MOTT MACDONALD

SEA Environmental Report ANNEX 3: APPENDIX I

Water Framework Directive (WFD) Assessment

South West Water: Updated Draft Water Resources Management Plan 2024 (WRMP24)

December 2023

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Contents

Tables

Abbreviations

ACWG	All Companies Working Group
AMP	Asset Management Plan
ASR	Aquifer Storage and Recover
AWB	Artificial Water Bodies
BESP	Best Environmental and Societal Plan
BVP	Best Value Plan
DCO	Development Consent Orders
DPs	Drought plans
dWRMP24	Draft Water Resource Management Plan 2024
DSR	Distribution Service Reservoir
EA	Environment Agency
EAR	Environmental Assessment Report
EFI	Environmental Flow Indicator
FE	Final Effluent
GAC	Granular Activated Carbon
GEP	Good Ecological Potential
GES	Good Ecological Status
GW	Groundwater
GWDTE	Groundwater Dependent Terrestrial Ecosystem
HMWB	Heavily Modified Water Body
HMWB MM	Heavily Modified Water Body Mitigation Measures
HOF	Hands Off Flows
HRA	Habitat Regulations Assessment
ICA	Industrial controls and automation
IPR	Indirect potable reuse
LCP	Least Cost Plan
M&E	Mechanical and Electrical services
Ml/d	Megalitres per day
NTL	Normal Tidal Limit
OP	Ofwat Plan
PBDE	Polybrominated Diphenyl Ethers
PFOS	Perfluorooctane Sulphonate
PO4	Phosphate
PS	Pumping Station

RAPID	Regulators Alliance for Progressing Infrastructure Development
RBMP	River Basin Management Plan
RGF	Rapid Gravity Filter
RNAG	Reason For Not Achieving Good
RO	Reverse Osmosis
SO2	Sulphate
SRO	Strategic Resource Option
SSSI	Site of Special Scientific Interest
SWW	South West Water
UV	Ultra violet
WFD	Water Framework Directive
WINEP	Water Industry Natural Environment Plan
WPS	Water Pumping Station
WRMP	Water Resource Management Plan
WRZ	Water Resource Zone
WSR	Water Service Reservoir
WTW	Water Treatment Works
WwTW	Wastewater Treatment Works

1 Introduction

1.1 Overview

Water companies have a statutory obligation to produce a Water Resources Management Plan (WRMP), which sets out how a company intends to maintain the balance between supply and demand for water over a minimum 25-year period. The plans must be prepared every five years and reviewed annually. The South West Water (SWW) updated draft WRMP 2024 (dWRMP24) renews the previous WRMP first published in 2019[1]. In the development of a WRMP, water companies must follow the Environment Agency (EA) Water Resources Planning Guideline[2] and consider broader government policy objectives. WRMPs should ensure a secure and sustainable supply of water, focus on efficiently delivering the outcomes that customers want, while reflecting the value that society places on the environment.

As part of the environmental assessment process to support the development of the SWW updated dWRMP24, Water Framework Directive (WFD) assessments have been completed. These assessments follow the two stage process set out in the All Company Working Group, Water Framework Directive: Consistent framework for undertaking no deterioration assessments[3]. The results of the Level 1 and Level 2 assessments are presented in this appendix report.

SWW issued the dWRMP24 for public consultation in February 2023 with the Statement of Response (SoR) published on 15 August 2023 in line with the requirements of the Guidelines. The updated dWRMP24 was submitted in early October 2023 and has been subject to an eight-week public consultation period between October and December 2023.

A number of options were developed or refined during summer 2023 for inclusion in the updated dWRMP24. The SEA and WFD assessments of these options could not be fully completed for integration into the October 2023 consultation documents. This document is an update of the October 2023 consultation version of the report, with full WFD assessments for all required updated dWRMP24 options.

Following consultation on the updated dWRMP24, SWW will update the SoR with inclusion of the changes made in response to feedback received.

This appendix supports the Environmental Report that accompanies the SWW updated dWRMP24 submission to regulators. It presents the findings of the WFD assessments for the supply options.

1.2 SWW updated dWRMP24 options

The options appraisal identified 49 supply-side and 20 drought feasible options for additional water supplies in the SWW region. In addition, six Strategic Resource Options (SROs) have also been included under the updated dWRMP. The SROs have been assessed separately outside of the updated dWRMP24, under the Regulators Alliance for Progressing Infrastructure Development (RAPID) framework. A summary of the results from the SRO options is provided in this report. All of the updated dWRMP options are summarised, by Water Resource Zone (WRZ), in Table 1.1.

[1] South West Water / Bournemouth Water (2019). Water Resources Management Plan 2019. Available at: https://www.southwestwater.co.uk/environment/water-resources/water-resources-management-plan/
[2] Environment Agency, Natural Resources Wales, Office for Water Services (2023). Water resources planning guideline. Available at: https://www.gov.uk/government/publications/water-resources-planning-guideline/water-resources-planning-guideline.
[3] All Company Working Group, November 2020. Water Framework Directive: Consistent framework for undertaking no deterioration assessments.

Of the 20 drought options, seven have been assessed in Environmental Assessment Reports (EARs) as part of licence changes, drought permits or Habitat Regulations Assessment (HRA) reports. As the options have not changed, these assessments have not been revisited but a summary is provided within this report.

Table 1.1: SWW updated dWRMP24 Options

Option name	Description
Bournemouth Water Resource Zone (WRZ)	
BNW1	**Borehole development, existing borehole remedial works.** This option will provide additional water from a new borehole and pump, which will be distributed to the nearby water treatment works. The scoped works required at the water treatment works (WTW) include additional headworks, kiosk, and pipework will be required to connect it into the works as well as upgrades to the chemical storage and dosing equipment at the works, a new chlorine contact tank, dirty wash water system, run to waste as well as instrumentation and controls will be required, and a new pressure filter. This option assumes that there will be no additional WTW capacity required and that the existing power source will be sufficient.
BNW6	**Longham Aquifer Recharge.** This scheme assumes the development of an aquifer storage and recovery operation that will deliver a deployable output of approximately 10Ml/d. Abstraction will occur for three months at a rate of 10Ml/d, followed by a recharge phase injecting approximately 1,500Ml/d, infiltration of a pre-treated blend of water from the Stour and Avon rivers would take place up to 9 months per year. This would be at a rate of up to 5,000m^3/d (208m^3/hr) - totalling 1,458,000m^3 over the 9 months. Achievable infiltration rate per well would be 75m^3/hr. During the abstraction phase, stored water would be recovered during 3 months per year at a rate of 10,000m^3/d (417m^3/hr) - totalling 900,000m^3 over the 3 months. The achievable abstraction rate per well would be 150m^3/hr. The abstraction rate is likely to require at least three wells to achieve 10Ml/d, particularly if the wells are near one another. Borehole location will need careful consideration at an early stage in the investigation.
BNW7	**SRO: Mendips Quarry raw water transfer and augmentation of the River Stour.** This option is to abstract raw water from Mendip Quarries and then transfer it to augment flows in the River Stour, to subsequently be abstracted by existing infrastructure to serve Wessex and Bournemouth Water. It will be necessary to purchase or obtain a leasehold of the quarry (leasehold would require a long-term agreement for access to water) and a new intake on the River Avon would be constructed to support refilling the reservoir. A new transfer pipe from the river to the quarry will be required and a new shaft from where the flow will enter the quarry. The raw water would be treated for invasive non-native species and water quality before being transferred to the River Stour. Transfer of water to the River Stour (near Hinton St. Mary) from the quarry would be via a new pipeline (31.5km). A raw water abstraction of 50Ml/d has been considered at the current Regulators Alliance for Progressing Infrastructure Development (RAPID) stage.
BNW8	**SRO: Poole Harbour FE - reuse** This option is to recycle treated final effluent (FE) from Poole Wastewater Treatment Works (WWTW), via a new final effluent recycling centre, to augment flows in the River Stour for abstraction at Longham Lakes. Effluent would be diverted from Holes Bay (Coastal Water) to the Corfe Mullen area of the River Stour.
BNW14	**Ibsley Lake** This option is centred on abstracting water from Ibsley lake via the existing Matcham intake and deliver additional raw water supply to Knapp Mill WTW. This be achieved through the development of 5 no. boreholes, a new pumping station at Ibsley (with associated holding tank, headworks, and pipeline) and a new raw water pipeline (9.8km).
BNW16	**Christchurch and Holdenhurst WWTW IPR 3 - further treatment and transfer to Knapp Mill WTW** This option is centred on the re-use of final effluent from Christchurch and Holdenhurst WWTW to augment treated water supply at Fawley. This would involve new pipelines and pumping stations to Knapp Mill water treatment works from Christchurch (1.3km) and Holdenhurst (4.2km), connecting a new water treatment works to Knapp Mill inlet works via a new 2.4km pipeline, a new water treatment works consisting of, chemical dosing, ozone dosing plant, chlorine dosing, clarifier, membrane filtration, washwater recovery and sludge plant, and a treated water pumping station and pipeline (0.7km) teeing into the existing Fawley water pipeline.
BNW17	**SRO: Cheddar 2 new strategic regional reservoir and transfer**.

Option name	Description
	This iteration of the Cheddar 2 strategic resource option is a treated water transfer to from Bristol Water to Bournemouth water. The key transfer stages are listed below - Raw water (spring water) pumping station and pipeline to Cheddar two reservoir - Raw water pipeline for River Axe preliminary treatment works to the reservoir - Cheddar two reservoir construction - Cheddar to Honeyhurst WTW pipeline - Construction of Honeyhursy WTW - Treated water pipeline and pumping station from Honeyhurst WTW to Summerslade Service Reservoir. The water from Cheddar 2 can then be used to offset the 20Ml/d south (Sturminster/Corfe Mullen) to north (Summerslade WSR) that occurs during the spring/summer months.
BNW18	**Alderney WTW - Reduce Treatment Losses** This option is centred on removing the existing treatment losses at Alderney WTW by providing equipment to intercept, collect and return slow sand filter ripening water and providing equipment to intercept, collect, thicken and transfer solids from the pressure filters to the slow sand filters.
BNW19	**Knapp Mill WTW - Reduce Treatment Losses** This option is centred on removing the existing treatment losses at Knapp Mill water treatment work by providing a treatment process for Rapid Gravity Filter (RGF) dirty wash water flow, provide equipment to intercept, collect and return slow sand filter ripening water, and provide treatment process for dirty sand washwater flow.
Colliford WRZ	
COL2	**Colliford Pumped Storage (PS) Stage 2 – River Camel Abstraction.** This option is to take water (up to 90Ml/d in periods of high flows) from the Lower River Camel via a new raw-water intake structure comprised of a weir, fish passing point, eel screen, raw water pumping stations, and a new pump pipeline discharging into a gravity pipeline connected to Restormel WTW. The new location for abstracting raw water will protect the impounded water at Colliford Reservoir during a period of drought and protect the St Neot stream from the negative effects of water release from the reservoir. This scheme shares a significant interface with the planned reversal of flow in the Restormel WTW to Colliford Impounding Reservoir raw-water pipeline scheme. As part of the combined scheme, 2no. 1-megawatt turbines are proposed to recover energy from the pipeline at Restormel water treatment works (Colliford pipeline Water Industry Natural Environment Plan (WINEP24) for Asset Management Plan (AMP8).
COL3	**Abstraction of Colliford Reservoir compensation flows when making supply releases.** The current operating practice is that a flow of water from the reservoir feeds into the downstream river continuously to negate the environmental impact of abstractions. This compensation release is a ‘passive’ activity which happens regardless of whether water is being abstracted downstream. At present, if water is required for abstraction downstream of the reservoir, water is actively released in addition to that from the compensation flow. This option will require a change to the existing abstraction licence at the River Fowey, specifically reducing the compensation flow when large water supply releases are made from Colliford reservoir for downstream abstraction. The active supply release delivers the benefits of the compensation flow between the reservoir and the abstraction point. This will need to be agreed upon with the EA in conjunction with environmental investigations and hydrological modelling.
COL4	**Abstraction of Siblyback Reservoir compensation flows when making supply releases.** The current operating practice is that a flow of water from the reservoir feeds into the downstream river continuously to negate the environmental impact of abstractions. This compensation release is a ‘passive’ activity which happens regardless of whether water is being abstracted downstream. At present, if water is required for abstraction downstream of the reservoir, water is actively released in addition to that from the compensation flow. This option will require a change to the existing abstraction licence at the River Fowey, specifically reducing the compensation flow when large water supply releases are made from Siblyback reservoir for downstream abstraction. The active supply release delivers the benefits of the compensation flow between the reservoir and the abstraction point. This will need to be agreed upon with the EA in conjunction with environmental investigations and hydrological modelling.
COL5	**Increase Wendron annual licence and de-couple from Stithians.** This option proposes to decouple the abstraction licences at River Cober and Stithians reservoir to fully utilise the available water in the River Cober. The required amount of water would remain the same (12.5Ml/d), meaning that more water would be taken from the River Cober annually, making more water available for abstraction from Stithians reservoir. This change will need to be agreed upon with the EA in conjunction with environmental investigations and hydrological modelling.
COL6	**River Hayle abstraction.**

Option name	Description
	This option is to take up to 2Ml/d of water from the River Hayle at St. Erth via an existing raw water intake structure and transfer it by a new pumping station to a new 2Ml/d package plant water treatment works (WTW). It includes reusing the existing raw water main by locating the WTW adjacent to the site of the historic water treatment works or at a new site within the St. Erth wastewater treatment site (WWTW) where the existing raw water main would need to be extended by 325m. The option would also reuse the existing water intake structure, located just above the normal tidal limit (NTL). The intake structure would have to be made compliant with the Eels (England and Wales) Regulations 2009. Treated water would then be injected into the Cornwall Spine Main.
COL9	**Leswidden Pool.** This option will abstract 5.46Ml/d from the pontoon arrangement on Leswidden pool to a Braithewaite-type tank located on the shore of Leswidden pool via new raw water pumps and flexi-rising main. The raw water will then be pump from the Braithwaite-type tank to Sancreed Stream that drains into Drift reservoir for treatment, via a new 1.5km pipeline.
COL15	**Restormel WTW- increase treatment capacity to 110Ml/d.** Restormel WTW has been identified as capable of increased production, from 93Ml/d to its licensed maximum of 110Ml/d. This will require additional treatment process upgrades across the site including, River intake, Low lift pump station, Clarification, RGFs, Interstage Pumping, Granular Activated Carbon (GAC) contactors, Chlorine Contact Tank, Chemical dosing, Sludge Thickeners, Sludge Presses, Final Water Pumping, Pipelines. The additional raw water required can be supplied by a combination of the following updated dWRMP options, COL22, COL23, COL24, COL25, COL26, or COL28.
COL16	**College WTW Improvements - treatment and distribution system** This option is to upgrade the treatment capacity at College WTW in accordance with the existing abstraction licence. This will include provision of one additional RGF and refurbishment of the two existing secondary filters along with other minor upgrades to other treatment processes.
COL19	**Boswyn stream / Cargenwen Reservoir / Carwynnen stream.** This option involves the following, a new pumped abstraction at the Carwynnen Stream transferring raw water to Boswyn Reservoir via a new 2.4km pipeline, a pumped abstraction at Cargenwen Reservoir transferring water to Boswyn Reservoir via a new 1.7km pipeline, a new 5.1Ml/d capacity water treatment works at Boswyn Reservoir, and a treated water pumping station and a new 3.9km pipeline to Trevu service reservoir. In 2022 we gave up our existing abstraction licence for this location. Further environmental work is required to confirm the sustainable operating parameters for this scheme and a new licence will need to be granted.
COL20	**River Fal new abstraction.** To abstract raw water (25Ml/d) from the River Fal at Grampound and transfer via a new raw water screened intake structure and pumping station to a new 25Ml/d water treatment works (WTW) at Grampound Road. The raw water abstraction would have to be made compliant with The Eels (England and Wales) Regulations 2009 with the addition of 1mm to 2mm size eel screens and of a suitable area to control intake velocity to 0.1-0.2m/s. Treated flows are to be distributed both locally by transfer into 2 No. Local distribution service reservoirs (DSR) north and south of the proposed WTW site and by Injection into the treated water Cornwall Spine Main via a new 500mm diameter trunk main.
COL21	**South Crofty & Wheal Jane - Mine Water Reclamation** This option comprises of two mine water reclamation schemes at Wheal Jane and South Crofty mines. Both schemes will further treat the mine water beyond the current HDS plant water quality, in order the discharge into Stithians reservoir via new pumping stations and new pipelines. It is assumed that the reverse osmosis (RO) concentrate for both Wheal Jane and South Crofty will be conveyed to Camborne wastewater treatment works. Wheal Jane treatment processes – Pre-treatment chemical dosing, MnO2 sand filter, Ferric chloride and sulphuric acid dosing, 0.15µm strainer, Ultrafiltration membrane, Reverse osmosis membrane, Re-hardening and pH adjustment with calcium hydroxide. South Crofty scheme – Pre-treatment chemical dosing, 0.15µm strainer, Ultrafiltration membrane, Reverse osmosis membrane, Re-hardening and pH adjustment with calcium hydroxide.
COL22	**Roadford to Colliford via Saltash** This option is centred on providing additional resilience in Colliford water resource zone through supplying treated water from Roadford water resource zones. This could be achieved by pushing more potable water through the existing main that links Winston Beacon service reservoir and Kit Hill service reservoir via an upgraded 200kW booster station.
COL23	**Mayflower WTW to Kit Hill (St. Cleer)** This option is centred on connecting Colliford and Roadford water resources zones via a new bi-directional 400mm diameter 16.9km long interconnector. This interconnector would distribute treated water between Mayflower WTW in Roadford and Kit Hill service reservoir (via St Cleer WTW) in Colliford through 4no. new treated water pumping stations.

Option name	Description
COL24	**Northcombe WTW to Launceston** This option is centred on providing water resilience in Colliford water resource through the transfer of the surplus treated water at Northcombe WTW in a drought situation. This will require a new 300mm diameter, 21km long pipeline connected into the existing treated water pumping station at Northcombe WTW.
COL25	**Brent Tor to Launceston** This option is centred on increasing resilience in the Colliford water resource zone via a new 400mm diameter 15.5km long interconnector. This interconnector looks to overcome the constraint around the availability of water in East Cornwall by importing it from the Roadford WRZ, significantly reducing the number of single source properties in Bastreet. The import of water from Roadford WRZ also helps to reduce pressure on Colliford's WTWs, freeing up treatment capacity to better utilise the additional resource made available by the drought and resilience schemes.
COL26	**Restormel WTW to East Cornwall** This option would enable to transfer water between St Cleers WTW and Fox Park services reservoir in Restormel and vice versa via a new bi-directional 19km interconnector and 3 no. new potable water pumping stations.
COL28	**Desalination Plant at Par** This option is centred on the purchase and installation of an additional desalination modular unit at an existing desalination plant in Colliford. All existing seawater abstraction infrastructure and raw water displacement infrastructure is sized to accommodate this additional treatment capacity. The treated seawater will require additional treatment at Restormel WTW.
COL29	**Restormel WTW - Increase Treatment Capacity to 120Ml/d** Restormel WTW has been identified as capable of increased production, from 93Ml/d to its licensed maximum of 120Ml/d. This will require additional treatment process upgrades across the site including, River intake – Low lift pump station, Clarification, RGFs, Interstage Pumping, GAC contactors, Chlorine Contact Tank, Chemical dosing, Sludge Thickeners, Sludge Presses, Final Water Pumping, Pipelines. The additional raw water required can be supplied by a combination of the following updated dWRMP options, COL22, COL23, COL24, COL25, COL26, or COL28.
Roadford WRZ	
ROA2	**River Erme.** This option looks to increase the amount of water available by moving the existing intake on the River Erme to a location where there is a higher flowrate, through the following: • Construction of a new intake approximately 7.6-8.1km downstream of the existing intake on the River Erme. • A new raw-water pumping station on a vacant plot of land within the sewage treatment works that is approximately 80m from the new abstraction point • A new reception shaft approximately 3-4m deep. • A new raw water connection to the South Devon Spine Main -approximately 910m. • Transfer raw water to Littlehempston WTW • A new abstraction licence in conjunction with the EA and WINEP investigations.
ROA3	**River Yealm** This option looks to increase the amount of water available by moving the existing intake on the River Yealm to a location where there is a higher flowrate. It involves the following: • Construction of a new intake approximately 6.3km downstream of the existing intake on the River Yealm • A new raw-water pumping station on a vacant plot of land that is approximately 25m from the new abstraction point • A new reception shaft approximately 3-4m deep • A new raw water connection to the South Devon Spine Main (raw water main) - approximately 230m • A new licence in conjunction with the EA.
ROA4	**Abstraction of Roadford compensation flow at Gunnislake when making supply releases.** The current operating practice is that a flow of water from the reservoir feeds into the downstream river continuously in order to minimise the environmental impact on the river. This compensation release is a 'passive' activity which happens regardless of whether water is being abstracted downstream. At present, if water is required for abstraction downstream of the reservoir we actively release water in addition to that from the compensation flow. This option will require a change to the existing abstraction licence at the River Tamar, specifically reducing the compensation flow when large water supply releases are made from Roadford reservoir for downstream abstraction. The active supply release delivers the benefits of the compensation flow between the reservoir and the abstraction point. This will need to be agreed with the EA in conjunction with environmental investigations and hydrological modelling.
ROA6	**Upper Tamar Lake increasing annual licence.**

Option name	Description
	This option is centred on increasing the frequency of abstractions from the Upper Tamar Lake, from 9 months to 12 months of the year. The abstraction licence change will have to be agreed with the EA in conjunction with environmental investigations, long term monitoring and hydrological modelling. There is an existing investigation and options appraisal as part of WINEP24 (Upper Tamar Lake WINEP24 (AMP8)).
ROA7	**Expansion of Northcombe WTW to 60Ml/d.** This option is centred on constructing new and repurposing existing treatment works processes, specifically, new parallel inlet works, new flocculation tanks, conversion of manganese filters to flocculation filters, GAC contactor upgrades, Manganese contactor upgrades, conversion of water tank into chlorination tank, Thickener upgrades, and all necessary ancillaries/pipework. This will enable Northcombe WTW to treat raw water up to the licence maximum of 60Ml/d.
ROA12	**Slade and Horedown WTW (GAC).** This option is centred on supplying additional raw water from Slade reservoir to Horedown WTW via a new raw water pumping station and an existing 3.5km pipeline as well as improving the water treatment quality at Horedown WTW via a new ozone/ granular activated carbon plant, increased chemical dosing, process wastewater treatment.
ROA13	**Duckaller and Vennbridge.** This option is based on proposed changes to two abstraction licences at Duckaller and Vennbridge boreholes (subject to successful application) and the installation of a new nitrate reduction facility at Burrows WTW. The existing raw water main between Duckaller and Burrows disinfection tank. Treatment wastewater will be connected to the adjacent sewer system at Burrows WTW.
ROA14	**Raise Avon Dam.** The preferred option is for the dam to be raised approximately 4m subject to structural engineering approval and flood risk assessments for heavily modified waterbodies. It is acknowledged that, due to the time limitation, no studies and/ or analysis has been undertaken involving a detailed review of the available project information and verification of the project parameters (including dam stability, etc). A review of the original project design information suggests that the Avon dam was provisioned for raising to a limited height. Both the design and the dam are now over 60 years old. There will need to be significant studies and investigatory work to establish the condition of the dam and surrounding geology before any view on the height-raising methodology can be established and accurately costed. A high-level schedule of quantities and method statement (as envisaged in the original design) has been produced at this stage in order to estimate a potential order-of-cost for raising the dam. This schedule and method statement is provisional pending further investigations which will include full environmental impact assessments, planning and public consultation. It is envisaged that the initial AMP period will be concerned with addressing these areas as well as the engineering methodology.
ROA15	**Gatherley Phase 2.** The completion of this scheme will require the construction of an additional raw water main to provide water supply resilience through a dual main between the River Lyd abstraction point and Roadford Reservoir, allowing the full 148Ml/d to be transferred to Roadford Reservoir. This option is dependent on the successful application of an aggregate abstraction licence in AMP7 of Gunnislake, Lyd, and Gatherley.
ROA17	**Littlehempston WTW.** This option is centred on dualling the 9.22km trunk main from Littlehempston WTW to Gallows Gate distribution service reservoir (DSR) and dualling the 9.87km trunk main Littlehempston WTW leading to Blackdown DSR (Crabadon Cross WPS). This will minimise network working pressures and therefore increase the network capacity. Separate investigations are ongoing into the current capacity of the off-site high lift pumping and treated main.
ROA19	**SRO: Cheddar 2 to Prewley – New Strategic Regional Reservoir, Treatment and Transfer** This iteration of the Cheddar 2 strategic resource option is a treated water transfer to from Bristol Water to Roadford WRZ. The option includes a new raw water pumping station and pipeline to Cheddar 2 reservoir, construction of Cheddar 2 reservoir, new WTWs, and new treated water pipelines and pumping stations. Once the treated water is displaced to Wittall service reservoir it will offset supply from Maundown WTW that feeds the north Dorset network. The infrastructure requirements for this offsetting are a treated water pipeline and pumping station from Maundown WTW to Parsonage service reservoir, and a treated water pipeline and pumping station from Parsonage service reservoir to Prewley service reservoir.
ROA20	**Mayflower WTW to Littlehempston WTW** This option is centred on construction of 38km of new 800mm dia. potable water main and pumped system to enable to transfer up to 40Ml/d. Currently there is no potable water link West-East and East-West between Roadford and Wimbleball. Licence capping and environmental destination abstraction reductions from Littlehempston WTW's sources will drive the need to transport more water into the area. The Gatherley pumped storage scheme being

Option name	Description
	delivered under the Green Recovery Programme will make available more raw water storage at Roadford Reservoir.
ROA21	**Roborough to Littlehempston WTW** This is an alternative solution to Mayflower WTW to South Devon Treated, consisting of a 37km raw water transfer. There is already an existing raw water main that enables the transfer of raw water between Mayflower WTW and Littlehempston WTW. However, a duplication of the raw water main would add flexibility to the network.
Wimbleball WRZ	
WIM1	**Abstraction of Wimbleball Reservoir compensation flow at Northbridge when making supply releases.** The current operating practice is that a flow of water from the reservoir feeds into the downstream river continuously in order to minimise the environmental impact on the river. This compensation release is a 'passive' activity which happens regardless of whether water is being abstracted downstream. At present, if water is required for abstraction downstream of the reservoir, we actively release water in addition to that from the compensation flow. This option will require a change to the existing abstraction licence at the Northbridge River, specifically reducing the compensation flow when large water supply releases are made from Wimbleball reservoir for downstream abstraction. The active supply release delivers the benefits of the compensation flow between the reservoir and the abstraction point. This will need to be agreed upon with the EA in conjunction with environmental investigations and hydrological modelling.
WIM2	**Sidford borehole commissioning.** This option utilises a new borehole in Sidford (which totals 4 boreholes on a duty/duty/duty/standby arrangement), that feed raw water into the new water treatment works comprising of, catalytic pressure filters, chlorination, aeration tank, contact tank, and supply tank. The treated water will be distributed to an existing booster pumping station via a new treated water main, then onto Branscombe water tower. Further borehole pump testing will be required during detailed design.
WIM4	**Wilmington springs annual abstraction increase.** This option is centred on increasing the frequency of abstraction from Wilmington Springs, from 9 months to 12 months of the year. The abstraction licence change will have to be agreed upon with the EA in conjunction with environmental investigations, long term monitoring and hydrological modelling.Increase in annual licence abstraction from existing Wilmington springs so annual volume equals that of the daily limit (2.7Ml/d). No infrastructure changes required.
WIM5	**Indirect potable reuse – stream support for Dotton WTW.** This option is centred on providing compensation flow (Stream Support) to the River Otter during low-flow periods via pumped treated final effluent from Sidmouth WwTW directly to the river using a new pumping station and pipeline (4.55km) and an additional clarifier, nitrifying trickling filter, and chemical dosing to treat final effluent to the required quality for discharge. This, therefore, negates the need for compensation flows from Dotton borehole no.5, as per the environmental determination in the Dotton catchment.
WIM6	**Increase Allers WTW capacity.** This option is centred on increasing water production at Allers WTW, subject to an increase in the Bolham licence and a reduction in the Dotton licence (winter) to be agreed with EA. To facilitate this production increase, the following treatment upgrades are required; a new river intake (eel screens, weir structure, upsize pumps), Clarification, RGFs, Interstage Pumping, GAC Contactors, Chemical Dosing - Sulphuric Acid, Lime, Polyaluminum Chloride, Clarifier Polymer, Chlorine, SO2, PO4 and Sludge Polymer, Final Water Pumping, and Pipelines.
WIM7	**Increase Pynes to licence limit 66.46Ml/d** This option is to upgrade the existing water treatment works to make full use of the current licensed flow (66.46Ml/d) abstracted at River Exe at Northbridge, through the following: construction of new or enhanced intake structure including screening and pumping, new Inlet flash mixer, 2no. flocculators, 1no additional clarifier, 2no additional rapid gravity filters. • 2no additional GAC contactors, Upgraded wastewater and sludge processing, Upgraded chemical dosing system, Additional/Upsized interprocess pumping/pipework and upgrades to feed pumps • Upgrade Power supply/ICA system/equipment and integrate with existing • Consultation with the EA regarding changes to abstraction licence
WIM8	**Brampford Speke borehole.** This option will be centred on the following, M&E renewal of existing borehole (new pumps, MCC, telemetry etc), transfer of raw water flow to river Exe by existing pipelines and new headwalls to riverbank at discharge locations. The current WINEP19 investigation will ensure that the new licence will be improved and more sustainable.
WIM9	**Stoke Canon borehole.** This option is centred on the following, M&E renewal of the existing borehole (new pumps, MCC, telemetry etc), transfer of raw water flow to river Exe by existing pipelines, new headwalls to riverbank at discharge locations and new WPD power supply. The current WINEP19 investigation will ensure that the new licence will be improved and more sustainable.
WIM11	**Counchill Springs, Seaton.** This option involves the transfer of water from Couchill Springs to Bovey Lane WTW. A new pumping station at Couchill Springs is required along with new assets at Bovey Lane including

Option name	Description
	a break tank, filters & UV disinfection. The solution would also utilise existing high lift pumps for treated water distribution.
WIM12	**Aller Springs.** The option proposes transfer of water from Allers Springs to Allers WTW. A new raw water pumping station consisting of concrete wet well & 2no. submersible pumps is required at Allers springs in order to feed existing raw water tank and treatment at Allers WTW.
WIM13	**SRO: Cheddar 2 to Parsonage – New Strategic Regional Reservoir, Treatment and Transfer** This iteration of the Cheddar 2 strategic resource option is a treated water transfer to from Bristol Water to Wimbleball WRZ. The option includes a new raw water pumping station and pipeline to Cheddar 2 reservoir, construction of Cheddar 2 reservoir, new WTWs, and new treated water pipelines and pumping stations. Once the treated water is displaced to Wittall service reservoir it will offset supply from Maundown WTW that feeds the north Dorset network. The infrastructure requirements for this offsetting are a treated water pipeline and pumping station from Maundown WTW to Parsonage service reservoir.
WIM14	**Whitecross distribution upgrade** A new main allowing 5 Ml/d of additional water from Pynes WTW supply zone to offset any deficit in the future production capabilities of Dotton WTW resulting from water quality of the boreholes or any potential licence changes. The increased resilience in the network would provide the flexibility to support Dotton, Ottery St.Mary Intermediate WTW and Allers WTW. The new main will be 5.7km long and 500mm diameter and will run from Whitecross Service Reservoir to Sowton Industrial Estate.
WIM15	**Northcombe WTW to Allers WTW** This option proposes a new 600mm diameter 74Km long main linking Northcombe WTW to Allers WTW and a 1100kw pumping station enabling Roadford WRZ to support Wimbleball WRZ (20Ml/d), especially for a 1 in 500 year drought resilience.
WIM16	FE reuse - Countess Wear and Mear Lane WWTW to River Exe This option is centred on reusing the final effluent from 2no. wastewater treatment works, Countess Wear and Maer Lane via new pumping stations and pipelines, providing additional treatment via a new FE recycling centre, and discharging the treated water to the river Exe via a new pumping station and pipeline. This will provide additional raw resources for abstraction and treatment at Pynes WTW.
WIM18	**SRO: Cheddar 2 to Bickham Moor - New Strategic Regional Reservoir, Treatment and Transfer** This phase of the Cheddar 2 SRO is a treated water transfer from Bristol Water to Wimbleball WRZ. The option includes a new raw water pumping station and pipeline to Cheddar 2 reservoir, construction of Cheddar 2 reservoir, new WTWs, and new treated water pipelines and pumping stations. Once the treated water is displaced to Wittall service reservoir it will offset supply from Maundown WTW that feeds the north Dorset network. The infrastructure requirements for this offsetting are a treated water pipeline and pumping station from Maundown WTW to Bickham Moor service reservoir.
Drought options	
dB1	**Wimborne borehole** This scheme entails abstracting from a disused, licensed groundwater source, under drought conditions, using new pumps and pipeline, distributing the abstracted water to Wimborne WTW, subject to a successful drought permit application.
dB2	**Stanbridge Licence** The scheme entails increasing the daily licence limit, to enable abstraction above the current daily licence limit under drought conditions, in order to provide additional raw water to Wimborne WTW, subject to a successful drought permit application.
dCS1/E	**Colliford not releasing compensation flows when making supply releases** The scheme entails not making compensation flow releases from Colliford reservoir into the river Fowey when making supply releases during the summer months, under a new drought permit.
dCS11/E	**Siblyback not releasing compensation flows when making supply releases** This scheme entails reducing the volume of compensation flows (by 50%) from the Siblyback Reservoir to the river Fowey when making supply releases, during the summer months, under a new drought permit.
dR2	**Slade Reservoir** The scheme entails re-introducing a disused, licensed raw water source at Slade reservoir, installing pumps to abstract the water (during drought conditions) and transferring the abstracted water to Horedown WTW via an existing pipeline. This is subject to an approved drought permit from the EA because the source has been disused for a long period of time.
dR3	**Challacombe Reservoir**

Option name	Description
	The scheme entails re-introducing a disused, previously licensed raw water source, and transferring the abstracted water, under drought conditions, to Horedown WTW via an existing raw water pipeline. This is subject to an approved drought permit from the EA.
dR4	**Meldon / Vellake to Roadford** The scheme entails abstracting from an existing river intake on the river West Okemont at Vellake and laying a new pipeline to transfer the abstracted raw water from Vellake to Roadford Reservoir during drought conditions. This is subject to an approved drought permit from the EA.
dR5	**Lee Moor unused quarries** The scheme entails abstracting from three quarries (Lee Moor pit, Whitehill Yeo pit & Cholwichtown pit), during drought conditions. The option involves the construction of a new pipeline adjacent to the Devon spine main from Lee Moor to Littlehempston WTW for treatment.
dRS15/E	**Roadford not releasing compensation flows when making supply releases** The scheme entails abstracting all the compensation flows released from Roadford reservoir into Gunnislake River when making supply releases, under drought conditions. This is subject to an approved drought permit from the EA.
dW1	**Brampford Speke and Stoke Canon (North Exeter Boreholes)** This scheme entails abstracting from a disused, licensed groundwater sources, under drought conditions, using new pumps and a new pipeline, releasing the abstracted water into the River Exe and abstracting this water at Pynes WTW, subject to a successful drought permit application.
dW2	**Hook Springs Licence** The scheme entails removing the annual licence limit at Hook Springs intake, to enable abstraction at the daily licence limit throughout the year, under drought conditions, to provide additional raw water to Hook WTW, subject to a successful drought permit application.
dW3	**Wilmington Springs Licence** The scheme entails removing the annual licence limit at Wilmington Springs intake, to enable abstraction at the daily licence limit throughout the year, under drought conditions, to provide additional raw water to Wilmington WTW subject to a successful drought permit application.
dW4	**Wimbleball not releasing compensation flows when making supply releases** The scheme entails abstracting all the compensation flows released from Wimbleball reservoir, during drought conditions, into the River Exe when making supply releases, subject to a successful drought permit application.
dC1	**EAR: Restormel Licence** The scheme entails increasing the annual abstraction licence limit (to licence maximum) to enable greater winter pumped storage abstraction, to aid Colliford Reservoir refill. This will be facilitated via the existing river Fowey intake and the existing infrastructure (pumping stations, pipelines, air valves etc) and a new drought permit. This is one of the seven drought options assessed in separate EAR documents. Results are summarised in this report and the findings are included in the cumulative and in-combination effects assessment.
dC2	**EAR: Stannon Lake Licence** The scheme entails increasing the abstraction rate at Stannon Lake to 6Ml/d by installing temporary pumps and pipework and successfully applying for a drought permit to abstract during the summer months. This is one of the seven drought options assessed in separate EAR documents. Results are summarised in this report and the findings are included in the cumulative and in-combination effects assessment.
dC3	**EAR: Porth Reservoir and Rialton Intake** The scheme entails re-commencing abstraction from a licensed resource during the summer months. Releases are made from Porth Reservoir into Rialton Stream and abstracted at the existing Rialton Intake. Abstracted water will be treated at Coswarth WTW. This is one of the seven drought options assessed in separate EAR documents. Results are summarised in this report and the findings are included in the cumulative and in-combination effects assessment.
dCS2/E	**EAR: Park Lake Licence** This scheme entails increasing the daily abstraction limit, under a new drought permit, at Park Lake from 8Ml/d to 12Ml/d, providing a WAFU benefit of 2Ml/d. This is one of the seven drought options assessed in separate EAR documents. Results are summarised in this report and the findings are included in the cumulative and in-combination effects assessment.

Option name	Description
dCS3/E	**EAR: Blackpool Pit** The option involves the abstraction from Blackpool Pit followed by transfer to Restormel WTW via a raw water pipeline. It involves abstraction from new source, using new abstraction infrastructure and pipeline to existing WTW. This is one of the seven drought options assessed in separate EAR documents. Results are summarised in this report and the findings are included in the cumulative and in-combination effects assessment.
Dcs6/E	**EAR: Hawks Tor Pit** The option involves abstraction from Hawk's Tor Pit, with transfer to existing WTW. It involves abstraction from new source, using new abstraction infrastructure and pipeline to Colliford reservoir. This is one of the seven drought options assessed in separate EAR documents. Results are summarised in this report and the findings are included in the cumulative and in-combination effects assessment.
Drs1/E	**EAR: River Lyd (Summer)** Abstract from the River Lyd and transfer into Roadford Reservoir in summer. Using existing pipeline, subject to a prescribed flow agreed with the Environment Agency. This is one of the seven drought options assessed in separate EAR documents. Results are summarised in this report and the findings are included in the cumulative and in-combination effects assessment.

1.3 The Water Framework Directive Regulations

The Water Framework Directive (WFD) was introduced into UK law in 2003. The latest regulations are set out in The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017[3] (known as the WFD Regulations). These regulations require all water bodies (both surface and groundwater) to achieve 'good status'.

For surface water bodies good status is a function of good ecological status (GES) (for biological, physico-chemical and hydromorphological elements and specific pollutants) and good chemical status (Priority Substances and Priority Hazardous Substances). For groundwater good status is a function of quantitative (surface water, groundwater dependent terrestrial ecosystems (GWDTE), saline intrusion and water balance) and chemical status (dependent surface water body, drinking water protected areas, GWDTE, saline intrusion and general chemical).

The WFD Regulations require that the water bodies experience no deterioration in status and no impediment is introduced which could prevent the achievement of future water body objectives and good status. The WFD Regulations promote long-term sustainable water management, with the key objectives of providing a high level of protection to the aquatic environment, including:

- aquatic ecology
- unique and valuable habitats
- drinking water resources
- bathing water

All the key objectives are integrated for each river basin district with objectives 2, 3 and 4 above reflecting specific bodies of water that are designated for drinking water abstraction, supporting special wetlands, or bathing areas.

The WFD Regulations, regulation 13, sets out the "environmental objectives" for natural surface and groundwater bodies, and artificial water bodies (AWB) and heavily modified water bodies (HMWBs). Natural surface water bodies must, by 2015, adhere to good ecological and chemical status and groundwater bodies to good quantitative and chemical status. Artificial and HMWBs (A/HMWB) must achieve good ecological potential (GEP) and good chemical status. Regulation 13 also sets out the principle of no deterioration, providing protection from the deterioration of water status/potential. The WFD Regulation, regulation 15, sets out the criteria for the designation of artificial or heavily modified water bodies.

Regulations 8 to 10 set out the protection of specific areas for the protection of areas used for drinking water, shellfish water and protected areas respectively.

Exemptions are defined within the WFD Regulations, with regulations 16 to 19 outlining the conditions under which the achievement of good status or potential may be phased or not be achieved, or under which deterioration may be allowed. Regulations 16 to 19 describe these distinct conditions. In summary:

- Regulation 16 allows an extension of the time limit so that good status or potential is, under certain conditions, achieved only after 2015.
- Regulation 17 allows the achievement of less stringent objectives under certain conditions.
- Regulation 18 allows the temporary deterioration of status in case of natural causes or "force majeure".
- Regulation 19 allows for deterioration of status or non-achievement of good status or potential under certain distinct conditions. If any options are identified as leading to a risk of water body scale deterioration that cannot be mitigated, then a regulation 19 derogation application would be needed. Where a regulation 19 exemption application is needed, various tests must be passed including:
  - The benefits of the option cannot be achieved by a significantly better environmental option.
  - All practicable steps have been taken to mitigate the adverse effects on the water body.
  - The reasons for the modifications or alterations are explicitly set out in the River Basin Management Plan (RBMP).
  - There is an overriding public interest in the proposed development and/or its benefits outweigh the benefits of delivering the WFD objectives.

The objectives of the WFD assessment are:

- To ensure there is no deterioration between WFD status class of any element in the water body as set out in WFD Regulation 13.
- To ensure no new impediments to attaining ‘Good’ WFD status or potential for the water body, or any assessed element, as set out in Regulation 13. In some water bodies it is accepted that it is currently technically infeasible or disproportionately costly to achieve Good status or potential. If this is the case, the test is applied to current agreed objectives for the water body.
- To ensure that the planned programme of measures in the current cycle of RBMPs, to help attain the WFD objectives from the water body, are not compromised.

