr Dodd



Dear Christopher,

Thank you for giving me some time on the phone earlier today to talk over and understand your concerns about Southern Water's River Test drought permit application.

I hope you find the following points and information references useful in follow up to our conversation.

In respect of your overall point about not wasting freshwater to sea, I know you recognised that it is not easy to find viable geological sites for conventional on-land reservoir storage in the South of England, including the Isle of Wight and, indeed, you have concerns about the hydrological reliability of such anyway, especially relative to climate change risks. However you feel some form of control of freshwater flow to sea should be possible. (We didn't go as far as discussing details in our call but, as indicated in 5.5 of your objection text, some form of barrier control will be needed. The implication would seem some form of barrage in a lower river or estuarine location, whether fixed or somehow flexible according to season or other state of flow and / or tide. Some big scale examples of these ideas exist around the country – e.g.. Severn Barrage / Mersey Barrage but, to date, these have never got off the concept / initial design stage, except the Cardiff Bay scheme is perhaps an example of sorts. There would of course be engineering feasibility, upstream flood risk, environmental impact, planning permission and, overall costs, amongst overall considerations).

I hoped I was able to reassure you that we do plan ahead , via the Water Resources Management Planning (WRMP) and Business planning processes , respectively regulated by the Environment Agency (EA) and OFWAT. I've included a link to Southern Water current WRMP below. Also, a link to our current Drought (management) Plan

I should also confirm that our specific current drought permit application is to allow abstraction to continue to lower flow of the River Test at Testwood than our normal abstraction licence will allow us to. That river abstraction feeds immediately to our water treatment works there. At present we have no other means of sourcing water to that Works and, some 160,000 people are entirely dependent on supply from it. There is also some dependency of the Isle of Wight on it. We do have local groundwater and river sources on the Isle of Wight but, especially relative to peak demand periods, our supply reliability is dependent on a transfer from the mainland, which is from the lower River Test source and treatment works.

We do have a live programme of investment in new resources and supply network capacity and connectivity improvements for Hampshire and the Isle of Wight. It is being promoted as our "Water for Life Hampshire" programme. The overall programme value is of the order of £1 billion, with the overall beneficial outcome expected by around 2030 but, with interim benefits realised by and from 2024-25. These earlier benefits include increased supply support from Portsmouth Water and connectivity improvements to our Southampton West supply areas to remove its current whole dependency on the River Test abstraction.

Progress of the water for life Hampshire programme is under the regulatory governance of a new body – RAPID – standing for Regulators' Alliance for Progressing Infrastructure Development, a partnership of three water regulators: Ofwat, the Environment Agency (EA) and the Drinking Water Inspectorate (DWI).

Originally the main strategic resource development intended within the investment programme was a large desalination plant, expected to be located in the Fawley area. That scheme was the preferred strategic option included Southern Water's 2019 water resources management plan, which was approved for publication by Defra, with the EA advising. However, upon trying to take the scheme into implementation (planning permission application) concerns were raised by the EA , Natural England, local environmental groups and residents such that we concluded we had to stop that promotion and re-plan. The revised strategic resources option of the programme is an expanded version of the Havant Thicket reservoir scheme that was a part of the original solution, though originally in a smaller version. The revised version involves conjunctive use with a water recycling support scheme. The reservoir scheme is real and live; it has planning permission; Southern Water has signed high value contracts with Portsmouth Water for its joint development and long term shared use; work has started on site and beneficial use is expected in and from 2029-30. On 31st May 2022 the Secretary of State directed that the overall scheme – 'the Hampshire water transfer and water recycling project' - was a project of national significance and therefore must be consented through a Development Consent Order. This should be helpful to overall surety of progress and the programme team is currently working on

the submission for that consent. For the Isle of Wight, the programme includes a new water recycling scheme(s) – the preferred option now being further designed - or possibly desalination. Overall the programme aims to build the island water supply to be more self-sufficient.

I have included a link to the current consultation within the Water for Life Hampshire programme, below

I recognise the programme completion still leaves some time before we can remove our current dependency on abstraction from the rivers during low flow periods but, I can assure you that is our aim and plans now being implemented are a firm programme to achieve that aim, not just a plan.

Also, recognising that we do currently have undesirable dependency on the rivers during low flow periods, we are investing £ millions in environmental monitoring, river and riparian habitat improvements and ecological resilience work across the Hampshire catchments. For example, within this effort, Wessex Rivers Trust, acting with our funding support, implemented nine river improvements schemes on the River Test in autumn 2021 and, they have another eight under preparation for implementation this autumn.

I can provide more details of any of the things I mention above if you would like and would be very happy to include you when we do progress bulletins – which we have been doing for catchment stakeholders. We also hold occasional ‘stakeholder’ briefing meetings on progress of the Water for life Hampshire programme and we could invite you to these if you would like. I believe some are scheduled to take place on the Isle of Wight and will forward you the dates when I have them.

I hope this might have reassured you that things are moving in the direction you have challenged about in the sense of ensuring better, sustainable water resources and supplies into the future and, though we are still a few years from the solution to the immediate concerns raised by drought permit application, that point is in sight.

As we concluded on the phone call, you will maintain your objection and I believe you recognised that a number of your points are probably more for the EA to consider than they are directly answerable by Southern Water.

Links referenced above:-

The link to the live consultation on our new strategic resource for Hampshire:-

[Have Your Say Today - Understand the project and have your say! - Hampshire Water Transfer & Water Recycling Project \(commonplace.is\)](#)

You are welcome to contribute into this consultation with your views on the long term solution.

