

# 1.1 Description of the Proposals

November 2022



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# 1. BACKGROUND

## 1.1 Executive Summary

South West Water is applying for a drought permit under section 79A of the Water Resources Act 1991 ("WRA 1991") to make temporary amendments to abstraction licence 15/48/018/G/118/R01 as issued on 30 January 2018 ("the Licence") relating to abstraction from Park Lake, for the purposes of replenishing the storage levels at Colliford Reservoir.

The actions set out in this permit will offer support across the entire Colliford Water Resource Zone ("WRZ") in response to the Exceptional Shortage of Rainfall ("ESOR") from November 2021 to the end of October 2022, which presents an anticipated risk to the security of supply from December 2022 through to the end of September 2023.

This permit applies for an increase in the daily abstraction limit from 8Mld to 14Mld. The table below sets out the impacts on the annual licences for 2022 and 2023, the daily licence and the 5-year average. We have also set out a change to the hourly and instantaneous licence to facilitate the change to the daily licence.

|                                  | Days in month | Existing licence | Drought permit | Total |
|----------------------------------|---------------|------------------|----------------|-------|
|                                  |               | MI               | MI             | MI    |
| Nov 22 (from 10th)               | 21            | 168              | 126            | 294   |
| Dec-22                           | 31            | 248              | 186            | 434   |
| Jan-23                           | 31            | 248              | 186            | 434   |
| Feb-23                           | 28            | 224              | 168            | 392   |
| Mar-23                           | 31            | 248              | 186            | 434   |
| Apr-23                           | 30            | 240              | 180            | 420   |
|                                  |               |                  |                |       |
| Daily                            |               | 8                | 6              | 14    |
|                                  |               |                  |                |       |
| Annual - 2022                    |               | 2920             | 312            | 3232  |
| Annual - 2023                    |               | 2920             | 720            | 3640  |
|                                  |               |                  |                |       |
| 5 Year average daily abstraction |               | 4                | 6              | 10    |

Additionally, this permit applies for an increase in the instantaneous and daily abstraction volumes as follows:

- Hourly – increase from 500 m3/hr to 875 m3/hr
- Instantaneous – increase from 139 l/s to 243 l/s

In accordance with paragraph 1.3.5 of the Drought Permit Guidance, South West Water is applying for this drought permit to reduce the risk to public supply in winter 2022 and through Spring/Summer 2023, to assist the recovery of water supply resources which have been excessively depleted because of exceptional shortage of rainfall.

This permit is part of a suite of measures currently in progress to support winter refill of Colliford Reservoir, which is the strategic reservoir in the Colliford WRZ.

**Table 1 – Colliford WRZ Interventions**

| Colliford WRZ – Drought Permit Interventions |  |  |
|--|--|--|
| Location                                     | Intervention Required                  | Drought Permit Status                    |
| Restormel                                    | Increase in Annual abstraction licence | Submitted 13 10 22 and approved 31 10 22 |
| Stannon Lake                                 | Increase of existing daily abstraction | Submitted 27 10 22                       |
| Porth/Rialton                                | Recommissioning a disused source       | To be submitted November 2022            |
| Hawks Tor                                    | New abstraction                        | To be submitted November 2022            |
| Park Lake                                    | Increase of existing daily abstraction | To be submitted 02 November 2022         |

In addition to the suite of Colliford WRZ interventions outlined above, we are reviewing opportunities to pursue further mitigation options outlined within our Drought Plan.

## 1.2 Background

South West Water's Drought Management Plan ("**the Drought Plan**"), which has been approved by Defra, sets out the actions and interventions which will be used to reduce the demand for water and options to increase access to water during times of drought.

The Drought Plan details the actions expected to be taken at various "Drought Levels" based upon benefit, confidence, and the need to support the environment (e.g., watercourses, waterbodies, and ecology). Our approach has meant that up until 2022, we have avoided the need to impose demand restrictions for 25 years.