As well as these legally binding WFD objectives, other objectives set out in the RBMP should be reviewed to see if the options can assist in meeting the WFD objectives:

- Does the option assist in attaining the WFD objectives for the water body?
- Does the option assist in attaining the objectives associated with WFD protected areas?
- Does the option reduce treatment needed in the production of drinking water and look to work in partnership with others, promoting the requirements of Regulation 8?

1.4 Methodology

1.4.1 Approach to WFD assessment for updated dWRMP24 Options

The All Company Working Group (ACWG) has developed a consistent framework for undertaking WFD assessments[4] for SRO projects, to ensure that the WRMP supports the achievement of environmental objectives for water resources in the RBMPs. The environmental objectives in the RBMP include preventing WFD deterioration and supporting achievement of protected area and water body objectives, as well as not preventing a water body from reaching 'good' status or 'good potential' in the future. This assessment considers mitigation that would need to be put in place to protect water body status and WFD future objectives. In order to ensure consistency between SRO assessments and others within the updated dWRMP, the same approach has been applied to the other updated dWRMP options.

Two stages of assessment are undertaken using the ACWG WFD approach, an initial Level 1 basic screening (see Section 1.4.2) and a Level 2 detailed impact assessment (see Section 1.4.3). These are completed using a spreadsheet assessment tool. Level 1 outcomes are automated based on option information for Level 1 and expert judgment based for Level 2. Further information on WFD classification and the approach adopted can be found in ACWG, 2020.

1.4.2 ACWG WFD Level 1 – basic screening

The first stage of WFD assessment was completed for all options. The Level 1 assessment followed the ACWG methodology outlined in the framework and is summarised as follows:

- The affected water bodies are identified.
- The option is reviewed for activities taking place in each water body.
- Possible impacts of the option are identified. Predetermined scores for each activity (as set out in the ACWG framework) in a water body are applied, using a 6-point scale from -2 to 3 (as shown in Table 1.2).
- Embedded mitigation measures (those already included in the scheme design) are applied. Where this embedded mitigation would remove the potential impact from an activity, the impact score is adjusted using professional judgement and justification provided.
- A maximum screening score for the water body is then calculated. Where this maximum screening score identifies water bodies with a maximum score of -2 to 1, these are 'screened out' and do not proceed to further assessment. If the maximum impact score is greater than 1 then the water body is 'screened in' and assessed at Level 2. This is known as detailed impact screening (please refer to Section 1.4.3).

Table 1.2: Impact scoring system used for WFD assessments

Impact	Score	Description
Major beneficial	-2	Impacts that, taken on their own, have the potential to lead to the improvement in the ecological status or potential of a WFD quality element for the entire water body.
Minor beneficial	-1	Impacts that, when taken on their own, have the potential to lead to a minor localised or temporary improvement that does not affect the overall WFD status of the water body or any quality elements.
Negligible	0	No measurable change in the quality of the water environment or the ability for target WFD objectives to be achieved.
Minor localised	1	Impacts that, when taken on their own, have the potential to lead to a minor localised, short-term and fully reversible effects on one or more of the quality elements but would not result in the lowering of WFD status. Impacts would be very unlikely to prevent any target WFD objectives from being achieved.

[4] All Company Working Group, November 2020. Water Framework Directive: Consistent framework for undertaking no deterioration assessments.

Impact	Score	Description
Amber adverse	2	Impacts that, when taken on their own, have the potential to lead to a widespread or prolonged effect on the quality of the water environment that may result in the reduction in WFD status. Impacts have the potential to prevent target WFD objectives from being achieved.
Major adverse	3	Impacts when taken on their own have the potential to lead to a significant effect and permanent deterioration of WFD status. Potential for high impact on preventing target WFD objectives from being achieved.

The WFD Level 1 screening outcomes for the SWW updated dWRMP24 options are presented in Section 2 and Annex A. Where water bodies and option impacts were 'screened in', they have been taken forward to Level 2 assessment.

1.4.3 ACWG WFD Level 2 – detailed impact screening

The second stage of WFD assessment is more detailed. These Level 2 assessments have been completed for options that were screened in at Level 1. The Level 2 assessment includes the following steps:

- For each water body where a risk of deterioration has been identified in Level 1, a detailed assessment is undertaken on the potential for impacts on each WFD quality element, from each activity proposed as part of the option. Each activity is assessed against each WFD status element and a score (using the same criteria set out in Table 1.2) is assigned using professional judgement.
- An assessment of confidence in the assessment is given (low, medium or high), for the WFD baseline data and around the design certainty. These confidence levels are assigned for each assessment, based on the quality and availability of physical data and design information for the option at the time of assessment *(note, confidence/certainty is expected to be low during this initial WRMP assessment and will increase over time).* The criteria for these confidence levels is set out in the ACWG framework and provided in Table 1.3. For options where confidence levels are medium or low, the requirements for further data collection or design detail are outlined in order to raise this confidence level in the future.
- Further mitigation is also identified.
- A post mitigation impact scope is also assigned based on professional judgement of the impact once the proposed further mitigation, or suitable alternative, has been included in the design.
- Where the assessment certainty is medium or low, further investigations are identified which would improve the certainty of the assessment outcomes.

Table 1.3: Confidence levels used in the Level 2 assessment

Confidence level	Description
Low	Limited data and evidence available, based mainly or completely on expert judgement with many assumptions. Preliminary design information only, detailed information on location/routes, construction methods etc not yet available.
Medium	Some data and evidence available, based partially on professional judgment with some assumptions.t with some assumptions. Design progressed but some assumptions made on construction methods etc.
High	Lots of appropriate data and evidence available, minimal assumptions needed. Design advanced minimal assumptions needed

The WFD Level 2 assessment outcomes for the SWW updated dWRMP24 options are summarised in Section 2.7 and Annex B.

Where water bodies and option impacts have been identified, recommendations have been made for increasing the confidence in the assessment. This is expected to be through

enhancing the level of detail available during option development and the pre-application design process when development consent is sought.

1.4.4 Cumulative effects

The ACWG WFD assessment process, described in Sections 1.4.2 and 1.4.3, is designed to identify where an individual option contained within updated dWRMP24 would lead to a direct risk of deterioration to a specific water body (i.e. option compliance). There is also the need to consider the potential risk of deterioration posed by the updated dWRMP24 as a whole, to identify whether more than one option included in the updated dWRMP24 could lead to an increase in deterioration risk to one, or more, water bodies. As such, a cumulative effects assessment was undertaken to identify whether any water bodies are potentially at risk from multiple supply side, drought and SRO options within the updated dWRMP plans.

The water bodies listed as potentially being impacted under more than one option were identified. The proposed activities associated with all options within each water body were reviewed to determine whether there is an increased risk of WFD deterioration and a new impact scope to be assigned to the water body, as required. The assessment is based on the WFD Level 1 and 2 assessment outcomes at this stage. As further investigations are conducted and design information becomes available for future updates to the plan, the individual Level 2 WFD assessments will require updates. Following these adjustments, updates to these assessments will be required.

The cumulative effects assessment for the updated dWRMP has been carried out on the following plans:

- Best Value Plan (BVP)
- Least Cost Plan (LCP)
- Ofwat Plan (OP) (this plan is identical to the BVP and as such has not been assessed separately).
- Best Environmental and Societal Plan (BESP) (this plan is identical to the BVP and as such has not been assessed separately).

The findings are detailed in Sections 4.1 to 4.2. In addition, assessments have been carried out on two adaptive pathway plans (Alternative plan (Med) and Alternative plan (High)). The outcomes of these assessments are reported in Sections 4.3 and 4.4.

1.4.5 In-combination effects assessment

The in-combination effects assessment is undertaken to determine the combined impact of BVP (preferred SWW plan) option activities, alongside any other relevant planning projects and/or other water company options identified on impacted water bodies.

All planning allocations, large existing or emerging planning applications (500 or more dwellings or large commercial/industrial developments) and major projects, such as Development Consent Orders (DCOs) or Hybrid Bills, have been identified within the SWW operating area. Hereafter these will be collectively referred to as ‘planning projects’. For each planning project, an assessment is made on whether the project could lead to impacts on WFD water bodies. For larger DCOs this review makes use of any existing WFD assessments which have been carried out for the planning application. For other planning allocations or applications where no WFD assessment has been carried out, professional judgement is used to identify the potential for impacts on WFD. Any planning projects where no risk of deterioration is identified are screened out of the assessment, and the remaining planning projects are passed into the next stage of the assessment.

The in-combination effects assessment also includes consideration of the BVP options with neighbouring water company WRMPs and DPs. The results from the published draft WRMP BVP have been used in this report to consider the cumulative effects of the other water companies.

For any water body where effects from one or more BVP options and one or more relevant planning projects occur, the corresponding option assessments and planning project information is reviewed to determine if the cumulative impact of the proposed activities could lead to an increased risk of WFD deterioration. Where a water body is identified to be at an increased risk, a new cumulative WFD assessment is completed where all option activities and planning project activities are assessed together, and a new impact score assigned.

1.4.6 Limitations and assumptions

The impact scoring system used in this assessment is derived from the ACWG (2020) guidance and focusses on screening at a project level. The limitations of this scoring system to assess WFD compliance at the plan/strategic level must therefore be acknowledged. However, this system has been used to guide this WFD assessment, in the manner outlined below.

As the options set out in the updated dWRMP24 are in the early stages of design development, a precautionary approach has been exercised in the derivation of WFD compliance risk scoring, following the Level 2 assessment approach. If insufficient evidence was available at the time of assessment to rule out a potential risk of deterioration and/or meeting WFD objectives, that has been reflected in the tables provided with this assessment in the maximum impact score column, which reflects the impact scoring system which contains a category of potential deterioration risk.

The assessment also includes consideration of potential available mitigation, and these measures are taken into account in a further column which reflects the scoring of ‘post-mitigation’ impact. This scoring approach has considered where a potential deterioration risk is identified whether an adjustment should be made to the impact score taking into account the mitigation measures. Given that this assessment is at a strategic plan level the scoring has been undertaken based on reasonable professional judgment at this stage. The mitigation identified at this stage is generic or best practice in nature, so is understood to have a reasonable level of confidence that it can be applied at a project level.

Clearly more detailed WFD assessments will need to be undertaken at the project-level design development stage.

The WFD assessment has the following limitations and assumptions:

- The assessment has used WFD 2019 baseline classification data, which is the current officially reported baseline in the Cycle 3 RBMP.
- All assessments will be based on a precautionary approach where limited data or design certainty is identified.
- All pipelines are assumed to be constructed underground, rather than above ground.
- Assessment assumes that pipelines will be directionally drilled or pipe-jacked beneath any larger watercourses, roads or railways and bypass and trenched under small roads and watercourses. Therefore, they will not be installed over watercourses above ground or cause direct impacts.
- The WFD assessment initially considers the water bodies where changes to abstraction and discharges will take place. There is potential for some effects to continue downstream of the abstraction point. It is assumed these effects would decrease downstream until they are far enough removed from option activity to be considered at a ‘negligible’ risk. Where downstream impacts are possible, these water bodies have been included in the relevant

assessments. This assumption will need to be reviewed as additional hydrological studies are undertaken.

- WFD assessments for the SROs and the seven drought options which have been assessed in separate EARs have not been reassessed as part of this updated dWRMP. A summary of the results from the assessments from the original reporting (by others) have been provided within this report for information. This information has been used to assess the potential cumulative and in-combination effects of these options within the context of the updated dWRMP.
- In-combination effects assessments are based on publicly available information from planning applications, DCOs and planning allocations available at the time of writing.

Further, more option specific assumptions are set out in the Level 2 assessment summary tables (outlined in Section 2.7).

2 Level 1 Water Framework Directive Assessments

This section presents a summary of the WFD Level 1 assessments. The full assessments are provided in Annex A. Where these assessments highlight the requirement for further investigation, Level 2 assessments were undertaken and presented in Section 2.7. Further information on WFD classification and the approach is outlined in Section 1.4.

2.1 Bournemouth WRZ

2.1.1 BNW1: Borehole development, existing borehole remedial works

The Level 1 WFD assessment covered three water bodies for this option. The outcomes indicated that further assessment would be necessary for two groundwater bodies: GB40702G503500: SW Hants Barton Group and GB407020G504000: SW Hants Solent Group.

Table 2.1: WFD Level 1 assessment outcomes for BNW1

Option ID	BNW1
Option description	This option will provide additional water from a new borehole and pump, which will be distributed to the nearby water treatment works. The scoped works required at the WTW include additional headworks, kiosk, and pipework will be required to connect it into the works as well as upgrades to the chemical storage and dosing equipment at the works, a new chlorine contact tank, dirty wash water system, run to waste as well as instrumentation and controls will be required, and a new pressure filter. This option assumes that there will be no additional WTW capacity required and that the existing power source will be sufficient.
Number of water bodies passing WFD assessment	1
Water bodies passing WFD assessment	GB107042011220: Lymington River
Number of water bodies requiring further WFD assessment	2
Water bodies failing WFD assessment	GB40702G503500: SW Hants Barton Group (GW); GB407020G504000: SW Hants Solent Group (GW)

2.1.2 BNW6: Longham Aquifer Recharge

The Level 1 WFD assessment covered four water bodies for this option. The outcomes indicated further assessment would be necessary for two river water bodies: GB107042011300: Avon Water and GB40801G804500: Upper Dorset Stour.

Table 2.2: WFD Level 1 assessment outcomes for BNW6

Option ID	BNW6
Option description	This scheme assumes the development of an aquifer storage and recovery operation that will deliver a deployable output of approximately 10Ml/d. Abstraction will occur for three months at a rate of 10Ml/d, followed by a recharge phase injecting approximately 1,500Ml/d, infiltration of a pre-treated blend of water from the Stour and Avon rivers would take place up to 9 months per year. This would be at a rate of up to 5,000m^3 per day (208m^3 per hour) - totalling 1,458,000m^3 over the 9 months. Achievable infiltration rate per well would be 75m^3 per hour. During the abstraction phase, stored water would be recovered during 3 months per year at a rate of 10,000 m3 per day (417m^3 per hour) - totalling 900,000m^3 over the 3 months. The achievable abstraction rate per well would be 150m^3 per hour. The abstraction rate is likely to require at least three wells to achieve 10Ml/d, particularly if the wells are near one another. Borehole location will need careful consideration at an early stage in the investigation.

Option ID	BNW6
Number of water bodies passing WFD assessment	2
Water bodies passing WFD assessment	GB40802G805800: Lower Dorset Stour and Lower Hampshire Avon (GW); GB108043011040: Stour (Lower)
Number of water bodies requiring further WFD assessment	2
Water bodies failing WFD assessment	GB107042011300: Avon Water GB40801G804500: Upper Dorset Stour

2.1.3 BNW14: Ibsley Lake

The Level 1 WFD assessment covered six water bodies for this option. The outcomes indicated further assessment would be necessary for three water bodies: GB108043015842: Hampshire Avon (Lower) river water body, GB40802G805800: Lower Dorset Stour and Lower Hampshire Avon groundwater body, and GB30847016: Ibsley Water lake water body.

Table 2.3: WFD Level 1 assessment outcomes for BNW14

Option ID	BNW14
Option description	This option is centred on abstracting water from Ibsley lake via the existing Matcham intake and deliver additional raw water supply to Knapp Mill WTW. This be achieved through the development of 5 no. boreholes, a new pumping station at Ibsley (with associated holding tank, headworks, and pipeline) and a new raw water pipeline (9.8km).
Number of water bodies passing WFD assessment	3
Water bodies passing WFD assessment	GB108043015740: Dockens Water; GB108043015720: Linford Brook; GB108043011012: Bisterne Stream
Number of water bodies requiring further WFD assessment	3
Water bodies failing WFD assessment	GB108043015842: Hampshire Avon (Lower); GB40802G805800: Lower Dorset Stour and Lower Hampshire Avon (GW); GB30847016: Ibsley Water (lake)

2.1.4 BNW16: Christchurch and Holdenhurst WWTW IPR 3 - further treatment and transfer to Knapp Mill WTW

The Level 1 WFD assessment covered six water bodies for this option. The outcomes indicated further assessment would be necessary for one groundwater body: GB40802G805800: Lower Dorset Stour and Lower Hampshire Avon.

Table 2.4: WFD Level 1 assessment outcomes for BNW16

Option ID	BNW16
Option description	This option is centred on the re-use of final effluent from Christchurch and Holdenhurst WWTW to augment treated water supply at Fawley. This would involve new pipelines and pumping stations to Knapp Mill water treatment works from Christchurch (1.3km) and Holdenhurst (4.2km), connecting a new water treatment works to Knapp Mill inlet works via a new 2.4km pipeline, a new water treatment works consisting of, chemical dosing, ozone dosing plant, chlorine dosing, clarifier, membrane filtration, washwater recovery and sludge plant, and a treated water pumping station and pipeline (0.7km) teeing into the existing Fawley water pipeline
Number of water bodies passing WFD assessment	5

Option ID	BNW16
Water bodies passing WFD assessment	GB108043015842: Hampshire Avon (Lower) GB108043011011: Clockhouse Stream GB520804315900: Christchurch harbour (transitional) GB108043011040: Stour (Lower) GB108043011020: Mude
Number of water bodies requiring further WFD assessment	1
Water bodies failing WFD assessment	GB40802G805800: Lower Dorset Stour and Lower Hampshire Avon (GW)

2.1.5 BNW18: Alderney WTW – Reduce Treatment Losses

The Level 1 WFD assessment covered four water bodies for this option. The outcomes indicated further assessment would be necessary for two water bodies: GB40802G805800: Lower Dorset Stour and Lower Hampshire Avon groundwater body and GB40802G805600: Lower Frome and Piddle groundwater body.

Table 2.5: WFD Level 1 assessment outcomes for BNW18

Option ID	BNW18
Option description	This option is centred on removing the existing treatment losses at Alderney WTW by providing equipment to intercept, collect and return slow sand filter ripening water and providing equipment to intercept, collect, thicken and transfer solids from the pressure filters to the slow sand filters.
Number of water bodies passing WFD assessment	2
Water bodies passing WFD assessment	GB108044009570: Bourne Stream; GB108043011040: Stour (Lower)
Number of water bodies requiring further WFD assessment	2
Water bodies failing WFD assessment	GB40802G805800: Lower Dorset Stour and Lower Hampshire Avon (GW); GB40802G805600: Lower Frome and Piddle (GW)

2.1.6 BNW19: Knapp Mill WTW - Reduce Treatment Losses

The Level 1 WFD assessment covered three water bodies for this option. The outcomes indicated further assessment would be necessary for one water body: GB40802G805800: Lower Dorset Stour and Lower Hampshire Avon groundwater body.

Table 2.6: WFD Level 1 assessment outcomes for BNW19

Option ID	BNW19
Option description	This option is centred on removing the existing treatment losses at Knapp Mill water treatment work by providing a treatment process for Rapid Gravity Filter (RGF) dirty wash water flow, provide equipment to intercept, collect and return slow sand filter ripening water, and provide treatment process for dirty sand washwater flow.
Number of water bodies passing WFD assessment	2
Water bodies passing WFD assessment	GB108043015842: Hampshire Avon (Lower); GB520804315900: Christchurch Harbour
Number of water bodies requiring further WFD assessment	1

Option ID	BNW19
Water bodies failing WFD assessment	GB40802G805800: Lower Dorset Stour and Lower Hampshire Avon

2.2 Colliford WRZ

2.2.1 COL2: Colliford PS Stage 2 - River Camel abstraction

The Level 1 WFD assessment covered five water bodies for this option. The outcomes indicated further assessment would be necessary for one river water body: GB108049000190: Lower River Camel.

Table 2.7: WFD Level 1 assessment outcomes for COL2

Option ID	COL2
Option description	This option is to take water (up to 90Ml/d in periods of high flows) from the Lower River Camel via a new raw-water intake structure comprised of a weir, fish passing point, eel screen, raw water pumping stations, and a new pump pipeline discharging into a gravity pipeline connected to Restormel WTW. The new location for abstracting raw water will protect the impounded water at Colliford Reservoir during a period of drought and protect the St Neot stream from the negative effects of water release from the reservoir. This scheme shares a significant interface with the planned reversal of flow in the Restormel WTW to Colliford Impounding Reservoir raw-water pipeline scheme. As part of the combined scheme, 2no. 1-megawatt turbines are proposed to recover energy from the pipeline at Restormel water treatment works (Colliford pipeline WINEP24 (AMP8).
Number of water bodies passing WFD assessment	4
Water bodies passing WFD assessment	GB40802G800300: North Cornwall (GW); GB108049000040: St Lawrence Stream; GB108048001420: Lower River Fowey; GB40802G806600: Looe and Fowey (GW)
Number of water bodies requiring further WFD assessment	1
Water bodies failing WFD assessment	GB108049000190: Lower River Camel

2.2.2 COL3: Abstraction of Colliford compensation flows when making supply releases

The Level 1 WFD assessment covered two water bodies for this option. The outcomes indicated further assessment would be necessary for one water body: GB108048001420: Lower River Fowey water body.

Table 2.8: WFD Level 1 assessment outcomes for COL3

Option ID	COL3
Option description	The current operating practice is that a flow of water from the reservoir feeds into the downstream river continuously to negate the environmental impact of abstractions. This compensation release is a ‘passive’ activity which happens regardless of whether water is being abstracted downstream. At present, if water is required for abstraction downstream of the reservoir, water is actively released in addition to that from the compensation flow. This option will require a change to the existing abstraction licence at the River Fowey, specifically reducing the compensation flow when large water supply releases are made from Colliford reservoir for downstream abstraction. The active supply release delivers the benefits of the compensation flow between the reservoir and the abstraction point. This will need to be agreed upon with the EA in conjunction with environmental investigations and hydrological modelling.
Number of water bodies passing WFD assessment	1

Option ID	COL3
Water bodies passing WFD assessment	GB40802G806600: Looe and Fowey (GW)
Number of water bodies requiring further WFD assessment	1
Water bodies failing WFD assessment	GB108048001420: Lower River Fowey

2.2.3 COL4: Abstraction of Siblyback Reservoir compensation flows when making supply releases

The Level 1 WFD assessment covered two water bodies for this option. The outcomes indicated further assessment would be necessary for one river water body: GB108048001420: Lower River Fowey river water body.

Table 2.9: WFD Level 1 assessment outcomes for COL4

Option ID	COL4
Option description	The current operating practice is that a flow of water from the reservoir feeds into the downstream river continuously to negate the environmental impact of abstractions. This compensation release is a 'passive' activity which happens regardless of whether water is being abstracted downstream. At present, if water is required for abstraction downstream of the reservoir, water is actively released in addition to that from the compensation flow. This option will require a change to the existing abstraction licence at the River Fowey, specifically reducing the compensation flow when large water supply releases are made from Siblyback reservoir for downstream abstraction. The active supply release delivers the benefits of the compensation flow between the reservoir and the abstraction point. This will need to be agreed upon with the EA in conjunction with environmental investigations and hydrological modelling.
Number of water bodies passing WFD assessment	1
Water bodies passing WFD assessment	GB40802G806600: Looe and Fowey (GW)
Number of water bodies requiring further WFD assessment	1
Water bodies failing WFD assessment	GB108048001420: Lower River Fowey

2.2.4 COL5: Increase Wendron annual licence and de-couple from Stithians

The Level 1 WFD assessment covered four water bodies for this option. The outcomes indicated further assessment would be necessary for one river water body: GB108048001171: Upper River Cober.

Table 2.10: WFD Level 1 assessment outcomes for COL5

Option ID	COL5
Option description	This option proposes to decouple the abstraction licences at River Cober and Stithians reservoir to fully utilise the available water in the River Cober. The required amount of water would remain the same (12.5Ml/d), meaning that more water would be taken from the River Cober annually, making more water available for abstraction from Stithians reservoir. This change will need to be agreed upon with the EA in conjunction with environmental investigations and hydrological modelling.
Number of water bodies passing WFD assessment	3

Option ID	COL5
Water bodies passing WFD assessment	GB108048001820: Helford River; GB40802G800100: West Cornwall (GW); GB40802G800200: South Cornwall (GW)
Number of water bodies requiring further WFD assessment	1
Water bodies failing WFD assessment	GB108048001171: Upper River Cober

2.2.5 COL6: River Hayle abstraction

The Level 1 WFD assessment covered three water bodies for this option. The outcomes indicated further assessment would be necessary for two water bodies: GB108049000380: Hayle river water body and GB530804906700: HAYLE transitional water body.

Table 2.11: WFD Level 1 assessment outcomes for COL6

Option ID	COL6
Option description	This option is to take up to 2Ml/d of water from the River Hayle at St. Erth via an existing raw water intake structure and transfer it by a new pumping station to a new 2Ml/d package plant water treatment works (WTW). It includes reusing the existing raw water main by locating the WTW adjacent to the site of the historic water treatment works or at a new site within the St. Erth wastewater treatment site (WWTW) where the existing raw water main would need to be extended by 325m. The option would also reuse the existing water intake structure, located just above the normal tidal limit (NTL). The intake structure would have to be made compliant with the Eels (England and Wales) Regulations 2009. Treated water would then be injected into the Cornwall Spine Main.
Number of water bodies passing WFD assessment	1
Water bodies passing WFD assessment	GB40802G800100: West Cornwall (GW)
Number of water bodies requiring further WFD assessment	2
Water bodies failing WFD assessment	GB108049000380: Hayle; GB530804906700: HAYLE (transitional)

2.2.6 COL9: Leswidden Pool

The Level 1 WFD assessment covered four water bodies for this option. The outcomes indicated further assessment would be necessary for three water bodies: GB610807680001: Lands End to Trevose Head coastal water body; GB108048002090: Newlyn Riverwater body and GB30846547: Drift Reservoir lake water body.

Table 2.12: WFD Level 1 assessment outcomes for COL9

Option ID	COL9
Option description	This option will abstract 5.46 Ml/d from the pontoon arrangement on Leswidden pool to a Braithewaite-type tank located on the shore of Leswidden pool via new raw water pumps and flexi-rising main. The raw water will then be pump from the Braithwaite-type tank to Sancreed Stream that drains into Drift reservoir for treatment, via a new 1.5km pipeline.
Number of water bodies passing WFD assessment	1
Water bodies passing WFD assessment	GB40802G800100: West Cornwall (GW)

Option ID	COL9
Number of water bodies requiring further WFD assessment	3
Water bodies failing WFD assessment	GB610807680001: Lands End to Trevose Head (coastal); GB108048002090: Newlyn River; GB30846547: Drift Reservoir (lake)

2.2.7 COL15: Restormel WTW- increase treatment capacity to 110Ml/d

The Level 1 WFD assessment covered two water bodies for this option. The outcomes indicated further assessment would be necessary for one river water body: GB108048001420: Lower River Fowey.

Table 2.13: WFD Level 1 assessment outcomes for COL15

Option ID	COL15
Option description	Restormel WTW has been identified as capable of increased production, from 93Ml/d to its licensed maximum of 110Ml/d. This will require additional treatment process upgrades across the site including, River intake, Low lift pump station, Clarification, RGFs, Interstage Pumping, Granular Activated Carbon (GAC) contactors, Chlorine Contact Tank, Chemical dosing, Sludge Thickeners, Sludge Presses, Final Water Pumping, Pipelines. The additional raw water required can be supplied by a combination of the following updated dWRMP options, COL22, COL23, COL24, COL25, COL26, or COL28.
Number of water bodies passing WFD assessment	1
Water bodies passing WFD assessment	GB40802G806600: Looe and Fowey (GW)
Number of water bodies requiring further WFD assessment	1
Water bodies failing WFD assessment	GB108048001420: Lower River Fowey

2.2.8 COL16: College WTW Improvements - treatment and distribution system

The Level 1 WFD assessment covered four water bodies for this option. The outcomes indicated further assessment would be necessary for two water bodies: GB30846516: College Reservoir lake water body and GB30846526: Argal Reservoir lake water body.

Table 2.14: WFD Level 1 assessment outcomes for COL16

Option ID	COL16
Option description	This option is to upgrade the treatment capacity at College WTW in accordance with the existing abstraction licence. This will include provision of one additional RGF and refurbishment of the two existing secondary filters along with other minor upgrades to other treatment processes.
Number of water bodies passing WFD assessment	2
Water bodies passing WFD assessment	GB650806250000: Carrick Roads Outer (coastal); GB40802G800200: South Cornwall (GW)
Number of water bodies requiring further WFD assessment	2
Water bodies failing WFD assessment	GB30846516: College Reservoir (lake); GB30846526: Argal Reservoir (lake)

2.2.9 COL19: Boswyn stream/Cargenwen Reservoir/Carwynnen stream

The Level 1 WFD assessment covered four water bodies for this option. The outcomes indicated further assessment would be necessary for two water bodies: GB108049000560: Roseworthy Stream river water body and GB30846509: Cargenwyn Reservoir (lake) water body.

Table 2.15: WFD Level 1 assessment outcomes for COL19

Option ID	COL19
Option description	This option involves the following, a new pumped abstraction at the Carwynnen Stream transferring raw water to Boswyn Reservoir via a new 2.4km pipeline, a pumped abstraction at Cargenwen Reservoir transferring water to Boswyn Reservoir via a new 1.7km pipeline, a new 5.1Ml/d capacity water treatment works at Boswyn Reservoir, and a treated water pumping station and a new 3.9km pipeline to Trevu service reservoir. In 2022 we gave up our existing abstraction licence for this location. Further environmental work is required to confirm the sustainable operating parameters for this scheme and a new licence will need to be granted.
Number of water bodies passing WFD assessment	2
Water bodies passing WFD assessment	GB40802G800100: West Cornwall (GW); GB108049000600: Red River (Upper)
Number of water bodies requiring further WFD assessment	2
Water bodies failing WFD assessment	GB108049000560: Roseworthy Stream; GB30846509: Cargenwyn Reservoir (lake)

2.2.10 COL20: River Fal new abstraction

The Level 1 WFD assessment covered five water bodies for this option. The outcomes indicated further assessment would be necessary for one river water body: GB108048001270: Lower River Fal.

Table 2.16: WFD Level 1 assessment outcomes for COL20

Option ID	COL20
Option description	To abstract raw water (25Ml/d) from the River Fal at Grampound and transfer via a new raw water screened intake structure and pumping station to a new 25Ml/d water treatment works (WTW) at Grampound Road. The raw water abstraction would have to be made compliant with The Eels (England and Wales) Regulations 2009 with the addition of 1mm to 2mm size eel screens and of a suitable area to control intake velocity to 0.1-0.2m/s. Treated flows are to be distributed both locally by transfer into 2 Nr. Local distribution service reservoirs (DSR) north and south of the proposed WTW site and by Injection into the treated water Cornwall Spine Main via a new 500mm diameter trunk main.
Number of water bodies passing WFD assessment	4
Water bodies passing WFD assessment	GB40802G800200: South Cornwall (GW); GB108048002350: Tresillian River (Lower); GB108048002400: Brighton Stream; GB108048002390: Tresillian River (Upper)
Number of water bodies requiring further WFD assessment	1
Water bodies failing WFD assessment	GB108048001270: Lower River Fal

2.2.11 COL21: South Crofty & Wheal Jane - Mine Water Reclamation

The Level 1 WFD assessment covered ten water bodies for this option. The outcomes indicated further assessment would be necessary for two water bodies: GB610807680001: Lands End to Trevose Head and GB108048001231: Lower River Carnon.

Table 2.17: WFD Level 1 assessment outcomes for COL21

Option ID	COL21
Option description	This option comprises of two mine water reclamation schemes at Wheal Jane and South Crofty mines. Both schemes will further treat the mine water beyond the current HDS plant water quality, in order the discharge into Stithians reservoir via new pumping stations and new pipelines. It is assumed that the reverse osmosis (RO) concentrate for both Wheal Jane and South Crofty will be conveyed to Camborne wastewater treatment works. Wheal Jane treatment processes – Pre-treatment chemical dosing, MnO2 sand filter, Ferric chloride and sulphuric acid dosing, 0.15 µm strainer, Ultrafiltration membrane, Reverse osmosis membrane, Re-hardening and pH adjustment with calcium hydroxide. South Crofty scheme – Pre-treatment chemical dosing, 0.15 µm strainer, Ultrafiltration membrane, Reverse osmosis membrane, Re-hardening and pH adjustment with calcium hydroxide.
Number of water bodies passing WFD assessment	8
Water bodies passing WFD assessment	GB108049000600: Red River (Upper); GB108048001140: Kennal; GB108048001160: Upper Carnon River; GB108048001150: Hicks Mill Stream; GB520804814400: Carrick Roads (transitional); GB30846501: Stithians Reservoir (lake); GB40802G800100: West Cornwall (GW); GB40802G800200: South Cornwall (GW)
Number of water bodies requiring further WFD assessment	2
Water bodies failing WFD assessment	GB610807680001: Lands End to Trevose Head (coastal) GB108048001231: Lower River Carnon;

2.2.12 COL22: Roadford to Colliford via Saltash

The Level 1 WFD assessment covered two water bodies for this option. The outcomes indicated no further assessment would be necessary for the option because the types of activities do not present a risk to WFD status or objectives for any water bodies.

Table 2.18: WFD Level 1 assessment outcomes for COL22

Option ID	COL22
Option description	This option is centred on providing additional resilience in Colliford water resource zone through supplying treated water from Roadford water resource zones. This could be achieved by pushing more potable water through the existing main that links Winston Beacon service reservoir and Kit Hill service reservoir via an upgraded 200kW booster station.
Number of water bodies passing WFD assessment	2
Water bodies passing WFD assessment	GB520804714300: Plymouth Tamar (transitional) GB40802G806700: Tamar (GW)
Number of water bodies requiring further WFD assessment	0
Water bodies failing WFD assessment	N/A

2.2.13 COL23: Mayflower WTW to Kit Hill (St. Cleer)

The Level 1 WFD assessment covered five water bodies for this option. The outcomes indicated further assessment would be necessary for one water body: GB40802G806700: Tamar groundwater body.

Table 2.19: WFD Level 1 assessment outcomes for COL23

Option ID	COL23
Option description	This option is centred on connecting Colliford and Roadford water resources zones via a new bi-directional 400mm diameter 16.9km long interconnector. This interconnector would distribute treated water between Mayflower WTW in Roadford and Kit Hill service reservoir (via St Cleer WTW) in Collifordthrough 4no. new treated water pumping stations.
Number of water bodies passing WFD assessment	4
Water bodies passing WFD assessment	GB108047004040: Lower River Plym; GB520804714300: PLYMOUTH TAMAR (transitional); GB108047004070: Cotehele Stream; GB108047007670: Lower River Lynher
Number of water bodies requiring further WFD assessment	1
Water bodies failing WFD assessment	GB40802G806700: Tamar (GW)

2.2.14 COL24: Northcombe WTW to Launceston

The Level 1 WFD assessment covered eight water bodies for this option. The outcomes indicated no further assessment would be necessary for the option because the types of activities do not present a risk to WFD status or objectives for any water bodies.

Table 2.20: WFD Level 1 assessment outcomes for COL24

Option ID	COL24
Option description	This option is centred on providing water resilience in Colliford water resource through the transfer of the surplus treated water at Northcombe WTW in a drought situation. This will require a new 300mm diameter, 21km long pipeline connected into the existing treated water pumping station at Northcombe WTW.
Number of water bodies passing WFD assessment	8
Water bodies passing WFD assessment	GB108050008160: Upper River Lew (Torridge); GB108047008020: Wolf; GB108047007990: Broadwood Brook; GB108047008040: Carey; GB108047008030: Tamar (River Ottery to River Deer); GB108047007940: Tamar (River Ottery to River Lyd); GB108047007960: Kensey; GB40802G806700: Tamar (GW)
Number of water bodies requiring further WFD assessment	0
Water bodies failing WFD assessment	N/A

2.2.15 COL25: Brent Tor to Launceston

The Level 1 WFD assessment covered nine water bodies for this option. The outcomes indicated no further assessment would be necessary for the option because the types of activities do not present a risk to WFD status or objectives for any water bodies.

Table 2.21: WFD Level 1 assessment outcomes for COL25

Option ID	COL25
Option description	This option is centred on increasing resilience in the Colliford water resource zone via a new 400mm diameter 15.5km long interconnector. This interconnector looks to overcome the constraint around the availability of water in East Cornwall by importing it from the Roadford WRZ, significantly reducing the number of single source properties in Bastreet. The import of water from Roadford WRZ also helps to reduce pressure on Colliford's WTWs, freeing up treatment capacity to better utilise the additional resource made available by the drought and resilience schemes.
Number of water bodies passing WFD assessment	9
Water bodies passing WFD assessment	GB108047007960: Kensey; GB108047007920: Lowley Brook; GB108047007940: Tamar (River Ottery to River Lyd); GB108047007910: Tamar (River Lyd to River Inny); GB108047007900: Tamar (Kelly Brook); GB108047007710: Quither Brook; GB108047007850: Lumburn; GB108047007880: Burn (Tavy); GB40802G806700: Tamar (GW)
Number of water bodies requiring further WFD assessment	0
Water bodies failing WFD assessment	N/A

2.2.16 COL26: Restormel WTW to East Cornwall

The Level 1 WFD assessment covered eight water bodies for this option. The outcomes indicated no further assessment would be necessary for the option because the types of activities do not present a risk to WFD status or objectives for any water bodies.

Table 2.22: WFD Level 1 assessment outcomes for COL26

Option ID	COL26
Option description	This option would enable to transfer water between St Cleers WTW and Fox Park services reservoir in Restormel and vice versa via a new bi-directional 19km interconnector and 3 no. new potable water pumping stations.
Number of water bodies passing WFD assessment	8
Water bodies passing WFD assessment	GB108048001420: Lower River Fowey; GB108048002000: West Looe River; GB108048001440: East Looe River; GB108048001400: Lerryn River; GB108048001410: Fowey (Warleggan to St Neot); GB108048007650: Fowey (Upper); GB108048002320: Seaton; GB40802G806600: Looe and Fowey (GW).
Number of water bodies requiring further WFD assessment	0

Option ID	COL26
Water bodies failing WFD assessment	N/A

2.2.17 COL28: Desalination Plant at Par

The Level 1 WFD assessment covered seven water bodies for this option. The outcomes indicated further assessment would be necessary for two water bodies: GB620806110001: St Austell coastal water body and GB108048001420: Lower River Fowey.

Table 2.23: WFD Level 1 assessment outcomes for COL28

Option ID	COL28
Option description	This option is centred on the purchase and installation of an additional desalination modular unit at an existing desalination plant in Colliford. All existing seawater abstraction infrastructure and raw water displacement infrastructure is sized to accommodate this additional treatment capacity. The treated seawater will require additional treatment at Restormel WTW.
Number of water bodies passing WFD assessment	5
Water bodies passing WFD assessment	GB108048002291: Tywardreath Stream; GB108048002290: Par River (Lower); GB510804806400: FOWEY (Transitional); GB40802G800200: South Cornwall (GW); GB40802G806600: Looe and Fowey (GW)
Number of water bodies requiring further WFD assessment	2
Water bodies failing WFD assessment	GB620806110001: St Austell (coastal); GB108048001420: Lower River Fowey.

2.2.18 COL29: Restormel WTW - Increase Treatment Capacity to 120Ml/d

The Level 1 WFD assessment covered two water bodies for this option. The outcomes indicated further assessment would be necessary for one water body: GB108048001420: Lower River Fowey.

Table 2.24: WFD Level 1 assessment outcomes for COL29

Option ID	COL29
Option description	Restormel WTW has been identified as capable of increased production, from 93Ml/d to its licensed maximum of 120Ml/d. This will require additional treatment process upgrades across the site including, River intake – Low lift pump station, Clarification, RGFs, Interstage Pumping, GAC contactors, Chlorine Contact Tank, Chemical dosing, Sludge Thickeners, Sludge Presses, Final Water Pumping, Pipelines. The additional raw water required can be supplied by a combination of the following updated dWRMP options, COL22, COL23, COL24, COL25, COL26, or COL28.
Number of water bodies passing WFD assessment	1
Water bodies passing WFD assessment	GB40802G806600: Looe and Fowey (GW)
Number of water bodies requiring further WFD assessment	1
Water bodies failing WFD assessment	GB108048001420: Lower River Fowey

2.3 Roadford WRZ

2.3.1 ROA2: River Erme

The Level 1 WFD assessment covered two water bodies for this option. The outcomes indicated further assessment would be necessary for one river water body: GB108046005200: Erme.

Table 2.25: WFD Level 1 assessment outcomes for ROA2

Option ID	ROA2
Option description	This option looks to increase the amount of water available by moving the existing intake on the River Erme to a location where there is a higher flowrate, through the following: • Construction of a new intake approximately 7.6-8.1km downstream of the existing intake on the River Erme. • A new raw-water pumping station on a vacant plot of land within the sewage treatment works that is approximately 80m from the newabstraction point • A new reception shaft approximately 3-4m deep. • A new raw water connection to the South Devon Spine Main -approximately 910m. • Transfer raw water to Littlehempston WTW • A new abstraction licence in conjunction with the EA and WINEP investigations.
Number of water bodies passing WFD assessment	1
Water bodies passing WFD assessment	GB40802G800700: Teign, Avon, Dart and Erme (GW)
Number of water bodies requiring further WFD assessment	1
Water bodies failing WFD assessment	GB108046005200: Erme

2.3.2 ROA3: River Yealm

The Level 1 WFD assessment covered two water bodies for this option. The outcomes indicated further assessment would be necessary for one river water body: GB108047004010: Lower River Yealm.

Table 2.26: WFD Level 1 assessment outcomes for ROA3

Option ID	ROA3
Option description	This option looks to increase the amount of water available by moving the existing intake on the River Yealm to a location where there is a higher flowrate. It involves the following: • Construction of a new intake approximately 6.3km downstream of the existing intake on the River Yealm • A new raw-water pumping station on a vacant plot of land that is approximately 25m from the new abstraction point • A new reception shaft approximately 3-4m deep • A new raw water connection to the South Devon Spine Main (raw water main) - approximately 230m • A new licence in conjunction with the EA
Number of water bodies passing WFD assessment	1
Water bodies passing WFD assessment	GB40802G806700: Tamar (GW)
Number of water bodies requiring further WFD assessment	1
Water bodies failing WFD assessment	GB108047004010: Lower River Yealm

2.3.3 ROA4: Abstraction of Roadford compensation flow at Gunnislake when making supply releases

The Level 1 WFD assessment covered three water bodies for this option. The outcomes indicated further assessment would be necessary for one river water body: GB108047007860: Lower River Tamar.