Drought Plan: [Our Drought Plan \(southernwater.co.uk\)](#)

Our Drought Plan - sets out how we would deal with a drought in Sussex, Kent, Hampshire and the Isle of Wight.

WRMP: [Water Resources Management Plan 2020–70 \(southernwater.co.uk\)](#)

Water Resources Management Plan 2020–70 - find out more about our water resources plan, published in December 2019, which details how we plan to keep your taps flowing for the next 50 years.

Progress of the Water for Life Hampshire programme is summarised in our application, in document 2.3, section 3.

We recognize the concerns of Mr Cole and Mr Dodd, and we believe the explanation and further information links should help them each understand the wider context within which their concerns relate. In relation to their objections, we consider there is no immediate additional mitigation or action we can take that we are not already addressing within, and relating to, the drought permit application and the immediate water supply and environment concerns it is a necessary response to.

We suggest many of the points in both objections relate to finding permanent solutions to supply risks and pressures on the environment and it would be appropriate for the Environment Agency to

respond as to their role in guiding and review of water resource and drought plans, permitting of infrastructure proposals and views about the environmental acceptability of options, including tidal river barriers (such as suggested by Mr Dodd).

Q7

What are the views of the Agency and SWS on comments from HIWWT regarding the delivery of mitigation measures as part of the Section 20 agreement and as recommended in 2019? (I note the 2018 Mitigation package sets out measures are to be delivered by 2024, and details of progress on these contained in doc 2.3 parts 1,2 and 4 and table 2?)

Nigel Hepworth discussed the concerns raised in the HIWWT objection with Hannah Terrey on 29th July. The concern in part related to the overall challenge of interrogation of the 28-document application submission in the short timescale of 7 days of the public consultation period and, disappointment that Southern Water had not approached HIWWT more proactively during the pre-application period to engage them in the application process. (However, HIWWT were party to wider group briefings about the permit application schedule in which it was emphasised draft application documents could be requested or follow up '1-2-1' briefings could be booked; wider group briefings to, for example, the Watercress and Winterbournes project Steering Group; the Test and Itchen catchment partnership (June); and, the S20 / WfLH stakeholder engagement meeting (June) and, subsequent emailed updates to these stakeholder groups. In any event, Southern Water has apologised for the lack of earlier more direct engagement with HIWWT and, will make sure this is undertaken in future). However, irrespective of this issue, HIWWT had genuine concern that progress of mitigation implementation was not visible enough.

We re-summarise below the drought permit application content with respect to the S20 agreement and other mitigation aspects of the permit application. We believe the content of the application demonstrates sufficient progress has been made to date, especially given the unexpected constraints added through Covid restrictions, especially in 2020.

Most importantly, in their 'delivery partner' roles for the S20 mitigation measures, the EA and HIWWT have both reaffirmed recently that they remain on track to complete by April 2024, though recognising some catch-up is necessary, with the EA better placed again having recruited a new river restoration lead Officer. We hope this helps reassure HIWWT that satisfactory progress is being made and helps the Inspector in respect of considering HIWWT's concern.

Summary of mitigation approach and progress

Mitigation measures for this drought permit fall in to four categories:-

- (i) Permanent mitigation as agreed for the S20 Agreement. These measures are set out in the River Test drought permit and drought order mitigation 'work package', signed by the EA, NE and Southern Water in 2018, to be implemented by April 2024.

The S20 Agreement is introduced in document 1.1 of the drought permit application with the S20 itself in document 1.1 Appendix 2; a summary of the S20 in document 1.1 Appendix 3; and, S20 River Test Monitoring and mitigation work packages at, respectively Appendices 4 and 5.

S20 implementation progress is summarised in the application document 2.3.

However, in respect of the concern raised in the HIWWT objection, we have agreed with HIWWT that more detailed visibility of progress should be collated and presented before any future application. This had already been discussed at the most recent meeting (9th June) of the S20 Programme Steering Group, which comprises EA, NE, HIWWT, Wessex Rivers Trust (WRT) and Southern Water. An action due from the most recent meeting is for a sub-group meeting to refocus on the opportunity to use the data-sharing platform that Southern Water has sponsored WRT to develop for the Test and Itchen Catchment Partnership. We have also asked the EA directly for more details of the mitigation work they have completed to date from their S20 Southern Water funding and in implementation of the wider river restoration strategy (River Test and River Itchen), as sufficient detail is not yet working into the S20 programme delivery governance meetings (Delivery Group and Steering Group).

(ii) Mitigation implemented in 2019-20 in connection with the drought permit granted in 2019.

Condition 5.10 of the 2019 programme required development of programme for tree and scrub clearance in the Lower Test Valley SSSI for bird habit improvement and maintenance of favourable condition in that respect. Southern Water agreed the desired clearance with Natural England and, the tree clearance, with the landowner and Fishery (leaseholder). Southern Water funded HIWWT to undertake the work in 2020-21. The scrub clearance was not agreed with the landowner at the time but this will be revisited in 2022.

Separately, and in addition to the conditions of the 2019 drought permit, Southern Water also undertook to explore fencing improvements to prevent cattle poaching of the Wirehouse stream and on the River Test on the right bank downstream of Testwood Bridge. These matters were requested to be addressed by LRM. Agreement was reached to repair a cattle bridge over the Wirehouse stream rather than install fencing. Southern Water funded the cattle bridge repair by HIWWT. The fencing downstream of Testwood Bridge was not supported by NE, EA and HIWWT, so it has not been implemented.

These matters are covered in the current drought permit application's monitoring and mitigation plan (document 2.2, section 4.5 and 4.6).