This permit application is required due to exceptionally below average rainfall between November 2021 and the end of October 2022. The amount of rain that has fallen in the Colliford WRZ for this period is the 5th lowest since 1891.

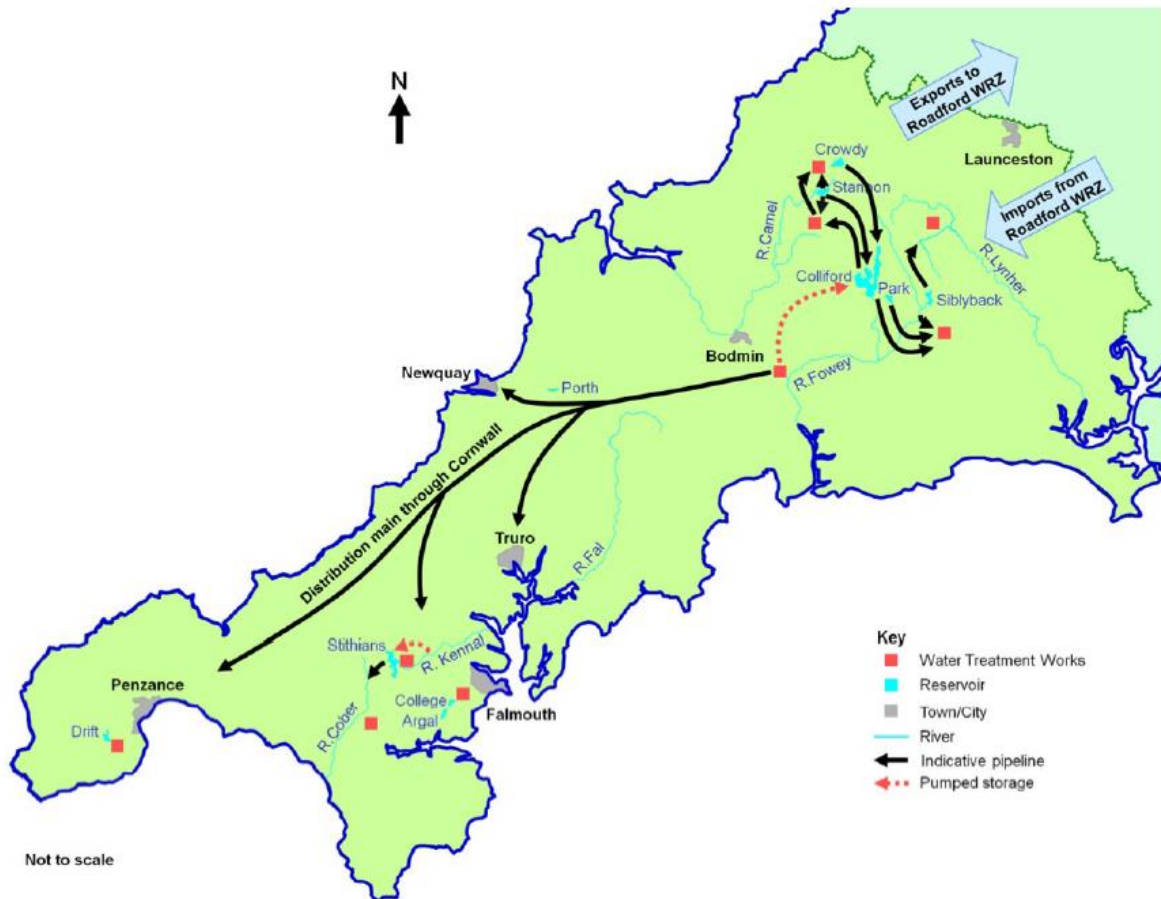
The consequence of this period of ESOR has been significantly reduced recharge and higher than normal environmental releases during 2022. This means we are currently projecting a risk to supply in December 2022 and through to the end of summer 2023, as recovery to acceptable storage levels by 1 April 2023 will not be possible without intervention.