Table 2.27: WFD Level 1 assessment outcomes for ROA4

Option ID	ROA4
Option description	The current operating practice is that a flow of water from the reservoir feeds into the downstream river continuously in order to minimise the environmental impact on the river. This compensation release is a 'passive' activity which happens regardless of whether water is being abstracted downstream. At present, if water is required for abstraction downstream of the reservoir we actively release water in addition to that from the compensation flow. This option will require a change to the existing abstraction licence at the River Tamar, specifically reducing the compensation flow when large water supply releases are made from Roadford reservoir for downstream abstraction. The active supply release delivers the benefits of the compensation flow between the reservoir and the abstraction point. This will need to be agreed with the EA in conjunction with environmental investigations and hydrological modelling.
Number of water bodies passing WFD assessment	2
Water bodies passing WFD assessment	GB520804714300: Plymouth Tamar (transitional); GB40802G806700: Tamar (GW)
Number of water bodies requiring further WFD assessment	1
Water bodies failing WFD assessment	GB108047007860: Lower River Tamar

2.3.4 RAO6: Upper Tamar Lake increasing annual licence

The Level 1 WFD assessment covered four water bodies for this option. The outcomes indicated further assessment would be necessary for three water bodies: GB30845277: Upper Tamar Lake and GB308454324: Lower Tamar lake water bodies, and GB108047013920: Upper River Tamar river water body.

Table 2.28: WFD Level 1 assessment outcomes for ROA6

Option ID	ROA6
Option description	This option is centred on increasing the frequency of abstractions from the Upper Tamar Lake, from 9 months to 12 months of the year. The abstraction licence change will have to be agreed with the EA in conjunction with environmental investigations, long term monitoring and hydrological modelling. There is an existing investigation and options appraisal as part of WINEP24 (Upper Tamar Lake WINEP24 (AMP8)).
Number of water bodies passing WFD assessment	1
Water bodies passing WFD assessment	GB40802G806700: Tamar (GW)
Number of water bodies requiring further WFD assessment	3
Water bodies failing WFD assessment	GB30845324: Lower Tamar Lake (lake); GB108047013920: Upper River Tamar; GB30845277: Upper Tamar Lake (lake)

2.3.5 ROA7: Expansion of Northcombe WTW to 60Ml/d

The Level 1 WFD assessment covered five water bodies for this option. The outcomes indicated further assessment would be necessary for two water bodies: GB30847000: Roadford Lake water body and GB108047008020: Wolf river water body.

Table 2.29: WFD Level 1 assessment outcomes for ROA7

Option ID	ROA7
Option description	This option is centred on constructing new and repurposing existing treatment works processes, specifically, new parallel inlet works, new flocculation tanks, conversion of manganese filters to flocculation filters, GAC contactors upgrades, Manganese contactor upgrades, conversion of water tank into chlorination tank, Thickener upgrades, and all necessary ancillaries/pipework. This will enable Northcombe WTW to treat raw water up to the licence maximum of 60Ml/d.
Number of water bodies passing WFD assessment	3
Water bodies passing WFD assessment	GB108050008160: Upper River Lew (Torridge); GB40802G806700: Tamar (GW); GB40802G800600: Torridge and Hartland Streams (GW)
Number of water bodies requiring further WFD assessment	2
Water bodies failing WFD assessment	GB30847000: Roadford Lake (lake); GB108047008020: Wolf

2.3.6 ROA12: Slade and Horedown WTW (GAC)

The Level 1 WFD assessment covered five water bodies for this option. The outcomes indicated further assessment would be necessary for three water bodies: GB30843764: Slade Lower Reservoir and GB30843794: Slade Higher Reservoir lake water bodies as well as GB610807680004: Bristol Channel Outer South coastal water body.

Table 2.30: WFD Level 1 assessment outcomes for ROA12

Option ID	ROA12
Option description	This option is centred on supplying additional raw water from Slade reservoir to Horedown WTW via a new raw water pumping station and an existing 3.5km pipeline as well as improving the water treatment quality at Horedown WTW via a new ozone/ granular activated carbon plant, increased chemical dosing, process wastewater treatment.
Number of water bodies passing WFD assessment	2
Water bodies passing WFD assessment	GB40802G801000: River Taw and North Devon Streams (GW); GB108050020060: Bradwell Stream
Number of water bodies requiring further WFD assessment	3
Water bodies failing WFD assessment	GB610807680004: Bristol Channel Outer South (coastal); GB30843764: Slade Lower Reservoir (lake) GB30843794: Slade Higher Reservoir (lake)

2.3.7 ROA13: Duckaller and Vennbridge

The Level 1 WFD assessment covered three water bodies for this option. The outcomes indicated no further assessment would be necessary for the option because the types of activities do not present a risk to WFD status or objectives for any water bodies.

Table 2.31: WFD Level 1 assessment outcomes for ROA13

Option ID	ROA13
Option description	This option is based on proposed changes to two abstraction licences at Duckaller and Vennbridge boreholes (subject to successful application) and the installation of a new nitrate reduction facility at Burrows WTW. The existing raw water main between Duckaller and Burrows disinfection tank. Treatment wastewater will be connected to the adjacent sewer system at Burrows WTW.
Number of water bodies passing WFD assessment	3
Water bodies passing WFD assessment	GB510804505600: Exe (transitional); GB40801G801700: Permian Aquifers in Central Devon (GW); GB108045008910: Dawlish Water
Number of water bodies requiring further WFD assessment	0
Water bodies failing WFD assessment	N/A

2.3.8 ROA14: Raise Avon Dam

The Level 1 WFD assessment covered three water bodies for this option. The outcomes indicated further assessment would be necessary for two water bodies: GB30846291: Avon Dam Reservoir lake water body and GB108046004941: Upper Avon river water body.

Table 2.32: WFD Level 1 assessment outcomes for ROA14

Option ID	ROA14
Option description	The preferred option is for the dam to be raised approximately 4m subject to structural engineering approval and flood risk assessments for heavily modified waterbodies. It is acknowledged that, due to the time limitation, no studies and/ or analysis has been undertaken involving a detailed review of the available project information and verification of the project parameters (including dam stability, etc). A review of the original project design information suggests that the Avon dam was provisioned for raising to a limited height. Both the design and the dam are now over 60 years old. There will need to be significant studies and investigatory work to establish the condition of the dam and surrounding geology before any view on the height-raising methodology can be established and accurately costed. A high-level schedule of quantities and method statement (as envisaged in the original design) has been produced at this stage in order to estimate a potential order-of-cost for raising the dam. This schedule and method statement is provisional pending further investigations which will include full environmental impact assessments, planning and public consultation. It is envisaged that the initial AMP period will be concerned with addressing these areas as well as the engineering methodology.
Number of water bodies passing WFD assessment	1
Water bodies passing WFD assessment	GB40802G800700: Teign, Avon, Dart and Erme (GW)
Number of water bodies requiring further WFD assessment	2
Water bodies failing WFD assessment	GB30846291: Avon Dam Reservoir (lake) GB108046004941: Upper Avon;

2.3.9 ROA15: Gatherley Phase 2

The Level 1 WFD assessment covered six water bodies for this option. The outcomes indicated further assessment would be necessary for one river water body: GB108047007731: Lower River Lyd.

Table 2.33: WFD Level 1 assessment outcomes for ROA15

Option ID	ROA15
Option description	The completion of this scheme will require the construction of an additional raw water main to provide water supply resilience through a dual main between the River Lyd abstraction point and Roadford Reservoir, allowing the full 148Ml/d to be transferred to Roadford Reservoir. This option is dependent on the successful application of an aggregate abstraction licence in AMP7 of Gunnislake, Lyd, and Gatherley.
Number of water bodies passing WFD assessment	5
Water bodies passing WFD assessment	GB108047008010: Thrushel; GB108047008020: Wolf; GB30847000: Roadford Lake (lake); GB40802G806700: Tamar (GW); GB108047007990: Broadwood Brook
Number of water bodies requiring further WFD assessment	1
Water bodies failing WFD assessment	GB108047007731: Lower River Lyd

2.3.10 ROA17: Littlehempston WTW

The Level 1 WFD assessment covered nine water bodies for this option. The outcomes indicated no further assessment would be necessary for the option because the types of activities do not present a risk to WFD status or objectives for any water bodies.

Table 2.34: WFD Level 1 assessment outcomes for ROA17

Option ID	ROA17
Option description	This option is centred on dualling the 9.22km trunk main from Littlehempston WTW to Gallows Gate distribution service reservoir (DSR) and dualling the 9.87km trunk main Littlehempston WTW leading to Blackdown DSR (Crabadon Cross WPS). This will minimise network working pressures and therefore increase the network capacity. Separate investigations are ongoing into the current capacity of the off-site high lift pumping and treated main.
Number of water bodies passing WFD assessment	9
Water bodies passing WFD assessment	GB510804605900: Dart; GB40802G800700 Teign, Avon, Dart and Erme (GW) GB108046005330: Aller Brook (Teign) – Upper; GB108046005340: Aller Brook; GB108046005430: Hems – Lower; GB108046005210: Am Brook; GB510804605900: DART (transitional); GB108046005170: Harbourne River; GB40801G801500: Torquay (GW)
Number of water bodies requiring further WFD assessment	0
Water bodies failing WFD assessment	N/A

2.3.11 ROA20: Mayflower WTW to Littlehempston WTW

The Level 1 WFD assessment covered thirteen water bodies for this option. The outcomes indicated no further assessment would be necessary for the option because the types of activities do not present a risk to WFD status or objectives for any water bodies.

Table 2.35: WFD Level 1 assessment outcomes for ROA20

Option ID	ROA20
Option description	This option is centred on construction of 38km of new 800mm dia. potable water main and pumped system to enable to transfer up to 40Ml/d. Currently there is no potable water link West-East and East-West between Roadford and Wimbleball. Licence capping and environmental destination abstraction reductions from Littlehempston WTW's sources will drive the need to transport more water into the area. The Gatherley pumped storage scheme being delivered under the Green Recovery Programme will make available more raw water storage at Roadford Reservoir.
Number of water bodies passing WFD assessment	13
Water bodies passing WFD assessment	GB108047004040: Lower River Plym GB108047003640: Tory Brook GB108047004000: Silverbridge lake GB108047004010: Lower River Yealm GB108046005200: Erme GB108046005110: Lud Brook GB108046004940: Avon – Upper GB108046005170: Harbourne River GB108046005160: Bidwell Brook GB108046008350: Dart GB510804605900: DART (transitional) GB40802G806700: Tamar (GW) GB40802G800700: Teign, Avon, Dart and Erme (GW)
Number of water bodies requiring further WFD assessment	0
Water bodies failing WFD assessment	N/A

2.3.12 ROA21: Roborough to Littlehempston WTW

The Level 1 WFD assessment covered thirteen water bodies for this option. The outcomes indicated no further assessment would be necessary for the option because the types of activities do not present a risk to WFD status or objectives for any water bodies.

Table 2.36: WFD Level 1 assessment outcomes for ROA21

Option ID	ROA21
Option description	This is an alternative solution to Mayflower WTW to South Devon Treated, consisting of a 37km raw water transfer. There is already an existing raw water main that enables the transfer of raw water between Mayflower WTW and Littlehempston WTW. However, a duplication of the raw water main would add flexibility to the network.
Number of water bodies passing WFD assessment	13
Water bodies passing WFD assessment	GB108047004040: Lower River Plym GB108047003640: Tory Brook GB108047004000: Silverbridge lake GB108047004010: Lower River Yealm GB108046005200: Emre GB108046005110: Lud Brook GB108046004940: Avon – Upper GB108046005170: Harbourne River GB108046005160: Bidwell Brook GB108046008350: Dart GB510804605900: DART (transitional) GB40802G806700: Tamar (GW) GB40802G800700: Teign, Avon, Dart and Erme (GW)

Option ID	ROA21
Number of water bodies requiring further WFD assessment	0
Water bodies failing WFD assessment	N/A

2.4 Wimbleball WRZ

2.4.1 WIM1: Abstraction of Wimbleball compensation flow at Northbridge when making supply releases

The Level 1 WFD assessment covered three water bodies for this option. The outcomes indicated further assessment would be necessary for one river water body: GB108045009060: Exe (Culm to Creedy).

Table 2.37: WFD Level 1 assessment outcomes for WIM1

Option ID	WIM1
Option description	The current operating practice is that a flow of water from the reservoir feeds into the downstream river continuously in order to minimise the environmental impact on the river. This compensation release is a 'passive'activity which happens regardless of whether water is being abstracted downstream. At present, if water is required for abstraction downstream of the reservoir, we actively release water in addition to that from the compensation flow. This option will require a change to the existing abstraction licence at the Northbridge River, specifically reducing the compensation flow when large water supply releases are made from Wimbleball reservoir for downstream abstraction. The active supply release delivers the benefits of the compensation flow between the reservoir and the abstraction point. This will need to be agreed upon with the EA in conjunction with environmental investigations and hydrological modelling.
Number of water bodies passing WFD assessment	2
Water bodies passing WFD assessment	GB108045015050: Exe (Barle to Culm); GB40802G800900: Exeter-Whiddon Down Culm (GW)
Number of water bodies requiring further WFD assessment	1
Water bodies failing WFD assessment	GB108045009060: Exe (Culm to Creedy)

2.4.2 WIM2: Sidford borehole commissioning

The Level 1 WFD assessment covered two water bodies for this option. The outcomes indicated further assessment would be necessary for one groundwater body: GB40802G802800: Sidmouth-Honiton, Mercia Mudstone.

Table 2.38: WFD Level 1 assessment outcomes for WIM2

Option ID	WIM2
Option description	This option utilises a new borehole in Sidford (which totals 4 boreholes on a duty/duty/duty/standby arrangement), that feed raw water into the new water treatment works comprising of, catalytic pressure filters, chlorination, aeration tank, contact tank, and supply tank. The treated water will be distributed to an existing booster pumping station via a new treated water main, then onto Branscombe water tower. Further borehole pump testing will be required during detailed design.
Number of water bodies passing WFD assessment	1
Water bodies passing WFD assessment	GB108045009160: Sid

Option ID	WIM2
Number of water bodies requiring further WFD assessment	1
Water bodies failing WFD assessment	GB40802G802800: Sidmouth-Honiton, Mercia Mudstone (GW)

2.4.3 WIM4: Wilmington springs annual abstraction increase

The Level 1 WFD assessment covered two water bodies for this option. The outcomes indicated further assessment would be necessary for one river water body: GB108045008880: Umborne Brook.

Table 2.39: WFD Level 1 assessment outcomes for WIM4

Option ID	WIM4
Option description	This option is centred on increasing the frequency of abstraction from Wilmington Springs, from 9 months to 12 months of the year. The abstraction licence change will have to be agreed upon with the EA in conjunction with environmental investigations, long term monitoring and hydrological modelling.
Number of water bodies passing WFD assessment	1
Water bodies passing WFD assessment	GB40801G802400: East Devon – Greensand (GW)
Number of water bodies requiring further WFD assessment	1
Water bodies failing WFD assessment	GB108045008880: Umborne Brook;

2.4.4 WIM5: Indirect potable reuse - stream support for Dotton WTW

The Level 1 WFD assessment covered four water bodies for this option. The outcomes indicated further assessment would be necessary for one river water body GB108045009160: Sid.

Table 2.40: WFD Level 1 assessment outcomes for WIM5

Option ID	WIM5
Option description	Indirect potable reuse – stream support for Dotton WTW. This option is centred on providing compensation flow (Stream Support) to the River Otter during low-flow periods via pumped treated final effluent from Sidmouth WwTW directly to the river using a new pumping station and pipeline (4.55km) and an additional clarifier, nitrifying trickling filter, and chemical dosing to treat final effluent to the required quality for discharge. This, therefore, negates the need for compensation flows from Dotton borehole no.5, as per the environmental determination in the Dotton catchment.
Number of water bodies passing WFD assessment	3
Water bodies passing WFD assessment	GB108045009170: Lower River Otter GB40802G802800: Sidmouth-Honinton, Mercia Mudstone (GW) GB40801G801900: Otter Valley (GW)
Number of water bodies requiring further WFD assessment	1
Water bodies failing WFD assessment	GB108045009160: Sid

2.4.5 WIM6: Increase Allers WTW capacity

The Level 1 WFD assessment covered two water bodies for this option. The outcomes indicated no further assessment would be necessary for the option because the types of activities do not present a risk to WFD status or objectives for any water bodies.

Table 2.41: WFD Level 1 assessment outcomes for WIM6

Option ID	WIM6
Option description	This option is centred on increasing water production at Allers WTW, subject to an increase in the Bolham licence and a reduction in the Dotton licence (winter) to be agreed with EA. To facilitate this production increase, the following treatment upgrades are required; a new river intake (eel screens, weir structure, upsize pumps), Clarification, RGFs, Interstage Pumping, GAC Contactors, Chemical Dosing - Sulphuric Acid, Lime, Polyaluminum Chloride, Clarifier Polymer, Chlorine, SO2, PO4 and Sludge Polymer, Final Water Pumping, and Pipelines.
Number of water bodies passing WFD assessment	2
Water bodies passing WFD assessment	GB108045015050: Exe (Barle to Culm); GB40801G801700: Permian Aquifers in Central Devon (GW)
Number of water bodies requiring further WFD assessment	0
Water bodies failing WFD assessment	N/A

2.4.6 WIM7: Increase Pynes to licence limit 66.46Ml/d

The Level 1 WFD assessment covered four water bodies for this option. The outcomes indicated further assessment would be necessary for two river water bodies: GB108045009040: Exe (Creedy to Estuary) and GB108045009060: Exe (Culm to Creedy).

Table 2.42: WFD Level 1 assessment outcomes for WIM7

Option ID	WIM7
Option description	This option is to upgrade the existing water treatment works to make full use of the current licensed flow (66.46Ml/d) abstracted at River Exe at Northbridge, through the following: construction of new or enhanced intake structure including screening and pumping, new Inlet flash mixer, 2no. flocculators, 1no additional clarifier, 2no additional rapid gravity filters. • 2no additional granular activated carbon (GAC) contactors, Upgraded wastewater and sludge processing, Upgraded chemical dosing system, Additional/Upsized interprocess pumping/pipework and upgrades to feed pumps • Upgrade Power supply/ICA system/equipment and integrate with existing • Consultation with the EA regarding changes to abstraction licence
Number of water bodies passing WFD assessment	2
Water bodies passing WFD assessment	GB40802G800900: Exeter-Whiddon Down Culm (GW) GB108045009070: Lower Creedy
Number of water bodies requiring further WFD assessment	2
Water bodies failing WFD assessment	GB108045009060: Exe (Culm to Creedy) GB108045009040: Exe (Creedy to Estuary)

2.4.7 WIM8: Brampford Speke borehole

The Level 1 WFD assessment covered two water bodies for this option. The outcomes indicated further assessment would be necessary for one groundwater body: GB40801G801700: Permian Aquifers in Central Devon.

Table 2.43: WFD Level 1 assessment outcomes for WIM8

Option ID	WIM8
Option description	This option will be centred on the following, M&E renewal of existing borehole (new pumps, MCC, telemetry etc), transfer of raw water flow to river Exe by existing pipelines and new headwalls to riverbank at discharge locations. The current WINEP19 investigation will ensure that the new licence will be improved and more sustainable.
Number of water bodies passing WFD assessment	1
Water bodies passing WFD assessment	GB108045015050: Exe (Barle to Culm)
Number of water bodies requiring further WFD assessment	1
Water bodies failing WFD assessment	GB40801G801700: Permian Aquifers in Central Devon (GW)

2.4.8 WIM9: Stoke Canon borehole

The Level 1 WFD assessment covered two water bodies for this option. The outcomes indicated further assessment would be necessary for one groundwater body: GB40801G801700: Permian Aquifers in Central Devon.

Table 2.44: WFD Level 1 assessment outcomes for WIM9

Option ID	WIM9
Option description	This option is centred on the following, M&E renewal of the existing borehole (new pumps, MCC, telemetry etc), transfer of raw water flow to river Exe by existing pipelines, new headwalls to riverbank at discharge locations and new WPD power supply. The current WINEP19 investigation will ensure that the new licence will be improved and more sustainable.
Number of water bodies passing WFD assessment	1
Water bodies passing WFD assessment	GB108045015050: Exe (Barle to Culm)
Number of water bodies requiring further WFD assessment	1
Water bodies failing WFD assessment	GB40801G801700: Permian Aquifers in Central Devon (GW)

2.4.9 WIM11: Couchill Springs, Seaton

The Level 1 WFD assessment covered two water bodies for this option. The outcomes indicated no further assessment would be necessary for the option because the types of activities do not present a risk to WFD status or objectives for any water bodies.

Table 2.45: WFD Level 1 assessment outcomes for WIM11

Option ID	WIM11
Option description	This option involves the transfer of water from Couchill Springs to Bovey Lane WTW. A new pumping station at Couchill Springs is required along with new assets at Bovey

Option ID	WIM11
	Lane including a break tank, filters & UV disinfection. The solution would also utilise existing high lift pumps for treated water distribution.
Number of water bodies passing WFD assessment	2
Water bodies passing WFD assessment	GB620806560000: Lyme Bay East; GB40801G802400: East Devon – Greensland (GW)
Number of water bodies requiring further WFD assessment	0
Water bodies failing WFD assessment	N/A

2.4.10 WIM12: Aller Springs

The Level 1 WFD assessment covered three water bodies for this option. The outcomes indicated further assessment would be necessary for two groundwater bodies: GB40801G801700: Permian Aquifers in Central Devon and GB40802G801800: Central Devon and Exe – Aslesbeare Mudstone.

Table 2.46: WFD Level 1 assessment outcomes for WIM12

Option ID	WIM12
Option description	The option proposes transfer of water from Allers Springs to Allers WTW. A new raw water pumping station consisting of concrete wet well & 2no. submersible pumps is required at Allers springs in order to feed existing raw water tank and treatment at Allers WTW.
Number of water bodies passing WFD assessment	1
Water bodies passing WFD assessment	GB108045015030: Lowman
Number of water bodies requiring further WFD assessment	2
Water bodies failing WFD assessment	GB40801G801700: Permian Aquifers in Central Devon (GW); GB40802G801800: Central Devon and Exe – Aslesbeare Mudstone (GW)

2.4.11 WIM14: Whitecross Distribution Upgrade

The Level 1 WFD assessment covered four water bodies for this option. The outcomes indicated no further assessment would be necessary for the option because the types of activities do not present a risk to WFD status or objectives for any water bodies.

Table 2.47: WFD Level 1 assessment outcomes for WIM14

Option ID	WIM14
Option description	A new main allowing 5Ml/d of additional water from Pynes WTW supply zone to offset any deficit in the future production capabilities of Dotton WTW resulting from water quality of the boreholes or any potential licence changes. The increased resilience in the network would provide the flexibility to support Dotton, Ottery St.Mary Intermediate WTW and Allers WTW. The new main will be 5.7km long and 500mm diameter and will run from Whitecross Service Reservoir to Sowton Industrial Estate.
Number of water bodies passing WFD assessment	4
Water bodies passing WFD assessment	GB108045008750: Lower Clyst GB108045008710: Grindle Brook GB40802G801800: Central Devon and Exe – Aylesbeare Mudstone (GW) GB40801G801700: Permian Aquifer in Central Devon (GW)

Option ID	WIM14
Number of water bodies requiring further WFD assessment	0
Water bodies failing WFD assessment	N/A

2.4.12 WIM15: Northcombe WTW to Allers WTW

The Level 1 WFD assessment covered twenty-five water bodies for this option. The outcomes indicated further assessment would be necessary for two groundwater bodies: GB40802G800600: Torridge and Hartland Streams and GB40802G801000: River Taw and North Devon Streams.

Table 2.48: WFD Level 1 assessment outcomes for WIM15

Option ID	WIM15
Option description	This option proposes a new 600mm diameter 74Km long main linking Northcombe WTW to Allers WTW and a 1100kw pumping station enabling Roadford WRZ to support Wimbleball WRZ (20Ml/d), especially for a 1 in 500 year drought resilience.
Number of water bodies passing WFD assessment	23
Water bodies passing WFD assessment	GB108050008160: Upper River Lew (Torridge); GB108050008210: Wagaford water; GB108050008230: Pulworthy Brook; GB108050008220: Lower River Lew (Torridge); GB108050008130: Lower River Okement; GB108050008110: Middle River Okement; GB108050014090: Hole Brook; GB108050014170: Bullow Brook; GB108050014210: Taw (River Yeo to Little Dart River); GB108050014340: Lower Little River Dart; GB108050013960: Huntacott Water; GB108050014100: Little Silver Stream; GB108050013990: Sturcombe River; GB108050014120: Crooked Oak; GB108045015040: Iron Mill Stream; GB108050013980: Upper Little Dart River; GB108045015010: Dart (Exe); GB108045014990: Calverleigh Stream; GB108045015050: Exe (Barle to Culm); GB108045015030: Lowman; GB40802G806700: Tamar (GW); GB40802G801800: Central Devon and Exe – Aylesbeare Mudstone (GW); GB40801G801700: Permian Aquifers in Central Devon (GW)
Number of water bodies requiring further WFD assessment	2
Water bodies failing WFD assessment	GB40802G800600: Torridge and Hartland Streams (GW); GB40802G801000: River Taw and North Devon Streams (GW).

2.4.13 WIM16: FE reuse - Countess Wear and Mear Lane WwTW to River Exe

The Level 1 WFD assessment covered eleven water bodies for this option. The outcomes indicated further assessment would be necessary for one groundwater body: GB40802G800600: Permian Aquifers in Central Devon.

Table 2.49: WFD Level 1 assessment outcomes for WIM16

Option ID	WIM16
Option description	This option is centred on reusing the final effluent from 2no. wastewater treatment works, Countess Wear and Maer Lane via new pumping stations and pipelines, providing additional treatment via a new FE recycling centre, and discharging the treated water to the river Exe via a new pumping station and pipeline. This will provide additional raw resources for abstraction and treatment at Pynes WTW.
Number of water bodies passing WFD assessment	10
Water bodies passing WFD assessment	GB40802G800900 – Exeter-Whiddon Down Culm (GW) GB40802G801800 – Central Devon and Exe – Aylesbeare Mudstone (GW) GB108045009060 – Exe (Culm to Creedy) GB108045008860 – Upper Clyst GB510804505600 – EXE (transitional) GB108045014970 – Lower Culm GB108045008750 – Lower Clyst GB108045008710 – Grindle Brook GB108045008980 – Polly Brook GB650806420000 – Lyme Bay West (coastal)
Number of water bodies requiring further WFD assessment	1
Water bodies failing WFD assessment	GB40801G801700 – Permian Aquifers in Central Devon (GW)

2.5 SRO options

The six SRO options are subject to individual reporting under the Regulators Alliance for Progressing Infrastructure Development (RAPID) gated process. The WFD assessments for these options are reported separately, and summarised in this section.

2.5.1 BNW7: SRO – Mendips Quarry Raw water transfer and augmentation of the River Stour

The Level 1 WFD assessment covered 28 water bodies for this option. The outcomes indicated further assessment would be necessary for nine water bodies: GB109053027371: Bristol Avon (By Bk to Netham Weir), GB109053021990: Whatley Bk - source to conf Mells R, GB109053022000: Nunney Bk - source to conf Mells R, GB109053022080: Frome - source to conf Maiden Bradley Bk, GB109053022090: Maiden Bradley Bk - source to conf R Frome, GB108043016051: Stour (Middle u/s Pimperne Brook), GB108043016052: Stour (Middle d/s Pimperne Brook), GB40901G804600: Mendips and GB108043011040: Stour (Lower).

Table 2.50: WFD Level 1 assessment outcomes for BNW7

Option ID	BNW7
Option description	This option is centred on abstracting raw water from Mendip Quarries and transferring it to augment flows in the River Stour, to subsequently be abstracted by existing infrastructure to serve Wessex and Bournemouth Water. It will be necessary to purchase or obtain a leasehold of the quarry (leasehold would require a long-term agreement for access to water) and construct a new intake on the River Avon to support refilling the reservoir. A new transfer pipe from the river to the quarry will be required and along with a new shaft from where the flow will enter the quarry. The raw water will be treated for invasive non-native species and water quality before being transferred to the River Stour. Transfer of water to the River Stour (near Hinton St. Mary) from the quarry would be via a new pipeline (31.5km). A raw water abstraction of 50Ml/d has been considered at the current ‘Regulators Alliance for Progressing Infrastructure Development’ (RAPID) stage.

Option ID	BNW7
Number of water bodies passing WFD assessment	19
Water bodies passing WFD assessment	GB109053021880: Newton Bk - source to conf R Avon (Brist) GB109053022290: Cam Bk - source to conf Wellow Bk GB109053022271: Wellow Bk - Snails Bk to Bristol Avon GB109053022230: Kilmersdon Str - source to conf Snails Bk GB109053022020: Mells source to conf with Somerset Frome GB109053022101: Frome (Maiden Bradley to Mells) GB108052021140: Brue - Upper GB109053022110: Rodden Bk - source to conf R Frome GB108043022520: Wylye (Headwaters) GB108043015850: Cale GB108043016170: Stour (Upper) GB40901G305800: Inferior Oolite and Bridport Sands GB40902G804800: Bristol Triassic GB40902G302900: Bristol Avon Forest Marble GB40802G805400: Forest Marble (East of Bruton) GB40802G804400: Corallian - Wincanton GB40801G806900: Upper Hampshire Avon GB108043011050: Moors GB40802G805800: Lower Dorset Stour and Lower Hampshire Avon
Number of water bodies requiring further WFD assessment	9
Water bodies failing WFD assessment	GB109053027371: Bristol Avon (By Bk to Netham Weir) GB109053021990: Whatley Bk - source to conf Mells R GB109053022000: Nunney Bk - source to conf Mells R GB109053022080: Frome - source to conf Maiden Bradley Bk GB109053022090: Maiden Bradley Bk - source to conf R Frome GB108043016051: Stour (Middle u/s Pimperne Brook) GB108043016052: Stour (Middle d/s Pimperne Brook) GB40901G804600: Mendips GB108043011040: Stour (Lower)

2.5.2 BNW8: SRO – Poole Harbour FE-reuse

The Level 1 WFD assessment covered five water bodies for this option. The outcomes indicated further assessment would be necessary for two water bodies: GB108043011040: Stour (Lower) and GB108043016052: Stour (Middle d/s Pimperne Brook).

Table 2.51: WFD Level 1 assessment outcomes for BNW8

Option ID	BNW8
Option description	This option is to recycle treated final effluent (FE) from Poole Wastewater Treatment Works (WWTW), via a new final effluent recycling centre, to augment flows in the River Stour for abstraction at Longham Lakes. Effluent would be diverted from Holes Bay (Coastal Water) to the Corfe Mullen area of the River Stour.
Number of water bodies passing WFD assessment	3
Water bodies passing WFD assessment	GB520804415800: Poole Harbour GB108043015842: Hampshire Avon (Lower) GB520804315900: Christchurch Harbour
Number of water bodies requiring further WFD assessment	2
Water bodies failing WFD assessment	GB108043011040: Stour (Lower) GB108043016052: Stour (Middle d/s Pimperne Brook)

2.5.3 BNW17, ROA19, WIM13, WIM18: SRO – Cheddar 2 new strategic regional reservoir and transfer SRO

Cheddar 2 SRO consists of 4 sub-options:

- BNW17 – Cheddar 2 to Summerslade
- ROA19 – Cheddar 2 to Prewley
- WIM13 – Cheddar 2 to Parsonage
- WIM18 – Cheddar 2 to Bickham Moor

Out of these four sub-options, only BNW17 has a formal Level 1 assessment in line with the ACWG WFD approach. For the other three sub-options WFD conclusions have been summarised based on the available SEA appraisal only. Further assessment will be required for those options carried forward in the updated dWRMP.

2.5.3.1 BNW17: Cheddar 2 to Summerslade

The Level 1 WFD assessment covered 17 water bodies for this option. The outcomes indicated further assessment would be necessary for two water bodies: GB109052021540: Cheddar Yeo – source to conf River Axe and GB109052021570: Axe - Cocklake to Brean Cross Sluice.

Table 2.52: WFD Level 1 assessment outcomes for BNW17

Option ID	BNW17
Option description	This iteration of the Cheddar 2 strategic resource option is a treated water transfer to from Bristol Water to Bournemouth water. The key transfer stages are listed below: - Raw water (spring water) pumping station and pipeline to Cheddar two reservoir - Raw water pipeline for River Axe preliminary treatment works to the reservoir - Cheddar two reservoir construction - Cheddar to Honeyhurst WTW pipeline - Construction of Honeyhurst WTW - Treated water pipeline and pumping station from Honeyhurst WTW to Summerslade Service Reservoir The water from Cheddar 2 can then be used to offset the 20Ml/d south (Sturminster/Corfe Mullen) to north (Summerslade WSR) that occurs during the spring/summer months.
Number of water bodies passing WFD assessment	15
Water bodies passing WFD assessment	GB530905415401: Severn Lower GB40902G804700: Wells GB40901G804600: Mendips (GW) GB109052021520: Axe – source to Cocklake GB108052021240: Keward Brook GB108052021221: Sheppey GB108052021171: Hartlake GB108052021172: Redlake GB108052021173: Whitelake GB108052021160: Alham GB108052021140: Brue – Upper GB109053022080: Frome – source to conf Maiden Bradley Bk GB108043022520: Wylye (Headwaters) GB109053022090: Maiden Bradley Bk - source to conf R Frome GB109053022110: Rodden Bk - source to conf R Frome
Number of water bodies requiring further WFD assessment	2
Water bodies failing WFD assessment	GB109052021540: Cheddar Yeo - source to conf River Axe GB109052021570: Axe - Cocklake to Brean Cross Sluice

2.5.3.2 ROA19: Cheddar 2 to Prewley

Currently it is anticipated that approximately 35 water bodies will be intersected along Cheddar 2 to Prewley iteration route. ROA19, WIM13 and WIM18 all use the same source of water for the scheme and impacts include operational effects of Cheddar 2 reservoir use which are discussed in the BNW17 Level 2 assessment.

Due to the extent of the proposed option route, there is potential for deterioration in WFD status and objectives although with the current information level, these impacts remain unquantified and unassessed. Mitigation and further studies will be required to confirm option feasibility and it is acknowledged that the route is subject to change with further option development.

Due to limited information at this time, no Level 2 assessment has been carried out. However, this option is not selected as part of any of the updated dWRMP24 plans and therefore this option is not considered further.

2.5.3.3 WIM13: Cheddar 2 to Parsonage

Currently it is anticipated that approximately 24 water bodies will be intersected along Cheddar 2 to Parsonage iteration route. ROA19, WIM13 and WIM18 all use the same source of water for the scheme and impacts include operational effects of Cheddar 2 reservoir use which are discussed in the BNW17 Level 2 assessment.

Due to the extent of the proposed option route, there is potential for deterioration in WFD status and objectives although with the current information level these impacts remain unquantified and unassessed. Mitigation and further studies will be required to confirm option feasibility and it is acknowledged that the route is subject to change with further option development.

Due to limited information at this time, no Level 2 assessment has been carried out. However, this option is not selected as part of any of the updated dWRMP24 plans and therefore this option is not considered further.

2.5.3.4 WIM18: Cheddar 2 to Bickham Moor

ROA19, WIM13 and WIM18 all use the same source of water for the scheme and impacts include operational effects of Cheddar 2 reservoir use which are discussed in the BNW17 Level 2 assessment.

This option has been selected as part of the BVP for the SWW updated dWRMP24. However, it is acknowledged that the proposed route is subject to change with further option development.

Currently, it is anticipated that the option route will intersect the following waterbodies:

- Cheddar Yeo - source to conf River Axe (GB109052021540)
- Axe - source to Cocklake (GB109052021520)
- Shipham Rhyne (Trib of Brue/Cripps) (GB108052021510)
- Mark Yeo (GB108052021250)
- Brue - conf with North Drain to Tidal Limit (GB108052021260)
- South Drain (GB108052021181)
- Cannington Bk – Lower (GB108052021310)
- Fiddington Brook (GB108052021320)
- Kilve Stream (GB108051020350)
- Tone - Upper (GB108052021370)
- Upper Batherm (GB108045014860)
- Exe (Haddeo to Barle) (GB108045015060)

- Lower Barle (GB108045015100)
- Brockey River (GB108045015080)

Moreover, it is anticipated that this option will be located within the following groundwater bodies:

- Wells (GB40902G804700)
- Tone and North Somerset Streams (GB40802G806400)
- Central Devon and Exe - Aylesbeare Mudstone (GB40802G801800)

Due to the extent of the proposed option route, there is potential for deterioration in WFD status and objectives although with the current information level, these impacts remain unquantified and unassessed.

Mitigation will be required to minimise the impacts of the option activities. Currently, mitigation is proposed in the form of following good construction practice methods. For example, using pollution control measures to minimise pollution from chemical and fuel spills and suppressing dust dispersion. Appropriate precautionary measures should also be taken when working in channels of watercourses, to appropriately manage the potential for deposition of silt or release of other forms of suspended material or pollution within the water column.

Additionally, the proposed option will pass through the Ge-Mare Farm Fields SSSI GWDTE and multiple other GWDTEs are also located within close proximity to the option. Therefore, mitigation is proposed in the form of considering an alternative diversion of the proposed option route, in order to avoid passing the Ge-Mare Farm Fields SSSI GWDTE, main rivers, and ordinary streams. If alternative diversion is not possible, directional drilling methods shall be adopted to avoid direct encroaching.

Further investigations will be undertaken at an appropriate time, in line with the date that the option is required for the BVP. These investigations are required to confirm option feasibility and could include undertaking a risk assessment for the proposed excavation works and dewatering to ensure no adverse impact on watercourses, wetland habitats or abstractions. Further detailed designs are required to ensure the depth of the alignment would not impede groundwater flow during operational phase. Furthermore, during operation, the downstream water level and water quality should be closely monitored to minimise the effect of the reservoir.

Overall, for this option, it is anticipated that both a Level 1 basic screening and a Level 2 detailed impact assessment will be required, in line with the ACWG framework described in section 1.4.

2.6 Drought Options

2.6.1 dB1: Wimborne Borehole

The Level 1 WFD assessment covered two water bodies for this option. The outcomes indicated further assessment would be necessary for one water body: GB40802G805900: Reading Beds groundwater body.

Table 2.53: WFD Level 1 assessment outcomes for dB1

Option ID	dB1
Option description	This scheme entails abstracting from a disused, licensed groundwater source, under drought conditions, using new pumps and pipeline, distributing the abstracted water to Wimborne WTW, subject to a successful drought permit application.
Number of water bodies passing WFD assessment	1
Water bodies passing WFD assessment	GB108043011090: Allen (Lower)

Option ID	dB1
Number of water bodies requiring further WFD assessment	1
Water bodies failing WFD assessment	GB40802G805900: Reading Beds (GW)

2.6.2 dB2: Stanbridge Licence

The Level 1 WFD assessment covered two water bodies for this option. The outcomes indicated further assessment would be necessary for one water body: GB40801G804500 – Upper Dorset Stour groundwater body.

Table 2.54: WFD Level 1 assessment outcomes for dB2

Option ID	dB2
Option description	The scheme entails increasing the daily licence limit, to enable abstraction above the current daily licence limit under drought conditions, in order to provide additional raw water to Wimborne WTW, subject to a successful drought permit application.
Number of water bodies passing WFD assessment	1
Water bodies passing WFD assessment	GB108043015790: Allen (Headwaters)
Number of water bodies requiring further WFD assessment	1
Water bodies failing WFD assessment	GB40801G804500: Upper Dorset Stour (GW)

2.6.3 dCS1/E: Colliford not releasing compensation flows when making supply releases

The Level 1 WFD assessment covered two water bodies for this option. The outcomes indicated further assessment would be necessary for one water body: GB108048001420: Lower River Fowey river water body.

Table 2.55: WFD Level 1 assessment outcomes for dCS1/E

Option ID	dCS1/E
Option description	The scheme entails abstracting all the compensation flows released from Colliford reservoir into Restormel River when making supply releases during the summer months, under a new drought permit.
Number of water bodies passing WFD assessment	1
Water bodies passing WFD assessment	GB40802G806600: Looe and Fowey (GW)
Number of water bodies requiring further WFD assessment	1
Water bodies failing WFD assessment	GB108048001420: Lower River Fowey

2.6.4 dCS11/E: Siblyback not releasing compensation flows when making supply releases

The Level 1 WFD assessment covered four water bodies for this option. The outcomes indicated further assessment would be necessary for one water body: GB108048001420: Lower River Fowey river water body.

Table 2.56: WFD Level 1 assessment outcomes for dCS11/E

Option ID	dCS11/E
Option description	This scheme entails reducing the volume of compensation flows from the Siblyback Reservoir to the Withey Brook when making supply releases, during the summer months, under a new drought permit.
Number of water bodies passing WFD assessment	3
Water bodies passing WFD assessment	GB40802G806600: Looe and Fowey (GW) GB108048007650: Fowey (Upper) GB108048001410: Fowey (Warleggen to St Neot)
Number of water bodies requiring further WFD assessment	1
Water bodies failing WFD assessment	GB108048001420: Lower River Fowey

2.6.5 dR2: Slade Reservoir

The Level 1 WFD assessment covered four water bodies for this option. The outcomes indicated further assessment would be necessary for all four water bodies: GB30843764: Slade Lower Reservoir (lake),GB30843794: Slade Higher Reservoir (lake), GB610807680004: Bristol Channel Outer South and GB40802G801000: River Taw and North Devon Streams.