(iii) Reactive mitigation committed within the Monitoring and Mitigation Plan (document 2.2) submitted with this drought permit application

The content and status of the drought permit application's monitoring and mitigation plan is covered in response to Question 11 below.

Additionally, Southern Water has committed to fund and otherwise support the development of a **River Restoration Strategy for the lower River Test area**, which to date has been excluded from the long-standing strategy for the wider River Test and River Itchen catchments. The strategy development is to be led by the EA, with close engagement of LRM and Southern Water. A positive initial scoping discussion was held at LRMs Testwood Mill premises in late 2019 but, then momentum was somewhat lost due Covid and the EA losing its leading river restoration expert to retirement. However, progress is underway again in 2022, currently on procurement of lead consultants, with a site walkover scheduled for 23 August 2022 to facilitate consultants firming their bids to undertake the strategy development. When the strategy is documented it should provide a focus for agreement of which mitigation works can proceed to implementation within the lower Test area.

The S20 mitigation commitments include assumptions that permanent mitigations may be implemented in the Lower Test Area under Fishery lease to LRM. However, no specific measures were identified for within the area within the S20 work package and, the likelihood of progress was recognised to be subject to whether measures could be agreed with LRM and, if access would be granted to Southern Water for such work to be implemented. At present, there is no access agreement.

Q8

Have SWS appropriately followed the sequence of actions set out in the S20 agreement:

- **Is there sufficient evidence of fully utilising all existing sources and bulk supplies from Portsmouth Water (see comments on LRM re Testwood Lakes);**
- **Is there sufficient evidence of SWS delivering appropriate demand side water efficiency measures and other measures to reduce water use (LRM paras 16, 17 and 18);**
- **Position in relation to TUBs.**

We have used our sources appropriately to the circumstances of current pressures and forward risk assessment, including management of transfers between supply areas. With forward risks in mind, we should not over-use individual sources now such that they might then not be able to provide their expected drought reliable “deployable outputs” over coming weeks and months. “Deployable outputs” are the basis of maintaining the supply-demand balances of our water resources management plan (WRMP). We are managing the resources in respect of our commitment to minimise transfer out of the Hampshire Southampton West supply area, to minimise the abstraction required from the River Test as committed in the drought permit application.

The key transfers in terms of that commitment are the transfers from Southampton West to Southampton East and to the Isle of Wight. Minimising the transfer to Southampton East is aided by the import of Bulk Supply from Portsmouth Water to Southampton East.

We are providing update of these key data to the EA on a weekly basis.

The very hot and exceptions dry weather has caused some difficulty reducing the transfers as much as intended. However, in the last week for July the transfer to Southampton East has been reduced to a minimal 1 MI/d and the transfer to the Isle of Wight has reduced to 10 MI/d (our permit application remains for up to 12 MI/d to be allowed for).

Across July we have operated wider Hampshire source at close to or, in many cases a little above their deployable outputs. This includes our sources at Otterbourne and Twyford – the sources within the Southampton East supply area. Spreadsheet Table 1, attached, shows the July source utilisation across Hampshire. We believe this demonstrates proper use of all our other available sources. It would increase future risks to take much more for anything other than short peak periods.

During July we have largely had 10 MI/d bulk Supply from Portsmouth Water into the Southampton East supply area. This reflects the request we made earlier in the year within our contract (for up to 15 MI/d), with the rate due to increase to 15 MI/d in the second half of August and for the whole of September. We have recently asked for 15 MI/d to be made available for the first half of August and, for up to 20 MI/d to be made available in September. Portsmouth Water has committed best endeavour to make the larger rates available but, it has indicated it has some outage issues to resolve first. The Table below, compiled by our Productions Planners shows how different rates of supply from Portsmouth Water influence our ability to minimise the transfer from Southampton

West to East. The second Table also shows revised ‘picture’ with the benefit of the increase in peak output capacity we expect in place at Twyford Moors groundwater source in Southampton East area from 5th August. Overall, the prospects of minimising the transfer to Southampton East are good with this and Bulk Supply from Portsmouth Water available.

Current Twyford Moors Output

Gaters Mill	Twyford	Twyford Moors	Otterbourne	Total	Olivers Battery	Peak Demand	Average Demand	Low Demand	Peak Woodside	Average Woodside	Low Woodside
0.00	14.50	7.00	61.00	82.50	4.30	95.87	87.00	83.50	17.67	8.80	5.30
5.00	14.50	7.00	61.00	87.50	4.30	95.87	87.00	83.50	12.67	3.80	1.00
10.00	14.50	7.00	61.00	92.50	4.30	95.87	87.00	83.50	7.67	1.00	1.00
15.00	14.50	7.00	61.00	97.50	4.30	95.87	87.00	83.50	2.67	1.00	1.00
20.00	14.50	7.00	61.00	102.50	4.30	95.87	87.00	83.50	1.00	1.00	1.00

Increased Twyford Moors Output

Gaters Mill	Twyford	Twyford Moors	Otterbourne	Total	Olivers Battery	Peak Demand	Average Demand	Low Demand	Peak Woodside	Average Woodside	Low Woodside
0.00	14.50	11.00	61.00	86.50	4.30	95.87	87.00	83.50	13.67	4.80	1.30
5.00	14.50	11.00	61.00	91.50	4.30	95.87	87.00	83.50	8.67	1.00	1.00
10.00	14.50	11.00	61.00	96.50	4.30	95.87	87.00	83.50	3.67	1.00	1.00
15.00	14.50	11.00	61.00	101.50	4.30	95.87	87.00	83.50	1.00	1.00	1.00
20.00	14.50	11.00	61.00	106.50	4.30	95.87	87.00	83.50	1.00	1.00	1.00

In respect of transfer to the Isle of Wight, we maintain our position that it is important that the permit includes provision for up to 12 MI/d transfer to the Isle of Wight on average, though we will endeavour to reduce to less than that, as we have done recently, to 10 MI/d. This requirement relates to potential peak demands on the island – it is the holiday season and concerns that some sources on the island are notably sensitive to water quality variations and, we must work within new monthly licence limits on our Bowcombe and Carisbrooke sources. (There was a water quality issue at Bowcombe in early July causing a period of run to waste).