By way of explanation and without intervention, even if we were to receive 100% long term average ("**LTA**") winter rainfall, the Colliford Reservoir water level would only recover to around 35% by 1 April 2023. 80% LTA winter rainfall would provide recovery to around 25% and under a 60% LTA winter rainfall would provide recovery to only around 15%. Recent modelling has highlighted that under extreme autumnal conditions, deploying low rainfall forecasts for the next three weeks and then applying 59% rainfall (driest historic), Colliford reservoir could cross drought Level 4 in early 2023. This represents our worst-case scenario.

The Colliford WRZ serves a population of c.567,000 people or c.276,000 domestic and commercial properties.

The strategic Colliford reservoir, in conjunction with abstraction at Restormel WTW, is responsible for supplying c.65% of the total population of Cornwall via transfer along the Cornwall Spine Main. Whilst other smaller treatment works and reservoirs exist and supply local areas, they cannot substitute the supply for Cornwall in the event of Colliford Reservoir running out of water.

Figure 1 - Map showing the Colliford WRZ



Critical to the recharge of Colliford Reservoir is the Restormel abstraction point which is used as a pumped winter recharge option for Colliford Reservoir with any volume for this activity included within the daily and annual limits proscribed by the licence at Restormel.

A separate drought permit application to increase abstraction from Restormel was submitted on 13 October 2022, and a drought permit application to increase abstraction from Stannon Lake was submitted 27 October 2022, in accordance with the sequencing of the Drought Plan. A drought permit for Porth/Rialton abstraction is planned for November 2022.

This application, at Park Lake, provides further support for the recharge of Colliford Reservoir. St Cleer WTW is currently served by river abstraction, Park Lake and Colliford reservoir. This application supports the direct winter recharge of Colliford reservoir and substitutes the demand placed upon Colliford reservoir in supporting St Cleer WTW and the 42521 properties it serves.

## Park Lake Drought Permit Application 2022

Colliford Reservoir is a multi-season reservoir, it is designed to provide resources for more than one summer. Whilst the reservoir is resilient to a normal dry summer, the drier than average winter, spring, and summer from November 2021 throughout 2022 has resulted in significant draw down of resources. Whilst the reservoir is large (28,540 MI) and is in an area with normally high annual rainfall (Bodmin Moor), it has a small catchment area of only 12.4 km<sup>2</sup>.

The Colliford Reservoir is the largest and most significant store of water resources in the region and is fundamental to the operation of the system of reservoirs and pipes which keep our customers supplied.

In July 2022 the Colliford Reservoir crossed Drought Level 1. Using rainfall, storage and demand forecast we notified our customers on the 15 August that a temporary use ban ("**TUB**") was required for Colliford WRZ, as we had forecasted that the Drought Level 2 stage noted in our Drought Plan would be reached. This notification was published ahead of reaching Drought Level 2 to ensure we were doing everything we could to protect the environment. Our notice came into effect on 00:01 on 23 August 2022.

We crossed the threshold for Drought Level 2 on the 30 September 2022. Undertaking the drought measures in the order set out in our Drought Plan will reduce the risk of further drought management actions being necessary during 2023.

The proposed permit, if granted, will enable us to abstract an additional 6Mld from Park Lake to support the recharge of Colliford Reservoir. This "more before 4" action in accordance with our Drought Plan has been brought forward due to the severity of the situation and risk. It provides good confidence of resource benefit from water in storage to supplement natural winter refill of Colliford Reservoir, supporting the wider Colliford WRZ.

Given how critical Colliford Reservoir is to supply in the Colliford WRZ, South West Water will continue to regularly review the need to apply for further drought management measures to ensure uninterrupted supply to customers and to meet demand.

### The drought permit application documents

This document is part of a suite of documents which form the application for the drought permit as set out in Table 1. The structure and contents of the documents follows the requirements

set out in **Appendix E** of the EA guidance on drought permits and drought orders ("**The Drought Permit Guidance**"), which was issued in 2019 and revised in 2021, with some adjustments to the sequence of documents / sections.