Table 2.57: WFD Level 1 assessment outcomes for dR2

Option ID	dR2
Option description	The scheme entails re-introducing a disused, licensed raw water source at Slade reservoir, installing pumps to abstract the water (during drought conditions) and transferring the abstracted water to Horedown WTW via an existing pipeline. This is subject to an approved drought permit from the EA because the source has been disused for a long period of time.
Number of water bodies passing WFD assessment	0
Water bodies passing WFD assessment	
Number of water bodies requiring further WFD assessment	4
Water bodies failing WFD assessment	GB610807680004: Bristol Channel Outer South GB40802G801000: River Taw and North Devon Streams GB30843764: Slade Lower Reservoir (lake) GB30843794: Slade Higher Reservoir (lake)

2.6.6 dR3: Challacombe Reservoir

The Level 1 WFD assessment covered two water bodies for this option. The outcomes indicated further assessment would be necessary for two water bodies: GB108050019950: Bray (Source to Hole Water) river water body and GB40802G801000: River Taw and North Devon Streams groundwater body.

Table 2.58: WFD Level 1 assessment outcomes for dR3

Option ID	dR3
Option description	The scheme entails re-introducing a disused, previously licensed raw water source, and transferring the abstracted water, under drought conditions, to Horedown WTW via an existing raw water pipeline. This is subject to an approved drought permit from the EA.
Number of water bodies passing WFD assessment	0
Water bodies passing WFD assessment	N/A

Option ID	dR3
Number of water bodies requiring further WFD assessment	2
Water bodies failing WFD assessment	GB108050019950: Bray (Source to Hole Water); GB40802G801000: River Taw and North Devon Streams (GW).

2.6.7 dR4: Meldon/Vellake to Roadford

The Level 1 WFD assessment covered seven water bodies for this option. The outcomes indicated further assessment would be necessary for two water bodies: GB30845945: Meldon Reservoir (lake) and GB108050008080: West Okement.

Table 2.59: WFD Level 1 assessment outcomes for dR4

Option ID	dR4
Option description	The scheme entails abstracting from an existing river intake on the river West Okemont at Vellake and laying a new pipeline to transfer the abstracted raw water from Vellake to Roadford Reservoir during drought conditions. This is subject to an approved drought permit from the EA.
Number of water bodies passing WFD assessment	5
Water bodies passing WFD assessment	GB108047007770: Lew (Tamar); GB108047008010: Thrushel; GB108047008020: Wolf; GB30847000: Roadford Lake (lake); GB40802G806700: Tamar (GW)
Number of water bodies requiring further WFD assessment	2
Water bodies failing WFD assessment	GB30845945: Meldon Reservoir (lake); GB108050008080: West Okement

2.6.8 dR5: Lee Moor unused quarries

The Level 1 WFD assessment covered three water bodies for this option. The outcomes indicated further assessment would be necessary for one groundwater body: GB40802G806700: Tamar groundwater body.

Table 2.60: WFD Level 1 assessment outcomes for dR5

Option ID	dR5
Option description	The scheme entails abstracting from three quarries (Lee Moor pit, Whitehill Yeo pit & Cholwichtown pit, during drought conditions. The option involves the construction of a new pipeline adjacent to the Devon spine main from Lee Moor to Littlehempston WTW for treatment.
Number of water bodies passing WFD assessment	2
Water bodies passing WFD assessment	GB108047004020: Piall; GB108047003640: Tory Brook
Number of water bodies requiring further WFD assessment	1
Water bodies failing WFD assessment	GB40802G806700: Tamar (GW)

2.6.9 dRS15/E: Roadford not releasing compensation flows when making supply releases

The Level 1 WFD assessment covered three water bodies for this option. The outcomes indicated further assessment would be necessary for one water body: GB108047007860: Lower River Tamar.

Table 2.61: WFD Level 1 assessment outcomes for dRS15/E

Option ID	dRS15/E
Option description	The scheme entails abstracting all the compensation flows released from Roadford reservoir into Gunnislake River when making supply releases, under drought conditions. This is subject to an approved drought permit from the EA.
Number of water bodies passing WFD assessment	2
Water bodies passing WFD assessment	GB40802G806700: Tamar (GW); GB520804714300: PLYMOUTH TAMAR
Number of water bodies requiring further WFD assessment	1
Water bodies failing WFD assessment	GB108047007860: Lower River Tamar

2.6.10 dW1: Brampford Speke and Stoke Canon (North Exeter Boreholes)

The Level 1 WFD assessment covered two water bodies for this option. The outcomes indicated further assessment would be necessary for both water bodies: GB108045015050: Exe (Barle to Culm) and GB40801G801700: Permian Aquifers in Central Devon.

Table 2.62: WFD Level 1 assessment outcomes for dW1

Option ID	dW1
Option description	This scheme entails abstracting from a disused, licensed groundwater sources, under drought conditions, using new pumps and a new pipeline, releasing the abstracted water into the River Exe and abstracting this water at Pynes WTW, subject to a successful drought permit application.
Number of water bodies passing WFD assessment	0
Water bodies passing WFD assessment	N/A
Number of water bodies requiring further WFD assessment	2
Water bodies failing WFD assessment	GB108045015050: Exe (Barle to Culm); GB40801G801700: Permian Aquifers in Central Devon (GW).

2.6.11 dW2: Hook Springs Licence

The Level 1 WFD assessment covered two water bodies for this option. The outcomes indicated further assessment would be necessary for one water body: GB40801G802400 – East Devon Greensand groundwater body.

Table 2.63: WFD Level 1 assessment outcomes for dW2

Option ID	dW2
Option description	The scheme entails removing the annual licence limit at Hook Springs intake, to enable abstraction at the daily licence limit throughout the year, under drought conditions, to provide additional raw water to Hook WTW, subject to a successful drought permit application.

Option ID	dW2
Number of water bodies passing WFD assessment	1
Water bodies passing WFD assessment	GB108045014830 – Kit Brook
Number of water bodies requiring further WFD assessment	1
Water bodies failing WFD assessment	GB40801G802400 – East Devon Greensand (GW)

2.6.12 dW3: Wilmington Springs Licence

The Level 1 WFD assessment covered two water bodies for this option. The outcomes indicated further assessment would be necessary for one water body: GB108045008880 – Umborne Brook.

Table 2.64: WFD Level 1 assessment outcomes for dW3

Option ID	dW3
Option description	The scheme entails removing the annual licence limit at Wilmington Springs intake, to enable abstraction at the daily licence limit throughout the year, under drought conditions, to provide additional raw water to Wilmington WTW subject to a successful drought permit application.
Number of water bodies passing WFD assessment	1
Water bodies passing WFD assessment	GB40801G802400– East Devon – Greensand (GW)
Number of water bodies requiring further WFD assessment	1
Water bodies failing WFD assessment	GB108045008880 – Umborne Brook

2.6.13 dW4: Wimbleball not releasing compensation flows when making supply releases

The Level 1 WFD assessment covered three water bodies for this option. The outcomes indicated further assessment would be necessary for one water body: GB108045009060 – Exe (Culm to Creedy).

Table 2.65: WFD Level 1 assessment outcomes for dW4

Option ID	dW4
Option description	The scheme entails abstracting all the compensation flows released from Wimbleball reservoir, during drought conditions, into the River Exe when making supply releases, subject to a successful drought permit application.
Number of water bodies passing WFD assessment	2
Water bodies passing WFD assessment	GB108045015050– Exe (Barle to Culm) GB40802G800900 - Exeter-Whiddon Down Culm (GW)
Number of water bodies requiring further WFD assessment	1
Water bodies failing WFD assessment	GB108045009060 – Exe (Culm to Creedy)

2.7 Drought EAR options

These seven options which were appraised in specific EARs accompanying licence changes, drought permits or habitat regulations assessment (HRA) reports in 2023. These options were assessed for compliance with WFD regulations, using a single stage screening and assessment process. There have been no changes to these options since these reports were issued and therefore the WFD assessments have been summarised in the Level 2 section (Section 3.7).

3 Level 2 Water Framework Directive assessments

The second stage of WFD assessment has been completed for the updated dWRMP24 options that were screened in at Level 1. Further information on WFD classification and the approach is outlined in Section 1.4.

This section provides an overview of the Level 2 WFD assessment findings and summary tables for each option with details on mitigation measures and scoring. It should be noted that for any options triggering a potential WFD non compliance risk (risk of deterioration) after mitigation, it is anticipated that following further investigation, additional appropriate mitigation will be identified.

3.1 Bournemouth WRZ

3.1.1 BNW1: Borehole development, existing borehole remedial works

For this option, two water bodies were identified as requiring further assessment: GB40702G503500: SW Hants Barton Group groundwater body and GB40702G504000: SW Hants Solent Group groundwater body. A summary of the Level 2 WFD assessment is included in Table 3.1 and detailed outputs are presented in Annex B.

The Level 2 WFD assessment for SW Hants Barton Group identified potential adverse construction and operational impacts (impact score 2) to quantitative water balance due to increased groundwater abstraction. The assessment also identified potential minor localised impacts (impact score 1) to quantitative and chemical status elements (quantitative GWDTEs test, quantitative dependent surface water body status, chemical dependent surface water body status, chemical drinking water protected area, chemical GWDTEs test and, general chemical test). Potential impacts are due to increased groundwater abstraction and below ground construction activity.

The Level 2 WFD assessment for SW Hants Solent Group also identified potential adverse construction and operational impacts (impact score 2) to quantitative water balance due to potential increased groundwater abstraction.

For both groundwater bodies, construction mitigation is proposed in the form of discharging dewatering into a nearby surface watercourse, to help maintain flow during dewatering. Good construction practice should also be followed. For example, it should be ensured that new boreholes are located as far away from GWDTEs as possible and new boreholes should be designed robustly so as to prevent any connection between lower flowing artesian aquifer and the shallower aquifer deposits.

No 'reasons for not achieving good' (RNAG) status are associated with either groundwater body. No risks of impeding water body objectives were identified.

For both groundwater bodies, further investigations will be undertaken at an appropriate time, in line with the date that the option is required for the plan. These investigations are required to better understand the impacts of this option and could include a hydrogeological assessment of the operational impacts to water balance of the proposed abstraction. An assessment of the impacts of temporary construction dewatering on flow in surface watercourses and groundwater levels at designated sites should also be conducted. Furthermore, a hydrogeological assessment of the deep confined aquifer should be undertaken, in order to prove no connection

to the upper aquifer. These investigations will help to identify further mitigation measures required to minimise the impact of the option activities.

Following further investigation, design development and implementation of any resultant targeted mitigation, this assessment concludes that there is a potential for WFD deterioration risk (impact score 2). Therefore, for these water bodies this option may be non-compliant under WFD.

Table 3.1: BNW1: Borehole development, existing borehole remedial works – Level 2 WFD Summary

Water body ID	Water body name	Confidence in WFD data and option design	Deterioration between status classes	Compromises water body objectives	Assists attainment of water body objectives	Maximum Level 2 impact score	Requirements to improve confidence	Mitigation measures	Post mitigation impact score	Further comments
GB40702 G503500	**SW Hants Barton Group**	**Low / Low**	**Possible**	**No**	**No**	**2 (adverse impact – risk of deterioration)**	Assessment of scale of water balance impacts. Hydrogeological assessment of deep confined aquifer to prove no connection to the upper aquifer. . Hydrological assessment of the impacts of temporary dewatering abstraction on flow in the watercourses and groundwater levels at GWDTE. Further information about option.	Dewatering to be discharged to local watercourse to help maintain flow (if water quality not of concern). Ensure any new boreholes are located as far away from GWDTE as possible. Design the borehole robustly so as to prevent any connection between the lower flowing artesian aquifer and the shallower aquifer deposits.	**2 (adverse impact – risk of deterioration)**	Assumes target aquifer for abstraction is deep confined and that there is no connection with the surface water or upper aquifer.
GB40702 G504000	**SW Hants Solent Group**	**Low / Low**	**Possible**	**No**	**No**	**2 (adverse impact – risk of deterioration)**	Assessment of scale of water balance impacts. Hydrogeological assessment of deep confined aquifer to prove no connection to the upper aquifer. Hydrological assessment of the impacts of temporary dewatering abstraction on flow in the watercourses and groundwater levels at designated sites.	Dewatering to be discharged to local watercourse to help maintain flow (if water quality not of concern). Ensure any new boreholes are located as far away from designated sites as possible. Design the borehole robustly so as to prevent any connection between the lower flowing artesian aquifer and the	**2 (adverse impact – risk of deterioration)**	Assumes target aquifer for abstraction is deep confined and that there is no connection with the surface water or upper aquifer.

Water body ID	Water body name	Confidence in WFD data and option design	Deterioration between status classes	Compromises water body objectives	Assists attainment of water body objectives	Maximum Level 2 impact score	Requirements to improve confidence	Mitigation measures	Post mitigation impact score	Further comments
							Further information about option.	shallower aquifer deposits.		

3.1.2 BNW6: Longham Aquifer Recharge

For this option, two water bodies were identified as requiring further assessment: GB107042011300: Avon water river water body and GB40801G804500: Upper Dorset Stour groundwater body. A summary of the Level 2 WFD assessment is included in Table 3.2 and detailed outputs are presented in Annex B.

The Level 2 WFD assessment for Avon Water identified potential minor localised operational impacts (impact score 1) to physio-chemical quality elements (ammonia, dissolved oxygen, pH, phosphate, temperature), hydromorphological supporting elements (hydrological regime) and biological quality elements (invertebrates, macrophytes and phytobenthos combined). Potential impacts are primarily due to the proposed increased abstraction.

Mitigation may include implemenation of a Hand's off Flow (HoF) on the licence to reduce impact on flow in Avon Water, downstream of abstraction site. It should also be ensured that appropriate fish and eel screening is in place at the new intake site.

The RNAG status for the Avon Water river water body relate to:

- Macrophytes and phytobenthos and phosphate due to 'pollution from towns, cities and transport', 'pollution from wastewater' and 'pollution from rural areas'; and
- Mercury and its compounds and polybrominated diphenyl ethers (PBDE) (measures delivered to address reason, awaiting recovery) and macrophytes and phytobenthos due to 'natural conditions' (sediment pressures during drought).

This option will not affect any of these RNAGs and therefore is not anticipated to impede reaching GES / GEP or compromise water body objectives.

Further investigations will also be undertaken at an appropriate time, in line with the date that the option is required for the plan. These investigations are required to confirm this assessment and could include assessment of all additional baseline ecological WFD data, impact assessment of changes in flow due to abstraction. Since Avon Water is identified as a salmonid river, which could increase the biological sensitivity to potential reductions in flow, as a result of increased abstraction proposed by the option. Further investigation of any obstructions to fish passage (weirs etc.) should also be undertaken to ensure that any potential reductions in flow do not inhibit fish migration within this river.

Following further investigations, design development and implementation of any resultant targeted mitigation, it is anticipated that WFD non-compliance risk will remain as minor localised (impact score 1).

The Level 2 WFD assessment for Upper Dorset Stour groundwater body identified potential adverse impacts (impact score 2) to quantitative status elements (quantitative dependent surface water body status, quantitative GWDTEs test and quantitative water balance). This is primarily due to changes in groundwater level resulting from abstraction and discharge activity related to proposed Aquifer Storage and Recover (ASR) scheme at Longham. It should be noted that the deep confined Chalk aquifer which would be used for this scheme is not part of the official WFD water body boundary. However, due to the nature of the ASR scheme there are potential implications on this groundwater body, which could manifest at the unconfined Chalk outcrop.

If required consideration would be given the licence conditions (such as Hands off flows or levels in the Chalk water body), pending further investigation to identify appropriate mitigation.

The RNAG status for Upper Dorset Stour groundwater body relates to quantitative water balance due to 'changes in flow and levels of water from water industry groundwater abstraction'. This option has the potential to worsen this impact impeding the water body from

reaching GES / GEP in the future. Further investigation is therefore required to understand the implication of this scheme on quantitative water balance.

Further investigations will be undertaken at an appropriate time, in line with the date that the option is required for the plan. These investigations are required to better understand the impacts of this option and could include groundwater modelling to help understand potential changes to groundwater level at the outcrop. These investigations will help to identify appropriate mitigation measures required to minimise the impact of the option activities.

Following further investigation, design development and implementation of any resultant targeted mitigation, this assessment concludes that there is still potential for WFD deterioration risk (impact score 2). Therefore, for this groundwater body, this option may be non-compliant under WFD.

Table 3.2: BNW6: Longham Aquifer Recharge – Level 2 WFD Summary

Water body ID	Water body name	Confidence in WFD data and option design	Deterioration between status classes	Compromises water body objectives	Assists attainment of water body objectives	Maximum Level 2 impact score	Requirements to improve confidence	Mitigation measures	Post Mitigation impact score	Further comments
GB107042011300	**Avon Water**	**Low / Low**	**No**	**No**	**No**	**1 (minor localised impact)**	Detailed review of all additional baseline ecological WFD data, including results of any surveys already undertaken for this scheme. Further assessment of abstraction conditions and volume to increase confidence in impacts associated with additional abstracted volume. Further investigation into other biology within river (fish, invertebrates etc.) would improve confidence. Abstraction increase likely to have greater impact on these than on macrophytes. Further investigation of any obstructions to fish passage (weirs etc.) should be reviewed to confirm potential reductions in flow as a result of abstraction does not inhibit fish passage (particularly as Avon Water is a salmonid river). Further information about option and operation of intake.	Adjustment of abstraction conditions could be considered to reduce impact on flow downstream where appropriate. Check appropriate fish and eel screening is in place.	**1 (minor localised impact)**	Assumes that ASR into deep confined chalk aquifer. Chalk is not a WFD water body; however, due to the nature of the ASR scheme, there are potential impacts on chemistry that should be considered when evaluating this option. Assumes suitable consideration of seasonal flows and abstraction will be restricted to periods when flow is sufficient to support this abstraction.
GB40801G804500	**Upper Dorset Stour**	**Low / Low**	**Uncertain**	**No**	**No**	**2 (adverse impact – risk of deterioration)**	Further investigation, potentially including modelling, required to understand the potential for changes in groundwater level at the outcrop.	N/A	**2 (adverse impact – risk of deterioration)**	

3.1.3 BNW14: Ibsley Lake

For this option, three water bodies were identified as requiring further assessment: GB30847016: Ibsley Water lake water body, GB108043015842: Hampshire Avon (lower) river water body and GB40802G805800: Lower Dorset Stour and Lower Hampshire Avon groundwater body. A summary of the Level 2 WFD assessment is provided in Table 3.3 and detailed outputs are presented in Annex B.

The Level 2 WFD assessment for Ibsley Water identified potential minor localised operational impacts (impact score 1) to priority / priority hazardous substances. This is due to potential lowering of lake levels as a result of a new groundwater abstraction.

The RNAG status for the Ibsley Water lake water body relates to Mercury and Its Compounds and PBDE, with measures delivered to address reason, awaiting recovery. This option will not affect these reasons for not achieving good status and is not anticipated to impede reaching GES / GEP or compromise water body objectives.

Further investigations will be undertaken at an appropriate time, in line with the date that the option is required for the plan. These investigations are required to confirm this assessment and could include a review of all baseline ecological WFD data and a hydroecological assessment of the potential impacts of abstraction from bank site boreholes on water levels, hydromorphology and water quality. These investigations will help to increase confidence in assessment outcomes for this water body.

For Ibsley Water, the hydromorphological designation is ‘artificial’. Despite this, option activities are not expected to significantly increase the physical modification pressures as no new infrastructure is proposed in this water body.

Following further investigation, design development and implementation of any resultant targeted mitigation, it is anticipated that the WFD non-compliance risk will remain as minor (impact score 1).

The Level 2 WFD assessment for Hampshire Avon (Lower) identified potential adverse operational impacts (impact score 2) to biological quality elements (fish and invertebrates) and physico-chemical quality elements (ammonia, dissolved oxygen, pH, phosphate and temperature). The assessment also identified potential minor localised impacts (impact score 1) to hydromorphological supporting elements (hydrological regime), priority / priority hazardous substances, specific and other pollutants. Potential impacts are largely due to changes in water quality as a result of surface water discharge from Ibsley Water into the Avon River, due to potential differences in water quality between the two water bodies, particularly in regard to nutrients.

Potential mitigation may include treating surface water prior to discharge into Avon River. This should be undertaken if further assessments identify a significant water quality difference between the source and receiver. Alternatively, this water could be piped directly to the water treatment works (WTW) which is proposed to see benefit of scheme.

No RNAG are associated with this water body. However, this option has potential to impede reaching GES / GEP and compromise water body objectives if appropriate mitigation is not implemented.

Further investigations will be undertaken at an appropriate time, in line with the date that the option is required for the plan. These investigations are required to better understand the impacts of this option and could include a detailed review of all baseline ecological WFD data and a hydroecological assessment of the impacts of discharge on flow, hydromorphology and

water quality in the Avon River. These investigations will help to identify further mitigation measures required to minimise the impact of the option activities.

Following further investigations and design development, it is anticipated that the WFD non-compliance risk can be reduced to minor localised (impact score 1). Therefore, for the Hampshire Avon (lower) river water body, this option would be WFD compliant.

The Level 2 WFD assessment for the Lower Dorset Stour and Lower Hampshire Avon groundwater body identified potential adverse impacts (impact score 2) to quantitative status elements (quantitative dependent surface water body status and quantitative GWDTEs test). The assessment also identified potential minor localised impacts (impact score 1) to quantitative water balance and general chemical test. Potential impacts are due to the fact that a majority of the proposed option route is covered by the Avon Valley (Bickton - Christchurch) Site of Special Scientific Interest (SSSI). The proposed groundwater abstraction could lead to a reduction in groundwater levels in the immediate area, potentially increasing the risk of deterioration in ecological status at the SSSI site - particularly when water levels in Ibsley Lake are low (during summer periods especially).

Mitigation has been proposed in the form of dewatering discharge to surface water courses (and Ibsley Lake), in order to maintain flow and water levels. In addition, clay stanks should be used in pipeline trenches to ensure that the trench does not form a preferential flow path for groundwater.

The RNAG status for the Lower Dorset Stour and Lower Hampshire Avon groundwater body relates to Chemical dependent surface water body status due to ‘pollution from towns, cities and transport’. This option will not affect this reason for not achieving good status. Despite this, the option has potential to impede reaching GES / GEP if appropriate mitigation is not implemented. However, no risks to achieving water body objectives were identified.

Further investigations will also be undertaken at an appropriate time, in line with the date that the option is required for the plan. These investigations are required to better understand the impacts of this option and could include a hydrogeological assessment of the impacts of groundwater abstraction on water balance and groundwater flows to surface water bodies, lakes and GWDTE.

Following further investigation, design development and implementation of any resultant targeted mitigation, this assessment concludes that there is still potential for WFD deterioration risk (impact score 2). Therefore, for this groundwater body, this option may be non-compliant under WFD.

Table 3.3: BNW14: Ibsley Lake – Level 2 WFD Summary

Water body ID	Water body name	Confidence in WFD data and option design	Deterioration between status classes	Compromises water body objectives	Assists attainment of water body objectives	Maximum Level 2 impact score	Requirements to improve confidence	Mitigation measures	Post mitigation impact score	Further comments
GB30847016	**Ibsley Water**	**Low / Low**	**No**	**No**	**No**	**1 (minor localised impact)**	Detailed review of all baseline ecological WFD data, including results of any surveys already undertaken for this scheme. Hydroecology assessment of the impacts of abstraction from bank side boreholes on water levels, hydromorphology, water quality/concentration of key physico-chemical parameters, especially Total Phosphorus (TP) and Phosphate and therefore on biology.	N/A	**1 (minor localised impact)**	None.
GB108043015 8	**Hampshire Avon (Lower)**	**Low / Low**	**No**	**No**	**No**	**2 (adverse impact – risk of deterioration)**	Detailed review of all baseline ecological WFD data, including results of any surveys already undertaken for this scheme. Hydroecology assessment of the impacts of discharge and abstraction on flow, hydromorphology, water quality/concentration of key physicochemical parameters, especially TP / Phosphate and therefore on biology.	If water quality is likely to cause impacts on the watercourse, consideration should be given to piping water directly into Matcham WTW. Treatment of water before discharge into Avon if water quality difference is significant.	**1 (minor localised impact)**	Assessment assumes that water is discharged into the River Avon, just upstream of the WTW intake.

Water body ID	Water body name	Confidence in WFD data and option design	Deterioration between status classes	Compromises water body objectives	Assists attainment of water body objectives	Maximum Level 2 impact score	Requirements to improve confidence	Mitigation measures	Post mitigation impact score	Further comments
GB40802G805	**Lower Dorset Stour and Lower Hampshire Avon**	**Low / Low**	**Possible**	**No**	**No**	**2 (adverse impact – risk of deterioration)**	Hydrogeological assessment of the impacts of abstraction on water balance and changes in groundwater flows to surface water bodies, lakes and GWDTE. Detailed review of all baseline ecological WFD data, including results of any surveys already undertaken for this scheme. Further information about option, including details on abstraction conditions.	Dewatering discharge to surface water courses to maintain flow. Topping off of Ibsley Lake may also be necessary in periods of low lake level. Clay Stanks or similar to be used in pipeline trench to ensure trench does not form a preferential flow path for groundwater.	**2 (adverse impact – risk of deterioration)**	None.

3.1.4 BNW16: Christchurch and Holdenhurst WwTW IPR 3 - Further treatment and transfer to Knapp Mill WTW

For this option, one water body was identified as requiring further assessment: GB40802G805800 – Lower Dorset Stour and Lower Hampshire Avon groundwater body. A summary of the Level 2 WFD assessment is included in Table 3.4 and detailed outputs are presented in Annex B.

The Level 2 WFD assessment for this groundwater body identified potential minor localised impacts (impact score 1) to quantitative status elements (quantitative dependent surface water body status, quantitative GWDTEs test, quantitative water balance) and chemical status elements (chemical dependent surface water body status, chemical drinking water protected area, chemical GWDTEs test, general chemical test). This is primarily due to below ground construction activity and associated dewatering.

Mitigation is proposed in the form of using clay stanks within pipeline routes where groundwater is potentially encountered. If possible, shafts for river crossings should also be moved further from SSSI site(s) and shafts should be sealed to ensure minimal groundwater egress after construction.

The RNAG status for this groundwater body relates to Chemical dependent surface water body status due to ‘pollution from towns, cities and transport’. This option will not affect this reason for not achieving good status and is not anticipated to impede reaching GES / GEP or compromise water body objectives.

Further investigations will be undertaken at an appropriate time, in line with the date that the option is required for the plan. These investigations are required to confirm this assessment and could include groundwater monitoring, in order to understand the impact to groundwater levels of dewatering for construction. Returning water to the ground (through recharge trenches) should also be considered, as this could help to minimise the impact of construction. These investigations will help to increase confidence in assessment outcomes for this water body.

Following further investigation, design development and implementation of any resultant targeted mitigation, it is anticipated that the WFD non-compliance risk will remain as minor (impact score 1) and, therefore for this water body, this option is assessed to be WFD compliant.

Table 3.4: BNW16: Christchurch and Holdenhurst WWTW IPR 3 – further treatment and transfer to Knapp Mill WTW – Level 2 WFD Summary

Water body ID	Water body name	Confidence in WFD data and option design	Deterioration between status classes	Compromises water body objectives	Assists attainment of water body objectives	Maximum Level 2 impact score	Requirements to improve confidence	Mitigation measures	Post mitigation impact score
GB40802 G805800	**Lower Dorset Stour and Lower Hampshire Avon**	**Low / Low**	**No**	**No**	**No**	**1 (minor localised impact)**	Groundwater monitoring to understand groundwater levels and how they might interact with the option. Investigation into impact on groundwater levels of dewatering for construction and consideration of requirement to return water to the ground (through recharge trenches) to help minimise the impact of construction, if required. Further information about option.	Use of clay bunds / stanks within pipeline route where groundwater potentially encountered. If possible, shafts for river crossings should be moved further from SSSI sites. Shafts to be sealed to ensure minimal groundwater egress after construction.	**1 (minor localised impact)**

3.1.5 BNW18: Alderney WTW - Reduce Treatment Losses

For this option, two water bodies were identified as requiring further assessment: GB40802G805800 – Lower Dorset Stour and Lower Hampshire Avon groundwater body and GB40802G805600 – Lower Frome and Piddle groundwater body. A summary of the Level 2 WFD assessment is included in Table 3.5 and detailed outputs are presented in Annex B.

For both groundwater bodies, the Level 2 WFD assessment identified potential minor localised impacts (impact score 1) to quantitative status elements (quantitative dependent surface water body status, quantitative GWDTEs test, quantitative water balance) and chemical status elements (chemical dependent surface water body status, chemical drinking water protected area, chemical GWDTEs test and general chemical test). Potential impacts are primarily due to below ground construction activity and associated dewatering.

For both groundwater bodies, mitigation is proposed in the form of using clay bunds where potential shafts may encounter groundwater and sealing potential shafts to ensure minimal groundwater egress after construction.

The ‘reason for not achieving good’ (RNAG) status for the Lower Dorset Stour and Lower Hampshire Avon relates to Chemical dependent surface water body status due to ‘pollution from towns, cities and transport’. This option will not affect this reason for not achieving good status and is not anticipated to impede reaching GES / GEP or compromise water body objectives.

For the Lower Frome and Piddle groundwater body, no reasons for not achieving good status were identified. Therefore, this option is not anticipated to impede reaching GES / GEP or compromise water body objectives for this groundwater body.

Further investigations will also be undertaken at an appropriate time, in line with the date that the option is required for the plan. These investigations are required to confirm this assessment and could include groundwater monitoring to assess the impact of dewatering for construction on groundwater levels. These investigations will help to increase confidence in assessment outcomes for this water body.

Following further investigation, design development and implementation of any resultant targeted mitigation, it is anticipated that WFD non-compliance risk can remain as minor localised (impact score 1) for both groundwater bodies. Therefore, this option would be WFD compliant for both groundwater bodies.

Table 3.5: BNW18: Alderney WTW - Reduce Treatment Losses – Level 2 WFD Summary

Water body ID	Water body name	Confidence in WFD data and option design	Deterioration between status classes	Compromises water body objectives	Assists attainment of water body objectives	Maximum Level 2 impact score	Requirements to improve confidence	Mitigation measures	Post Mitigation impact score
GB40802 G805800	**Lower Dorset Stour and Lower Hampshire Avon**	**Low / Low**	**No**	**No**	**No**	**1 (minor localised impact)**	Groundwater monitoring to understand groundwater levels and how they might interact with the option. Investigation into impact on groundwater levels of dewatering for construction and consideration of requirement to return water to the ground (through recharge trenches) to help minimise the impact of construction, if required. Further information about option.	Use of clay bunds where potential shafts may encounter groundwater. Potential shafts to be sealed to ensure minimal groundwater egress after construction.	**1 (minor localised impact)**
GB40802 G805600	**Lower Frome and Piddle**	**Low / Low**	**No**	**No**	**No**	**1 (minor localised impact)**	Groundwater monitoring to understand groundwater levels and how they might interact with the option. Investigation into impact on groundwater levels of dewatering for construction and consideration of requirement to return water to the ground (through recharge trenches) to help minimise the impact of construction, if required. Further information about option.	Use of clay bunds where potential shafts may encounter groundwater. Potential shafts to be sealed to ensure minimal groundwater egress after construction.	**1 (minor localised impact)**

3.1.6 BNW19: Knapp Mill WTW - Reduce Treatment Losses

For this option, one water body was identified as requiring further assessment: GB40802G805800 – Lower Dorset Stour and Lower Hampshire Avon groundwater body. A summary of the Level 2 WFD assessment is included in Table 3.6 and detailed outputs are presented in Annex B.

The Level 2 WFD assessment identified potential minor localised impacts (impact score 1) to quantitative status elements (quantitative dependent surface water body status, quantitative GWDTEs test, quantitative water balance) and chemical status elements (chemical dependent surface water body status, chemical drinking water protected area, chemical GWDTE test and general chemical test). Potential impacts are largely due to below ground construction activity and associated dewatering, related to modification of an existing WTW.

Mitigation is proposed in the form of using clay bunds where potential shafts may encounter groundwater and sealing potential shafts to ensure minimal groundwater egress after construction.

The RNAG status for the Lower Dorset Stour and Lower Hampshire Avon groundwater body relates to Chemical dependent surface water body status due to ‘pollution from towns, cities and transport’. This option will not affect this reason for not achieving good status and is not anticipated to impede reaching GES / GEP or compromise water body objectives.

Further investigations will be undertaken at an appropriate time, in line with the date that the option is required for the plan. These investigations are required to confirm this assessment and could include groundwater monitoring to assess the impact of dewatering for construction on groundwater levels. These investigations will help to increase confidence in assessment outcomes for this water body.

Following further investigation, design development and implementation of any resultant targeted mitigation, it is anticipated that WFD non-compliance risk can remain as minor localised (impact score 1) for this water body. Therefore, this option would be WFD compliant.

Table 3.6: BNW19: Knapp Mill WTW - Reduce Treatment Losses – Level 2 WFD Summary

Water body ID	Water body name	Confidence in WFD data and option design	Deterioration between status classes	Compromises water body objectives	Assists attainment of water body objectives	Maximum Level 2 impact score	Requirements to improve confidence	Mitigation measures	Post mitigation impact score
GB40802 G805800	**Lower Dorset Stour and Lower Hampshire Avon**	**Low / Low**	**No**	**No**	**No**	**1 (minor localised impact)**	Groundwater monitoring to understand groundwater levels and how they might interact with the option. Investigation into impact on groundwater levels of dewatering for construction and consideration of requirement to return water to the ground (through recharge trenches) to help minimise the impact of construction, if required. Further information about option.	Use of clay bunds where potential shafts may encounter groundwater. Potential shafts to be sealed to ensure minimal groundwater egress after construction.	**1 (minor localised impact)**

3.2 Colliford WRZ

3.2.1 COL2: Colliford PS Stage 2 - River Camel abstraction

For this option, one water body was identified as requiring further assessment: GB108049000190 - Lower River Camel river water body. A summary of the Level 2 WFD assessment is included in Table 3.7 and detailed outputs are presented in Annex B.

An AMP6 WINEP HWWB investigation concluded that high volume water releases from the reservoir into the St Neot stream, for subsequent abstraction at Restormel WTW, has a negative impact upon the success of several fish species including the native brown trout and salmon populations. This option would reduce the impact on this watercourse, by reducing the releases into the St Meot stream for subsequent abstraction at Restormel WTW.

The Level 2 WFD assessment identified potential major adverse impacts (impact score 3) to biological quality elements (fish, invertebrates and macrophytes and phytobenthos combined) and hydrological regime. The assessment also identified potential adverse impacts (impact score 2) to morphology and physico-chemical quality elements (ammonia, dissolved oxygen, pH, phosphate and temperature) and potential minor localised impacts (impact score 1) to priority / priority hazardous substances, specific and other pollutants. Potential impacts are due to reduction in river velocity and volume resulting from proposed new surface water abstraction.

Mitigation is proposed in the form of using fish and eel screening at new River Camel intake and setting abstraction conditions (Hands off flow) (HOF)) to minimise changes to hydrological regime.

The RNAG status for the Lower Camel River relates to mercury and its compounds and PBDE, with ‘measures delivered to address, awaiting recovery’. This option will not affect this reason for not achieving good status and no further risks to achieving water body objectives have been identified. However, this option has potential to impede reaching GES / GEP if appropriate mitigation is not applied.

Further investigations will be undertaken at an appropriate time, in line with the date that the option is required for the plan. These investigations are required to better understand the impacts of this option and could include a detailed review of all baseline ecological WFD data and an additional hydroecological assessment of implications of new large abstraction on flow, water quality and biology in the River Camel. Furthermore, it is recommended to explore river restoration measures to address flow concerns in stream and ensure the health of River Camel is maintained post anticipated reduced flow (if necessary).

The Camel is identified as a salmonid river, which could increase the biological sensitivity to potential reductions in flow as a result of new abstraction proposed by the option. Further investigation of any obstructions to fish passage (weirs etc.) should also be undertaken to ensure that any potential reductions in flow do not inhibit fish migration within this river.

Following further investigation, design development and implementation of any resultant targeted mitigation, it is anticipated that WFD non-compliance risk can be reduced to potential adverse (impact score 2).Therefore, for this water body, this option remains non-compliant under WFD.

Table 3.7: COL2: Colliford Reservoir Pumped Storage Stage 2 – Lower River Camel Abstraction – Level 2 WFD Summary

Water body ID	Water body name	Confidence in WFD data and option design	Deterioration between status classes	Compromises water body objectives	Assists attainment of water body objectives	Maximum Level 2 impact score	Requirements to improve confidence	Mitigation measures	Post mitigation impact score	Further comments
GB108049000190	**Lower River Camel**	**Low / Low**	**Possible**	**Possible**	**No**	**3 (major adverse impact – significant risk of deterioration)**	Detailed review of all baseline ecological WFD data, including results of any surveys already undertaken for this scheme. Carry out additional hydroecological assessment of implications on flow, water quality and biology of River Camel as a result of new large abstraction. Further investigation of any obstructions to fish passage (weirs etc.) should be reviewed to confirm potential reductions in flow as a result of abstraction does not inhibit fish passage (particularly as Camel is a salmonid river). Further information about option, including details on abstraction conditions.	Fish and eel screening at intake from new River Camel intake. Abstraction conditions (HOF) to be set in order to minimise changes to hydrological regime. Potential requirement for HOF likely (subject to further assessment). Compensation flow could be required.	**2 (adverse impact – risk of deterioration)**	Could explore river restoration measures to address flow concerns in stream and ensure health of River Camel is maintained post anticipated reduced flow, if necessary. Could be an option to consider particularly as PR24 methodology encourages further implementation of Nature-based Solutions (NbS) like river restoration and integrating said solutions as Business As Usual (BAU) practice.

3.2.2 COL3: Abstraction of Colliford compensation flows when making supply releases

For this option, one water body was identified as requiring further assessment: GB108048001420 – Lower River Fowey. A summary of the Level 2 WFD assessment is included in Table 3.8 and detailed outputs are presented in Annex B.

The Level 2 WFD assessment identified potential adverse impacts (impact score 2) to hydrological regime, due to proposed new abstraction from the Fowey. The assessment also identified potential minor localised impacts (impact score 1) to biological quality elements (fish, invertebrates, macrophytes and phytobenthos combined) and physico-chemical quality elements (ammonia, dissolved oxygen, pH, phosphate and temperature). Potential impacts are due to reduction in river velocity and volume resulting from proposed new surface water abstraction.

Mitigation is proposed in the form of setting abstraction conditions (Hands off flow) (HOF)) to minimise changes to hydrological regime. It is anticipated that following further investigation appropriate mitigation will be identified. Furthermore, it is recommended to explore river restoration measures to address flow concerns in stream and ensure health of River Fowey is maintained post anticipated reduced flow (if necessary). These investigations will help to identify appropriate mitigation measures required to minimise the impact of the option activities.

The RNAG status for the water body relates to Mercury and its compounds and PBDE, with ‘no sector responsible’. This option will not affect this reason for not achieving good status and no risks to achieving water body objectives have been identified. However, this option has potential to impede reaching GES / GEP if appropriate mitigation is not applied.

Further investigations will be undertaken at an appropriate time, in line with the date that the option is required for the plan. These investigations are required to better understand the impacts of this option and could include a detailed hydrological assessment of the impacts of proposed abstraction on hydromorphology, water quality and biology. A detailed review of all baseline ecological WFD data should also be conducted along with attainment of further information regarding abstraction conditions.

The Fowey (at the abstraction point) is identified as a salmonid river. This could increase the biological sensitivity to potential reductions in flow as a result of new abstraction proposed by option. Further investigation of any obstructions to fish passage (weirs etc.) should also be undertaken to ensure that any potential reductions in flow do not inhibit fish migration within this river.

Following further investigation, design development and implementation of any resultant targeted mitigation, this assessment concludes that there is still potential for WFD deterioration risk (impact score 2). Therefore, for this water body, this option may be non-compliant under WFD.

Table 3.8: COL3: Abstraction of Colliford compensation flows when making supply releases – Level 2 WFD Summary

Water body ID	Water body name	Confidence in WFD data and option design	Deterioration between status classes	Compromises water body objectives	Assists attainment of water body objectives	Maximum Level 2 impact score	Requirements to improve confidence	Mitigation measures	Post mitigation impact score	Further comments
GB108048001420	**Lower River Fowey**	**Low / Low**	**Possible**	**No**	**No**	**2 (adverse impact – risk of deterioration)**	Detailed hydrological & hydroecology assessment of the impacts of 2.3Ml/d abstraction from watercourse on flow, hydromorphology, water quality and biology. Detailed review of all baseline ecological WFD data, including results of any surveys already undertaken for this scheme. Further investigation of any obstructions to fish passage (weirs etc.) should be reviewed to confirm potential reductions in flow as a result of abstraction does not inhibit fish passage (particularly as Fowey is a salmonid river). Further information about option, including details on abstraction conditions, Hands Off Flow (HOF) etc.	N/A	**2 (adverse impact – risk of deterioration)**	Explore river restoration measures to address flow concerns in stream and ensure health of River Fowey is maintained post anticipated reduced flow if necessary. Could be an option to consider particularly as PR24 methodology encourages further implementation of NbS like river restoration and integrating said solutions as BAU practice.

3.2.3 COL4: Abstraction of Siblyback compensation flows when making supply releases

For this option, one water body was identified as requiring further assessment: GB108048001420 – Lower River Fowey. A summary of the Level 2 WFD assessment is included in Table 3.9 and detailed outputs are presented in Annex B.

The Level 2 WFD assessment identified potential adverse impacts (impact score 2) to biological quality elements (fish, invertebrates) and hydrological regime. The assessment also identified potential minor localised impacts (impact score 1) to physico-chemical quality elements (ammonia, dissolved oxygen, pH, phosphate and temperature). Impacts are due to the potential reduction in river flow volume and velocity associated with new surface water abstraction.

Mitigation is proposed in the form of sufficient fish and eel screening at intake and setting abstraction conditions (Hands off flow) (HOF)) to minimise changes to hydrological regime. It is anticipated that following further investigation appropriate mitigation will be identified. Furthermore, it is recommended to explore river restoration measures to address flow concerns in stream and ensure health of River Fowey is maintained post anticipated reduced flow (if necessary). These investigations will help to identify appropriate mitigation measures required to minimise the impact of the option activities.

The RNAG status for the water body relates to Mercury and its compounds and PBDE, with ‘no sector responsible’. This option will not affect this reason for not achieving good status and no further risks to achieving water body objectives have been identified. However, this option has potential to impede reaching GES / GEP if appropriate mitigation is not applied.