Regarding our implementation of water efficiency, we are confident we have implemented communications to customers and stakeholders within the intentions of the S20 Agreement and our drought plan. Also, compared to the indication in our drought permit application, we are implementing TUB two weeks earlier, now commencing on 5th August, advertised on 29th July. This demonstrates our monitoring of the situation and forecasts, and our proactive approach.

Q9

Is there sufficient evidence to support the view that flow calculations and abstraction reporting are reliable ? (LRM paras 9 and 10) ?

Southern Water has proper certified abstraction meters that are independently verified. All abstraction is measured and reported to the EA based on these meters

Nigel Hepworth discussed these questions with Mike Johnson of LRM on 28th July and summarised the position by email as follows:-

Your objection point 10 – abstraction data

In our phone call I explained that we don't make desktop estimates of our abstraction, we have certified and annually independently verified abstraction meters in place, to which we apply further regular weekly and monthly in-house checks. We have always reported our abstraction data to the EA based on meter measurements. I did also explain that prior to 2018 we were dependent on five in-pipe meters to calculate the total abstraction downstream of the abstraction pumps; in 2017-18, recognising that fewer meters would

be a better approach, we installed two flow meters, one in each of the abstraction culverts just upstream of the abstraction pumps, so measuring the abstraction drawn by the pumps; after a period of performance assessment, these have been our primary meters whenever possible since but, they have suffered from some unreliability (data drop-outs) during which we have reverted back to the previous five-meter approach, still maintained. This is all detailed in monthly reports to the EA of our daily abstraction data.

As I believe you know, we have commenced a significant reconfiguration of the pipework immediately downstream of the abstraction pumphouse in order to install two new in-pipe meters, which once commissioned and verified, are intended to be a further improvement to reliability, accuracy and continuity of data. This work is expected to complete late this year. However, we have always had and, while the new configuration is being constructed, still do have, entirely valid meter-measured abstraction data, either from the two in-culvert meters or from the 'five meters'.

Your objection point 9 – river flow data

The EA is responsible for the river flow measurement via its gauging stations and manual 'spot' current meter gaugings. In 2019 we were heavily dependent on emailed updates to the Total Test Flow from the EA. That situation is improved, with better near-real-time access to data via the EA national 'API' web-site. However, we find data updating can be un-reliable, which is a concern to our abstraction compliance checking and to river flow monitoring for the environment. The EA has been prompt with spot gauging checks as flows have fallen. We do press the EA for further improvement in the reliability of their data in terms of both accuracy and timeliness of on-line availability. I suggest the issue of making the data available to yourselves [LRM] is a question for the EA.

Q10

Are the quantities sought by SWS reasonable? Where is this demonstrated?

The case for the drought permit is set out in Section 6.2 of document 1.2 Reasons for the Permit. The threat to supply equates to the degree to which flows in the River Test may fall to and below the 'hands-off flow' (HOF) of 355 MI/d as set out in condition 9.1 of the abstraction licence.

The scale of the threat to supplies relates directly to the rate of hydrological recession. Once the flow of 355 MI/d has been reached then every megalitre of further reduction in river flows causes an equivalent megalitre of reduction in the amount of water available for abstraction, and so a shortfall in supply – a growing supply-demand deficit.

In making the assessment, an abstraction requirement at the Testwood abstraction has been assumed at 55 MI/d. However, abstraction rates at Testwood had to increase toward, and sometimes above, 70 MI/d in response to increased customer demand due to the exceptionally high temperatures that occurred through much of July. The most recent data available at time of writing show that the Testwood abstraction rate dropped to approximately 59 MI/d on 22nd July, and has since been below 60MI/d, apart from a couple of days over the weekend on 29th and 30th when the rate increased to 64 MI/d.

In order to meet normal operating demands within the Hampshire Southampton East zone (approximately 33 MI/d) and meet transfer requirements to the Isle of Wight (12 MI/d), 55 MI/d is realistically the minimum viable abstraction from Testwood. This also assumes our strategic commercial customer at Fawley can minimise their requirement from us.

However, we must also reserve the need to take up to 80 MI/d (the maximum daily abstraction rate as stipulated in the licence) in order to meet potential short-term requirements to increase the abstraction – for example as needed during the hot periods in July.

We will undertake all measures to reduce the abstraction requirements at Testwood as set out in document 1.4 Evidence the Company is following its Drought Plan – including demand

management measurements such as the media campaign and the imposition of Temporary Use Bans, as well as enhanced management of leakage, and measures to reduce the need to transfer water out of the supply area to Hampshire Southampton East, or the Isle of Wight. This could mean abstraction reduces to less than 55 Ml/d; we will of course only abstract what we need to maintain supplies.

Q11

What measures are proposed in mitigation? (All contained in doc 2.2 Environmental Monitoring and Mitigation Plan ?)

- How have these been arrived at?
- Are the measures in relation to Salmonid rescue appropriate and likely to be effective? – What are the Agency’s views on the measures set out in doc 2.2 mmp-app-1 fish monitoring mitigation plan? Have they been tested? Does the mitigation contain effective measures to address oxygenation/thermal changes? (LRM 3-8, 10-15 and 19)
- Should they address pollution? (doc 2.2mmp app3 blackwater surveys)
- How will they be monitored? (All contained in doc 2.2 Environmental Monitoring and Mitigation Plan?)
- How has/will the baseline be established? (again, All contained in doc 2.2 Environmental Monitoring and Mitigation Plan?)