**Table 2 Document structure for drought permit application**

| Documents: Drought Permit Proposals |   |   |
|-------------------------------------|---|---|
| <b>1</b>                            | 1.1<br>1.2<br>1.3<br>Appendix 1<br>Appendix 2 | Description of Proposals<br>Draft Permit<br>Drinking Water Services Report 2022 – Operations Supporting Evidence<br>Park Lake Abstraction Licence<br>National Security Notice |
| <b>2</b>                            | 2.1<br>2.2                                    | Statement of Reasons<br>Case for Exceptional Shortage of Rain (ESoR)  |
| <b>3</b>                            | 3   | Park Drought Permit Environmental Impact Review   |
| <b>4</b>                            | 4<br>Appendix 1<br>Appendix 2                 | Evidence the Company has followed its Drought Plan<br>Enhanced Media Campaign<br>Leakage and pressure management  |
| <b>5</b>                            | 5   | Actions taken to reduce demand and conserve supplies in line with Drought Plan  |
| <b>6</b>                            | 6<br>Appendix 1<br>Appendix 2                 | Consultation Process<br>Formal Notice<br>Email and letter to Stakeholders   |

### 1.3 Objectives of this document

This document provides a description of the proposed drought permit as required in the Drought Permit Guidance.

A draft drought permit is included at **Document 1.2 Draft Permit**.

### 1.4 Drought Permit Guidance

This set of drought permit application documents have been prepared with reference to the Drought Permit Guidance.

### 1.5 Application checklist for accompanying information

The Drought Permit application form includes a checklist of accompanying information. The items on the checklist are to be found in the set of documents as set out in Table 2.

**Table 3 Application Checklist**

|    | Checklist requirement  | Application document reference | Section Number (where relevant) |
|----|--|--------------------------------|---------------------------------|
| 1  | A description of the proposals                               | Document 1.1                   |                                 |
| 2  | A draft drought permit                                       | Document 1.2                   |                                 |
| 3  | A statement of reasons                                       | Document 2.1                   |                                 |
| 4  | A location map   | Document 1.1                   |                                 |
| 5  | Navigation authority permission                              | N/A                            |                                 |
| 6  | Notices to local councils                                    | Document 6                     |                                 |
| 7  | Notices to protected persons                                 | Document 6                     |                                 |
| 8  | Notices to other water companies                             | N/A                            |                                 |
| 9  | Notices to navigation authorities                            | N/A                            |                                 |
| 10 | Notices on internal drainage boards                          | N/A                            |                                 |
| 11 | Advertisement in local newspapers                            | Document 6                     |                                 |
| 12 | Advertisement in London Gazette                              | Document 6                     |                                 |
| 13 | Description of arrangements for public inspection            | Document 6                     |                                 |
| 14 | Current abstraction licence                                  | Document 1: Appendix 1         |                                 |
| 15 | Statutory instrument or local Act of Parliament              | N/A                            |                                 |
| 16 | Water Shortage Strategy                                      | Document 4                     |                                 |
| 17 | Environmental Report   | Document 3                     |                                 |
| 18 | Consultation comments received                               | Document 6                     |                                 |
| 19 | Objections received and details of agreements with objectors | Document 6                     |                                 |

## 2. DESCRIPTION OF THE



# PROPOSALS

## 2.1 Overview of catchments

Colliford Reservoir is an important source of water supply in South West Water's Colliford WRZ in the South West of England.

Park Lake is groundwater fed with limited hydraulic connectivity with the downstream river such that any impacts are likely to be minimal. The lake is c.2.3km from the nearest SSSI, Upper Fowey Valley. However due to having a limited hydraulic connectivity there is minimal risk. A second SSSI, Draynes Wood, is c.2.4km upstream of the lake.

Engineering assessments have concluded that whilst pump upgrades/enhancements are ongoing no further infrastructure required, resulting in a high level of confidence it will deliver the benefits associated with implementing the action.