Further investigations will be undertaken at an appropriate time, in line with the date that the option is required for the plan. These investigations are required to better understand the impacts of this option and could include a detailed hydrological and hydroecological assessment of the impacts of proposed new abstraction on flow, hydromorphology, water quality and biology. A detailed review of all baseline ecological WFD data should also be conducted as well as a review of any further information related to abstraction conditions.

The Fowey (at the abstraction point) is identified as a salmonid river. This could increase the biological sensitivity to potential reductions in flow as a result of new abstraction proposed by option. Further investigation of any obstructions to fish passage (weirs etc.) should also be undertaken to ensure that any potential reductions in flow do not inhibit fish migration within this river.

Following further investigation, design development and implementation of any resultant targeted mitigation, this assessment concludes that there is still potential for WFD deterioration risk (impact score 2). Therefore, for this water body, this option may be non-compliant under WFD.

Table 3.9: COL4: Abstraction of Siblyback compensation flows when making supply releases – Level 2 WFD Summary

Water body ID	Water body name	Confidence in WFD data and option design	Deterioration between status classes	Compromises water body objectives	Assists attainment of water body objectives	Maximum Level 2 impact score	Requirements to improve confidence	Mitigation measures	Post mitigation impact score	Further comments
GB108048001420	**Lower River Fowey**	**Low / Low**	**Possible**	**No**	**No**	**2 (adverse impact – risk of deterioration)**	Detailed hydrological and hydroecological assessment of the impacts of 1.5Ml/d abstraction from watercourse on flow, hydromorphology, water quality and biology. Detailed review of all baseline ecological WFD data, including results of any surveys already undertaken for this scheme. Further investigation of any obstructions to fish passage (weirs etc.) should be reviewed to confirm potential reductions in flow as a result of abstraction does not inhibit fish passage (particularly as Fowey is a salmonid river). Further information about option, including details on abstraction conditions (HOF etc).	Ensure eel and fish pass on existing intake are sufficient in preventing fish entrainment. Potential adjustment of licence/abstraction conditions or HOF to minimise impact on biology and hydrological regime.	**2 (adverse impact – risk of deterioration)**	Explore river restoration measures to address flow concerns in stream and ensure health of River Fowey is maintained post anticipated reduced flow if necessary. Could be an option to consider particularly as PR24 methodology encourages further implementation of NbS like river restoration and integrating said solutions as BAU practice.

3.2.4 COL5: Increase Wendron annual licence and de-couple from Stithians

For this option, one water body was identified as requiring further assessment: GB108048001171 – Upper River Cober. A summary of the Level 2 WFD assessment is included in Table 3.10 and detailed outputs are presented in Annex B.

The Level 2 WFD assessment identified potential adverse impacts (impact score 2) to biological quality elements (fish, invertebrates) and hydrological regime. The assessment also identified potential minor localised impacts (impact score 1) to physico-chemical quality elements (ammonia, dissolved oxygen, pH, phosphate and temperature). Potential impacts are due primarily to potential reduction in river flow volume and velocity associated with new surface water abstraction.

Mitigation is proposed in the form of setting abstraction conditions (Hands off flow) (HOF)) to minimise changes to hydrological regime. Furthermore, it is recommended to explore river restoration measures to address flow concerns in stream and ensure health of River Cober is maintained post anticipated reduced flow if necessary. These investigations will help to identify appropriate mitigation measures required to minimise the impact of the option activities. It is anticipated that following further investigation appropriate mitigation will be identified.

The ‘reasons for not achieving good’ (RNAG) status for the water body relate to:

- Hydrological regime due to ‘changes to the natural flow and levels of water’
- Fish and zinc due to ‘pollution from abandoned mines’; and
- Mercury and its compounds, PBDE, and zinc due to ‘no sector responsible’.

This option has potential to impede the Upper River Cober from gaining GES / GEP and compromise future objectives relating to fish and hydrological regime if the appropriate mitigation measures are not identified and implemented. Therefore, further investigations are required to understand the implication of this scheme on fish and hydrological regime.

Further investigations will be undertaken at an appropriate time, in line with the date that the option is required for the plan. These investigations are required to better understand the impacts of this option and could include a detailed hydrological and hydroecological assessment of the impacts of proposed abstraction on flow, hydromorphology, water quality and biology. A detailed review of all baseline ecological WFD data should also be conducted as well as a review of any further information related to abstraction conditions.

The Cober (downstream of the abstraction point) is identified as a salmonid river, which could increase the biological sensitivity to potential reductions in flow as a result of new abstraction proposed by option. Further investigation of any obstructions to fish passage (weirs etc.) should also be undertaken to ensure that any potential reductions in flow do not inhibit fish migration within this river.

Following further investigation, design development and implementation of any resultant targeted mitigation, this assessment concludes that there is still potential for WFD deterioration risk (impact score 2). Therefore, for this water body, this option may be non-compliant under WFD.

Table 3.10: COL5: Increase Wendron annual licence and de-couple from Stithians – Level 2 WFD Summary

Water body ID	Water body name	Confidence in WFD data and option design	Deterioration between status classes	Compromises water body objectives	Assists attainment of water body objectives	Maximum Level 2 impact score	Requirements to improve confidence	Mitigation measures	Post mitigation impact score	Further comments
GB108048001171	**Upper River Cober**	**Low / Low**	**Possible**	**Possible**	**No**	**2 (adverse impact – risk of deterioration)**	Detailed hydrological and hydroecological assessment of the impacts of 1-2Ml/d abstraction from watercourse on flow, hydromorphology, water quality and biology. Detailed review of all baseline ecological WFD data, including results of any surveys already undertaken for this scheme. Further investigation of any obstructions to fish passage (weirs etc.) should be reviewed to confirm potential reductions in flow as a result of abstraction does not inhibit fish passage (particularly as Cober is a salmonid river further downstream of abstraction point). Further information about option, including details on abstraction conditions (HOF etc).	N/A	**2 (adverse impact – risk of deterioration)**	Explore river restoration measures to address flow concerns in stream and ensure health of River Cober is maintained post anticipated reduced flow if necessary. Could be an option to consider particularly as PR24 methodology encourages further implementation of NbS like river restoration and integrating said solutions as BAU practice.

3.2.5 COL6: River Hayle abstraction

For this option, two water bodies were identified as requiring further assessment: GB108049000380 – Hayle river water body and GB530804906700 – Hayle transitional water body. A summary of the Level 2 WFD assessment is included in Table 3.11 and detailed outputs are presented in Annex B.

The Level 2 WFD assessment for Hayle river water body identified potential adverse impacts (impact score 2) to biological quality elements (fish, invertebrates), hydromorphological supporting elements (hydrological regime, morphology) and physico-chemical quality elements (ammonia, dissolved oxygen, pH, phosphate and temperature). The assessment also identified potential minor localised impacts (impact score 1) to priority / priority hazardous substances and specific pollutants. This is primarily due to potential reductions in river flow and volume associated with new surface water abstraction.

Mitigation is proposed in the form of using fish and eel screening at new River Hayle intake and ensuring that abstraction conditions are set to minimise changes to hydrological regime.

The RNAG status for the river water body relate to:

- Copper, cadmium and its compunds, zinc and nickel and its compounds due to ‘pollution from abandoned mines’;
- Mercury and Its Compounds, nickel and its compounds, zinc, copper and PBDE, due to ‘no sector responsible’; and
- Perfluorooctane sulphonate (PFOS) due to ‘sector under investigation’.

This option will not affect any of these reasons for not achieving good status and no further risks to achieving water body objectives have been identified. However, this option has potential to impede reaching GES / GEP if appropriate mitigation is not applied.

Further investigations will be undertaken at an appropriate time, in line with the date that the option is required for the plan. These investigations are required to better understand the impacts of this option and could include a detailed review of all baseline ecological WFD data and additional hydroecological assessment of implications on flow, water quality and biology in the River Hayle as a result of new abstraction. Furthermore, it is recommended to explore river restoration measures to address flow concerns in stream and ensure health of River Hayle is maintained post anticipated reduced flow if necessary. These investigations will help to identify additional mitigation measures required to minimise the impact of the option activities.

The Hayle is identified as a salmonid river, which could increase the biological sensitivity to potential reductions in flow as a result of new abstraction proposed by option. Further investigation of any obstructions to fish passage (weirs etc.) should also be undertaken to ensure that any potential reductions in flow do not inhibit fish migration within this river.

Following further investigation, design development and implementation of any resultant targeted mitigation, this assessment concludes that there is still potential for WFD deterioration risk (impact score 2). Therefore, for this water body, this option may be non-compliant under WFD.

The Level 2 WFD assessment for Hayle transitional water body identified potential adverse impacts (impact score 2) to hydrological regime and physico-chemical quality elements (dissolved inorganic nitrogen and dissolved oxygen). The assessment also identified potential minor localised impacts (impact score 1) to biological quality elements (macroalgae and phytoplankton) and priority / priority hazardous substances. This is primarily due to reduced river flow and volume associated with new surface water abstraction.

Mitigation has been proposed in the form of ensuring that abstraction conditions minimise changes to hydrological regime, considering requirement for HOF.

Further investigations will be undertaken at an appropriate time, in line with the date that the option is required for the plan. These investigations are required to better understand the impacts of this option and could include a detailed review of all baseline ecological WFD data and an additional hydroecological assessment of implications on flow, water quality and biology associated with proposed new abstraction. Investigations will help to identify further mitigation measures required to minimise the impact of the option activities.

The RNAG status for Hayle transitional water body relate to:

- Macroalgae and dissolved inorganic nitrogen due to ‘pollution from rural areas’;
- Mitigation measures assessment due to ‘physical modifications’; and
- Mercury and Its Compounds and PBDE, with ‘no sector responsible’.

This option has the potential to impede Hayle transitional water body from reaching GES / GEP for water quality, namely for dissolved inorganic nitrogen. This is because the proposed new abstraction could lead to changes in water quality in the water body by changing flow velocity and volume and decreasing dilution of water quality parameters. This could have increased impact given the existing Nitrogen issues across catchment. However, it is unlikely that the ‘reasons for not achieving good’ status identified will compromise water body objectives.

Following further investigation, design development and implementation of any resultant targeted mitigation, this assessment concludes that there is still potential for WFD deterioration risk (impact score 2). Therefore, for this water body, this option may be non-compliant under WFD.

Table 3.11: COL6: River Hayle abstraction – Level 2 WFD Summary

Water body ID	Water body name	Confidence in WFD data and option design	Deterioration between status classes	Compromises water body objectives	Assists attainment of water body objectives	Maximum Level 2 impact score	Requirements to improve confidence	Mitigation measures	Post mitigation impact score	Further comments
GB108049000380	**Hayle**	**Low / Low**	**Possible**	**No**	**No**	**2 (adverse impact – risk of deterioration)**	Detailed review of all baseline ecological WFD data, including results of any surveys already undertaken for this scheme. Carry out additional hydroecological assessment of implications on flow, water quality and biology of River Hayle as a result of new abstraction. Further investigation of any obstructions to fish passage (weirs etc.) should be reviewed to confirm potential reductions in flow as a result of abstraction does not inhibit fish passage (particularly as Hayle is a salmonid river further downstream of abstraction point). Further information about option, including details on abstraction conditions.	Fish and eel screening at new River Hayle intake. Abstraction conditions to be set in order to minimise changes to hydrological regime.	**2 (adverse impact – risk of deterioration)**	Could explore river restoration measures to address flow concerns in stream and ensure health of River Hayle is maintained post anticipated reduced flow if necessary. Could be an option to consider particularly as PR24 methodology encourages further implementation of NbS like river restoration and integrating said solutions as BAU practice.

Water body ID	Water body name	Confidence in WFD data and option design	Deterioration between status classes	Compromises water body objectives	Assists attainment of water body objectives	Maximum Level 2 impact score	Requirements to improve confidence	Mitigation measures	Post mitigation impact score	Further comments
GB530804906700	**HAYLE**	**Low / Low**	**Possible**	**No**	**No**	**2 (adverse impact – risk of deterioration)**	Detailed review of all baseline ecological WFD data, including results of any surveys already undertaken for this scheme. Carry out additional hydroecological assessment of implications on flow, water quality and biology of HAYLE water body as a result of new abstraction. Further information about option, including details on abstraction conditions.	Abstraction conditions to be set in order to minimise changes to hydrological regime. Potential requirement for HOF likely (subject to further assessment).	**2 (adverse impact – risk of deterioration)**	Could explore river restoration measures to address flow concerns in stream and ensure health of River Hayle is maintained post anticipated reduced flow if necessary. Could be an option to consider particularly as PR24 methodology encourages further implementation of NbS like river restoration and integrating said solutions as BAU practice.

3.2.6 COL 9: Leswidden Pool

For this option, three water bodies were identified as requiring further assessment: GB610807680001 – Lands End to Trevose Head coastal water body, GB30846547 – Drift Reservoir lake water body, GB108048002090 – Newlyn River river water body. A summary of the Level 2 WFD assessment is included in Table 3.12 and detailed outputs are presented in Annex B.

The Level 2 WFD assessment for Lands End to Trevose Head coastal water body identified potential minor localised impacts (impact score 1) to biological quality elements (invertebrates and phytoplankton), hydromorphological supporting elements (morphology) and physico-chemical quality elements (dissolved oxygen). Potential impacts are due to the proposed abstraction from Leswidden Pool, as this will lead to changes in water level and quality.

Mitigation is proposed in the form of an operational agreement for the abstraction, which ensures that abstraction conditions are set so as to minimise any adverse impacts caused by changes in water level or quality.

The RNAG status for Lands End to Trevose Head water body relates to Mercury and its compounds and PBDE, with ‘no sector responsible’. This option will not affect this reason for not achieving good status and is not anticipated to impede reaching GES / GEP or compromise water body objectives

Further investigations will be undertaken at an appropriate time, in line with the date that the option is required for the plan. Investigations are required to confirm this assessment and could include a detailed review of all additional baseline ecological WFD data. Further hydroecological assessment of the impacts of abstraction on flow, hydromorphology, water quality and biology within Balswidden/Leswidden Pools should also be undertaken in order to understand the local implications of this abstraction. Investigations will help to identify further mitigation measures required to minimise the impact of the option activities.

Following further investigation, design development and implementation of any resultant targeted mitigation, it is anticipated that WFD non-compliance risk can remain as minor localised (impact score 1) for this water body and therefore this option would be WFD compliant.

The Level 2 WFD assessment for Drift Reservoir identified potential adverse impacts (impact score 2) to biological quality elements (phytoplankton) and physico-chemical quality elements (salinity, total nitrogen, total phosphorus). The assessment also identified potential minor localised impacts (impact score 1) to priority / priority hazardous substances, and specific pollutants. Potential impacts are due to new discharge into Drift reservoir via Sancreed Stream, as this could lead to potential water quality changes in the reservoir.

Mitigation has been proposed in the form of appropriately treating source water prior to discharge into Sancreed Stream.

The RNAG status for Drift Reservoir relate to:

- Phytoplankton and total phosphorus due to ‘pollution from rural areas’, ‘pollution from wastewater’ and ‘physical modifications’;
- Dissolved inorganic nitrogen due to ‘pollution from rural areas’; and
- Mercury and Its compounds, total phosphorus, phytoplankton, PBDE, with ‘no sector responsible’.

The assessment identified potential for this option to increase pressure on the Drift Reservoir. There is potential for the option to impede gaining GES / GEP and compromise water body

objectives, namely for phytoplankton and total phosphorus. However, there is limited data available on the quality of the water source and so further monitoring is required.

Further investigations will be undertaken at an appropriate time, in line with the date that the option is required for the plan. These investigations are required to better understand the impacts of this option and could include water quality monitoring and assessment of the quality of source water (Balswidden Pool), in order to determine the potential impact of this on water quality in the Drift Reservoir. Further hydroecological assessment of the impacts of new discharge on flow, water quality and biology could also be undertaken. Investigations will help to identify further mitigation measures required to minimise the impact of the option activities.

The hydromorphological designation for the Drift Reservoir water body is ‘heavily modified’. Despite this, option activities are not expected to significantly increase the physical modification pressures as no new infrastructure is proposed in this water body (will be using an existing outfall to facilitate new discharge).

Following further investigations, design development and implementation of any resultant targeted mitigation, it is anticipated that the WFD non-compliance risk for Drift Reservoir can be reduced to minor localised (impact score 1). Therefore, for this water body, this option would be WFD compliant.

The Level 2 WFD assessment for the Newlyn River identified potential adverse impacts (impact score 2) to physico-chemical quality elements (ammonia, dissolved oxygen, pH, phosphate and temperature). The assessment also identified potential minor localised impacts (impact score 1) to biological quality elements (fish, invertebrates), priority / priority hazardous substances and specific pollutants. Potential impacts are a result of source water coming into Sancreed Stream from the former quarry site, now reservoir, Lewisdden Pool. There is limited water quality information available regarding the water within the former quarry site, and so effects are uncertain and subject to further investigation.

The assessment also identified potential beneficial impacts to hydrological regime (impact score -1). This is due to the new discharge into Sancreed Stream potentially causing increase in flow within the watercourse. Currently, this watercourse is at ‘does not support good’ status for hydrological regime. Therefore, a potential increase in flow could help to support biological elements and improve hydromorphology to a more natural state.

Mitigation has been proposed in the form of appropriately treating source water prior to discharge into Sancreed Stream and exploring potential use of river restoration / channel adjustment to allow flow volume and velocity to be better supported.

The RNAG status for Newlyn River relates to:

- Hydrological regime due to ‘changes to the natural flow and levels of water’; and
- Mercury and Its compounds and PBDE, with ‘no sector responsible’

The assessment identified that increase in flow associated with new discharge could help to support flow in watercourse and therefore help the achievement of GES / GEP. There is also potential that this increase in flow will assist in the attainment of the water body objective for hydrological regime. However, it is uncertain whether there will be a deterioration in status classes for other elements due to potential adverse impacts on physico-chemical quality elements.

Further investigations will be undertaken at an appropriate time, in line with the date that the option is required for the plan. These investigations are required to better understand the impacts of this option and could include monitoring and assessment of water quality in order to establish quality of source water (Balswidden Pool) and potential impacts of this on water quality in Sancreed Stream. Further hydroecological and hydrological assessment of the impacts of

new discharge on flow, water quality and biology could also be undertaken. Investigations will help to identify further mitigation measures required to minimise the impact of the option activities.

Following further investigation, design development and implementation of any resultant targeted mitigation, it is anticipated that WFD non-compliance risk can be reduced to minor localised (impact score 1) and therefore this option would be WFD compliant.

Table 3.12: COL9: Leswidden Pool – Level 2 WFD Summary

Water body ID	Water body name	Confidence in WFD data and option design	Deterioration between status classes	Compromises water body objectives	Assists attainment of water body objectives	Maximum Level 2 impact score	Requirements to improve confidence	Mitigation measures	Post mitigation impact score	Further comments
GB610807680001	**Lands End to Trevose Head**	**Low / Low**	**Uncertain**	**No**	**No**	**1 (minor localised impact)**	Detailed review of all additional baseline ecological WFD data, including results of any surveys already undertaken for this scheme. Although the lake water body is not considered a WFD water body and therefore this assessment has not identified a WFD risk, further hydroecology assessment of the impacts of abstraction on flow, hydromorphology, water quality and biology within Balswidden/Leswidden Pools, should be undertaken to understand the local implications of this abstraction. Further information about option, including details on abstraction conditions (HOF etc.).	Operation of abstraction should be agreed to minimise any potential impact on biology from changes in water level or quality.	**1 (minor localised impact)**	None.
GB108048002090	**Newlyn River**	**Low / Low**	**Uncertain**	**No**	**Possible**	**2 (adverse impact – risk of deterioration)**	Water quality monitoring and assessment to be undertaken to establish quality of source water (Balswidden Pool) and the potential impact of this on water quality in the Sancreed Stream. Hydrological and hydroecology assessment of the impacts of new discharge on flow and biology.	If monitoring suggests impact from poor water quality, consideration should be given to appropriate treatment of water prior to discharge into	**1 (minor localised impact)**	PR24 guidance encourages the usage of nature-based solutions, becoming increasingly BAU practice. River restoration, as a type of NbS

Water body ID	Water body name	Confidence in WFD data and option design	Deterioration between status classes	Compromises water body objectives	Assists attainment of water body objectives	Maximum Level 2 impact score	Requirements to improve confidence	Mitigation measures	Post mitigation impact score	Further comments
							Further information about option, including details on discharge conditions (volume discharged etc.).	Sancreed Stream if deemed necessary.		could address flow concerns within the Sancreed Stream and contribute environmental and social value in line with PR24 if implemented.
GB30846547	**Drift Reservoir**	**Low / Low**	**Possible**	**Possible**	**No**	**2 (adverse impact – risk of deterioration)**	Water quality monitoring and assessment to be undertaken to establish quality of source water (Balswidden Pool) and the potential impact of this on water quality in the Drift Reservoir. Hydroecology assessment of the impacts of new discharge on flow, water quality and biology. Further information about option, including details on discharge conditions (volume discharged etc.).	Appropriate treatment of source water prior to discharge into Sancreed Stream, if needed.	**1 (minor localised impact)**	None.

3.2.7 COL15: Restormel WTW- increase treatment capacity to 110Ml/d

For this option, one water body was identified as requiring further assessment: GB108048001420 – Lower River Fowey. A summary of the Level 2 WFD assessment is included in Table 3.13 and detailed outputs are presented in Annex B.

The assessment identified potential minor localised impacts (impact score 1) to biological quality elements (fish, invertebrates) and physico-chemical quality elements (ammonia, dissolved oxygen, pH, phosphate and temperature). This is due to proposed plans to increase abstraction daily peak and below ground construction activity.

Mitigation is proposed in the form of continuing appropriate compensation flow from Colliford Reservoir and Siblyback Lake to supply River Fowey with enough flow volume and velocity for new abstraction daily peak increase. Further investigations will help to identify mitigation measures required to minimise the impact of the option activities.

The RNAG status relates to Mercury and Its Compounds and PBDE, with ‘no sector responsible’. This option will not affect this reason for not achieving good status and is not anticipated to impede reaching GES / GEP or compromise water body objectives

Further investigations will be undertaken at an appropriate time, in line with the date that the option is required for the plan. These investigations are required to confirm this assessment and could include a detailed hydrological assessment of the impacts of daily peak increase on flow, hydromorphology and water quality in the watercourse. A detailed review of all baseline ecological WFD data, including results of any surveys already undertaken for this scheme, should also be conducted. Furthermore, it is recommended to explore river restoration measures to address flow concerns in stream and ensure health of River Fowey is maintained post anticipated reduced flow if necessary. These investigations will help to identify further mitigation measures required to minimise the impact of the option activities.

The Fowey (at the abstraction point) is identified as a salmonid river, which could increase the biological sensitivity to potential reductions in flow as a result of new abstraction proposed by option. Further investigation of any obstructions to fish passage (weirs etc.) should also be undertaken to ensure that any potential reductions in flow do not inhibit fish migration within this river.

Following further investigation, design development and implementation of any resultant targeted mitigation, it is anticipated that WFD non-compliance risk can remain as minor localised (impact score 1) and therefore this option would be WFD compliant.

Table 3.13: COL15: Restormel WTW- increase treatment capacity to 110Ml/d – Level 2 WFD Summary

Water body ID	Water body name	Confidence in WFD data and option design	Deterioration between status classes	Compromises water body objectives	Assists attainment of water body objectives	Maximum Level 2 impact score	Requirements to improve confidence	Mitigation measures	Post mitigation impact score	Further comments
GB108048001420	**Lower River Fowey**	**Low / Low**	No	No	No	**1 (minor localised impact)**	Detailed hydrological assessment of the impacts on watercourse of daily peak increase from 100Ml/d to 110Ml/d on flow, hydromorphology and water quality/concentration of key physicochemical parameters. Detailed review of all baseline ecological WFD data, including results of any surveys already undertaken for this scheme. Further investigation of any obstructions to fish passage (weirs etc.) should be reviewed to confirm potential reductions in flow as a result of abstraction does not inhibit fish passage (particularly as Fowey is a salmonid river). Further information about option, including details on abstraction conditions (HOF etc).	Continuation of appropriate compensation flow from Colliford Reservoir and Siblyback Lake to supply River Fowey with enough flow volume and velocity for new abstraction daily peak increase. Ensure abstraction conditions are still set in order to minimise changes to hydrological regime.	**1 (minor localised impact)**	Explore river restoration measures to address flow concerns in stream and ensure health of River Fowey is maintained post anticipated reduced flow if necessary. Could be an option to consider particularly as PR24 methodology encourages further implementation of NbS like river restoration and integrating said solutions as BAU practice.

3.2.8 COL16: College WTW Improvements - treatment and distribution system

For this option, two water bodies were identified as requiring further assessment: GB30846516 – College Reservoir lake water body and GB30846526 – Argal Reservoir lake water body. A summary of the Level 2 WFD assessment is included in Table 3.14 and detailed outputs are presented in Annex B.

For both water bodies, the Level 2 WFD assessment identified potential minor localised impacts (impact score 1) to biological quality elements (chrinomids and phytoplankton) and physico-chemical quality elements (salinity, total nitrogen and total phosphorus). Potential impacts are due to proposed abstraction increase from College and Argal reservoirs.

Mitigation is proposed in the form of setting abstraction conditions to minimise changes to hydrological regime and reservoir water levels.

The RNAG status for the College Reservoir relates to Mercury and its compounds and PBDE, with ‘no sector responsible’.

The RNAG status for the Argal Reservoir relates to:

- Phytoplankton and chironomids due to ‘pollution from rural areas’ and ‘physical modifications’;
- Total Phosphorus due to ‘pollution from rural areas’; and
- Mercury and its compounds, phytoplankton, chironomids, total phosphorus and PBDE, with ‘no sector responsible’.

This option will not affect any of these reasons for not achieving good status and is not anticipated to impede reaching GES / GEP or compromise water body objectives.

For both reservoirs, further investigations will be undertaken at an appropriate time, in line with the date that the option is required for the plan. These investigations are required to confirm this assessment and could include a detailed review of all baseline ecological WFD data and a hydroecological assessment of implications of increase in existing abstraction level on water quality and biology in the reservoirs. These investigations will help to identify further appropriate mitigation measures required to minimise the impact of the option activities. Further information about the option should also be gathered, including details on abstraction conditions.

Following further investigation, design development and implementation of any resultant targeted mitigation, it is anticipated that the WFD non-compliance risk will remain as minor (impact score 1) and, therefore for both lake water bodies, this option is assessed to be WFD compliant.

Table 3.14: COL16: College WTW Improvements - treatment and distribution system – Level 2 WFD Summary

Water body ID	Water body name	Confidence in WFD data and option design	Deterioration between status classes	Compromises water body objectives	Assists attainment of water body objectives	Maximum Level 2 impact score	Requirements to improve confidence	Mitigation measures	Post mitigation impact score
GB30846516	**College Reservoir**	**Low**	**No**	**No**	**No**	**1 (minor localised impact)**	Detailed review of all baseline ecological WFD data, including results of any surveys already undertaken for this scheme. Carry out additional hydroecological assessment of implications on level, water quality and biology of reservoir as a result of increase in existing abstraction. Further information about option, including details on abstraction conditions.	Abstraction conditions should be set in order to minimise changes to hydrological regime / minimise changes to levels in reservoir.	**1 (minor localised impact)**
GB30846526	**Argal Reservoir**	**Low**	**No**	**No**	**No**	**1 (minor localised impact)**	Detailed review of all baseline ecological WFD data, including results of any surveys already undertaken for this scheme. Carry out additional hydroecological assessment of implications on level, water quality and biology of reservoir as a result of increase in existing abstraction. Further information about option, including details on abstraction conditions.	Abstraction conditions should be set in order to minimise changes to hydrological regime / minimise changes to levels in reservoir.	**1 (minor localised impact)**

3.2.9 COL19: Boswyn stream / Cargenwen Reservoir / Carwynnen stream

For this option, two water bodies were identified as requiring further assessment: GB108049000560 – Roseworthy Stream river water body and GB30846509 – Cargenwyn Reservoir lake water body. A summary of the Level 2 WFD assessment is included in Table 3.15 and detailed outputs are presented in Annex B.

The Level 2 WFD assessment for Roseworthy stream river water body identified potential adverse impacts (impact score 2) to biological quality elements (invertebrates, macrophytes and phytobenthos combined), hydromorphological supporting elements (hydrological regime and morphology) and physico-chemical quality elements (ammonia, dissolved oxygen and phosphate). The assessment also identified potential minor localised impacts (impact score 1) to physico-chemical quality elements (phosphate and temperature). Potential impacts are due to reduction in river velocity and volume resulting from proposed new surface water abstraction.

Mitigation is proposed in the form of setting abstraction conditions so minimal changes to hydrological regime are observed and ensuring no water body contamination during construction of proposed new pumping station. Appropriate fish/eel screens on intake structure(s) should also be implemented.

The RNAG status for Roseworthy Stream relate to:

- Phosphate due to ‘pollution from wastewater’ and ‘pollution from rural areas’;
- Zinc, cadmium and its compounds, and copper due to ‘pollution from abandoned mines’;
- Mercury and its compounds, zinc, cadmium and its compounds, copper and PBDE with ‘no sector responsible’;
- Hydrological regime due to ‘changes in natural flow and levels’; and
- Benzo(g-h-i)perylene due to ‘responsible sector under investigation’.

This option has potential to increase pressure on this water body and impede it from gaining GES / GEP. This option also has potential to compromise water body objectives pertaining to phosphate and hydrological regime. This is because the proposed increased abstraction, and associated changes to flow, could reduce nutrient dilution in this water body and thus increase concentrations of Phosphate. Furthermore, increased abstraction will lead to a reduction in river flow where the hydrological regime already 'does not support good', this could lead to a reduction in the improvements which can be made to the watercourse.

Further investigations will be undertaken at an appropriate time, in line with the date that the option is required for the plan. These investigations are required to better understand the impacts of this option and could include a detailed review of all baseline ecological WFD data and a detailed hydroecological assessment of the impacts of abstraction on flow, water quality and biology. Investigations will help to identify further mitigation measures required to minimise the impact of the option activities.

Roseworthy Stream (downstream of the abstraction point) is identified as a salmonid river, which could increase the biological sensitivity to potential reductions in flow as a result of new abstraction proposed by option. Further investigation of any obstructions to fish passage (weirs etc.) should also be undertaken to ensure that any potential reductions in flow do not inhibit fish migration within this river.

Following further investigation, design development and implementation of any resultant targeted mitigation, this assessment concludes that there is still potential for WFD deterioration risk (impact score 2). Therefore, for this water body, this option may be non-compliant under WFD.

The Level 2 WFD assessment for Cargenwyn Reservoir identified potential minor localised impacts (impact score 1) to surface water supporting elements (expert judgement, mitigation measure assessment). This is primarily due to new abstraction/discharge.

No mitigation measures have been proposed. It is anticipated that after further investigations have been conducted, appropriate mitigation measures will be identified.

The RNAG status for Cargenwyn Reservoir relates to Mercury and Its Compounds and PBDE, with ‘no sector responsible’. This option will not affect this reason for not achieving good status and is not anticipated to impede reaching GES / GEP or compromise water body objectives .

Further investigations will be undertaken at an appropriate time, in line with the date that the option is required for the plan. These investigations are required to confirm this assessment and could include a detailed review of all baseline ecological WFD data and a review of EA mitigation measures assessment and any HMWBMM. These investigations will help to identify any additional mitigation measures required to minimise the impact of the option activities.

The hydromorphological designation for the Cargenwyn Reservoir lake water body is ‘heavily modified’. Despite this, option activities are not expected to significantly increase the physical modification pressures (despite new intake proposed in this water body).

Following further investigation, design development and implementation of any resultant targeted mitigation, it is anticipated that the WFD non-compliance risk will remain as minor (impact score 1) and, therefore for this water body, this option is assessed to be WFD compliant.

Table 3.15: COL19: Boswyn stream / Cargenwen Reservoir / Carwynnen stream – Level 2 WFD Summary

Water body ID	Water body name	Confidence in WFD data and option design	Deterioration between status classes	Compromises water body objectives	Assists attainment of water body objectives	Maximum Level 2 impact score	Requirements to improve confidence	Mitigation measures	Post mitigation impact score
GB108049000560	**Roseworthy Stream**	**Low / Low**	**Possible**	**Possible**	**No**	**2 (adverse impact – risk of deterioration)**	Detailed review of all baseline ecological WFD data, including results of any surveys already undertaken (eg macrophyte and fish surveys). Detailed hydroecological assessment of the impacts of abstraction on flow, water quality/concentration of key physicochemical parameters and therefore no biology. Further investigation of any obstructions to fish passage (weirs etc.) should be reviewed to confirm potential reductions in flow as a result of abstraction does not inhibit fish passage (particularly as Roseworthy Stream dowsntream of abstraction is a salmonid river). Further information about option.	Inclusion of appropriate fish/eel screens on intake structures. Ensure no contamination of water body during construction of new pumping station and WWTW. Abstraction conditions to be set to minimise changes to hydrological regime.	**2 (adverse impact – risk of deterioration)**
GB30846509	**Cargenwyn Reservoir**	**Low / Low**	**No**	**No**	**No**	**1 (minor localised impact)**	Detailed review of all baseline ecological WFD data, including results of any surveys already undertaken (e.g. macrophyte and fish surveys). Review of EA mitigation measures assessment and any HMWBMM. Further information about option.	N/A	**1 (minor localised impact)**

3.2.10 COL20: River Fal new abstraction

For this option, one water body was identified as requiring further assessment: GB108048001270 – Lower River Fal river water body. A summary of the Level 2 WFD assessment is included in Table 3.16 and detailed outputs are presented in Annex B.

The Level 2 WFD assessment identified potential adverse impacts (impact score 2) to biological quality elements (fish, invertebrates), hydromorphological supporting elements (hydrological regime and morphology) and physico-chemical quality elements (ammonia, dissolved oxygen and phosphate). These potential adverse impacts are primarily due to potential reductions in flow caused by new abstraction proposed by the option.

Mitigation is proposed in the form of using appropriate eel and fish screening at new intake and adjusting abstraction conditions to minimise changes in hydrological regime.

The ‘reasons for not achieving good’ (RNAG) status for Lower River Fal relate to:

- Phosphate and macrophytes and phytobenthos due to ‘pollution from wastewater’ and ‘pollution from rural areas’;
- Mercury and its compounds and PBDE with ‘no sector responsible’

This option has the potential to impede the Lower River Fal from reaching GES / GEP and compromise water body objectives relating to phosphate. This is because increased abstraction could reduce nutrient dilution, increasing concentrations of phosphate in the river downstream. This could potentially reduce improvements that can be made to phosphate concentrations in the water body.

Further investigations will be undertaken at an appropriate time, in line with the date that the option is required for the plan. These investigations are required to better understand the impacts of this option and could include a detailed hydroecological assessment of the impacts of proposed new abstraction from watercourse on flow, hydromorphology, water quality and biology.

The Fal (downstream of the abstraction point) is identified as a salmonid river, this could increase the biological sensitivity to potential reductions in flow. Further investigation of any obstructions to fish passage (weirs etc.) should therefore be undertaken to ensure that any potential reductions in flow do not inhibit fish migration within this river.

Following further investigation, design development and implementation of any resultant targeted mitigation, this assessment concludes that there is still potential for WFD deterioration risk (impact score 2). Therefore, for this water body, this option may be non-compliant under WFD.

Table 3.16: COL20: River Fal new abstraction – Level 2 WFD Summary

Water body ID	Water body name	Confidence in WFD data and option design	Deterioration between status classes	Compromises water body objectives	Assists attainment of water body objectives	Maximum Level 2 impact score	Requirements to improve confidence	Mitigation measures	Post mitigation impact score	Further comments
GB108048001270	**Lower River Fal**	**Low / Low**	**Possible**	**Possible**	**No**	**2 (adverse impact – risk of deterioration)**	Detailed hydroecological assessment of the impacts of up to 25Ml/d abstraction from watercourse on flow, hydromorphology, water quality/concentration of key physicochemical parameters, especially Phosphate and biology. Detailed review of baseline ecological WFD data, including results of any surveys already undertaken for this scheme. Further investigation of any obstructions to fish passage (weirs etc.) should be reviewed to confirm potential reductions in flow as a result of abstraction does not inhibit fish passage (particularly as Fal dowsntream of abstraction is a salmonid river). Further information about option, including details on abstraction conditions.	Fish and eel screening at all new intakes. Minimisation of changes to hydrological regime through adjustment of abstraction conditions.	**2 (adverse impact – risk of deterioration)**	Currently assumes that abstraction would operate across the whole flow range. In reality it seems likely that a HOF would be applied to the source.

3.2.11 COL21: South Crofty & Wheal Jane - Mine Water Reclamation

For this option, two water bodies were identified as requiring further assessment: GB108048001231 - Lower River Carnon and GB610807680001- Lands End to Trevose Head coastal water body. A summary of the Level 2 WFD assessment is included in Table 3.17 and detailed outputs are presented in Annex B.

The Level 2 WFD assessment for the Lower River Carnon identified potential adverse impacts (impact score 2) to biological quality elements (invertebrates, macrophytes and phytobenthos combined) and hydrological regime. This is due to the proposed location change of water discharged from the Wheal Jane mine. Currently, Wheal Jane mine water is discharged into the Clemows stream (part of the Lower River Carnon catchment), but this option will move discharge to Stithians Reservoir. Associated changes in flow downstream of the current discharge location could disrupt patterns of velocity and depth and particularly impact watercourse biological elements and hydrological regime. However, this is subject to further investigation.

The assessment also identified potential beneficial impacts (impact score -1) to physico-chemical elements (pH, and cadmium and its compounds). This is because cessation of mine water discharge will help to decrease some contribution of less preferential quality water in the Clemows Stream (part of the Lower River Carnon catchment). In turn, this will likely improve water quality and thus have a net beneficial impact on water quality in this watercourse.

No mitigation has been identified as it is anticipated that following further investigation appropriate mitigation will be identified.

The ‘reasons for not achieving good’ (RNAG) status for Lower River Carnon relate to:

- pH, cadmium and its compounds, copper, arsenic, zinc, invertebrates, nickel and its compounds due to ‘pollution from abandoned mines’;
- Phosphate due to ‘pollution from rural areas’ and ‘pollution from wastewater’;
- Ammonia due to ‘pollution from wastewater’; and
- Mercury and its compounds, copper, zinc, nickel and its compounds, cadmium and its compounds and PBDE, with ‘no sector responsible’.

The assessment identified that the cessation of mine water discharge into the watercourse will potentially assist attainment of objectives related to pH, cadmium and its compounds and be beneficial for copper, arsenic, zinc, nickel and invertebrates. However, there is potential for this option to impede gaining GES / GEP for some quality elements, particularly biological quality elements and hydrological regime, if appropriate mitigation measures are not identified and implemented.

Following further investigation, design development and implementation of any resultant targeted mitigation, this assessment concludes that there is still potential for WFD deterioration risk (impact score 2). Therefore, for this water body, this option may be non-compliant under WFD.

The Level 2 WFD assessment for Lands End to Trevose Head identified potential adverse impacts (impact score 2) to biological quality elements (invertebrates, phytoplankton) and physico-chemical quality elements (dissolved oxygen). The assessment also identified potential minor localised impacts (impact score 1) to morphology and priority / priority hazardous substances. Impacts are due to expected increases in salinity, temperature and alkalinity associated with mine and waste effluent discharge to a coastal water body.

Mitigation is proposed in the form of diluting or treating discharge to an appropriate level which minimises disruption to the coastal environment.

Further investigations will be undertaken at an appropriate time, in line with the date that the option is required for the plan. These investigations are required to better understand the impacts of this option and could include an assessment of the impacts if mine and waste effluent discharge on water quality in the coastal environment. The assessment should particularly focus on the Special Area of Conservation (SAC) located nearby to assumed discharge location. Investigations will help to identify further mitigation measures required to minimise the impact of the option activities.

The ‘reason for not achieving good’ (RNAG) status for the coastal water body relates to Mercury and Its compounds and PBDE due to ‘no sector responsible’. This option will not affect this reason for not achieving good status. However, there is potential for this option to impede reaching GES / GEP for several quality elements if appropriate mitigation measures are not identified and implemented. Despite this no water body objectives are expected to be compromised by option activities.

Following further investigation, design development and implementation of any resultant targeted mitigation, this assessment concludes that there is still potential for WFD deterioration risk (impact score 2). Therefore, for this water body, this option may be non-compliant under WFD.

Table 3.17: COL21: South Crofty & Wheal Jane - Mine Water Reclamation – Level 2 WFD Summary

Water body ID	Water body name	Confidence in WFD data and option design	Deterioration between status classes	Compromises water body objectives	Assists attainment of water body objectives	Maximum Level 2 impact score	Requirements to improve confidence	Mitigation measures	Post mitigation impact score
GB108048001231	**Lower River Carnon**	**Low / Low**	**Possible**	**No**	**No**	**2 (adverse impact – risk of deterioration)**	Hydroecology investigation into the impact of reduced flow on this water body.	N/A	**2 (adverse impact – risk of deterioration)**
GB610807680001	**Lands End to Trevose Head**	**Low / Low**	**Possible**	**No**	**No**	**2 (adverse impact – risk of deterioration)**	Hydrodynamic and water quality assessment of increased discharge into coastal environment particularly in regard to the SAC nearby to assumed discharge location. Further options information.	Discharge to be diluted/treated to an appropriate level which minimises disruption to the coastal environment (SAC) following analysis of water quality.	**2 (adverse impact – risk of deterioration)**

3.2.12 COL23: Mayflower WTW to Kit Hill (St. Cleer)

For this option, one water body was identified as requiring further assessment: GB40802G806700 – Tamar groundwater body. A summary of the Level 2 WFD assessment is included in Table 3.18 and detailed outputs are presented in Annex B.

The Level 2 WFD assessment identified potential minor localised impacts (impact score 1) to quantitative status elements (quantitative dependent surface water body status, quantitative GWDTEs test, quantitative water balance) and chemical status elements (chemical dependent surface water body status, chemical drinking water protected area, chemical GWDTEs test, general chemical test). Potential minor localised impacts are due to below ground construction activity and associated dewatering in the Tamar-Tavy Estuary SSSI, which is a GWDTE. Dewatering for construction could lead to a reduction in groundwater levels at the site and therefore have a short-term impact on the site during construction period.