Baseline information for the assessment of the drought permit

Please see our response to Question 7 which explains the commitments of permanent mitigation measures and progress of them. The annual baseline monitoring commitments of the S20 have also progressed year on year since 2018. In our application we have also made it clear that the expected baseline ecological monitoring was completed in 2019 but not since, due to access refusal since July 2020. However, we have progressed water quality monitoring at six sites using public access or Southern Water access, with two additional measurement stations included downstream of our intake since May 2022.

Additional to the S20 commitments, we also have the aerial photography taken in 2019 and used by APEM to develop content of the ‘handbook’ (Appendix 2 to the Monitoring and mitigation plan), verified with ‘ground-truthing’ walkover survey in 2019, and we have further aerial photography taken in March 2022. As appropriate, repeat aerial photography can be taken to aid assessment of the impact of the drought and the drought permit.

Our application also acknowledges that Natural England’s SSSI condition assessment information will also be reviewed and, as appropriate, some data collected in previous older one-off studies might be relevant.

Therefore, although the expected S20 baseline ecological monitoring has not been possible except in 2019, a pool of baseline data and information is available, providing a good basis for assessing impacts of the drought and the drought permit.

Derivation and status of the drought permit Monitoring and Mitigation Plan

The submitted drought permit monitoring and mitigation plan was originally developed for the drought permit that was granted in 2019. It therefore has a precedent of acceptance. However, in particular, the water quality data available to monitor this drought and drought permit is much advanced compared to what was available in 2019. We have had good feedback from the EA on

the advancement of the Water quality data availability and how it is being used for the current permit.

We know that the aeration (oxygenation) and fish rescue reactive mitigations included in the plan would ideally have been tested in practice since the 2019 permit but, from September 2019 on the river flows rose to an unfavourable level for such tests, this was followed by Covid restrictions in 2020 and, from July 2020, refusal of access from the Fishery for any further environmental monitoring, which we took to be blanket refusal of access for anything related to the S20 commitments and drought permit. However, the measures are included in the plan with guidance of expert adviser APEM and they have passed through review by the EA's specialists. We recognise we must be ready to mobilise and have contracted APEM and other support contractors to support the reactive measures of the plan. APEM, RSK and Mott MacDonald are mobilising in the week commencing 1st August to undertake initial on-the ground re-familiarisation and condition observations.

The monitoring and mitigation plan submitted with the application passed through pre-application review by the EA and Natural England, with only relatively minor points of clarification raised, which we addressed in providing the submitted version.

The thresholds used in the plan for dissolved oxygen and temperature to trigger reactive actions result from dialogue with the EA's water quality and fisheries specialists, including national water quality monitoring experts. We changed our water quality station installation, maintenance and data assurance provider to align with the EA recommendations. We are now using the same supplier the EA uses: Meteor.

We have submitted a monitoring and mitigation plan which we believe to be sound in content and is supported by important advanced real-time water quality data availability and interrogation to aid its reactive functionality. We believe this is a good, appropriate monitoring and mitigation plan, dealing as best as possible with the unresolved access issue we have in the location. (Note, the S20 Agreement includes special provision relative to the access issues, that they should not be used to refuse a drought permit).

3 Objectors' comments

We have reviewed the comments received from Objectors. Those which have not been picked up in the Initial questions from the Inspector are summarised below, together with our response.

Table 1 Objectors' comments and our responses

Objector Ref	Objector comment ref	Comment summary	Response
Communications			
5	C	Concern around the lack of communication from Southern Water in the lead up to this drought permit application. A one-week consultation period is insufficient to ensure that all concerned stakeholders can meaningfully respond to the drought permit application	As per discussion with Hannah Terrey on 29 th July, Nigel Hepworth has apologised for the lack of direct consultation with HIWWT during the pre-application period, promising to do this in any future occurrence.
5	B	More could have been done to raise public awareness of the potential risk posed to our chalk rivers given the prevailing weather conditions and Southern Water could have provided more support their customers to help them become more water-efficient in the lead-up to this application.	<p>We have been communicating with customers and stakeholders in our 'baseline' communications about environmental care, environmental improvements and value of water efficiency (giving related advice / tips). As the situation developed into drought risk and drought permit application, we have escalated and made these communications more focused on the immediate concerns.</p> <p>This has all been done in line with our drought plan and our current Communications and Stakeholder Engagement Plans are included with our permit application (document ref: 1.4 App1 Drought communications plan and activity tracker). We have been updating the EA approximately weekly on progress, including quantification of the implementation.</p> <p>The most recent update to this document is provided together with this response (220801_Drought communications plan and activity tracker). This document sets out how our communications with customers and media engagement have ramped up over the past weeks, the notification of temporary use bans (to be implemented on 5th August), and our plans for further communications activity.</p> <p>Our communications activities have included:</p> <ul style="list-style-type: none"> - Regular social media updates - Website updates - Advertising on buses - Advertising in local press - Advertising on local radio - TV advertising