Park Lake, originally Park Pit, is predominantly groundwater fed with surface water directed around the periphery, via leats, into the Trenant Stream. Park Lake can spill into Trenant Stream; however, this has only occurred four times in the last thirteen years. This original conceptualisation of the lake and the limited degree of hydraulic linkage with the peripheral stream system and Whitebarrow Downs wetland is supported by the outcomes of the investigations undertaken since the existing licence was granted. In essence, drawdown of the lake level appears to have minimal impact, and this includes impact on flow in the adjacent Trenant Stream itself.

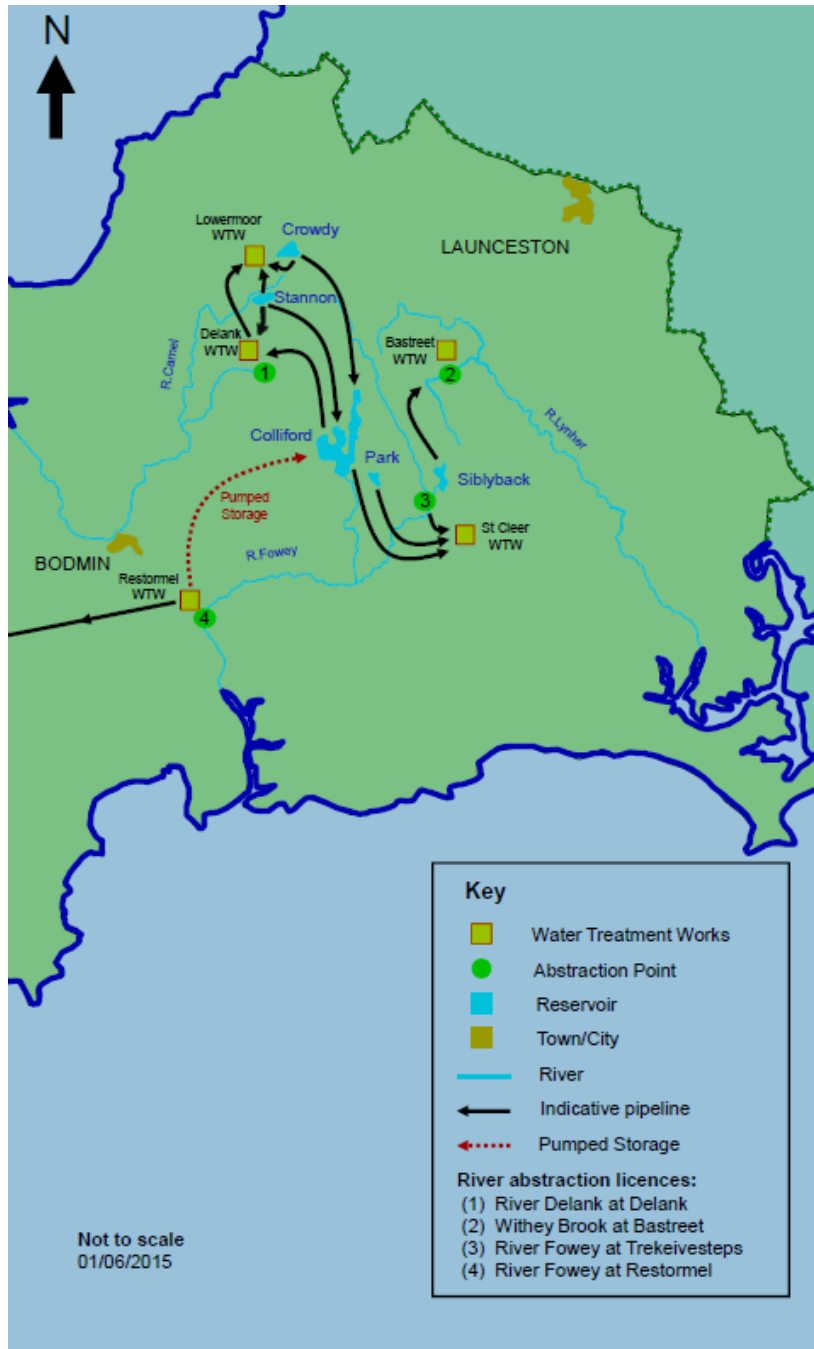
Calculations of the scale of impact of the loss of overflow on stream flows downstream were also presented with the original licence application. The impact was shown to be quickly mitigated by flows from other tributaries as one progressed downstream. This situation has not changed.