Mitigation is proposed in the form of using clay stanks within the new pipeline route where groundwater is potentially encountered. Furthermore, if possible, shafts for river crossings should be moved out from any SSSI / GWDTE sites and sealed to ensure minimal groundwater egress after construction.

The RNAG status for Tamar groundwater body relate to:

- Chemical drinking water protected area due to ‘pollution from rural areas’;
- Chemical dependent surface water body status and trend assessment due to ‘pollution from abandoned mines’; and
- Trend assessment due to ‘pollution from rural area’.

This option will not affect any of these reasons for not achieving good status and therefore this option is not anticipated to impede reaching GES / GEP or compromise water body objectives.

Further investigations will be undertaken at an appropriate time, in line with the date that the option is required for the plan. These investigations are required to confirm this assessment and could include groundwater monitoring to understand how groundwater levels might interact with the option and investigation into the impact of dewatering for construction on groundwater levels. These further investigations will help to identify further mitigation measures required to minimise the impact of the option activities.

Following further investigation, design development and implementation of any resultant targeted mitigation, it is anticipated that WFD non-compliance risk can remain minor localised (impact score 1) and therefore this option would be WFD compliant.

Table 3.18: COL23: Mayflower WTW to Kit Hill (St. Cleer) – Level 2 WFD Summary

Water body ID	Water body name	Confidence in WFD data and option design	Deterioration between status classes	Compromises water body objectives	Assists attainment of water body objectives	Maximum Level 2 impact score	Requirements to improve confidence	Mitigation measures	Post mitigation impact score
GB40802 G806700	**Tamar**	**Low / Low**	**Possible**	**No**	**No**	**1 (minor localised impact)**	Groundwater monitoring to understand groundwater levels and how they might interact with the option. Investigation into impact on groundwater levels of dewatering for construction and consideration of requirement to return water to the ground (through recharge trenches) to help minimise the impact of construction, if required. Further information about option.	Use of clay stanks within pipeline route where groundwater potentially encountered. If possible, shafts for river crossings should be moved out from any SSSI / GWDTE sites. Shafts to be sealed to ensure minimal groundwater egress after construction.	**1 (minor localised impact)**

3.2.13 COL28: Desalination Plant at Par

For this option one river water body and one coastal water body were identified as requiring further assessment: GB108048001420 - Lower River Fowey and GB620806110001- St Austell. A summary of the Level 2 WFD assessment is included in Table 3.19 and detailed outputs are presented in Annex B.

The Level 2 WFD assessment for the Lower River Fowey identified potential adverse impacts (impact score 2) to biological quality elements (fish and invertebrates) and minor localised impacts (impact score 1) to biological quality elements (macrophytes and phytobenthos), hydromorphological supporting elements (hydrological regime) and water quality (ammonia, dissolved oxygen, pH, phosphate and temperature), priority / priority hazardous substances, specific and other pollutants. This is largely due to proposed increase to existing surface water abstraction and below ground construction activity.

Mitigation is proposed in the form of setting abstraction conditions to minimise changes to hydrological regime, and potentially implementing HOF, subject to further assessment.

The RNAG status for the Lower River Fowey river water body relates to PBDE and mercury and its compounds due to ‘No sector responsible’ This option will not affect this reason for not achieving good status. However, this option has potential to impede reaching GES / GEP if appropriate mitigation is not implemented. No water body objectives are anticipated to be impeded by option.

Further investigations will be undertaken at an appropriate time, in line with the date the option is required for the plan. Investigations are required to confirm this assessment, including a review of all baseline ecological WFD data, a hydroecological assessment of implications on flow, water quality and biology in River Fowey as a result of increase in existing abstraction, and gathering further information about option, including details on abstraction conditions.

Following further investigations, design development and implementation of any resultant targeted mitigation, it is anticipated that the WFD non-compliance risk can be reduced to minor localised (impact score 1) and therefore, for this water body, this option would be WFD compliant.

The Level 2 WFD assessment for the St Austell coastal water body identified potential adverse impacts (impact score 2) to biological quality elements (phytoplankton) and physico-chemical elements (dissolved inorganic nitrogen and dissolved oxygen) and minor localised impacts (impact score 1) to hydromorphological supporting elements (morphology), priority / priority hazardous substances, specific and other pollutants. This is largely due to a new saline discharge and a new abstraction which has the potential to adversely impact biology and lead to deterioration in the status and water quality of specific physico-chemical pollutants.

Mitigation is proposed in the form of:

- Design of desalination process and outfall structure in line with best practice to meet acceptable environmental requirements;
- Hydrodynamic modelling of impacts of abstraction and discharge into coastal water body on flow, sedimentation, bathymetry and water quality; and
- Limitations on frequency of discharge of highly saline water into St Austell Coastal water body.

The RNAG status for the St Austell coastal water body relates to Mercury and Its Compounds and PBDE due to ‘No sector responsible’

This option will not affect this reason for not achieving good status. However, this option has potential to impede reaching GES / GEP if appropriate mitigation is not implemented. No water body objectives are anticipated to be impeded by option.

Further investigations will be undertaken at an appropriate time, in line with the date the option is required for the plan for both water bodies. These investigations are required to confirm this assessment and include:

- A detailed review of all additional baseline ecological WFD data, including results of any surveys already undertaken for this option;
- Additional hydroecological assessment of the implications on flow, water quality, and biology of the Lower River Fowey due to the increase in abstraction;
- Hydrodynamic modelling of the impacts of the abstraction and discharge into the coastal water body on flow, sedimentation and water quality;
- Further investigation of exact impact saline discharge will have on other physiochemical parameters; and
- Gathering further information about the option.

Following further investigation, design development and implementation of any resultant targeted mitigation, it is anticipated that WFD non-compliance risk can be reduced to minor localised (impact score 1) and therefore this option would be WFD compliant.

Table 3.19: COL28: Desalination plant at Par – Level 2 WFD Summary

Water body ID	Water body name	Confidence in WFD data and option design	Deterioration between status classes	Compromises water body objectives	Assists attainment of water body objectives	Maximum Level 2 impact score	Requirements to improve confidence	Mitigation measures	Post mitigation impact score
GB620806110001	**St Austell**	**Low / Low**	**Possible**	**No**	**No**	**2 (potential adverse impact)**	Detailed review of all additional baseline ecological WFD data, including results of any surveys already undertaken for this option. Further information about how the option will be operated. Hydrodynamic modelling of impacts of abstraction and discharge into coastal water body on flow, sedimentation, bathymetry and water quality.	Design of desalination process and outfall structure in line with best practice to meet acceptable environmental requirements. Hydrodynamic modelling of impacts of abstraction and discharge into coastal water body on flow, sedimentation, bathymetry and water quality. Limitations on frequency of discharge of highly saline water into St Austell Coastal water body. Further investigation of exact impact saline discharge will have on other physiochemical parameters.	**1 (minor localised impact)**
GB108048001420	**Lower River Fowey**	**Low / Low**	**Possible**	**No**	**No**	**2 (potential adverse impact)**	Detailed review of all baseline ecological WFD data, including results of any surveys already undertaken for this scheme. Carry out additional hydroecological assessment of implications on flow, water quality and biology of River Fowey as a result of increase in existing abstraction.	Abstraction conditions to be set in order to minimise changes to hydrological regime. Potential requirement for HOF likely (subject to further assessment).	**1 (minor localised impact)**

Water body ID	Water body name	Confidence in WFD data and option design	Deterioration between status classes	Compromises water body objectives	Assists attainment of water body objectives	Maximum Level 2 impact score	Requirements to improve confidence	Mitigation measures	Post mitigation impact score
							Further information about option, including details on abstraction conditions.		

3.2.14 COL29: Restormel WTW - Increase Treatment Capacity to 120Ml/d

For this option, one water body was identified as requiring further assessment: GB108048001420 – Lower River Fowey river water body. A summary of the Level 2 WFD assessment is included in Table 3.20 and detailed outputs are presented in Annex B.

The Level 2 WFD assessment identified potential minor localised impacts (impact score 1) to biological quality elements (fish, invertebrates), hydromorphological supporting elements (hydrological regime) and physico-chemical quality elements (ammonia, dissolved oxygen, pH, phosphate and temperature). This is due to proposed plans to increase abstraction daily peak and associated below ground construction activity.

Mitigation is proposed in the form of continuation of appropriate compensation flow from Colliford Reservoir and Siblyback Lake to supply River Fowey with enough flow volume and velocity for new abstraction daily peak increase.

The ‘reason for not achieving good’ (RNAG) status for the water body relates to Mercury and Its Compounds and PBDE, with ‘no sector responsible’. This option will not affect this reason for not achieving good status and therefore, this option is not anticipated to impede reaching GES / GEP or compromise water body objectives.

Further investigations will be undertaken at an appropriate time, in line with the date that the option is required for the plan. These investigations are required to confirm this assessment and could include a detailed hydrological assessment of the impacts of daily peak increase on flow, hydromorphology and water quality in the watercourse. A detailed review of all baseline ecological WFD data, including results of any surveys already undertaken for this scheme, should also be conducted. Furthermore, it is recommended to explore river restoration measures to address flow concerns in stream and ensure health of River Fowey is maintained post anticipated reduced flow, if necessary. These investigations will help to identify additional mitigation measures required to minimise the impact of the option activities.

The Fowey (at the abstraction point) is identified as a salmonid river. This could increase the biological sensitivity to potential reductions in flow as a result of new abstraction proposed by option. Further investigation of any obstructions to fish passage (weirs etc.) should be undertaken to ensure that any potential reductions in flow do not inhibit fish migration within this river.

Following further investigation, design development and implementation of any resultant targeted mitigation, it is anticipated that the WFD non-compliance risk will remain as minor (impact score 1) and, therefore for this water body, this option is assessed to be WFD compliant.

Table 3.20: COL29: Restormel WTW - Increase Treatment Capacity to 120Ml/d – Level 2 WFD Summary

Water body ID	Water body name	Confidence in WFD data and option design	Deterioration between status classes	Compromises water body objectives	Assists attainment of water body objectives	Maximum Level 2 impact score	Requirements to improve confidence	Mitigation measures	Post mitigation impact score	Further comments
GB108048001420	**Lower River Fowey**	**Low / Low**	**No**	**No**	**No**	**1 (minor localised impact)**	Detailed hydrological assessment of the impacts on watercourse of daily peak increase from 100Ml/d to 110Ml/d on flow, hydromorphology and water quality / concentration of key physicochemical parameters. Detailed review of all baseline ecological WFD data, including results of any surveys already undertaken for this scheme. Further investigation of any obstructions to fish passage (weirs etc.) should be reviewed to confirm potential reductions in flow as a result of abstraction does not inhibit fish passage (particularly as Fowey at abstraction point is a salmonid river). Further information about option, including details on abstraction conditions (HOF etc).	Continuation of appropriate compensation flow from Colliford Reservoir and Siblyback Lake to supply River Fowey with enough flow volume and velocity for new abstraction daily peak increase. Ensure abstraction conditions are still set in order to minimise changes to hydrological regime.	**1 (minor localised impact)**	Explore river restoration measures to address flow concerns in stream and ensure health of River Fowey is maintained post anticipated reduced flow if necessary. Could be an option to consider particularly as PR24 methodology encourages further implementation of NbS like river restoration and integrating said solutions as BAU practice.

3.3 Roadford WRZ

3.3.1 ROA2: River Erme

For this option, one water body was identified as requiring further assessment: GB108046005200: Erme River water body. A summary of the Level 2 WFD assessment is included in Table 3.21 and detailed outputs are presented in Annex B.

The Level 2 WFD assessment identified potential adverse impacts (impact score 2) to biological quality elements (fish, invertebrates), hydrological regime and physico-chemical quality elements (ammonia, dissolved oxygen, pH, phosphate, temperature). The assessment also identified potential minor localised impacts (impact score 1) to biological quality elements (macrophytes and phytobenthos combined) and morphology. Potential impacts are due to reduced flow and velocity related to proposed new surface water abstraction.

Mitigation is proposed in the form of using fish and eel screening at the new intake and ensuring that abstraction conditions are set in order to minimise changes to hydrological regime, considering use of HOF if appropriate.

The RNAG status for the Erme River water body relates to Mercury and Its compounds and PBDE, which have ‘measures delivered to address reason and awaiting recovery’ and fish due to ‘Natural conditions’ (low pH and barriers to ecological discontinuity).

This option has the potential to increase pressure in this water body, making it more difficult to address existing issues, particularly regarding fish. Possible impediments to achieving GES / GEP are anticipated with potential to compromise water body objectives if appropriate mitigation is not identified and implemented.

Further investigations will be undertaken at an appropriate time, in line with the date that the option is required for the plan. These investigations are required to better understand the impacts of this option and could include a detailed review of all baseline ecological WFD data and a detailed hydrological assessment of the impacts of abstraction on flow, water quality and biology. Furthermore, it is recommended to explore river restoration measures to address flow concerns in stream and ensure health of River Erme is maintained post anticipated reduced flow if necessary. These investigations will help to identify further mitigation measures required to minimise the impact of the option activities.

The Erme (at the abstraction point) is identified as a salmonid river, which could increase the biological sensitivity to potential reductions in flow as a result of new abstraction proposed by option. Further investigation of any obstructions to fish passage (weirs etc.) should also be undertaken to ensure that any potential reductions in flow do not inhibit fish migration within this river.

Following further investigation, design development and implementation of any resultant targeted mitigation, this assessment concludes that there is still potential for WFD deterioration risk (impact score 2). Therefore, for this water body, this option may be non-compliant under WFD.

Table 3.21: ROA2: River Erme – Level 2 WFD Summary

Water body ID	Water body name	Confidence in WFD data and option design	Deterioration between status classes	Compromises water body objectives	Assists attainment of water body objectives	Maximum Level 2 impact score	Requirements to improve confidence	Mitigation measures	Post mitigation impact score	Further comments
GB108046005200	**Erme**	**Low / Low**	**Possible**	**Possible**	**No**	**2 (adverse impact – risk of deterioration)**	Detailed review of all baseline ecological WFD data, including results of any surveys already undertaken (e.g. macrophyte and fish surveys). Detailed hydrological/hydroecology assessment of the impacts of abstraction on flow, water quality/concentration of key physicochemical parameters and biology. Further investigation of any obstructions to fish passage (weirs etc.) should be reviewed to confirm potential reductions in flow as a result of abstraction does not inhibit fish passage (particularly as Erme is a salmonid river at abstraction point). Further information about option.	Fish and eel screening at new intake. Abstraction conditions to be set in order to minimise changes to hydrological regime. Potential requirement for HOF likely (subject to further assessment).	**2 (adverse impact – risk of deterioration)**	Could explore river restoration measures to address flow concerns in stream and ensure health of River Erme is maintained post anticipated reduced flow if necessary. Could be an option to consider particularly as PR24 methodology encourages further implementation of NbS like river restoration and integrating said solutions as BAU practice.

3.3.2 ROA3: River Yealm

For this option, one water body was identified as requiring further assessment: GB108047004010 – Lower River Yealm River water body. A summary of the Level 2 WFD assessment is included in Table 3.22 and detailed outputs are presented in Annex B.

The Level 2 WFD assessment identified potential adverse impacts (impact score 2) to biological quality elements (fish, invertebrates), hydrological regime and physico-chemical quality elements (ammonia, dissolved oxygen, pH, phosphate, temperature). The assessment also identified potential minor localised impacts (impact score 1) to priority / priority hazardous substances and specific pollutants. This is primarily due to a reduction in flow volume and velocity associated with proposed abstraction.

Mitigation is proposed in the form of using fish and eel screening at the new intake and ensuring that abstraction conditions are set in order to minimise changes to hydrological regime.

The RNAG status for this water body relate to:

- Fish due to ‘pollution from rural areas’, ‘pollution from towns, cities and transport’ and ‘physical modifications’; and
- Mercury and its compounds, fish and PBDE, with ‘no sector responsible’.

The assessment identified that reductions in flow caused by the new abstraction could lead to a reduction in dilution potential downstream of the abstraction point. This could increase severity of pollution issues and limit the potential improvements which can be made to the water body. Additionally, the impact on fish caused by the new abstraction, has the potential to compromise water body objectives and impede the water body from gaining GES / GEP if recommended mitigation measures are not identified and implemented.

Further investigations will be undertaken at an appropriate time, in line with the date that the option is required for the plan. These investigations are required to better understand the impacts of this option and could include a detailed review of all baseline ecological WFD data and a detailed hydrological assessment of the impacts of abstraction on flow, water quality and biology. Furthermore, it is recommended to explore river restoration measures to address flow concerns in stream and ensure health of River Yealm is maintained post anticipated reduced flow if necessary. These investigations will help to identify further mitigation measures required to minimise the impact of the option activities.

The Yealm (at the abstraction point) is identified as a salmonid river, which could increase the biological sensitivity to potential reductions in flow as a result of new abstraction proposed by option. Further investigation of any obstructions to fish passage (weirs etc.) should also be undertaken to ensure that any potential reductions in flow do not inhibit fish migration within this river.

Following further investigation, design development and implementation of any resultant targeted mitigation, this assessment concludes that there is still potential for WFD deterioration risk (impact score 2). Therefore, for this water body, this option may be non-compliant under WFD.

Table 3.22: ROA3: River Yealm – Level 2 WFD Summary

Water body ID	Water body name	Confidence in WFD data and option design	Deterioration between status classes	Compromises water body objectives	Assists attainment of water body objectives	Maximum Level 2 impact score	Requirements to improve confidence	Mitigation measures	Post mitigation impact score	Further comments
GB108047004010	**Lower River Yealm**	**Low / Low**	**Possible**	**Possible**	**No**	**2 (adverse impact – risk of deterioration)**	Detailed review of all baseline ecological WFD data, including results of any surveys already undertaken (eg macrophyte and fish surveys). Detailed hydrological and hydroecological assessment of the impacts of abstraction on flow, water quality/concentration of key physicochemical parameters and biology. Further investigation of any obstructions to fish passage (weirs etc.) should be reviewed to confirm potential reductions in flow as a result of abstraction does not inhibit fish passage (particularly as Yealm is a salmonid river at abstraction point). Further information about option.	Fish and eel screening at new intake. Abstraction conditions to be set in order to minimise changes to hydrological regime. Potential requirement for HOF likely (subject to further assessment).	**2 (adverse impact – risk of deterioration)**	Could explore river restoration measures to address flow concerns in stream and ensure health of River Yealm is maintained post anticipated reduced flow if necessary. Could be an option to consider particularly as PR24 methodology encourages further implementation of NbS like river restoration and integrating said solutions as BAU practice.

3.3.3 ROA4: Abstraction of Roadford compensation flow at Gunnislake when making supply releases

For this option, one water body was identified as requiring further assessment: GB108047007860 – Lower River Tamar River water body. A summary of the Level 2 WFD assessment is included in Table 3.23 and detailed outputs are presented in Annex B.

The Level 2 WFD assessment identified potential adverse impacts (impact score 2) to biological quality elements (invertebrates, macrophytes and phytobenthos combined), hydrological regime and physico-chemical quality elements (ammonia, dissolved oxygen, pH, phosphate, temperature). Potential impacts are due reductions in flow volume and velocity related to the proposed increased surface water abstraction.

Mitigation is proposed in the form of using appropriate fish and eel screening at the new intake.

The RNAG status for this water body relate to:

- Copper due to ‘pollution from abandoned mines’;
- Macrophytes and phytobenthos combined due to ‘pollution from wastewater’ and ‘pollution from rural areas’;
- PFOS due to ‘sector under investigation’; and
- Mercury and Its compounds and PBDE, with ‘no sector responsible’.

The assessment found that this option will not affect any of these reasons for not achieving good status. Despite this, this option has potential to impede reaching GES / GEP and compromise water body objectives if appropriate mitigation is not implemented.

Further investigations will be undertaken at an appropriate time, in line with the date that the option is required for the plan. Potential investigations could include a detailed review of all baseline ecological WFD data and a detailed hydrological and hydroecological assessment of the impacts of abstraction on flow, water quality and biology.

The Tamar (at the abstraction point) is identified as a salmonid river, which could increase the biological sensitivity to potential reductions in flow as a result of new abstraction proposed by option. Further investigation of any obstructions to fish passage (weirs etc.) should also be undertaken to ensure that any potential reductions in flow do not inhibit fish migration within this river.

Following further investigation, design development and implementation of any resultant targeted mitigation, this assessment concludes that there is still potential for WFD deterioration risk (impact score 2). Therefore, for this water body, this option may be non-compliant under WFD.

Table 3.23: ROA4: Abstraction of Roadford compensation flow at Gunnislake when making supply releases – Level 2 WFD Summary

Water body ID	Water body name	Confidence in WFD data and option design	Deterioration between status classes	Compromises water body objectives	Assists attainment of water body objectives	Maximum Level 2 impact score	Requirements to improve confidence	Mitigation measures	Post mitigation impact score
GB108047007860	**Lower River Tamar**	**Low / Low**	**Possible**	**Possible**	**No**	**2 (adverse impact – risk of deterioration)**	Detailed review of all baseline ecological WFD data, including results of any surveys already undertaken (eg macrophyte and fish surveys). Detailed hydrological and hydroecological assessment of the impacts of abstraction on flow, water quality/concentration of key physicochemical parameters and biology. Further investigation of any obstructions to fish passage (weirs etc.) should be reviewed to confirm potential reductions in flow as a result of abstraction does not inhibit fish passage (particularly as River Tamar is a salmonid river). Further information about option.	Fish and eel screening at new intake.	**2 (adverse impact – risk of deterioration)**

3.3.4 ROA6: Upper Tamar Lake increasing annual licence

For this option, three water bodies were identified as requiring further assessment: GB108047013920 – Upper River Tamar river water body, GB30845277 – Upper Tamar lake water body, GB30845324 – Lower Tamar Lake water body. A summary of the Level 2 WFD assessment is included in Table 3.24 and detailed outputs are presented in Annex B.

The Level 2 WFD assessment for Upper River Tamar identified potential minor localised impacts (impact score 1) to biological quality elements (fish, invertebrates) and physico-chemical quality elements (ammonia, dissolved oxygen, pH, phosphate, temperature). Potential impacts are due to proposed abstraction increase in Upper Tamar Lake, as this could lead to a delay in increased flows downstream of the reservoir.

Mitigation is proposed in the form of continuation of appropriate compensation flow provided to the River Tamar.

The RNAG status for this water body relate to:

- Fish due to ‘physical modifications’ and ‘pollution from rural areas’;
- Phosphate and macrophytes and phytobenthos due to ‘pollution from rural areas’; and
- Mercury and its compounds, fish and PBDE with ‘no sector responsible’.

The assessment found that this option will not affect any of these reasons for not achieving good status and is not anticipated to impede reaching GES / GEP or compromise water body objectives.

Further investigations will be undertaken at an appropriate time, in line with the date that the option is required for the plan. These investigations are required to confirm this assessment and could include a detailed hydrological and hydroecological assessment of the impacts of abstraction increase on water quality and biology.

Furthermore, The Tamar (downstream of Upper and Lower Tamar Lake) is identified as a salmonid river, which could increase the biological sensitivity to potential reductions in flow as a result of new abstraction proposed by option. Further investigation of any obstructions to fish passage (weirs etc.) should also be undertaken to ensure that any potential reductions in flow do not inhibit fish migration within this river.

Following further investigation, design development and implementation of any resultant targeted mitigation, it is anticipated that WFD non-compliance risk can remain as minor localised (impact score 1) and therefore this option would be WFD compliant for this water body.

The Level 2 WFD assessment for Upper Tamar Lake identified potential adverse impacts (impact score 2) to biological quality elements (phytoplankton) and physico-chemical quality elements (salinity, total nitrogen, total phosphorus). Potential impacts are primarily due to proposed abstraction increase in Upper Tamar Lake. This could lead to changes in lake level and effect dilution potential for physiochemical quality elements within the lake.

It is anticipated that following further investigation appropriate mitigation will be identified.

The RNAG status for this water body relate to:

- Total phosphorus and phytoplankton due to ‘physical modifications’ and ‘pollution from rural areas’; and
- Mercury and its compounds, phytoplankton, total phosphorus and PBDE with no sector responsible.

This option has the potential to impede the Upper Tamar Lake from reaching GES / GEP. This is because proposed increased abstraction could reduce dilution potential in the water body and

increase eutrophication, adversely impacting biology, especially phytoplankton. This will potentially make addressing existing issues in this water body more challenging. This option also has potential to compromise water body objectives, if appropriate mitigation is not identified and implemented.

Further investigations will be undertaken at an appropriate time, in line with the date that the option is required for the plan. These investigations are required to better understand the impacts of this option and could include detailed hydrological and hydroecological assessment of the impacts of abstraction increase on water quality and biology. Further investigations may help to identify appropriate mitigation measures required to minimise the impact of the option activities.

For Upper Tamar Lake, the hydromorphological designation for the water body is heavily modified. Despite this, option activities are not expected to significantly increase the physical modification pressures as no new infrastructure is proposed in this water body (use of existing intake).

Following further investigation, design development and implementation of any resultant targeted mitigation, this assessment concludes that there is still potential for WFD deterioration risk (impact score 2). Therefore, for this water body, this option may be non-compliant under WFD.

The Level 2 WFD assessment for Lower Tamar Lake identified potential minor localised impacts (impact score 1) to biological quality elements (phytoplankton), hydrological regime and physico-chemical quality elements (salinity, total nitrogen, total phosphorus). Potential impacts are due to proposed abstraction increase in Upper Tamar Lake, as this could lead to a delay in increased flows downstream of the reservoir. However, this is dependent on the extent to which releases into the Upper River Tamar will be impacted by the scheme.

Mitigation is proposed in the form of implementing appropriate compensation flow, if deemed necessary following further investigation.

The RNAG status for this water body relate to:

- Phytoplankton and total phosphorus due to ‘pollution from rural areas’ and ‘physical modifications’; and
- Mercury and its compounds, total phosphorus, phytoplankton and PBDE with ‘no sector responsible’.

The assessment found that this option will not affect any of these reasons for not achieving good status and is not anticipated to impede reaching GES / GEP or compromise water body objectives.

Further investigations will be undertaken at an appropriate time, in line with the date that the option is required for the plan. These investigations are required to confirm this assessment and could include a detailed hydrological assessment of the impacts of abstraction increase on water quality and biology.

Following further investigation, design development and implementation of any resultant targeted mitigation, it is anticipated that WFD non-compliance risk can be reduced to minor localised (impact score 1) and therefore this option would be WFD compliant.

Table 3.24: ROA6: Upper Tamar Lake increasing annual licence – Level 2 WFD Summary

Water body ID	Water body name	Confidence in WFD data and option design	Deterioration between status classes	Compromises water body objectives	Assists attainment of water body objectives	Maximum Level 2 impact score	Requirements to improve confidence	Mitigation measures	Post mitigation impact score
GB30845277	**Upper Tamar Lake**	**Low / Low**	**Possible**	**Possible**	**No**	**2 (adverse impact – risk of deterioration)**	Detailed hydrological/hydroecological assessment of the impacts of abstraction increase on water quality and biology. Further information about option.	N/A	**2 (adverse impact – risk of deterioration)**
GB108047013920	**Upper River Tamar**	**Low / Low**	**No**	**No**	**No**	**1 (minor localised impact)**	Detailed hydrological/hydroecological assessment of the impacts of abstraction increase on water quality and biology. Further investigation of any obstructions to fish passage (weirs etc.) should be reviewed to confirm potential reductions in flow as a result of abstraction does not inhibit fish passage (particularly as Tamar is a salmonid river). Further information about option.	Continuation of appropriate compensation flow to River Tamar.	**1 (minor localised impact)**
GB30845324	**Lower Tamar Lake**	**Low / Low**	**No**	**No**	**No**	**1 (minor localised impact)**	Detailed hydrological/hydroecological assessment of the impacts of abstraction increase on water quality and biology. Further information about option.	Appropriate compensation flow if deemed necessary following additional assessment.	**1 (minor localised impact)**

3.3.5 ROA7: Expansion of Northcombe WTW to 60Ml/d

For this option, two water bodies were identified as requiring further assessment: GB30847000 – Roadford lake water body and GB108047008020 – Wolf River water body. A summary of the Level 2 WFD assessment is included in Table 3.25 and detailed outputs are presented in Annex B.

The Level 2 WFD assessment for Roadford Lake identified potential adverse impacts (impact score 2) to biological quality elements (phytoplankton). This is due to proposed increased abstraction from Roadford Reservoir. The additional amount abstracted could lead to minor changes in water level and flow velocity around the intake structure.

Mitigation is proposed in the form of placing fish and eel screening at new intake.

The RNAG status for this water body relate to:

- Phytoplankton and total phosphorus due to ‘pollution from rural areas’ and ‘physical modifications’; and
- Mercury and its compounds, total phosphorus and phytoplankton and PBDE with no sector responsible.

This option has the potential to impede Roadford Lake from reaching GES / GEP by impacting phytoplankton. This could make addressing existing issues within the lake more challenging, potentially increasing the pressure on this water body. This option also has potential to compromise water body objectives if appropriate mitigation is not identified and implemented.

Further investigations should be undertaken at an appropriate time, in line with the date that the option is required for the plan. These investigations are required to better understand the impacts of this option and could include further investigation into impact of the option on EFI flow regime. Furthermore, a review of all additional baseline ecological WFD data and a hydroecology investigation into the impact of changes in reservoir water level on biology should be conducted. These investigations may help to identify additional mitigation measures required to minimise the impact of the option activities.

For Roadford Lake, the hydromorphological designation for the water body is heavily modified. Despite this, option activities are not expected to significantly increase the physical modification pressures as no new infrastructure is proposed in this water body (use of existing intake).

Following further investigation, design development and implementation of any resultant targeted mitigation, this assessment concludes that there is still potential for WFD deterioration risk (impact score 2). Therefore, for this water body, this option may be non-compliant under WFD.

The Level 2 WFD assessment for Wolf identified potential adverse impacts (impact score 2) to biological quality elements (fish, invertebrates). This is due to proposed increased abstraction from Roadford Reservoir. This is because the reservoir sits partly within the Wolf river water body and the Wolf flows in and out of the reservoir. The additional amount abstracted could lead to changes downstream of the River Wolf, considering its size. Changes in flow due to the increased abstraction could in turn lead to an impact on biology.

Mitigation is proposed in the form of ensuring appropriate compensation flow is discharged into River Wolf to maintain river health and natural flow.

The RNAG status for this water body relates to Mercury and its compounds and PBDE due to ‘no sector responsible’. The assessment found that this option will not affect this reason for not achieving good status. However, this option has potential to impede reaching GES / GEP and could compromise water body objectives if appropriate mitigation is not implemented.

Further investigations will be undertaken at an appropriate time, in line with the date that the option is required for the plan. These investigations are required to confirm this assessment and could include, a review of all additional baseline ecological WFD data. Further investigations may help to identify additional, appropriate mitigation measures required to minimise the impact of the option activities.

Following further investigation, design development and implementation of any resultant targeted mitigation, it is anticipated that WFD non-compliance risk can be reduced to minor localised (impact score 1). Therefore, this option would be WFD compliant for this water body.

Table 3.25: ROA7: Expansion of Northcombe WTW to 60Ml/d – Level 2 WFD Summary

Water body ID	Water body name	Confidence in WFD data and option design	Deterioration between status classes	Compromises water body objectives	Assists attainment of water body objectives	Maximum Level 2 impact score	Requirements to improve confidence	Mitigation measures	Post mitigation impact score	Further comments
GB30847000	**Roadford Lake**	**Low / Low**	**Possible**	**Possible**	**No**	**2 (adverse impact – risk of deterioration)**	Review of all additional baseline ecological WFD data, including results of any surveys already undertaken for this scheme. Hydroecology investigation into impact of changes in water level in reservoir on biology. Further investigation into impact on Environmental Flow Indicator (EFI) flow regime by option. Further information about option and operation of intake.	Fish and eel screening at new intake.	**2 (adverse impact – risk of deterioration)**	Assumes changes in abstraction from reservoir to provide additional flow to upgraded WTW.
GB108047008020	**Wolf**	**Low / Low**	**Possible**	**No**	**No**	**2 (adverse impact – risk of deterioration)**	Review of all additional baseline ecological WFD data, including results of any surveys already undertaken for this scheme. Further information about option and operation of intake.	Ensure appropriate compensation flow is discharged into River Wolf to maintain river health and normal flow.	**1 (minor localised impact)**	Assumes changes in abstraction from reservoir to provide additional flow to upgraded WTW.

3.3.6 ROA12: Slade and Horedown WTW (GAC)

For this option, three water bodies were identified as requiring further assessment: GB610807680004 – Bristol Channel Outer South Coastal water body, GB30843794 – Slade Higher Reservoir lake water body and GB30843764 – Slade Lower Reservoir lake water body. A summary of the Level 2 WFD assessment is included in Table 3.26 and detailed outputs are presented in Annex B.

The Level 2 WFD assessment for Bristol Channel Outer South identified potential minor localised impacts (impact score 1) to biological quality elements (invertebrates, phytoplankton), hydromorphological supporting elements (morphology) and physico-chemical quality elements (dissolved inorganic nitrogen and dissolved oxygen). Potential impacts are due to proposed reintroduction of Slade Reservoir abstraction. Abstraction has potential to reduce flow velocity and volume in West Wilder Brook, immediately downstream of Lower Slade Reservoir. Impact is assumed to be minor and localised at a water body scale because the brook is directly fed by the reservoir and the proposed abstraction is small relative to size of this water body. Reduced flow volume and velocity due to reintroduction of historic abstraction also has potential to affect water quality downstream due to reduced dilution.

Mitigation is proposed in the form of continuing appropriate compensation flow to West Wilder Brook when abstraction is operational. Furthermore, when modifications to the reservoir are underway, ensure that there is no contamination of the downstream watercourse when lowering reservoir water levels, by entrainment of contaminated bottom sediment. Assessments of sediment quality should be undertaken to ensure no hazardous chemicals are re-suspended during reservoir modification.

The RNAG status for this water body relates to Mercury and its compounds and PBDE due to ‘no sector responsible’. The assessment found that this option will not affect this reason for not achieving good status and is not anticipated to impede reaching GES / GEP or compromise water body objectives.

Further investigations should be undertaken at an appropriate time, in line with the date that the option is required for the plan. These investigations are required to confirm this assessment and could include a review of all baseline ecological WFD data and a hydrological assessment of the impacts of abstraction on water level, sedimentation, water quality and biology.

Furthermore, the West Wilder Brook (downstream of Slade Higher and Lower Reservoirs) is identified as a salmonid river, which could increase the biological sensitivity to potential reductions in flow as a result of new abstraction proposed by option. Further investigation of any obstructions to fish passage (weirs etc.) should also be undertaken to ensure that any potential reductions in flow do not inhibit fish migration within this river.

Following further investigation, design development and implementation of any resultant targeted mitigation, it is anticipated that WFD non-compliance risk can be reduced to minor localised (impact score 1) and therefore this option would be WFD compliant for this water body.

The Level 2 WFD assessment for Slade Higher Reservoir identified potential adverse impacts (impact score 2) to biological quality elements (macrophytes and phytobenthos combined). The assessment also identified potential minor localised impacts to surface water supporting elements (expert judgement and mitigation measures assessment). Impacts are primarily due to changes in water levels and flow volume and velocity relating to reintroduction of historic abstraction.

The Level 2 WFD assessment for Slade Lower Reservoir identified potential adverse impacts (impact score 2) to biological quality elements (phytoplankton) and potential minor localised impacts to surface water supporting elements (expert judgement and mitigation measures

assessment) and physico-chemical quality elements (salinity, total nitrogen and total phosphorus).

For both Slade Higher Reservoir and Slade Lower Reservoir, mitigation is proposed in the form of ensuring no contamination by entrainment of contaminated bottom sediment of downstream watercourse when lowering the water level in the reservoir. Assessments of sediment quality should be undertaken to ensure no hazardous chemicals are re-suspended during reservoir modification.

The RNAG status for the Slade Higher Reservoir water body relates to Mercury and Its Compounds and PBDE due to 'no sector responsible'.This option will not affect this reason for not achieving good status. However, the option has potential to impede Slade Higher Reservoir from reaching GES / GEP and compromise water body objectives if appropriate mitigation is not identified and implemented.

The RNAG status for the Slade Lower Reservoir water body relate to:

- Phytoplankton and total phosphorus due to 'pollution from rural areas'; and
- Mercury and Its Compounds and PBDE due to 'no sector responsible'.

The option also has potential to impede reaching GES / GEP and compromise water body objectives if appropriate mitigation is not identified and implemented. This is due to potential impacts phytoplankton and total phosphorus levels, as this could make it more difficult to address existing issues within the water body.

For both the Slade Higher Reservoir and Slade Lower Reservoir, further investigations will be undertaken at an appropriate time, in line with the date that the option is required for the plan. These investigations are required to better understand the impacts of this option and could include a review of all additional baseline ecological WFD data along with a hydrological assessment of the impacts of abstraction on water level, sedimentation, water quality and biology.

For both Slade Higher Reservoir and Slade Lower Reservoir, the hydromorphological designation for the water bodies are artificial. Despite this, option activities are not expected to significantly increase the physical modification pressures as no new infrastructure is proposed in this water body (use of existing intake).

Following further investigation, design development and implementation of any resultant targeted mitigation, this assessment concludes that there is still potential for WFD deterioration risk (impact score 2). Therefore, for both Slade Higher Reservoir and Slade Lower Reservoir this option may be non-compliant under WFD

Table 3.26: ROA12: Slade and Horedown WTW (GAC) – Level 2 WFD Summary

Water body ID	Water body name	Confidence in WFD data and option design	Deterioration between status classes	Compromises water body objectives	Assists attainment of water body objectives	Maximum Level 2 impact score	Requirements to improve confidence	Mitigation measures	Post mitigation impact score
GB30843764	**Slade Lower Reservoir**	**Low / Low**	**Possible**	**Possible**	**No**	**2 (adverse impact – risk of deterioration)**	Review of all baseline ecological WFD data, including results of any surveys already undertaken. Hydrological assessment of the impacts of abstraction on water level, sedimentation, water quality and biology.	Ensure no contamination of downstream watercourse when lowering water level in reservoir by entrainment of contaminated bottom sediment. Assessments of sediment quality should be undertaken to ensure no hazardous chemicals are re-suspended during reservoir modification.	**2 (adverse impact – risk of deterioration)**
GB610807680004	**Bristol Channel Outer South**	**Low / Low**	**No**	**No**	**No**	**2 (adverse impact – risk of deterioration)**	Review of all baseline ecological WFD data, including results of any surveys already undertaken. Hydrological assessment of the impacts of abstraction on water level, sedimentation, water quality and biology. Further investigation of any obstructions to fish passage (weirs etc.) should be reviewed to confirm potential reductions in flow as a result of abstraction does not inhibit fish passage (particularly as West Wilder Brook is a salmonid river). Further information about option.	Continuation of appropriate compensation flow to West Wilder Brook when abstraction is operational. Ensure no contamination of downstream watercourse when lowering water level reservoir by entrainment of contaminated bottom sediment. Assessments of sediment quality should be undertaken to ensure no hazardous chemicals are re-suspended during reservoir modification.	**1 (minor localised impact)**

Water body ID	Water body name	Confidence in WFD data and option design	Deterioration between status classes	Compromises water body objectives	Assists attainment of water body objectives	Maximum Level 2 impact score	Requirements to improve confidence	Mitigation measures	Post mitigation impact score
GB30843794	**Slade Higher Reservoir**	**Low / Low**	**Possible**	**Possible**	**No**	**2 (adverse impact – risk of deterioration)**	Review of all baseline ecological WFD data, including results of any surveys already undertaken. Hydrological assessment of the impacts of abstraction on water level, sedimentation, water quality and biology. Further information about option.	Ensure no contamination of downstream watercourse when lowering water level in reservoir by entrainment of contaminated bottom sediment. Assessments of sediment quality should be undertaken to ensure no hazardous chemicals are re-suspended during reservoir modification.	**2 (adverse impact – risk of deterioration)**

3.3.7 ROA14: Raise Avon Dam

For this option, two water bodies were identified as requiring further assessment: GB30846291 – Avon Dam Reservoir lake water body and GB108046004941 – Upper Avon river water body. A summary of the Level 2 WFD assessment is included in Table 3.27 and detailed outputs are presented in Annex B.

The Level 2 WFD assessment for Avon Dam reservoir identified potential adverse impacts (impact score 2) to physico-chemical quality elements (salinity, total nitrogen and total phosphorus). The assessment also identified potential minor localised impacts (impact score 1) to biological quality elements (phytoplankton) and surface water supporting elements (mitigation measures assessment). Potential impacts are due modifications of an existing WTW, as this will lead to reductions in flow and velocity and in turn, increase sedimentation. This increase in sedimentation could increase levels of certain water quality parameters where they are sediment-bound.

In order to mitigate potential impacts of this option, it should be ensured that there is no contamination of downstream water bodies when raising the reservoir, by entrainment of contaminated bottom sediment. Assessments of sediment quality should be undertaken to ensure no hazardous chemicals are re-suspended during reservoir modification.

Mitigation is proposed in the form of ensuring that there is no contamination of downstream water bodies when raising reservoir, by entrainment of contaminated bottom sediment. Assessments of sediment quality should be undertaken to ensure no hazardous chemicals are re-suspended during reservoir modification.

The RNAG status for this water body relate to:

- Total phosphorus due to ‘physical modifications’; and
- Mercury and its compounds, total phosphorus and PBDE due to ‘no sector responsible’.

This option has the potential to impede Avon Dam Reservoir from reaching GES / GEP for phosphorus as it has the potential to increase physical modifications pressures, thus making it more challenging to address existing issues in the water body. The option could also compromise water body objectives if appropriate mitigation is not identified and implemented.

Further investigations should be undertaken at an appropriate time, in line with the date that the option is required for the plan. These investigations are required to better understand the impacts of this option and could include a detailed review of all baseline ecological WFD data. Further information about the option should also be obtained, this will help to identify additional, appropriate mitigation measures required to minimise the impact of the option activities.