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			<ul style="list-style-type: none"> - Press releases - Direct Stakeholder engagement - Direct email to customers - Direct postal mail to customers - Public Notices (for Drought Permit application, and TUBs notice)
3	17	SWS has not demonstrated sufficient consumer engagement to reduce water consumption. Their communication plan only refers to a 'potential radio/TV campaign whereas both South West Water and Thames Water are already conducting TV advertising campaigns to highlight the need to protect rivers and explain what their customers can do to help.	See points in line above.
Leakage			
3	16	Based on their leakage report SWS has missed its leakage target in I.O.W. by c.50%. No explanation has been provided and the failure to achieve the target has created a 2.05 mld deficit. We understand the IOW receives at least 10mld a day of water from Testwood and therefore the failure to hit their own targets by 2.05 mld represents a missed opportunity to make a 20% reduction on the 10 mld demand placed on abstractions from Testwood. The EA's own policy guidance on making Drought Permit applications states that water companies must provide evidence of an acceptable leakage management performance before a drought permit will be considered.	<p>The recent increases in reported leakage have in part been as a result of an increase in demand for water from our customers. Due to the frequency of meter reading, it is not possible to differentiate this from genuine leakage easily and in short order. We are currently gathering data for application to our leakage reporting and this will take place by 31st August 22. It is anticipated that application of these legitimate allowances will see a reduction in the reported leakage levels provided for July where temperatures have been unseasonably high and where water demand has followed suit.</p> <p>In programming our reduction of leakage levels, we are currently operating above our planned level of leaks as staff recruitment has not match the programme expectation, though staffing has increased. (There is high demand for operational/technical personnel across the South of England). However, we are focusing on the repairs that will bring the greatest water volumes benefits, whilst exploring operational options to secure additional skilled resource.</p> <p>Of the higher than planned leakage level, it is only that on the Isle of Wight that is direct influence on the drought permit and, Isle of Wight has the added difficulty for leak repair of a wide embargo on traffic interruptions during the tourist season. (Also limiting progress of pressure reductions installations).</p>
Abstraction			
3	12	Insufficient consideration has been given to how the proposed the abstraction can be managed during each 24-hour cycle to	Nigel Hepworth discussed this with Mike Johnson on 28 th July and followed with email summary as below:-

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		<p>minimise the impact of the thermal barrier to salmonid migration caused by low flows.</p> <p>Reference is made to SWS’s modelling which suggest no more than 0.5 of a degree difference in water temperature caused by the additional abstraction and there is a further reference to a diurnal difference of 2 degrees. Reference is also made in the MMP to a study on daily abstraction that started in 2019 and will not be completed until October 2022. Given the sensitivity of salmonids to even the smallest changes to water temperature above 19 degrees the proposals should include more mitigation on how to manage the thermal barrier risks.</p>	<p><i>Regarding the ongoing ‘within-day abstraction pattern’ study, I confirmed that study looks both at recent actual patterns and explores alternative scenarios of abstraction pattern that could reduce risks or provide betterment. The study has been delayed to completion in October – was originally due to complete by March 2022 having commenced in 2021. The delay due the unfortunate passing away of the lead consultant. However the delay also allows some inclusion of this year’s data.</i></p> <p><i>You recognised I’d sent the scoping report for the study to you for comment before the project properly commenced. You recalled seeing it and thought you’d not responded because it all seemed sensible. I said I’d resend the Scoping report as though the study was really closing into the final report stage now, we might still be able to address comments within writing the report if received quickly. [We can share the final report in draft but, turn-around time may be tight.]</i></p> <p><i>Overall, in respect of managing the within-drought-permit risk, we have much improved real-time water quality data now compared to last year or 2019, with automated alarm messaging sent upon thresholds reached - as set out in the application monitoring and mitigation plan and agreed with EA and NE during pre-application discussions.</i></p>
Ecology			
3	4	<p>Fish rescue is not a viable mitigation for adult migratory salmonids. No evidence has been provided to counter this point and a fully detailed method statement has not been provided nor submitted to the EA for 2 approval. SWS have also not engaged with any riparian owner over the last three years to trial and test salmonid rescue, for example with a small number of tagged adult fish, to prove the efficacy of such a mitigation.</p>	<p>This was discussed this with Mike Johnson and Andrew Kelton on 1st August am. Whilst LRM remain concerned at the validity (fish safety) of aeration and fish rescue options, it may yet be possible to achieve some better agreement about proposals and implementation. LRM suggest an agreement could be discussed in the round, with management of abstraction by SWS and flows through hatches by LRM.</p>
3	5	<p>No consideration of reviewing the design of the fish passes at Testwood Pool and Nursling or the operating hatches to explore and test any changes in design to the passes or plan for a revised hatch management regime during any drought permit periods. For example, water levels are now so low the Test Back Carrier at Nursling is already dry.</p>	<p>See above</p>
3	6	<p>The statutory salmon passes on both Little Test and Great Test presently have inadequate flow to allow salmonid migration. Enough flow needs to be maintained to allow salmonid</p>	<p>See above</p>