Permanently installed pumps at Park Lake ordinarily pump water towards St Cleer WTW. Under usual circumstances the full licence of 8Mld is required for public water supply at St Cleer WTW.

Increasing the licence for abstraction from Park Lake, from 8Mld to 14Mld will provide significant flexibility, including:

- an additional 2Mld to support St Cleer WTW, reducing the need to abstract from Colliford to St Cleer
- an additional 4Mld benefit to Colliford Reservoir.

**Figure 2 - Map of the Park Lake Water Body and interaction with surrounding catchment.**



## 2.2 Increased Abstraction from Park Lake

### 2.2.1 Park Lake Licence

South West Water is applying for a drought permit under section 79A of the Water Resources Act 1991 ("WRA 1991") to make temporary amendments to abstraction licence

15/48/018/G/118/R01 as issued on 30 January 2018 ("**the Licence**") relating to abstraction from Park Lake, for the purposes of replenishing the storage levels at Colliford Reservoir.

Permanently installed pumps at Park Lake ordinarily pump water towards St Cleer WTW. In usual circumstances the full licence of 8Mld is required for public water supply at St Cleer WTW. Increasing the Licence for abstraction from Park Lake, from 8Mld to 14Mld, will provide an additional 2Mld to support St Cleer WTW, offsetting the Colliford abstraction and the remaining 4Mld for the winter recharge of Colliford Reservoir. This position is flexible depending upon the abstraction available at Trekeivsteps.

## 2.3 The intended drought permit

### 2.3.1 Context

In accordance with option CS2/E of the Drought Plan (page A191) this drought permit is necessary to improve winter storage thereby securing water for public supply in 2023.

This permit applies for (i) an increase abstraction volume as set out below:

|                                  | Days in month | Existing licence | Drought permit | Total |
|----------------------------------|---------------|------------------|----------------|-------|
|                                  |               | MI               | MI             | MI    |
| Nov 22 (from 10th)               | 21            | 168              | 126            | 294   |
| Dec-22                           | 31            | 248              | 186            | 434   |
| Jan-23                           | 31            | 248              | 186            | 434   |
| Feb-23                           | 28            | 224              | 168            | 392   |
| Mar-23                           | 31            | 248              | 186            | 434   |
| Apr-23                           | 30            | 240              | 180            | 420   |
|                                  |               |                  |                |       |
| Daily                            |               | 8                | 6              | 14    |
|                                  |               |                  |                |       |
| Annual - 2022                    |               | 2920             | 312            | 3232  |
| Annual - 2023                    |               | 2920             | 720            | 3640  |
|                                  |               |                  |                |       |
| 5 Year average daily abstraction |               | 4                | 6              | 10    |

Additionally, this permit applies for an increase in the instantaneous and daily abstraction volumes as follows:

- Hourly – increase from 500 m<sup>3</sup>/hr to 875 m<sup>3</sup>/hr
- Instantaneous – increase from 139 l/s to 243 l/s

An Environmental Impact Review (**Document Ref: 3**) has been prepared to support the drought permit application.

## Park Lake Drought Permit Application 2022

The water levels in Colliford Reservoir are at the lowest recorded since impoundment in the mid-1980's: 14.9% as at 08:00 on 28 October 2022. The exceptionally dry weather from November 2021 to date resulted in reduced 2021/22 winter recharge and increased draw-down of the reservoir storage throughout spring/summer 2022 with minimal inflow.