The Avon Dam Reservoir is designated as a heavily modified water body. Option activities have the potential to increase the physical modification pressures due to the proposed raising of the Dam in this water body.

Following further investigation, design development and implementation of any resultant targeted mitigation, this assessment concludes that there is still potential for WFD deterioration risk (impact score 2). Therefore, for this water body, this option may be non-compliant under WFD.

The Level 2 WFD assessment for Upper Avon River identified potential minor localised (impact score 1) impacts to biological quality elements (invertebrates, macrophytes and phytobenthos combined), surface water supporting elements (mitigation measures assessment) and physico-chemical quality elements (ammonia, dissolved oxygen, pH, phosphate and temperature). Potential impacts are primarily due to proposed modifications to an existing reservoir, leading to a reduction in the quantity and timing of the spills from the reservoir.

Mitigation is proposed in the form of ensuring no contamination of downstream water body when raising reservoir, by entrainment of contaminated bottom sediment. Assessments of sediment quality should be undertaken to ensure no hazardous chemicals are re-suspended during reservoir modification.

The RNAG status for this water body relate to:

- pH due to ‘natural conditions’;
- Mitigation measures assessment due to ‘physical modifications’; and
- Mercury and its compounds and PBDE due to ‘no sector responsible’.

The assessment identified a minor change to the physical modifications in this water body, potentially leading to a minor increase in the pressure on this water body as a result of proposed activities, making it more difficult to address existing issues. Despite this, the option is not anticipated to impede reaching GES / GEP or compromise water body objectives.

Further investigations should be undertaken at an appropriate time, in line with the date that the option is required for the plan. These investigations are required to confirm this assessment and could include a review of the impact of raising Avon Dam on mitigation measures assessment and a review of increased abstraction on downstream flow.

Following further investigation, design development and implementation of any resultant targeted mitigation, it is anticipated that WFD non-compliance risk can remain as minor localised (impact score 1) and therefore this option would be WFD compliant for this water body.

Table 3.27: ROA14: Raise Avon Dam – Level 2 WFD Summary

Water body ID	Water body name	Confidence in WFD data and option design	Deterioration between status classes	Compromises water body objectives	Assists attainment of water body objectives	Maximum Level 2 impact score	Requirements to improve confidence	Mitigation measures	Post mitigation impact score
GB30846291	**Avon Dam Reservoir**	**Low /Low**	**Possible**	**Possible**	**No**	**2 (adverse impact – risk of deterioration)**	Detailed review of all baseline ecological WFD data, including results of any surveys already undertaken. Assessments of sediment quality should be undertaken to ensure no hazardous chemicals are re-suspended during reservoir modification. Further information about option.	Ensure no contamination of downstream water body when raising reservoir by entrainment of contaminated bottom sediment.	**2 (adverse impact – risk of deterioration)**
GB108046004941	**Upper Avon**	**Low / Low**	**No**	**No**	**No**	**1 (minor localised impact)**	Review of the impact of raising Dam on mitigation measures assessment. Assessments of sediment quality should be undertaken to ensure no hazardous chemicals are re-suspended during reservoir modification. Review of raising dam and increased abstraction on downstream flow.	Ensure no contamination of downstream water body when raising reservoir by entrainment of contaminated bottom sediment..	**1 (minor localised impact)**

3.3.8 ROA15: Gatherley Phase 2

For this option, one water body was identified as requiring further assessment: GB108047007731 – Lower River Lyd river water body. A summary of the Level 2 WFD assessment is included in Table 3.28 and detailed outputs are presented in Annex B.

The Level 2 WFD assessment identified potential adverse impacts (impact score 2) to biological quality elements (fish, invertebrates) and hydrological regime. The assessment also identified potential minor localised impacts to biological quality elements (fish, invertebrates) and physico-chemical quality elements (ammonia, dissolved oxygen, pH, phosphate and temperature). This is primarily due to proposed abstraction from Lyd River. Impacts are likely due to reduced flow volume and velocity related to proposed abstraction from River Lyd.

Mitigation is proposed in the form of adjusting the licence or abstraction conditions to minimise impact of abstraction on biology and hydrological regime.

The ‘reasons for not achieving good’ (RNAG) status for this water body relate to:

- Mercury and its compounds and PBDE due to ‘no sector responsible’; and
- PFOS due to ‘sector under investigation’.

This option will not affect any of these reasons for not achieving good status. However, it has potential to impede reaching GES / GEP if appropriate mitigation is not identified and implemented. Option is not expected to compromise any water body objectives.

Further investigations should also be undertaken at an appropriate time, in line with the date that the option is required for the plan. These investigations are required to better understand the impacts of this option and will help to identify potential mitigation measures required to minimise the impact of the option activities. Further investigations could include a hydrological assessment of the impacts of increased abstraction on flow, hydromorphology and water, as well as a detailed review of all baseline ecological WFD data. Further review of hydromorphology and EFI flow regime should also be conducted before this option is taken forward.

The River Lyd is identified as a salmonid river, which could increase the biological sensitivity to potential reductions in flow as a result of new abstraction proposed by option. Further investigation of any obstructions to fish passage (weirs etc.) should also be undertaken to ensure that any potential reductions in flow do not inhibit fish migration within this river.

Following further investigation, design development and implementation of any resultant targeted mitigation, this assessment concludes that there is still potential for WFD deterioration risk (impact score 2). Therefore, for this water body, this option may be non-compliant under WFD.

Table 3.28: ROA15: Gatherley Phase 2 – Level 2 WFD Summary

Water body ID	Water body name	Confidence in WFD data and option design	Deterioration between status classes	Compromises water body objectives	Assists attainment of water body objectives	Maximum Level 2 impact score	Requirements to improve confidence	Mitigation measures	Post mitigation impact score
GB108047007731	**Lower River Lyd**	**Low /Low**	**Possible**	**No**	**No**	**2 (adverse impact – risk of deterioration)**	Hydrological assessment of the impacts of increased abstraction on flow, hydromorphology and water quality/concentration of key physicochemical parameters. Detailed review of all baseline ecological WFD data, including results of any surveys already undertaken for this scheme. Further information about option, including consideration to HOF and abstraction profile across different conditions (wet, average, dry or drought). Further investigation of any obstructions to fish passage (weirs etc.) should be reviewed to confirm potential reductions in flow as a result of abstraction does not inhibit fish passage (particularly as Lyd is a salmonid river). Further investigation of hydromorphology and EFI flow regime to be undertaken before option taken forward.	Potential adjustment of licence/abstraction conditions or HOF to minimise impact on biology and hydrological regime.	**2 (adverse impact – risk of deterioration)**

3.4 Wimbleball WRZ

3.4.1 WIM1: Abstraction of Wimbleball compensation flow at Northbridge when making supply releases

For this option, one water body was identified as requiring further assessment: GB108045009060 - Exe (Culm to Creedy) river water body. A summary of the Level 2 WFD assessment is included in Table 3.29 and detailed outputs are presented in Annex B

The Level 2 WFD assessment identified potential adverse impacts (impact score 2) to biological quality elements (invertebrates) and hydromorphological supporting elements (hydrological regime). The assessment also identified potential minor localised impacts (impact score 1) to physico-chemical quality elements (ammonia, dissolved oxygen, pH, phosphate and temperature). Potential impacts are primarily due to proposed abstraction from the River Exe, although abstraction is assumed to occur only during supply releases. Potential impacts of abstraction include reduced flow volume and velocity downstream.

No mitigation has been identified as it is anticipated that following further investigation appropriate mitigation will be identified.

The ‘reasons for not achieving good’ (RNAG) status for this water body relate to:

- Phosphate and macrophytes and phytobenthos due to ‘pollution from rural areas’ and ‘pollution from wastewater’; and
- Mercury and its compounds and PBDE due to ‘no sector responsible’.

This option will not affect any of these reasons for not achieving good status or compromise water body objectives. Despite this, this option has the potential to impede reaching GES / GEP if appropriate mitigation is not identified and implemented.

Further investigations should also be undertaken at an appropriate time, in line with the date that the option is required for the plan. These investigations are required to better understand the impacts of this option and could include a hydrological and hydroecological assessment of the impacts of abstraction from River Exe on flow, hydromorphology, water quality and biology. A detailed review of all baseline ecological WFD data should also be conducted and further information about the option, including abstraction conditions, should be obtained. These investigations may help to identify additional mitigation measures required to minimise the impact of the option activities.

The River Exe is identified as a salmonid river, which could increase the biological sensitivity to potential reductions in flow as a result of new abstraction proposed by option. Further investigation of any obstructions to fish passage (weirs etc.) should also be undertaken to ensure that any potential reductions in flow do not inhibit fish migration within this river.

Furthermore, it is recommended to explore river restoration measures to address flow concerns in stream and ensure health of River Exe is maintained post anticipated reduced flow if necessary.

Following further investigation, design development and implementation of any resultant targeted mitigation, this assessment concludes that there is still potential for WFD deterioration risk (impact score 2). Therefore, for this water body, this option may be non-compliant under WFD.

Table 3.29: WIM1: Abstraction of Wimbleball compensation flow at Northbridge when making supply releases – Level 2 WFD Summary

Water body ID	Water body name	Confidence in WFD data and option design	Deterioration between status classes	Compromises water body objectives	Assists attainment of water body objectives	Maximum Level 2 impact score	Requirements to improve confidence	Mitigation measures	Post mitigation impact score	Further comments
GB108045009060	**Exe (Culm to Creedy)**	**Low /Low**	**Possible**	**No**	**No**	**2 (adverse impact – risk of deterioration)**	Hydrological and hydroecological assessment of the impacts of 9Ml/d abstraction from watercourse on flow, hydromorphology, water quality and biology. Detailed review of all baseline ecological WFD data, including results of any surveys already undertaken for this scheme. Further investigation of any obstructions to fish passage (weirs etc.) should be reviewed to confirm potential reductions in flow as a result of abstraction does not inhibit fish passage (particularly as River Exe is a salmonid river). Further information about option, including details on abstraction conditions (HOF etc).	N/A	**2 (adverse impact – risk of deterioration)**	Explore river restoration measures to address flow concerns in stream and ensure health of River Exe is maintained post anticipated reduced flow if necessary. Could be an option to consider particularly as PR24 methodology encourages further implementation of NbS like river restoration and integrating said solutions as BAU practice.

3.4.2 WIM2: Sidford borehole commissioning

For this option, one water body was identified as requiring further assessment: GB40802G802800 – Sidmouth-Honiton, Mercia Mudstone groundwater body. A summary of the Level 2 WFD assessment is included in Table 3.30 and detailed outputs are presented in Annex B.

The Level 2 WFD assessment identified potential adverse impacts (impact score 2) to quantitative dependent surface water body status and quantitative water balance. The assessment also identified potential minor localised impacts (impact score 1) to chemical dependent surface water body status. Potential impacts are due to increased groundwater abstraction and temporary dewatering associated with the refurbishment of existing boreholes.

Mitigation is proposed in the form of confirming current / historical usage of source and reviewing previous assessments. This will confirm whether the borehole licence operated sustainably at time of operation and would therefore lead to no risk when reinstated. Furthermore, suitable temporary treatment could be put in place to prevent pollution from any temporary discharges to surface water.

No reasons for not achieving good status were identified and no water body objectives are anticipated to be compromised by this option. However, this option has potential to impede GES / GEP if appropriate mitigation measures are not implemented.

Further investigations should also be undertaken at an appropriate time, in line with the date that the option is required for the plan. These investigations are required to better understand the impacts of this option and will help to identify potential mitigation measures required to minimise the impact of the option activities. This could include a hydrogeological assessment of the impacts of increased groundwater abstraction on water balance and flows to surface water courses and a review of all baseline WFD data.

Following further investigation, design development and implementation of any resultant targeted mitigation, this assessment concludes that there is still potential for WFD deterioration risk (impact score 2). Therefore, for this water body, this option may be non-compliant under WFD.

Table 3.30: WIM2: Sidford borehole commissioning – Level 2 WFD Summary

Water body ID	Water body name	Confidence in WFD data and option design	Deterioration between status classes	Compromises water body objectives	Assists attainment of water body objectives	Maximum Level 2 impact score	Requirements to improve confidence	Mitigation measures	Post mitigation impact score	Further comments
GB40802 G802800	**Sidmouth-Honiton, Mercia Mudstone**	**Low / Low**	Possible	Possible	No	**2 (minor adverse impact – risk of deterioration)**	Hydrogeological assessment of the impacts of increased groundwater abstraction on water balance and flows to surface water bodies. Review of all baseline WFD data, including results of any surveys already undertaken for this scheme. Further information about option, including details on abstraction conditions.	SWW to confirm current/historical usage and review previous assessments to confirm if borehole licence operated sustainably at time of operation and would therefore lead to no risk when reinstated. Suitable temporary treatment will be put in place to prevent pollution from any temporary discharges to surface water.	**2 (minor adverse impact – risk of deterioration)**	Assuming abstraction is from the Sherwood Sandstone Group, surface water body impacts are unlikely as rest water level is approximately 20mbgl and sandstone is overlain by mudstone at the site. Groundwater balance may be a concern, further assessment is required.

3.4.3 WIM4: Wilmington springs annual abstraction increase

For this option one water body was identified as requiring further assessment: GB108045008880 - Umborne Brook river water body. A summary of the Level 2 WFD assessment is included in Table 3.31 and detailed outputs are presented in Annex B.

The Level 2 WFD assessment identified minor localised impacts (impact score 1) to biological quality elements (invertebrates), hydromorphological supporting elements (hydrological regime), physico-chemical quality elements, priority hazardous substances and priority substances. This is due to the increased abstraction, leading to the lowering of groundwater levels and corresponding reductions in flow volume and velocity in surface watercourses.

No mitigation has been identified as it is anticipated that following further investigation appropriate mitigation will be identified.

The RNAG status for the Umborne Brook river body relate to:

- Macrophytes and phytobenthos combined and phosphate due to ‘pollution from waste water’ and ‘pollution from rural areas’; and
- Mercury and its compounds and PBDE due to ‘no sector responsible’.

This option will not affect any of these reasons for not achieving good status. Therefore, this option is not anticipated to impede reaching GES / GEP or compromise water body objectives.

Further investigations will be undertaken at an appropriate time, in line with the date the option is required for the plan. These investigations are required to confirm this assessment and could include an assessment of the impact of increased abstraction on groundwater levels and flow volume in surface watercourses. It is recommended to explore river restoration measures to address flow concerns in stream and ensure health of Umborne stream is maintained post anticipated reduced flow if necessary. These investigations may help to identify appropriate mitigation measures required to minimise the impact of the option activities.

Furthermore, the Umborne Brook is identified as a salmonid river downstream of option activities, which could increase the biological sensitivity to potential reductions in flow as a result of new abstraction proposed by option. Further investigation of any obstructions to fish passage (weirs etc.) should also be undertaken to ensure that any potential reductions in flow do not inhibit fish migration within this river.

Following further investigation, design development and implementation of any resultant targeted mitigation, it is anticipated that WFD non-compliance risk can remain as minor localised (impact score 1) and therefore this option would be WFD compliant for this water body.

Table 3.31: WIM4: Wilmington springs annual abstraction increase – Level 2 WFD Summary

Water body ID	Water body name	Confidence in WFD data and option design	Deterioration between status classes	Compromises water body objectives	Assists attainment of water body objectives	Maximum Level 2 impact score	Requirements to improve confidence	Mitigation measures	Post mitigation impact score	Further comments
GB108045008880	**Umborne Brook**	**Low / Low**	**No**	**No**	**No**	**1 (minor localised impact)**	Review of all baseline ecological WFD data, including results of any surveys already undertaken for this scheme. Carry out additional assessment of the potential implications on flow and biology of Umborne stream as a result of reduced water from springs / reduced baseflow supplying it. Further investigation of any obstructions to fish passage (weirs etc.) should be reviewed to confirm potential reductions in flow as a result of abstraction does not inhibit fish passage (particularly as Umborne Brook is a salmonid river downstream). Further information about option, including details on abstraction conditions.	N/A	**1 (minor localised impact)**	Explore river restoration measures to address flow concerns in stream and ensure health of Umborne stream is maintained post anticipated reduced flow if necessary. Could be an option to consider particularly as PR24 methodology encourages further implementation of NbS like river restoration and integrating said solutions as BAU practice.

3.4.4 WIM5: Indirect potable reuse - stream support for Dotton WTW.

For this option one water body was identified as requiring further assessment: GB108045009160: Sid river water body. A summary of the Level 2 WFD assessment is included in Table 3.32 and detailed outputs are presented in Annex B.

The Level 2 WFD assessment identified potential adverse impacts (impact score of 2) to biological quality elements (invertebrates) and hydromorphological elements (hydrological regime). Minor and localised impacts (impact score of 1) were identified for physicochemical elements (ammonia, dissolved oxygen, pH, phosphate and temperature).This is primarily due to a reduction in flow volume and velocity, change in sediment deposition rates resulting from the cessation of an existing discharge to the watercourse.

No mitigation has been identified as it is anticipated that following further investigation appropriate mitigation will be identified.

The RNAG status for the water body relate to Macrophytes and Phytobenthos Combined due to ‘pollution from rural areas’ and ‘pollution from towns, cities and transport’. This option will not affect any of these reasons for not achieving good status. However, this option is anticipated impede reaching GES / GEP if appropriate mitigation is not identified and implemented. Despite this, it is not anticipated that the option will compromise water body objectives.

Further investigations will be undertaken at an appropriate time, in line with the date the option is required for the plan. These investigations are required to better understand the impacts of this option and will help to identify potential mitigation measures required to minimise the impact of the option activities. This could include a hydrological assessment of the impacts of cessation of discharge, a detailed review of all baseline ecological WFD data, and further information about the option, where available.

The River Sid is identified as a salmonid river, which could increase the biological sensitivity to potential reductions in flow as a result of new abstraction proposed by option. Further investigation of any obstructions to fish passage (weirs etc.) should also be undertaken to ensure that any potential reductions in flow do not inhibit fish migration within this river.

Furthermore, it is recommended to explore river restoration measures to address flow concerns in stream and ensure health of River Sid is maintained post anticipated seasonal reduced flow if necessary.

The ‘reasons for not achieving good’ (RNAG) status for the Sid river body relate to Macrophytes and Phytobenthos Combined due to ‘Pollution from rural areas’ and ‘Pollution from towns, cities and transport’. This option will not affect any of these reasons for not achieving good status and therefore this option is not anticipated to impede reaching GEP or compromise water body objectives.

Further investigations will be undertaken at an appropriate time, in line with the date the option is required for the plan. These investigations are required to confirm this assessment including a hydrological assessment of the impacts of cessation of discharge, a detailed review of all baseline ecological WFD data, and further information about the option, where available.

Following further investigation, design development and implementation of any resultant targeted mitigation, this assessment concludes that there is still potential for WFD deterioration risk (impact score 2). Therefore, for this water body, this option may be non-compliant under WFD.

Table 3.32: WIM5: Indirect potable reuse - stream support for Dotton WTW – Level 2 WFD Summary

Water body ID	Water body name	Confidence in WFD data and option design	Deterioration between status classes	Compromises water body objectives	Assists attainment of water body objectives	Maximum Level 2 impact score	Requirements to improve confidence	Mitigation measures	Post mitigation impact score	Further comments
GB10804 5009160	**Sid**	**Low / Low**	**Possible**	**No**	**No**	**2 (adverse impact – risk of deterioration)**	Hydrological assessment of the impacts of cessation of discharge. Detailed review of all baseline ecological WFD data, including results of any surveys already undertaken for this scheme. Carry out additional assessment of the potential implications on flow of Sid River as a result of seasonal cessation of discharge. Further investigation of any obstructions to fish passage (weirs etc.) should be reviewed to confirm potential reductions in flow as a result of abstraction does not inhibit fish passage (particularly as River Sid is a salmonid river). Further information about option, where available.	N/A	**2 (adverse impact – risk of deterioration)**	Explore river restoration measures to address flow concerns in stream and ensure health of River Sid is maintained post anticipated seasonal reduced flow if necessary. Could be an option to consider particularly as PR24 methodology encourages further implementation of NbS like river restoration and integrating said solutions as BAU practice.

3.4.5 WIM7: Increase Pynes to licence limit 66.46Ml/d

For this option two water bodies were identified as requiring further assessment: GB108045009060: Exe (Culm to Creedy) and GB108045009040: Exe (Creedy to Estuary). A summary of the Level 2 WFD assessment is included in Table 3.33 and detailed outputs are presented in Annex B.

The Level 2 WFD assessment for both water bodies identified potential adverse impacts (impact score of 2) to biological quality elements (invertebrates) and hydromorphological supporting elements (hydrological regime) and potential minor localised impacts (impact score of 1) to physico-chemical quality elements, priority hazardous substances and priority substances. This is due primarily to a reduction in flow velocity and volume, relating to an increased abstraction.

Mitigation is required in the form of ensuring the natural flow of the Exe is not inhibited by increased abstraction. Water could be supplemented by Wimbleball Reservoir releases into the River Haddeo where appropriate. Additionally, fish and eel screens shall be installed at the new intake.

The RNAG status for the Exe (Culm to Creedy) water body relate to:

- Phosphate and macrophytes and phytobenthos combined due to ‘pollution from rural areas’ and ‘pollution from urban areas’; and
- Mercury and its compounds and PBDE due to ‘no sector responsible’.

This option will not affect any of these reasons for not achieving good status. However, this option is anticipated to impede reaching GES / GEP if appropriate mitigation is not identified and implemented. Despite this, it is not anticipated that the option will compromise water body objectives.

The RNAG status for the Exe (Creedy to Estuary) water body relate to:

- Mitigation measures assessment due to ‘flood protection measures’;
- Phosphate and macrophytes and phytobenthos combined due to ‘pollution from waste water’
- and ‘poor livestock management’; and
- Mercury and its compounds and PBDE due to ‘no sector responsible’.

An increase in abstraction of flow could reduce nutrient dilution, increasing concentrations of phosphate, macrophytes, and phytobenthos in the river downstream and potentially leading to a reduction in the improvements that can be made. This option is anticipated to impede reaching GES / GEP if appropriate mitigation is not identified and implemented. Despite this, it is not anticipated that the option will compromise water body objectives.

Further investigations will be undertaken at an appropriate time, in line with the date the option is required for the plan. These investigations are required to better understand the impacts of this option and will help to identify potential mitigation measures required to minimise the impact of the option activities. This could include hydroecological investigation into impact of changes in flow on the river and biology is required for both water bodies to improve confidence in this assessment. This licence is under Water Industry Natural Environment Plan (WINEP) investigation in Asset Management Plan 7 (AMP7) for the potential for WFD deterioration, which would affect the sustainability of this option. The results of this investigation are not available at the time of writing.

The River Exe is identified as a salmonid river, which could increase the biological sensitivity to potential reductions in flow as a result of new abstraction proposed by option. Further investigation of any obstructions to fish passage (weirs etc.) should also be undertaken to ensure that any potential reductions in flow do not inhibit fish migration within this river.

The reasons for not achieving good status (RNAG) for the Exe (Culm to Creedy) water body relate to:

- Phosphate, Mercury and its Compounds and Macrophytes and Phytobenthos Combined due to ‘Pollution from rural areas’
- Phosphate and Macrophytes and Phytobenthos Combined due to ‘Pollution from urban areas’
- PDPEs and Mercury and its Compounds due to ‘No sector responsible’

The reasons for not achieving good status (RNAG) for the Exe (Creedy to Estuary) water body relate to:

- PDPEs and Mercury and its Compounds due to ‘No sector responsible’
- Mitigation measures assessment due to ‘Local and central government’
- Phosphate and Macrophytes and Phytobenthos Combined due to ‘Pollution from waste water’ and ‘Poor Livestock Management’

The Level 2 WFD assessment on the Exe (Creedy to Estuary) water body identified potential impediments to meeting Good status. An increase in abstraction of flow could reduce nutrient dilution, increasing concentrations of phosphate, macrophytes, and phytobenthos in the river downstream and potentially leading to a reduction in the improvements that can be made. Following further investigation, design development and implementation of any resultant targeted mitigation, it is anticipated that WFD non-compliance risk can be reduced to minor localised (impact score 1) and therefore this option would be WFD compliant for both water bodies.

Table 3.33: WIM7: Increase Pynes to licence limit 66.46Ml/d – Level 2 WFD Summary

Water body ID	Water body name	Confidence in WFD data and option design	Deterioration between status classes	Compromises water body objectives	Assists attainment of water body objectives	Maximum Level 2 impact score	Requirements to improve confidence	Mitigation measures	Post mitigation impact score
GB108045009040	**Exe (Creedy to Estuary)**	**Low / Low**	**Possible**	**No**	**No**	**2 (adverse impact – risk of deterioration)**	Hydroecological assessment of the impacts of increase in abstraction from watercourse on flow, hydromorphology and water quality / concentration of key physicochemical parameters, especially TP / Phosphate due to RNAG's. Detailed review of all baseline ecological WFD data, including results of any surveys already undertaken for this scheme. Further investigation of any obstructions to fish passage (weirs etc.) should be reviewed to confirm potential reductions in flow as a result of abstraction does not inhibit fish passage (particularly as River Exe is a salmonid river). Further information about option, including details on abstraction conditions and potential Wimbleball Reservoir releases.	Fish and eel screening at new intake. Further investigation into impact on EFI flow regime by option.	**1 (minor localised impact)**
GB108045009060	**Exe (Culm to Creedy)**	**Low / Low**	**Possible**	**No**	**No**	**2 (adverse impact – risk of deterioration)**	Hydroecological assessment of the impacts of increase in abstraction from watercourse on flow, hydromorphology and water quality / concentration of key physicochemical parameters, especially TP / Phosphate due to RNAG's. Detailed review of all baseline ecological WFD data, including results of any surveys already undertaken for this scheme. Further investigation of any obstructions to fish passage (weirs etc.) should be reviewed to confirm potential reductions in flow as a result of abstraction does not inhibit fish passage (particularly as River Exe is a salmonid river). Further information about option, including details on abstraction conditions and potential Wimbleball Reservoir releases.	Fish and eel screening at new intake. Further investigation into impact on EFI flow regime by option.	**1 (minor localised impact)**

3.4.6 WIM8: Brampford Speke borehole

For this option one water body was identified as requiring further assessment: GB40801G801700 Permian Aquifers in Central Devon groundwater body. A summary of the Level 2 WFD assessment is included in Table 3.34 and detailed outputs are presented in Annex B.

The Level 2 WFD assessment identified potential adverse impacts (impact score 2) to quantitative status elements (quantitative water balance) and minor localised impacts (impact score 1) to quantitative dependent surface water body status. This is due to increased abstraction of groundwater outside of recent actual rates but within licence conditions.

No mitigation has been identified as it is anticipated that following further investigation appropriate mitigation will be identified.

The reasons for not achieving good status (RNAG) for Permian Aquifers in Central Devon groundwater body relate to General chemical test, trend assessment and chemical drinking water protected area due to ‘pollution from rural areas’. This option will not affect any of these reasons for not achieving good status. However it is anticipated that this option will impede GES / GEP if appropriate mitigation is not identified and implemented. Despite this no water body objectives are anticipated to be compromised.

Further investigations will be undertaken at an appropriate time, in line with the date the option is required for the plan. These investigations are required to better understand the impacts of this option and confirm the possible long-term impacts on the groundwater environment, including detailed hydrogeological assessments of the impacts of increased groundwater abstraction on water balance and flows to surface water courses. A review of all baseline ecological WFD data, including results of any surveys are also considered under recommended investigations.

This licence is under WINEP investigation in AMP7 for the potential for WFD deterioration, which would affect the sustainability of this option. The results of this investigation are not available at the time of writing so on a precautionary basis this assessment has concluded a potential risk of deterioration. Pending the outcome of the WINEP AMP7 investigation, further assessment may be required into the possible long-term impacts on the groundwater environment. It is possible that abstraction is taken fully at the expense of river flow, although with some seasonal variation (eg groundwater might be taken in the summer at the expense of groundwater storage made up by a reduction in river flows in the winter). If so, this scheme may not provide any significant benefit. Further investigation is recommended.

Following further investigation, design development and implementation of any resultant targeted mitigation, this assessment concludes that there is still potential for WFD deterioration risk (impact score 2). Therefore, for this water body, this option may be non-compliant under WFD.

Table 3.34: WIM8: Brampford Speke borehole - Level 2 WFD Summary

Water body ID	Water body name	Confidence in WFD data and option design	Deterioration between status classes	Compromises water body objectives	Assists attainment of water body objectives	Maximum Level 2 impact score	Requirements to improve confidence	Mitigation measures	Post mitigation impact score	Further comments
GB40801 G801700	**Permian Aquifers in Central Devon**	**Low /Low**	**Possible**	**Possible**	**No**	**2 (adverse impact – risk of deterioration)**	This licence is under WINEP investigation in AMP7 for the potential for WFD deterioration, which would affect the sustainability of this option. The results of this investigation are not available at the time of writing and pending these results this option assessment may change. Pending on outcome further hydrogeological assessment of the impacts of increased groundwater abstraction on water balance and flows to surface water bodies may be needed. Review of all baseline ecological WFD data, including results of any surveys already undertaken for this scheme. Further information about option, including details on abstraction conditions.	N/A	**2 (adverse impact – risk of deterioration)**	It is possible that abstraction is taken fully at the expense of river flow, although with some seasonal variation (eg groundwater might be taken in the summer at the expense of groundwater storage made up by a reduction in river flows in the winter). If so, this scheme may not provide any significant benefit. Further investigation recommended.

3.4.7 WIM9: Stoke Canon borehole

For this option one water body was identified as requiring further assessment: GB40801G801700 Permian Aquifers in Central Devon groundwater body. A summary of the Level 2 WFD assessment is included in Table 3.35 and detailed outputs are presented in Annex B.

The Level 2 WFD assessment identified potential adverse impacts (impact score 2) to quantitative status elements (quantitative water balance and quantitative dependent surface water body status). This is due to proposed increased abstraction of groundwater outside of recent actual rates but within licence conditions.

No mitigation has been identified as it is anticipated that following further investigation appropriate mitigation will be identified.

The reasons for not achieving good status (RNAG) for Permian Aquifers in Central Devon groundwater body relate to General chemical test, trend assessment and chemical drinking water protected area due to ‘pollution from rural areas’. This option will not affect any of these reasons for not achieving good status. However it is anticipated that this option will impede GES / GEP if appropriate mitigation is not identified and implemented. Despite this no water body objectives are anticipated to be compromised.

Further investigations will be undertaken at an appropriate time, in line with the date the option is required for the plan. These investigations are required to better understand the impacts of this option and confirm the possible long-term impacts on the groundwater environment, including detailed hydrogeological assessments of the impacts of increased groundwater abstraction on water balance and flows to surface water courses. A review of all baseline ecological WFD data, including results of any surveys are also considered under recommended investigations.

This licence is under WINEP investigation in AMP7 for the potential for WFD deterioration, which would affect the sustainability of this option. The results of this investigation are not available at the time of writing so on a precautionary basis this assessment has concluded a potential risk of deterioration. Pending the outcome of the WINEP AMP7 investigation, further studies may be needed into the possible long-term impacts on the groundwater environment. It is possible that abstraction is taken fully at the expense of river flow, although with some seasonal variation (eg groundwater might be taken in the summer at the expense of groundwater storage made up by a reduction in river flows in the winter). If so, this scheme may not provide any significant benefit. Further investigation is recommended.

Following further investigation, design development and implementation of any resultant targeted mitigation, this assessment concludes that there is still potential for WFD deterioration risk (impact score 2). Therefore, for this water body, this option may be non-compliant under WFD.

Table 3.35: WIM9: Stoke Canon borehole – Level 2 WFD Summary

Water body ID	Water body name	Confidence in WFD data and option design	Deterioration between status classes	Compromises water body objectives	Assists attainment of water body objectives	Maximum Level 2 impact score	Requirements to improve confidence	Mitigation measures	Post mitigation impact score	Further comments
GB40801 G801700	**Permian Aquifers in Central Devon**	**Low / Low**	**Possible**	**Possible**	**No**	**2 (adverse impact – risk of deterioration)**	Awaiting outcome of AMP7 WINEP investigation into WFD deterioration risk. Pending on outcome further hydrogeological assessment of the impacts of increased groundwater abstraction on water balance and flows to surface water bodies may be needed. Review of all baseline ecological WFD data, including results of any surveys already undertaken for this scheme. Further information about option, including details on abstraction conditions.	N/A	**2 (adverse impact – risk of deterioration)**	It is possible that abstraction is taken fully at the expense of river flow, although with some seasonal variation (eg groundwater might be taken in the summer at the expense of groundwater storage made up by a reduction in river flows in the winter). If so, this scheme may not provide any significant benefit. Further investigation recommended.

3.4.8 WIM12: Aller Springs

For this option two water bodies were identified as requiring further assessment: GB40801G801700: Permian Aquifers in Central Devon groundwater body and GB40802G801800: Central Devon and Exe – Aylesbeare Mudstone groundwater body. A summary of the Level 2 WFD assessment is included in Table 3.36 and detailed outputs are presented in Annex B.

The Level 2 WFD assessment identified minor localised impacts (impact score 1) to quantitative status (quantitative dependent surface water body status and quantitative water balance) for both groundwater bodies. This is due to increased abstraction which may lead to reduced groundwater level and impact river health. No mitigation has been proposed for either groundwater body.

No mitigation has been identified as it is anticipated that following further investigation appropriate mitigation will be identified.

The RNAG status for the Permian Aquifers in Central Devon groundwater body relate to General chemical test, trend assessment and chemical drinking water protected area due to ‘pollution from rural areas’. The RNAG status for the Central Devon and Exe - Aylesbeare Mudstone groundwater body relate to Trend assessment and chemical drinking water protected area due to ‘pollution from rural areas’. This option will not affect any of these reasons for not achieving good status. This option is not anticipated to impede reaching GES / GEP or compromise water body objectives for both water bodies.

Further investigations will be undertaken at an appropriate time, in line with the date the option is required for the plan. Further assessment is required to confirm the possible long-term impacts on the groundwater environment, including detailed hydrogeological assessments of the impacts of increased groundwater abstraction on water balance and flows to surface water courses. Additionally, investigations should seek confirm if the site location is a borehole or spring and is able to deliver the proposed yield.

Following further investigation, design development and implementation of any resultant targeted mitigation, it is anticipated that WFD non-compliance risk can remain as minor localised (impact score 1) and therefore this option would be WFD compliant for this water body.

Table 3.36: WIM12: Aller Springs – Level 2 WFD Summary

Water body ID	Water body name	Confidence in WFD data and option design	Deterioration between status classes	Compromises water body objectives	Assists attainment of water body objectives	Maximum Level 2 impact score	Requirements to improve confidence	Mitigation measures	Post mitigation impact score
GB40801 G801700	**Permian Aquifers in Central Devon**	**Low /Low**	**No**	**No**	**No**	**1 (minor localised impact)**	Detailed hydrogeological assessment of the impacts of increased groundwater abstraction on water balance and flows to surface water bodies. Confirm if site is a borehole or spring. Confirm it is still active/able to deliver proposed yield. Detailed review of all baseline ecological WFD data, including results of any surveys already undertaken for this scheme. Further information about option, including details on abstraction conditions.	N/A	**1 (minor localised impact)**
GB40802 G801800	**Central Devon and Exe – Aylesbeare Mudstone**	**Low / Low**	**No**	**No**	**No**	**1 (minor localised impact)**	Detailed hydrogeological assessment of the impacts of increased groundwater abstraction on water balance and flows to surface water bodies. Detailed review of all baseline ecological WFD data, including results of any surveys already undertaken for this scheme. Further information about option, including details on abstraction conditions.	N/A	**1 (minor localised impact)**

3.4.9 WIM15: Northcombe WTW to Allers WTW

For this option two groundwater bodies were identified as requiring further assessment: GB40802G800600: Torridge and Hartland Streams groundwater body and GB40802G801000: River Taw and North Devon Streams. A summary of the Level 2 WFD assessment is included in Table 3.37 and detailed outputs are presented in Annex B.

The Level 2 WFD assessment for both groundwater bodies identified minor localised effects (impact score 1) on quantitative status elements (quantitative dependent surface water body status, quantitative GWDTE test and quantitative water balance) and chemical status elements (chemical dependent surface water body status, chemical GWDTE test and general chemical test). This is due to potential temporary changes in water quality from construction activities and groundwater level and water quality from construction dewatering at GWDTEs including Whiddon Moor, Luckroft & Odham Marshes SSSI, Hollow Moor & Odham Moor SSSI and Ribson Meadows SSSI. These temporary changes in water quality could have minor implications on biology.

Mitigation is proposed in the form of using clay stanks within the pipeline route where groundwater could potentially be encountered, to potentially move shafts further away from SSSI sites, and to ensure that any shafts are sealed to ensure minimal groundwater egress after construction.

The RNAG status for the Torridge and Hartland Streams groundwater body relate to:

- Trend assessment due to ‘sector under investigation’; and
- Chemical drinking water protected areas due to ‘no sector responsible’.

The RNAG status for the River Taw and North Devon Streams groundwater body relate to Trend assessment and chemical drinking water protected area due to ‘pollution from rural areas’. This option will not affect any of these reasons for not achieving good status. It is also anticipated that this option is not anticipated to impede reaching GES / GEP or compromise any water body objectives.

Further investigations will be undertaken at an appropriate time, in line with the date the option is required for the plan. These investigations are required to confirm this assessment to confirm the extent of groundwater level changes due to construction dewatering and review the degree of groundwater dependency of the identified GWDTEs.

Following further investigation, design development and implementation of any resultant targeted mitigation, it is anticipated that WFD non-compliance risk can remain as minor localised (impact score 1) and therefore this option would be WFD compliant for this water body.

Table 3.37: WIM15: Northcombe to Allers WTW – Level 2 WFD Summary

Water body ID	Water body name	Confidence in WFD data and option design	Deterioration between status classes	Compromises water body objectives	Assists attainment of water body objectives	Maximum Level 2 impact score	Requirements to improve confidence	Mitigation measures	Post mitigation impact score
GB40802 G800600	**Torridge and Hartland Streams**	**Low /Low**	**No**	**No**	**No**	**1 (minor localised impact)**	Groundwater monitoring to understand groundwater levels and how they might interact with the option. Investigation into impact on groundwater levels of dewatering for construction and consideration of requirement to return water to the ground (through recharge trenches) to help minimise the impact of construction, if required. Further information about option.	Use of clay bunds / stanks within pipeline route where groundwater potentially encountered. If possible, shafts for river crossings should be moved further away from SSSI sites. Shafts to be sealed to ensure minimal groundwater egress after construction.	**1 (minor localised impact)**
GB40802 G801000	**River Taw and North Devon Streams**	**Low /Low**	**No**	**No**	**No**	**1 (minor localised impact)**	Groundwater monitoring to understand groundwater levels and how they might interact with the option. Investigation into impact on groundwater levels of dewatering for construction and consideration of requirement to return water to the ground (through recharge trenches) to help minimise the impact of construction, if required. Further information about option.	Use of clay bunds / stanks within pipeline route where groundwater potentially encountered. If possible, shafts for river crossings should be moved further away from SSSI sites. Shafts to be sealed to ensure minimal groundwater egress after construction.	**1 (minor localised impact)**

3.4.10 WIM16: FE reuse - Countess Wear and Mear Lane WwTW to River Exe

For this option, one groundwater body was identified as requiring further assessment: GB40801G801700: Permian Aquifers in Central Devon groundwater body. A summary of the Level 2 WFD assessment is included in Table 3.38 and detailed outputs are presented in Annex B.

The Level 2 WFD assessment identified minor localised effects (impact score 1) to quantitative status elements (quantitative dependent surface water body status, quantitative GWDTEs test and quantitative water balance) and chemical status elements (chemical dependent surface water body status, chemical drinking water protected area, chemical GWDTEs test and general chemical test. Impacts are due to potential temporary changes to groundwater level and water quality from construction dewatering at GWDTEs including Exe Estuary SSSI. These temporary changes in water quality could have minor implications on biology.

Mitigation is proposed in the form of using clay stanks within the pipeline route where groundwater could potentially be encountered, to potentially move shafts further away from SSSI sites, and to ensure that shafts are sealed to ensure minimal groundwater egress after construction.

The RNAG status for the Torridge and Hartland Streams groundwater body relate to General chemical test, trend assessment and chemical drinking water protected area due to ‘pollution from rural areas’. This option will not affect any of these reasons for not achieving good status. It is also anticipated that this option is not anticipated to impede reaching GES / GEP or compromise any water body objectives.

Further investigations will be undertaken at an appropriate time, in line with the date the option is required for the plan. These investigations are required to confirm this assessment and to help identify further mitigation measures necessary to minimise impacts of the option activities. Potential investigations include groundwater monitoring to understand groundwater levels and how they interact with the scheme and hydrological assessment of the impacts of construction dewatering on groundwater levels at the GWDTE (Exe Estuary). A review of the degree of groundwater dependency at Exe Estuary will also help to identify whether dewatering activity should be designed to return water to either the SSSI, river, or ground (through recharge trenches) to help minimise impact on the protected site.

Following further investigation, design development and implementation of any resultant targeted mitigation, it is anticipated that WFD non-compliance risk can remain as minor localised (impact score 1) and therefore this option would be WFD compliant for this water body.