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		<p>migration, which currently is not even considered in the SWS mitigation plans. SWS's mitigation plan relies on unproven fish rescue from the river (see above), but if fish are forced out to the estuary they are still at risk.</p>	
3	7	<p>Taken together points 5, 6 and 7 (mitigation issues) mean SWS has not met the requirements of WFD art. 4(6) (or WFD Regulations 2017, reg. 18) that requires 'all practicable steps are taken to prevent further deterioration in status....' before a Drought Permit, varying an Abstraction Licence, can legally be granted. While it was accepted by the inspector at the public hearing in 2019 that this criterion had been met given the limited time between the s.20 Agreement being put in place and that application, we are now over 4 years on and the 'practicable steps' test needs to be made against that passage of time and the missed opportunities described in points 5, 6 and 7. In addition, the 'all 3 practicable steps' requirement equally applies to the prevention of abstraction which lowers flows below the 355 mld HoF (at which point a WFD deterioration is risked, including deterioration of a long-term nature e.g. a reduction in salmon stocks), particularly by 'practicable' demand management measures.</p>	<p>LRM consider that SWS has not taken all practical steps sufficiently in time ahead of this permit application.</p> <p>However, SWS view the in advance 'practical steps' as requiring access to have been granted and that has not been the case; access has been refused since July 2020</p> <p>On 28th July Nigel Hepworth and Mike Johnson discussed LRMs points that we should have progressed further assessment of potential fish passage improvements at the structures, aeration trials and fish tagging and rescue methods between 2019 and now. In the phone call Mr Johnson emphasised that though LRM had refused access for further environmental monitoring (since July 2020) that should not have been taken to have been a blanket refusal of these other activities. Mr Hepworth indicated that SWS had taken it as a blanket refusal and, unfortunately, had not even gone as far as testing the assumption with a request for access for any of those further assessment activities.</p> <p>The discussion concluded that we should be able to progress these matters, possibly in time still relevant to the current situation or, at least ready in case there is another low flow period next year. [Mr Johnson reminded Mr Hepworth that they have the agreed access on August 23rd for the contractor walk-over for the River Restoration Strategy development initiative - perhaps if not before, that day could be used for some exploration of the further assessment trialling items also?]</p>
3	11	<p>In the documents submitted with their application SWS have assigned a MODERATE risk to the likelihood of damaging the salmonid population. There is no definition or risk scale provided to support this conclusion and based on the acknowledged likely impacts and the precautionary principle the risk should be considered MAJOR. In which case the proposed mitigation plans are inadequate.</p>	<p>LRM regard the risk as MAJOR because aeration and fish rescue are unproven and, in their view, quite likely to do harm. Southern water see the risk as MODERATE because aeration and fish rescue are valid mitigations.</p>

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3	14	A survey of the Blackwater was undertaken in Aug 21. However, while the report contained numerous mitigation proposals, we see no evidence that SWS has undertaken the necessary stakeholder engagement and funding support for most of the recommendations. As a result, the mitigation plans do not satisfactorily address the known risks and are therefore not fit for purpose.	We have committed in the monitoring and mitigation plan to do this in future but, have not progressed beyond the survey since receiving the APEM report.
3	15	SWS claim in their submission it is impossible to know what impact a decline in sea trout stocks would have on the future populations of brown trout. This suggests a lack of rigorous research of the available data sources as various international sea trout symposium reports and Regional sea trout action plans from England, Wales and Scotland are available which clearly state, in river reaches with migratory populations, that 'most' brown trout recruitment is from large female sea trout and in some case up to 80%. Not addressing this issue properly in their Drought Plans mean SWS are not properly addressing either the environmental nor the economic importance of the wild brown trout population of the lower reaches of the River Test and therefore the MMP is inadequate.	Need to further understand the aim of the LRM comment; not sure of any practical implication to the MMP as is.
3	19	None of the proposed monitoring and mitigation activity included in SWS's Drought Plan directly address the risks to salmonid populations in the depleted reaches directly below the abstraction point other than untested aeration and questionable fish rescue, both of which are crisis responses rather than long-term and preventative.	The MMP includes monitoring the tidal reach below Testwood Mill, we could target aeration and / or fish rescue there if that is considered desirable.
5	A	All parties need greater confidence that Southern Water has delivered existing mitigation measures as part of the Section 20 agreement and therefore satisfied the necessary regulatory requirements to seek out this further drought permit	See response to Inspectors question 7

4 Clarifications in response to the EA

The Environment Agency emailed us on 22 July with some questions for clarification in relation to the drought permit application. The questions from the EA, and our responses are set out in Table 2 below.

Table 2 Clarification questions from EA

Questions	Responses
<p>Non Household Demand: Based on information provided, we assume at this stage beyond initial discussions there has not been a reduction in the non-household demand / any active measures to help encourage this further. Is this the case?</p>	<p>We have been in contact with non-household customers via retailers, briefing them on the escalating situation (of application for Rive Test drought permit and likelihood of TUB) and, asking that they use water carefully. We intend escalating that message again in coming days and weeks, including via direct communications, seeking voluntary restraint in non-essential uses by businesses as we prepare a non-essential use drought order submission that will affect some commercial uses. We will progress that as the situation develops in line with S20 Agreement and our drought plan. However, over and above the demand savings benefit of the TUB (which we expect does knock through into reduction of non-household use as well as its primarily targeted household use reduction), we are wary of assuming too much additional saving from a Non-EU drought order. Assessment by Atkins for Southern Water – submitted with our permit application – indicates the additional saving may be no more than 2-3%.</p>
<p>Outage: Southern Water has not set out whether it has accelerated or deferred its outage work in response to resource risks for HSW. Is this because it has not identified any outage work it could accelerate or defer to help ease abstraction pressure from the R. Test?</p>	<p>Our outage management activities are described in Section 3.5 of document 1.4 Evidence the Company followed its Drought Plan of the application documents. Outage relevant to the HSW resource zone is primarily the partial outage which is present at the Testwood and at Otterbourne sources due to the planned capital maintenance programme for the two sites as set out Section 3.5.4.</p> <p>We have an active programme to pre-empt outage, which includes the actions set out in Section 3.5.3, and our plans for further outage</p>