The forecast for a dry autumn/winter in 2022 combined with the current reservoir low level, represent a risk to public water supply in Winter 2022. Given the ESOR seen throughout 2022, even if we were to experience the same conditions as seen in the wettest winter on record, we would only achieve a net gain in storage between November and April of 43%, Colliford Reservoir is presently (as of 28 October 2022) at 14.9%. Target operating level at Colliford Reservoir on 1 April 2023 is 80%.

This permit application would provide up to an additional c.3.6% of net capacity in Colliford Reservoir by 1 April 2023. Whilst this application does not allow us to achieve our target storage, it is part of a basket of measures to support winter recharge, and we are simultaneously progressing additional supply and demand side activities for 2023, as well as further Drought Actions outlined within the Drought Plan.

The proposed application would not require any additional infrastructure.

### 2.3.2 Start and end dates

We would like the permit to increase abstraction to commence as soon as possible in November 2022, however the proposed start date is the date of determination by the Environment Agency.

The proposed end date would be six months after the date that the permit starts, or a date mutually agreed with the EA. This is suggested to be when Colliford Reservoir has returned to 80% (maintained for 5 days) or 30 April 2023 whichever is the sooner.

### 2.3.3 Proposed drought permit

The proposed drought permit will involve the following amendments to the abstraction licence:

Subject to agreed Conditions, from 1 December 2022 to 31 December 2022 inclusive, the 'Maximum quantity of water to be abstracted' (condition 6.1) in the Licence shall be substituted with the following:

- Not exceeding 875 cubic metres per hour
- Not exceeding 14,000 cubic metres per day
- Not exceeding 3,232,000 cubic metres per year
- At an instantaneous rate not exceeding 243 litres per second

From 1 January 2023 to 30 April 2023 inclusive, the 'Maximum quantity of water to be abstracted' (condition 6.1) in the Licence shall be substituted with the following:

- Not exceeding 875 cubic metres per hour
- Not exceeding 14,000 cubic metres per day
- Not exceeding 3,640,000 cubic metres per year
- At an instantaneous rate not exceeding 243 litres per second

## Park Lake Drought Permit Application 2022

From 1 December 2022 to 30 April 2023 inclusive, condition 6.2 of the Licence shall be substituted with the following:

The aggregate quantity of water authorised to be abstracted under this licence for the purpose of public water supply shall not exceed:

- An average of 10,000 cubic metres per day over a rolling 1,825-day period.

Note: an hour means any period of 60 consecutive minutes, a day means any period of 24 consecutive hours and a year means the 12-month period beginning on 01 January and ending on 31 December

The existing safeguards are:

- No abstraction shall take place unless the level of water in Park Lake as measured at the Park Lake outfall is greater than or equal to 217.99m AOD (equivalent to 7.50 meters below the outfalls invert level) and the abstraction shall not cause the level to fall below the point.

The following safeguards are also proposed:

- Provision to visually inspect Park Lake bankside stability during draw-down.
- Provision to publish an Environmental Assessment Report and revised Environmental Monitoring Plan by 31<sup>st</sup> December 2022.

The mitigation measures are set out in ***Document 3 Environmental Impact Review***.

## 2.4 Further conditions of the permit

South West Water's monitoring and mitigation plan for the proposed permit is included with the Environmental Impact Review (***Document 3 Park Lake Drought Permit Environmental Impact Review***). This has been undertaken from a desktop study of existing information and an Environmental Assessment Report has been commissioned and is ongoing. South West Water has committed to publishing the Environmental Assessment Report by 31<sup>st</sup> December 2022.

South West Water anticipates that further to this application, discussions with the Environment Agency will be held to review the need for further conditions attached to this permit.

## 2.5 Summary of impacts

This drought permit is predicted to have negligible impact on stream flow. There is limited hydraulic connectivity to either surrounding habitat or Trenant Stream therefore no further hydraulic safeguards are proposed. Evidence presented in our Environmental Impact Review highlights that draw down of the Lake level has minimal impact on Trenant Stream and surrounding land.