	<p>recovery are set out in Section 3.5.4. Updates for the sources are below:</p> <p>Twyford Moors - A new borehole pump has been installed. Repairs to surge vessel and sampling planned for 2nd August. If all clear, aim to increase flows at the site from Friday 5th August. This work was planned during the heatwave, but was delayed to prioritise security of supply. We have progressed as a matter of urgency with the drought permit as the driver.</p> <p>Timsbury - Reg 15 improvements have been approved allowing us to commence bringing the additional borehole back into service from 2nd August. We are awaiting outcome of WQ sampling, and then flow meters and water level cut-outs will need to be calibrated. Anticipate bringing it back into service with initial additional site output capacity of 1.6 MI/d, ramping up to full 1.95 when confirmed fully working.</p> <p>Otterbourne – Ongoing capital maintenance programme is progressing. Details provided in permit application document</p> <p>Ventnor. A change to the plan for return to service for Ventnor is being considered but, this has been a problematic source for a long time, so may still prove so.</p>
<p>Customer communications and metrics - Do the company have the water saving device order numbers available? Ideally this would be by WRZ and per week/month. (1.4_App1 indicates this data would be updated shortly)</p>	<p>This data is presented in the Drought communications plan and activity tracker (page 8 & 9), which accompanies this document.</p>
<p>Demand and leakage data - Could the company provide raw DI, data and estimated leakage and HH/NHH consumption data for us, to go alongside the charts provided?</p>	<p>We will provide DI data alongside leakage data as consistently geographically and temporally within future weekly data updates to the EA. We will provide HH consumption and non-household consumption when we can, but these data are on longer cycles of processing to availability. We undertake monthly updates of major components of the water balance (DI, household consumption, non-household consumption and leakage) and we will be able</p>

to share this on a monthly basis. However, there are a couple of points to bear in mind:

- Meters are read every 6 months, so the consumption rates are for the previous 12 months – DI data is better indicator for changes in demand

Water balance is calculated on Company basis. Numbers at water resource zone level are pro-rata based on company figures. We don't calculate WRZ level figures for internal monthly reporting but can start doing that from this month onward. The figures will typically be available around the 10th of each month.

Annex 1 Briefing note: River Test Drought Triggers

Shared with the EA on 14 July 2022

River Test Drought Permit Application

Briefing Note: River Test Drought Triggers

This note describes the development and case for using the new triggers for the River Test drought permit as developed for the 2022 Drought Plan (awaiting publication), in replacement of the drought triggers used in the 2019 Drought Plan. It also provides some commentary on the triggers for the River Itchen, for which a further briefing note will be provided in the next few days.

Trigger curves for the **River Test** in relation to the 355 Ml/d hands-off flow (HOF) condition and the requirements of the Section 20 operating agreement were first developed for the **2019 Drought Plan**. These curves were intended to give appropriate lead-in times for a drought permit application. The triggers were designed around the requirements set out in the **Section 20 operating agreement** for the River Test drought permit application to be **submitted 35 days before the HOF** was breached, and for the **pre-application** stage to commence **60 days before the HOF** was breached. A further trigger was developed, intended to give **90-days** internal lead in time (30 days internal time ahead of 60 day trigger). That is, the **internal preparation** was not to provoke early commencement of the pre-application phase. We are using the 2022 triggers for the River Test because we think they are an improvement on the 2019 triggers and this seems borne out in 2022 to date. We would like the EA to confirm they are in agreement with this urgently or, if not, let us know why.

In 2020 we commissioned Mott Macdonald to undertake a **review** and where necessary **revision** of all our flow triggers as part of the preparation for the **2022 Drought Plan**. During the period through to the submission of our draft Drought Plan in spring 2021 we held a number of meetings with the Environment Agency to update them with interim progress on the development of the revised triggers. This study concluded with a **revised set of triggers** for the **River Test Drought Permit**, which were consulted upon in the draft Drought Plan published in March 2021. (See tables below with the triggers for the **River Test Drought Permit** as prepared for the **2022** and **2019** Drought Plans.)

In Autumn 2021, a further **joint modelling study** was undertaken by Atkins and commissioned together with Portsmouth Water. The purpose of this study was primarily to undertake further review of triggers for the River Itchen Drought Orders using a system simulator – however, the study did also review the (**updated**) **River Test drought permit triggers** and concluded the updated curves provided **appropriate lead-in times (90-day, 60-day and 35-day)** for the respective drought interventions.

The joint modelling study used a Pywr system simulation model to assess the potential operation of the combined (Southern Water and Portsmouth Water) system through drought, and reviewed the performance of the triggers which Motts had prepared on the River Itchen.

We are proposing to revise the Candover and River Itchen Drought Order triggers proposed in dDP22 and will be setting out a programme of work to further assess these triggers as a follow on from the joint modelling study. In the interim we believe it is appropriate to use our “Alternative”, less conservative set of Candover and River Itchen triggers, as presented to the Agency in November 2021 and tested in the Joint Modelling Study but to use the 60-day triggers as the 90-day triggers, and the 35-day trigger as the 60-day trigger. In lieu of having a defined trigger, the 35 day threshold would be calculated by back-casting from forecasts of when the HOF would be breached.

We are preparing a further briefing note to summarise and discuss all of this work, which will be shared with the EA in the next few days.

River Test Drought Permit Triggers

Month	DP19 Trigger Set (Ml/d)			Proposed DP22 Trigger set (Ml/d)		
	90 day	60 day	35 day	90 day	60 day	35 day
Jan	660	535	435	660	589	509
Feb	660	535	440	728	589	497
Mar	660	535	440	728	589	486
Apr	660	535	440	728	589	486
May	660	535	465	738	589	486
Jun	660	535	465	738	589	486
Jul	660	535	455	738	589	481
Aug	660	535	455	738	589	476
Sep	660	535	455	738	589	472
Oct	660	535	420	738	589	467
Nov	660	535	420	715	589	467
Dec	660	535	435	677	589	485