The permit application maintains the existing hands-off flow safeguard, at 7.5m below the outfall. This means that the minimum lake level remains unchanged from the existing licence and therefore the impact on the lake is negligible.

The impact of the drought permit is predicted to be negligible for almost all receptors. The following receptors of moderate and high sensitivity have been assessed as a minor overall impact because of:

- Brown Trout (moderate sensitivity) - low magnitude of impact because of the lack of hydraulic connectivity between Park Lake and the Trenant Stream.
- Landscape (high sensitivity) - because of its AONB status, the extent and nature of any impacts fall within the existing parameters of water level variance. The magnitude of the impact is therefore assessed as being negligible resulting in minor visual significance.

Raw water quality data for Park Lake and Coliford Reservoir has been compared. The raw water quality at Park Lake is similar than at Colliford Reservoir there we do not anticipate a raw water transfer to have a detrimental effect on the raw water quality at Colliford Reservoir. Further information is included in the Environmental Impact Review section 4.

## 2.6 Monitoring and Mitigation

An Environmental Monitoring Plan (EMP) has been developed as part of the application process based upon our assessment of negligible impact.

We shall undertake the following **monitoring** steps:

- i. Maintain existing monitoring requirements in accordance with our current Licence as below:
  - a. Daily abstraction rates via installed meters
  - b. Continuous level readings at Park Lake to preserve hands-off flow requirement
  - c. Continuous flow readings in Trenant Stream using existing gauging structures
  - d. Continuous outflow volumes from Park Lake

Under our licence conditions we are required to supply this data within 28 days of the 31 March each year, or within 28 days of a request by the agency. We currently supply the abstraction data monthly and other required data annually to the Environment agency. For the duration of the drought permit we will provide this data weekly.

In addition to the above monitoring, we will undertake pre-implementation surveys for the monitoring activities set out below and then continue at the frequencies specified:

- ii. Collect fortnightly groundwater piezometer readings at existing installations.
- iii. Implement weekly walkover surveys of Park Lake and Trenant Stream for signs of fish distress until January 2023.
- iv. Implement weekly visual inspection of Park Lake bankside stability during draw-down.

In order to **mitigate** the impacts of this drought permit we shall:

- i. Publish an Environmental Assessment Report and revised Environmental Monitoring Plan by 31st December 2022
- ii. Implement 2mm screening on the pumps to protect against unknown invasive species transference risk.

- iii. In the unlikely event of fish distress being identified within a walkover as per 2.6.iii we shall undertake water quality monitoring at that location and consider whether fish rescue is appropriate.
- iv. In the unlikely event that walkover surveys identify bankside instability we shall seek immediate review from an internal South West Water accredited Supervising Civil Engineer. Whilst this review is undertaken abstraction shall return to Licence conditions, abstraction will not return to application level until the Supervising Civil Engineer indicates it is safe to resume higher flow abstraction.

An environmental statement setting out a summary of the environmental assessments which have been undertaken for this drought permit is included as **Document 3 Park Lake Drought Permit Environmental Impact Review**.

The key documents with the environmental assessments and monitoring plans are:

- 3. Drinking Water Services Report 2022 – Operations Supporting Evidence (**Document Ref: 1.3**)
- 4. Colliford Reservoir Drought Permit Environmental Impact Review (**Document Ref: 3**)

## 3 COPY OF ABSTRACTION LICENCE

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A copy of the abstraction licence is included as Appendix 1.

## 4 REFERENCES

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Environment Agency, 2021, Drought permits and drought orders – Supplementary Guidance from the Environment Agency and Department of Environment, Food and Rural Affairs.

South West Water, 2022, Drought Plan, September 2022

## 5 FIGURES

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Figure 1 Map showing the Colliford supply area

Figure 2 Map of the Park Lake Water Body

## 6 TABLES

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Table 1 Colliford WRZ Interventions

Table 2 Document structure for drought permit application

Table 3 Application Checklist