Table 3.38: WIM16: FE reuse - Countess Wear and Mear Lane WwTW to River Exe – Level 2 WFD Summary

Water body ID	Water body name	Confidence in WFD data and option design	Deterioration between status classes	Compromises water body objectives	Assists attainment of water body objectives	Maximum Level 2 impact score	Requirements to improve confidence	Mitigation measures	Post mitigation impact score
GB40801 G801700	**Permian Aquifers in Central Devon**	**Low /Low**	**No**	**No**	**No**	**1 (minor localised impact)**	Groundwater monitoring to understand groundwater levels and how they interact with the scheme. Hydrogeological assessment of the impacts of construction dewatering on groundwater levels at the GWDTE (Exe Estuary). Review the degree of groundwater dependency at identified GWDTE (Exe Estuary). Review of all baseline ecological WFD data to further understand the potential for impact on biology..	Ensure dewatering activity can be designed to return water to either the SSSI, river, or ground (through recharge trenches). This will help minimise impact on the protected site. Drainage from the construction is assumed to be discharged into a local watercourse to help maintain flows (if water quality not of concern). Use of diaphragm walls in shaft construction to minimise groundwater level changes. Use of clay bunds / stanks within pipeline route where groundwater potentially encountered. This will ensure pipeline does not become a preferential groundwater flow pathway. If possible, shafts for river crossings should be moved further away from SSSI site. Shafts to be sealed to ensure minimal groundwater egress after construction. Maintain good construction practice. Where possible, ensure shafts for horizontal directional drilling (HDD) launch and reception are located outside/further from the SSSI.	**1 (minor localised impact)**

3.5 SRO options

3.5.1 BNW7: SRO - Mendips Quarry – 30Ml/d scheme option – Raw water transfer and augmentation of the River Stour

Nine water bodies were identified as requiring further assessment:

- GB109053027371: Bristol Avon (By Bk to Netham Weir),
- GB109053021990: Whatley Bk - source to conf Mells R,
- GB109053022000: Nunney Bk - source to conf Mells R,
- GB109053022080: Frome - source to conf Maiden Bradley Bk,
- GB109053022090: Maiden Bradley Bk - source to conf R Frome,
- GB108043016051: Stour (Middle u/s Pimperne Brook),
- GB108043016052: Stour (Middle d/s Pimperne Brook),
- GB108043011040: Stour (Lower) and
- GB40901G804600: Mendips groundwater body.

A summary of the Level 2 WFD assessment is included in Table 3.39 and detailed outputs are presented in Annex B.

The Level 2 WFD assessment of Bristol Avon (By Bk to Netham Weir) identified potential adverse impacts (impact score 2) to biological and physicochemical elements from increased surface water abstraction as a result of changes in hydrological regime and water quality, as well as impacts on fish. Minor localised impacts to hydromorphological supporting elements, priority hazardous substances, priority substances, specific pollutants and other pollutant elements were also identified.

The Level 2 WFD assessment of Whatley Bk - source to conf Mells R and Nunney Bk - source to conf Mells R identified potential adverse impacts (impact score 2) on biological quality elements, physicochemical elements and hydromorphological supporting elements due to impacts on groundwater quality resulting from the construction of a new storage reservoir. Minor localised impacts to priority hazardous substances, priority substances, specific pollutants and other pollutants elements were also identified.

The Level 2 WFD assessment of Mendips groundwater body identified potential adverse impacts (impact score 2) to quantitative status elements and chemical status elements due to changes in groundwater level and flow change due to abstraction and discharge to and from a new reservoir, and due to the impacts of the surface water discharge on groundwater chemistry, respectively. Minor localised impacts (impact score 1) were also identified for supporting elements.

The Level 2 WFD assessment of Frome - source to conf Maiden Bradley Bk and Maiden Bradley Bk - source to conf R Frome identified potential minor localised impacts (impact score 1) to biological quality elements, physicochemical elements and hydromorphological supporting elements due to localised changes in hydrological regime and water quality from dewatering associated with the construction of below-ground structures.

The Level 2 WFD assessment for Stour (Middle u/s Pimperne Brook) and Stour (Middle d/s Pimperne Brook) identified potential adverse impacts (impact score 2) to biological quality elements, physico-chemical quality elements and hydromorphological supporting elements due to changes in hydrological regime and changes to surface water temperature as a result of the new discharge to the surface water body.

The Level 2 WFD assessment for Stour (Lower) identified potential adverse impacts (impact score 2) to biological and hydromorphological supporting elements from increased surface

water abstraction which may produce adverse impacts on hydrological regime, water quality and fish. Minor localised impacts were identified for physicochemical elements due to a short-term change in water quality as a result of below-ground structures.

The proposed mitigation reduces the potential adverse impacts (impact score 2) to a post-mitigation minor and localised impact (impact score 1) for the following water bodies: Whatley Bk - source to conf Mells R and Nunney Bk - source to conf Mells R. For the Frome - source to conf Maiden Bradley Bk and Maiden Bradley Bk - source to conf R Frome if recommended mitigation is implemented. For Bristol Avon (By Bk to Netham Weir), Mendips, Stour (Middle u/s Pimperne Brook), Stour (Middle d/s Pimperne Brook) and Stour (Lower), the proposed mitigation measures do not reduce potential adverse effects (impact score 2) and further assessment is required. It is anticipated that following further investigation / assessment, additional appropriate mitigation will be identified that will reduce residual risk.

Furthermore, it is recommended to explore river restoration measures to address flow concerns in river and ensure the health of Whatley Brook is maintained downstream post anticipated reduced flow if necessary.

Table 3.39: BNW7: SRO - Mendips Quarry – 30Ml/d scheme option – Raw water transfer and augmentation of the River Stour - Level 2 WFD summary

Water body ID	Water body name	Confidence in WFD data and option design	Deterioration between status classes	Compromises water body objectives	Assists attainment of water body objectives	Maximum Level 2 impact score	Requirements to improve confidence	Mitigation measures	Post mitigation impact score	Further comments
GB109053027371	**Bristol Avon (By Bk to Netham Weir)**	**Low / Medium**	**Possible**	**Possible**	**No**	**2 (adverse impact – risk of deterioration**	Review of the DO / Temp (water quality) impacts on the River Stour caused by the new discharge into the river from Torr reservoir. There is known to be turbidity and fine sediment issues within the River Avon which could present risks for the water environment for Wessex Water Service Reservoir and River Stour. These will need to be addressed prior to transfer to Wessex Water SR and River Stour. Hydroecological assessment of the impacts of new abstraction on flow volume and velocity, water quality and potential sub-daily fluctuations in water level, in the River Avon. Water quality analysis to understand impact of abstraction on water quality downstream. Should also consider implications of changes on flow to barrier to fish passage. Review of all additional baseline ecological WFD data, including results of any surveys already undertaken for this scheme. Potential requirement for additional monitoring to support assessment. Further information about option, including details on abstraction conditions."	Use of Hands Off Flow (HOF) and seasonally variable abstraction profile to reduce impact on hydrological regime. Fish and eel screening around the new intake should be installed for best practice. Appropriate measures to remove sediment from abstracted water could be implemented at works near abstraction point.	**2 (adverse impact – risk of deterioration**	None.
GB109053022080	**Frome - source to conf Maiden Bradley Bk**	**Low / Medium**	**No**	**No**	**No**	**1(minor localised impact)**	Review of all additional baseline ecological WFD data, including results of any surveys already undertaken for this scheme. Potential requirement for additional monitoring to support assessment. Further information about option.	If shafts needed for river crossing these should be located outside the site of special scientific interest (SSSI) boundary. Assumes crossing of river will be by HDD or pipejacking w/ appropriate mitigation in place (clay stanks, sealing shafts etc.).	**1(minor localised impact)**	None.
GB109053022090	**Maiden Bradley Bk – source to conf R Frome**	**Low / Medium**	**No**	**No**	**No**	**1(minor localised impact)**	Review of all additional baseline ecological WFD data, including results of any surveys already undertaken for this scheme. Potential requirement for additional monitoring to support assessment.	If shafts needed for river crossing these should be located outside the site of special scientific interest (SSSI) boundary. Assumes crossing of river will be by HDD or pipejacking w/ appropriate mitigation in place (clay stanks, sealing shafts etc.).	**1(minor localised impact)**	
GB109053021990	**Whatley Bk - source to conf Mells R**	**Low / Medium**	**Possible**	**No**	**No**	**2 (adverse impact – risk of deterioration)**	Review of all additional baseline ecological WFD data, including results of any surveys already undertaken for this scheme Hydroecological assessment of the impacts of new reservoir on flow volume and velocity and water quality, in Whatley Brook. May require further monitoring to support assessment.	Consider provision of augmentation flows to Whatley Brook, to maintain flows during reservoir drawdown. Limit drawdown level of reservoir to within range of recently observed quarry sump level to minimise impacts on water levels.	**1(minor localised impact)**	None.

Water body ID	Water body name	Confidence in WFD data and option design	Deterioration between status classes	Compromises water body objectives	Assists attainment of water body objectives	Maximum Level 2 impact score	Requirements to improve confidence	Mitigation measures	Post mitigation impact score	Further comments
							There is known to be turbidity and fine sediment issues within the River Avon which could present risks for the water environment for Wessex Water Service Reservoir and River Stour. These will need to be addressed prior to transfer to Wessex Water SR and River Stour. Further information about option.	Appropriate measures to remove sediment from water could be implemented at new proposed WTW.		
GB109053022000	**Nunney Bk - source to conf Mells R**	**Low / Medium**	**Possible**	**No**	**No**	**2 (adverse impact – risk of deterioration)**	Review of all additional baseline ecological WFD data, including results of any surveys already undertaken for this scheme Hydroecological assessment of the impacts of new reservoir on flow volume and velocity and water quality, in Nunney Brook. May require further monitoring to support assessment. Further information about option.	Provision of augmentation flows to Nunney Brook to maintain flows during reservoir drawdown. Limit drawdown level of reservoir to within range of recently observed quarry sump level to minimise impacts on water levels.	**1(minor localised impact)**	Explore river restoration measures to address flow concerns in river and ensure health of Whatley Brook is maintained downstream post anticipated reduced flow if necessary. Could be an option to consider particularly as PR24 methodology encourages further implementation of NbS like river restoration and integrating said solutions as BAU practice.
GB40901G804600	**Mendips**	**Low / Medium**	**Possible**	**Possible**	**No**	**2 (adverse impact – risk of deterioration)**	Additional groundwater monitoring to understand groundwater levels and subsequent hydrogeological impact assessment. Additional groundwater modelling to understand the implication of variation in reservoir levels on groundwater levels and surface water flows. Detailed hydroecological risk assessment of the impacts of new discharge and subsequent abstraction on flow within watercourse and groundwater discharge to springs and boreholes. Further operational information about option.	Provide nearby watercourses (Whatley and Nunney Brook) with appropriate compensation / augmentation flow. Appropriate treatment of source water for reservoir prior to discharge into the quarry, ensuring water quality is more in line with the groundwater.	**2 (adverse impact – risk of deterioration**	Lining (surface or grout curtain) of quarry prior to discharge into site has been discounted at this stage as a mitigation option due to cost.
GB108043016051	**Stour (Middle u/s Pimperne Brook)**	**Low / Medium**	**Possible**	**No**	**No**	**2 (adverse impact – risk of deterioration)**	Review of the DO / Temp (water quality) impacts on the River Stour caused by the new discharge into the river from Mendips quarry reservoir. Detailed hydroecological assessment of the impacts of new discharge on flow volume and velocity, water quality and potential sub-daily fluctuations in water level, in the Stour. May require more monitoring to support assessment. Review of all additional baseline ecological WFD data, including results of any surveys already undertaken for this scheme Further information about option.	N/A	**2 (adverse impact – risk of deterioration**	None.

Water body ID	Water body name	Confidence in WFD data and option design	Deterioration between status classes	Compromises water body objectives	Assists attainment of water body objectives	Maximum Level 2 impact score	Requirements to improve confidence	Mitigation measures	Post mitigation impact score	Further comments
GB108043016052	**Stour (Middle d/s Pimperne Brook)**	**Low / Medium**	**Possible**	**No**	**No**	**2 (adverse impact – risk of deterioration)**	Review of the DO / Temp (water quality) impacts on the River Stour caused by the new discharge into the upstream river from Mendips quarry reservoir. Detailed hydroecological assessment of the impacts of new discharge on flow volume and velocity, water quality and potential sub-daily fluctuations in water level, in the Stour. May require more monitoring to support assessment. Review of all additional baseline ecological WFD data, including results of any surveys already undertaken for this scheme Further information about option.	N/A	**2 (adverse impact – risk of deterioration**	None.
GB108043011040	**Stour (Lower)**	**Low / Medium**	**Possible**	**No**	**No**	**2 (adverse impact – risk of deterioration)**	Detailed hydrological and hydroecological assessment of the impacts of new abstraction on flow volume and velocity, water quality and potential sub-daily fluctuations in water level, in the Stour. This should take into account the upstream discharge of water from Mendips Quarry, including assessment of the quantity of water lost to ground or other abstractions between the two locations. Water quality analysis to understand impact of abstraction on water quality downstream. Review of all baseline ecological WFD data, including results of any surveys already undertaken for this scheme. Further information about option, including details on abstraction conditions.	If possible, use of HOF and seasonally variable abstraction profile to reduce impact on hydrological regime. However, it is noted that this mitigation may not be possible Fish and eel screening around the new intake should be installed for best practice.	**2 (adverse impact – risk of deterioration**	None.

3.5.2 BNW8: SRO – Poole Harbour FE-reuse

Two water bodies were identified as requiring further assessment: Stour (Middle d/s Pimperne Brook) and Stour (Lower). A summary of the Level 2 WFD assessment is included in Table 3.40 and detailed outputs are presented in Annex B.

The Level 2 WFD assessment of Stour (Middle d/s Pimperne Brook) identified potential minor localised impacts (impact score 1) to biological quality elements, physico-chemical quality elements, hydromorphological supporting elements, priority hazardous substances, priority substances, specific pollutants and other pollutants elements due to a new discharge to a surface water body.

The Level 2 WFD assessment of Stour (Lower) identified minor localised impacts (impact score 1) to biological and physicochemical elements due to changes in hydrological regime as a result of a changes in hydrological regime and water quality associated with a new surface water abstraction and a new discharge to a surface water body.

No mitigation measures were proposed for both water bodies, which did not change the risk of deterioration for this water body. A post-mitigation minor localised impact (impact score 1) remains following further assessment.

Table 3.40: SRO - Poole Effluent Recycling & Transfer (PERT) - Level 2 WFD summary

Water body ID	Water body name	Confidence in WFD data and option design	Deterioration between status classes	Compromises water body objectives	Assists attainment of water body objectives	Maximum Level 2 impact score	Requirements to improve confidence	Mitigation measures	Post mitigation impact score
GB108043016052	**Stour (Middle d/s Pimperne Brook)**	**Low / Low**	**Possible**	**Possible**	**Possible**	**1 (minor localised impact)**	Additional design data, final output quality and water quality monitoring needed.	N/A	**1 (minor localised impact)**
GB108043011040	**Stour (Lower)**	**Low / Low**	**Possible**	**Possible**	**Possible**	**1 (minor localised impact)**	Additional design data, final output quality and water quality monitoring needed.	N/A	**1 (minor localised impact)**

3.5.3 BNW17: SRO – Cheddar 2 to Summerslade - New Strategic Regional Reservoir, Treatment and Transfer

Based on the WFD compliance assessment[5], it was concluded that the Cheddar 2 Source and Transfer scheme is potentially non-compliant against WFD regulations. Please refer to the individual Cheddar 2 SRO WFD compliance document[5] for detailed outputs.

Two water bodies were identified as requiring further assessment: Cheddar Yeo - source to conf Stubbingham Rhyne and Axe – Cocklade to Brean Cross Sluice river water bodies. A summary of the Level 2 WFD assessment is included in Table 3.41 and detailed outputs are presented in Annex B.

The Level 2 WFD assessment of Cheddar Yeo - source to conf Stubbingham Rhyn identified potential adverse impacts (impact score 2) to biological elements (fish and macroinvertebrates) from increased surface water abstraction. Minor localised impacts to Macrophytes and phytobenthos and physico-chemical supporting elements were also identified.

The Level 2 WFD assessment of Axe – Cocklade to Brean Cross Sluice identified potential adverse impacts (impact score 2) on phosphate, with minor impacts also identified on biological elements and other physico-chemical supporting elements.

Mitigation measures including maintaining some high flows (where these flows provide a function to the aquatic environment) and catchment management to attempt to manage phosphate inputs into the watercourses, were proposed for these water bodies. However, in both cases further investigation and assessment is required to identify whether they are feasible. Further investigations should be undertaken at an appropriate time, in line with the date that the option is required for the plan and following the RAPID programme.

[5] Strategic Regional Water Resource Solutions: Cheddar 2 Source and Transfer. November 2022. Available at: cheddar-sro-gate-2-report-nov-2022.pdf (wessexwater.co.uk).

Table 3.41: SRO – Cheddar 2 (Summerslade) - Level 2 WFD summary

Water body ID	Water body name	Confidence in WFD data and option design	Deterioration between status classes	Compromises water body objectives	Assists attainment of water body objectives	Maximum Level 2 impact score	Requirements to improve confidence	Mitigation measures	Post mitigation impact score
GB109052021540	Cheddar Yeo - source to conf Stubbingham Rhyne	Low / Low	Yes	No	No	2	Further information on the operational regime Hydrological baseline monitoring and conceptualisation Identification of functional flow requirements which support ecology during high flow period. Dissolved oxygen sags monitoring to identify potential impact on ecology / implications on algae growth Investigation into interaction between Axebridge treatment works and discharge at Cheddar WRC and the potential implications on phosphate Ecological surveys and hydroecology study	Maintaining high flows which provide a function to the aquatic environment	2
GB109052021570	Axe - Cocklake to Brean Cross Sluice	Low / Low	Yes	No	No	2	Further information on the operational regime Hydrological baseline monitoring and conceptualisation Study of potential for increased ponding behind Brean Cross Sluice Dissolved oxygen sags monitoring to identify potential impact on ecology / implications on algae growth Ecological surveys and hydroecology study	Catchment management to manage phosphate inputs into the watercourses	2

3.5.4 WIM18: SRO - Cheddar 2 to Bickham Moor

No formal Level 1 assessment in line with the ACWG WFD approach, has been completed for this option and this summary is based on the WFD related assessment within the available SEA appraisal only. Currently, it is anticipated that the option route will intersect the following waterbodies:

- Cheddar Yeo - source to conf River Axe (GB109052021540)
- Axe - source to Cocklake (GB109052021520)
- Shipham Rhyne (Trib of Brue/Cripps) (GB108052021510)
- Mark Yeo (GB108052021250)
- Brue - conf with North Drain to Tidal Limit (GB108052021260)
- South Drain (GB108052021181)
- Cannington Bk – Lower (GB108052021310)
- Fiddington Brook (GB108052021320)
- Kilve Stream (GB108051020350)
- Tone - Upper (GB108052021370)
- Upper Batherm (GB108045014860)
- Exe (Haddeo to Barle) (GB108045015060)
- Lower Barle (GB108045015100)
- Brockey River (GB108045015080)

Moreover, it is anticipated that this option will be located within the following groundwater bodies:

- Wells (GB40902G804700)
- Tone and North Somerset Streams (GB40802G806400)
- Central Devon and Exe - Aylesbeare Mudstone (GB40802G801800)

Due to the extent of the proposed option route, there is potential for deterioration in WFD status and objectives although with the current information level, these impacts remain unquantified and unassessed.

Mitigation will be required to minimise the impacts of the option activities. Currently, mitigation is proposed in the form of following good construction practice methods. For example, using pollution control measures to minimise pollution from chemical and fuel spills and suppressing dust dispersion. Appropriate precautionary measures should also be taken when working in channels of watercourses, to appropriately manage the potential for deposition of silt or release of other forms of suspended material or pollution within the water column.

Additionally, the proposed option will pass through the Ge-Mare Farm Fields SSSI GWDTE and multiple other GWDTEs are also located within close proximity to the option. Therefore, mitigation is proposed in the form of considering an alternative diversion of the proposed option route, in order to avoid passing the Ge-Mare Farm Fields SSSI GWDTE, main rivers, and ordinary streams. If alternative diversion is not possible, directional drilling methods shall be adopted to avoid direct encroaching.

Further investigations will be undertaken at an appropriate time, in line with the date that the option is required for the BVP. These investigations are required to confirm option feasibility and could include undertaking a risk assessment for the proposed excavation works and dewatering to ensure no adverse impact on watercourses, wetland habitats or abstractions. Further detailed designs are required to ensure the depth of the alignment would not impede groundwater flow

during operational phase. Furthermore, during operation, the downstream water level and water quality should be closely monitored to minimise the effect of the reservoir.

Overall, for this option, it is anticipated that both a Level 1 basic screening and a Level 2 detailed impact assessment will be required, in line with the ACWG framework described in section 1.4.

3.6 Drought Options

3.6.1 dB1: Wimborne Borehole

For this option one groundwater body was identified as requiring further assessment: GB40802G805900: Reading Beds groundwater body. A summary of the Level 2 WFD assessment is included in Table 3.42 and detailed outputs are presented in Annex B.

The Level 2 WFD assessment identified minor localised impacts (impact score 1) on quantitative status elements (quantitative dependent surface water body status and quantitative water balance). This is primarily due to a periodic increase in groundwater abstraction for drought purposes. This could lead to a reduction in groundwater levels, which may have adverse implications for surface watercourse flow and quality in surface watercourses.

Mitigation is proposed in the form of confirmation of current and historical usage of drought abstractions licences and reviewing previous assessments to confirm increasing the drought licence will not lead to any risk in groundwater levels when implemented.

No RNAG status for the Reading Beds groundwater body were identified in this assessment. This option is also not anticipated to impede reaching GES / GEP or compromise water body objectives.

Further investigations will be undertaken at an appropriate time, in line with the date the option is required for the plan. These investigations are required to confirm this assessment and could include a hydrogeological assessment of the impacts of groundwater abstraction on water course flow, reviewing all baseline WFD data, including the results of any surveys already undertaken as part of this scheme, and gathering further information about the option, including abstraction conditions.

Following further investigation, design development and implementation of any resultant targeted mitigation, it is anticipated that WFD non-compliance risk can remain as minor localised (impact score 1) and therefore this option would be WFD compliant for this water body.

Table 3.42: dB1: Wimborne Borehole – Level 2 WFD Summary

Water body ID	Water body name	Confidence in WFD data and option design	Deterioration between status classes	Compromises water body objectives	Assists attainment of water body objectives	Maximum Level 2 impact score	Requirements to improve confidence	Mitigation measures	Post mitigation impact score
GB40802G805900	**Reading Beds (GW)**	**Low/Low**	**No**	**No**	**No**	**1 (minor localised impact)**	Hydrogeological assessment of the impacts of increased groundwater abstraction on water balance and flows to surface water courses. Review of all baseline WFD data, including results of any surveys already undertaken for this scheme. Further information about option, including details on abstraction conditions.	Confirm current / historical usage and review previous assessments to confirm if borehole licence operated sustainably at time of operation and would therefore lead to no risk when reinstated.	**1 (minor localised impact)**

3.6.2 dB2: Stanbridge Licence

For this option one water body was identified as requiring further assessment: GB40801G804500: Upper Dorset Stour groundwater body. A summary of the Level 2 WFD assessment is included in Table 3.43 and detailed outputs are presented in Annex B.

The Level 2 WFD assessment identified minor localised impacts (impact score 1) on quantitative status elements (quantitative dependent surface water body status and quantitative water balance). This is largely due to a periodic increase in groundwater abstraction for drought purposes.

Mitigation is proposed in the form confirmation of current / historical usage of borehole and review of any previous assessments of abstraction activity at this site. This is to ensure any increases in abstraction associated with drought licence will not lead to any risk to groundwater levels when implemented.

The RNAG status for the water body relate to:

- Quantitative water balance due to ‘changes to the natural flow and levels of water’; and
- Trend assessment due to ‘pollution from rural areas’.

This assessment has highlighted the potential for this option to have a minor increase in pressure on this groundwater body, namely in relation to risk of reductions in groundwater levels and flow. This could make addressing existing water balance issues in this water body more challenging. Despite this, option is not anticipated to impede gaining GES / GEP or compromise any water body objectives.

Further investigations will be undertaken at an appropriate time, in line with the date the option is required for the plan. These investigations are required to confirm this assessment and could include a hydrogeological assessment of the impacts of impacts groundwater abstraction on water balance and flow in surface watercourses. A review of all baseline WFD data, including result of any previous surveys and review of any further option information, particularly on abstraction conditions, are also recommended investigations.

Following further investigation, design development and implementation of any resultant targeted mitigation, it is anticipated that WFD non-compliance risk can remain as minor localised (impact score 1) and therefore this option would be WFD compliant for this water body.

Table 3.43: dB2: Stanbridge Licence – Level 2 WFD Summary

Water body ID	Water body name	Confidence in WFD data and option design	Deterioration between status classes	Compromises water body objectives	Assists attainment of water body objectives	Maximum Level 2 impact score	Requirements to improve confidence	Mitigation measures	Post mitigation impact score
GB40801G804500	**Upper Dorset Stour (GW)**	**Low/Low**	**No**	**No**	**No**	**1 (minor localised impact)**	Hydrogeological assessment of the impacts of increased groundwater abstraction on water balance and flows to surface water courses. Review of all baseline WFD data, including results of any surveys already undertaken for this scheme. Further information about option, including details on abstraction conditions.	SWW to confirm current / historical usage and review previous assessments to confirm if borehole licence operated sustainably at time of operation and would therefore lead to no risk when reinstated.	**1 (minor localised impact)**

3.6.3 dCS1/E: Colliford not releasing compensation flows when making supply releases

For this option one water body was identified as requiring further assessment: GB108048001420: Lower River Fowey River water body. A summary of the Level 2 WFD assessment is included in Table 3.44 and detailed outputs are presented in Annex B.

The Level 2 WFD assessment identified potential adverse impacts (impact score 2) to biological quality elements (fish and invertebrates), and hydromorphological supporting elements (hydrological regime), and minor localised impacts (impact score 1) on physico-chemical quality elements (ammonia, dissolved oxygen, pH, phosphate and temperature). This is largely due to a periodic increase in surface water abstraction for drought purposes. This could lead to a reduction in flow velocity and volume, sedimentation patterns and water quality downstream of abstraction point. The reduction in flow volume and velocity downstream could lead to less preferential conditions for biology in this water body. However, as the abstraction quantity is small in comparison to size of water body and as the downstream water body is the Fowey Estuary (fed by multiple tributaries), the impacts to biology will likely be minor and localised during operation at increased capacity.

Mitigation is proposed in the form of implementing a HOF to ensure the natural flow of the Fowey is not inhibited by increased abstraction during the operational period. It is also deemed necessary that the natural flow of the River Fowey should be maintained during the operational period.

The RNAG status for the water body relate to Mercury and its compounds and PBDE due to ‘no sector responsible’. This option will not affect any of these reasons for not achieving good status. It is also not anticipated to impede reaching GES / GEP or compromise any water body objectives.

Further investigations will be undertaken at an appropriate time, in line with the date the option is required for the plan. These investigations are required to confirm this assessment and could include a hydroecological assessment of the impacts of impacts groundwater abstraction on water course flow, hydromorphology and water quality, including the concentration of key physiochemical parameters, investigations into the impact on EFI flow regime, reviewing all baseline WFD data, including the results of any surveys already undertaken as part of this scheme, and gathering further information about the option (particularly regarding abstraction conditions).

Following further investigation, design development and implementation of any resultant targeted mitigation, it is anticipated that WFD non-compliance risk can remain as minor localised (impact score 1) and therefore this option would be WFD compliant for this water body.

Table 3.44: dCS1/E: Colliford not releasing compensation flows when making supply releases – Level 2 WFD Summary

Water body ID	Water body name	Confidence in WFD data and option design	Deterioration between status classes	Compromises water body objectives	Assists attainment of water body objectives	Maximum Level 2 impact score	Requirements to improve confidence	Mitigation measures	Post mitigation impact score
GB108048001420	**Lower River Fowey**	**Low/Low**	No	No	No	**1 (minor localised impact)**	Hydroecological assessment of the impacts of increase in abstraction from watercourse on flow, hydromorphology and water quality / concentration of key physicochemical parameters. Detailed review of all baseline ecological WFD data, including results of any surveys already undertaken for this scheme. Further investigation into impact on EFI flow regime by option. Further information about option, including details on abstraction conditions and potential Colliford Reservoir supply releases.	Operational period of abstraction is assumed for approximately 6 months and as such WB should be able to withstand changes and recover (provided appropriate compensation releases from Colliford during time drought permit abstraction is not operational). Despite this it is deemed necessary to ensure natural flow of Fowey is not inhibited by increased abstraction during operational period.	**1 (minor localised impact)**

3.6.4 dCS11/E: Siblyback not releasing compensation flows when making supply releases

For this option one water body was identified as requiring further assessment: GB108048001420: Lower River Fowey River water body. A summary of the Level 2 WFD assessment is included in Table 3.45 and detailed outputs are presented in Annex B.

The Level 2 WFD assessment identified minor localised impacts (impact score 1) on biology (fish and invertebrates), hydromorphological supporting elements (hydrological regime) and water quality (ammonia, dissolved oxygen, pH and phosphate). This is largely due to a periodic increase in surface water abstraction for drought purposes. This could lead to a reduction in flow velocity and volume, sedimentation patterns and water. It is understood that this option will be used to reduce compensation flow released from the reservoir across the flow duration curve to hold more water in the reservoir during dry periods for future supply releases. This means a minor reduction in flow into the water bodies immediately downstream of Siblyback reservoir.

Mitigation is proposed in the form of a continuation of appropriate compensation release from Siblyback Reservoir during the time in which the increased drought abstraction is not operational. It is also deemed necessary that the natural flow of the River Fowey should be maintained during the operational period if drought permit following further investigation is likely to be impacted

The RNAG status for the water body relate to mercury and its compounds and PBDE due to ‘no sector responsible’. This option will not affect any of these RNAGs. It is also not anticipated to impede reaching GES / GEP or compromise any water body objectives.

Further investigations will be undertaken at an appropriate time, in line with the date the option is required for the plan. These investigations are required to confirm this assessment and could include a hydroecological assessment of the impacts of impacts groundwater abstraction on water course flow, hydromorphology and water quality, including the concentration of key physiochemical parameters, investigations into the impact on EFI flow regime, reviewing all baseline WFD data, including the results of any surveys already undertaken as part of this scheme, and gathering further information about the option.

Overall, this assessment concludes that, following further investigations, design development and implementation of any resultant targeted mitigation, this option does not lead to a WFD deterioration or an impediment to reaching future objectives and is therefore compliant under WFD (impact score 1).

Table 3.45: dCS11/E: Siblyback not releasing compensation flows when making supply releases – Level 2 WFD Summary

Water body ID	Water body name	Confidence in WFD data and option design	Deterioration between status classes	Compromises water body objectives	Assists attainment of water body objectives	Maximum Level 2 impact score	Requirements to improve confidence	Mitigation measures	Post mitigation impact score
GB108048001420	**Lower River Fowey**	**Low/Low**	**No**	**No**	**No**	**1 (minor localised impact)**	Hydroecological assessment of the impacts of increase in abstraction from watercourse on flow, hydromorphology and water quality / concentration of key physicochemical parameters. Detailed review of all baseline ecological WFD data, including results of any surveys already undertaken for this scheme. Further investigation into impact on EFI flow regime by option. Further information about option, including details on abstraction conditions and potential Siblyback Reservoir supply releases.	Operational period of abstraction Is assumed for approximately 1-4 months and so the water body should be able to withstand changes and recover (provided appropriate compensation releases from Siblyback Reservoir during time drought permit abstraction is not operational). Despite this it is deemed necessary to ensure natural flow of Fowey is not inhibited by increased abstraction during operational period.	**1 (minor localised impact)**

3.6.5 dR2: Slade Reservoir

For this option, two artificial/heavily modified lake water bodies, one coastal water body and one groundwater body were identified as requiring further assessment: GB30843764: Slade Lower Reservoir and GB30843794: Slade Higher Reservoir, GB610807680004: Bristol Channel Outer South and GB40802G801000: River Taw and North Devon Streams. A summary of the Level 2 WFD assessment is included in Table 3.46 and detailed outputs are presented in Annex B.

The Level 2 WFD assessment for the Slade Lower Reservoir artificial lake water body identified minor localised impacts (impact score 1) to biology quality elements (phytoplankton) and physicochemical quality elements (salinity, total nitrogen and total phosphorus). This is largely due to a periodic increase in surface water abstraction from the disused reservoir for drought purposes. This could lead to a reduction in flow velocity and volume, and changes to sedimentation patterns and water quality which may create a minor, localised and periodic impact downstream of the reservoir.

Mitigation is proposed in the form setting abstraction conditions to minimise changes to hydrological regime and changes to reservoir water levels. It is also deemed necessary to ensure abstraction does not inhibit the natural conditions of the reservoir.

The RNAG status for the Slade Lower Reservoir Lake body relate to:

- Phytoplankton and total phosphorus due to ‘pollution from rural areas’; and
- Mercury and its compounds and PBDE due to ‘No sector responsible’.

This option will not affect any of these RNAGs. It is also anticipated that this option will not impede reaching GES / GEP or compromise any water body objectives.

The Level 2 WFD assessment for the Slade Higher Reservoir identified an impact score of 0 across all elements available for assessment, as no biological quality and physico-chemical quality elements are available for this water body. As such there could be minor and localised effects on these missing elements which cannot be assessed here.

The RNAG status for the Slade Higher Reservoir Lake body relate to mercury and Its Compounds and PBDE due to ‘no sector responsible’. This option will not affect any of these RNAGs. It is also anticipated that this option will not impede reaching GES / GEP or compromise any water body objectives.

The Level 2 WFD assessment for the Bristol Channel Outer South coastal water body identified minor localised impacts (impact score of 1) to biological quality elements (invertebrates and phytoplankton), hydromorphological supporting elements (morphology) and physicochemical quality elements (dissolved inorganic nitrogen and dissolved oxygen). This is largely due to use of existing surface water abstraction licences, within existing licence conditions but outside of recent actual abstraction patterns. This could lead to a reduction in flow velocity and volume, changes to sedimentation patterns and changes in water quality which may create a minor, localised and periodic impact on biology downstream of the reservoir.

Mitigation is proposed in the form of allowing compensation release from the reservoirs to support flow in the downstream coastal water body.

The RNAG status for the Bristol Channel Outer South coastal water body relate to Mercury and its compounds and PBDE due to ‘No sector responsible’. This option will not affect any of these RNAGs. It is also anticipated that this option will not impede reaching GES / GEP or compromise any water body objectives.

The Level 2 WFD assessment for the River Taw and North Devon Streams groundwater body identified minor localised impacts (impact score of 1) to quantitative status elements

(quantitative dependent surface water body status and quantitative water balance). This is largely due to changes in groundwater level as a result of abstraction from the reservoirs. Changes in groundwater levels are likely to be temporary, short term and highly localised, and is anticipated not to lead to water body scale impacts. No mitigation is proposed for this option.

The RNAG status for the River Taw and North Devon Streams groundwater body relates to Trend Assessment and Chemical Drinking Water Protected Area due to 'Poor nutrient management. This option will not affect any of these reasons for not achieving good status. It is also anticipated that this option will not impede reaching GES / GEP or compromise any water body objectives.

Further investigations are the same for both water bodies and will be undertaken at an appropriate time, in line with the date the option is required for the plan. These investigations are required to confirm this assessment and could include hydroecological assessment of the impacts of impacts groundwater abstraction on water course flow, hydromorphology and water quality, including the concentration of key physiochemical parameters, investigations into the impact on EFI flow regime, reviewing all baseline WFD data, including the results of any surveys already undertaken as part of this scheme, and gathering further information about the option.

For both Slade Higher Reservoir and Slade Lower Reservoir, the hydromorphological designation for the water bodies are artificial. Despite this, option activities are not expected to significantly increase the physical modification pressures as no new infrastructure is proposed in this water body (use of existing intake).

Following further investigation, design development and implementation of any resultant targeted mitigation, it is anticipated that WFD non-compliance risk can be reduced to minor localised (impact score 1) and therefore this option would be WFD compliant for both water bodies.

Table 3.46: dR2: Slade Reservoir – Level 2 WFD Summary

Water body ID	Water body name	Confidence in WFD data and option design	Deterioration between status classes	Compromises water body objectives	Assists attainment of water body objectives	Maximum Level 2 impact score	Requirements to improve confidence	Mitigation measures	Post mitigation impact score
GB30843764	**Slade Lower Reservoir**	**Low / Low**	**No**	**No**	**No**	**1 (minor localised impact)**	Hydroecological assessment of the impacts of increase in abstraction from watercourse on flow, hydromorphology and water quality / concentration of key physicochemical parameters. Detailed review of all baseline ecological WFD data, including results of any surveys already undertaken for this scheme. Further investigation into impact on EFI flow regime by option. Further information about option, including details on abstraction conditions	Abstraction conditions should be set in order to minimise changes to hydrological regime / minimise changes to levels in reservoir. Ensure abstraction does not inhibit natural / baseline conditions of reservoir.	**1 (minor localised impacts)**
GB30843794	**Slade Higher Reservoir**	**Low / Low**	**No**	**No**	**No**	**1 (minor localised impact)**	Hydroecological assessment of the impacts of increase in abstraction from watercourse on flow, hydromorphology and water quality / concentration of key physicochemical parameters. Detailed review of all baseline ecological WFD data, including results of any surveys already undertaken for this scheme. Further investigation into impact on EFI flow regime by option. Further information about option, including details on abstraction conditions.	Abstraction conditions should be set in order to minimise changes to hydrological regime / minimise changes to levels in reservoir. Ensure abstraction does not inhibit natural / baseline conditions of reservoir.	**1 (minor localised impact)**

Water body ID	Water body name	Confidence in WFD data and option design	Deterioration between status classes	Compromises water body objectives	Assists attainment of water body objectives	Maximum Level 2 impact score	Requirements to improve confidence	Mitigation measures	Post mitigation impact score
GB610807680004	**Bristol Channel Outer South**	**Low / Low**	**No**	**No**	**No**	**1 (minor localised impact)**	Hydroecological assessment of the impacts of increase in abstraction from watercourse on flow, hydromorphology and water quality / concentration of key physicochemical parameters. Detailed review of all baseline ecological WFD data, including results of any surveys already undertaken for this scheme. Further investigation into impact on EFI flow regime by option. Further information about option, including details on abstraction conditions	A compensation release should be allowed from the reservoirs to help support flow in the downstream water body.	**1 (minor localised impact)**
GB40802G801000	**River Taw and North Devon Streams**	**Low / Low**	**No**	**No**	**No**	**1 (minor localised impact)**	Hydrogeological assessment of the impacts of increase in abstraction on local groundwater levels. Further information about option, including details on abstraction conditions.	N/A	**1 (minor localised impact)**

3.6.6 dR3: Challacombe Reservoir

For this option, two water bodies were identified as requiring further assessment: GB108050019950 – Bray (source to Hole Water) river water body and GB40802G801000 - River Taw and North Devon Streams groundwater body. A summary of the Level 2 WFD assessment is included in Table 3.47 and detailed outputs are presented in Annex B

The Level 2 WFD assessment for Bray (source to Hole Water) river water body identified potential minor localised impacts (impact score 1) to biological quality elements (fish, invertebrates, macrophytes and phytobenthos combined), hydromorphological supporting elements (hydrological regime, morphology) and physico-chemical quality elements (ammonia, dissolved oxygen, pH, phosphate and temperature). These potential impacts are primarily due to the reintroduction of historic surface water abstraction for drought purposes.

Mitigation is proposed in the form of continuation of appropriate compensation / supporting flow to downstream river during abstraction period. it is also deemed necessary to ensure natural / baseline conditions of reservoir and downstream river are not inhibited by option activities.

The RNAG status for this water body relate to Mercury and its compounds and PBDE due to ‘no sector responsible’. This option will not affect this reason for not achieving good status. It is also not anticipated to impede reaching GES / GEP or compromise any water body objectives.

Further investigations should also be undertaken at an appropriate time, in line with the date that the option is required for the plan. These investigations are required to confirm this assessment and could include a hydroecological assessment of the impacts of increased abstraction from watercourse on flow, hydromorphology and water quality should be conducted. Furthermore, a detailed review of all baseline ecological WFD data should be undertaken, along with further investigations into the impact of the proposed option on EFI flow regime.

Following further investigation, design development and implementation of any resultant targeted mitigation, it is anticipated that WFD non-compliance risk can remain as minor localised (impact score 1) and therefore this option would be WFD compliant for this water body.

The Level 2 WFD assessment for River Taw and North Devon Streams groundwater body identified potential minor localised impacts (impact score 1) to quantitative status elements (quantitative dependent surface water body status and quantitative water balance). Potential impacts are primarily due to increased groundwater abstraction, as this could reduce groundwater levels and in turn effect baseflow to surface watercourses such as the Kit Brook River.

No mitigation measures have been suggested, as it is anticipated that following further investigations appropriate mitigation will be identified.

The RNAG status for this groundwater body relate to Trend assessment and chemical drinking water protected area due to ‘poor nutrient management’ and ‘poor livestock management’.

Further investigations should be undertaken at an appropriate time, in line with the date that the option is required for the plan. These investigations are required to confirm this assessment and could include a hydrogeological assessment of the impacts of increased groundwater abstraction on local groundwater levels. Further information about option, including details on abstraction conditions, should also be attained. This may help to identify appropriate mitigation measures required to minimise the potential impacts of the option activities.

Following further investigation, design development and implementation of any resultant targeted mitigation, it is anticipated that WFD non-compliance risk can remain as minor localised (impact score 1) and therefore this option would be WFD compliant for this water body.

Table 3.47: dR3: Challacombe Reservoir – Level 2 WFD Summary

Water body ID	Water body name	Confidence in WFD data and option design	Deterioration between status classes	Compromises water body objectives	Assists attainment of water body objectives	Maximum Level 2 impact score	Requirements to improve confidence	Mitigation measures	Post mitigation impact score
GB108050019950	**Bray (Source to Hole Water)**	**Low / Low**	**No**	**No**	**No**	**1 (minor localised impact)**	Hydroecological assessment of the impacts of increase in abstraction from watercourse on flow, hydromorphology and water quality / concentration of key physicochemical parameters. Detailed review of all baseline ecological WFD data, including results of any surveys already undertaken for this scheme. Further investigation into impact on EFI flow regime by option. Further information about option, including details on abstraction conditions.	Ensure existing compensation flow to downstream river continues during abstraction period. Ensure natural / baseline conditions of reservoir and downstream river is not inhibited by option activities.	**1 (minor localised impact)**
GB40802G801000	**River Taw and North Devon Streams**	**Low / Low**	**No**	**No**	**No**	**1 (minor localised impact)**	Hydrogeological assessment of the impacts of increase in abstraction on local groundwater levels. Further information about option, including details on abstraction conditions.	N/A	**1 (minor localised impact)**

3.6.7 dR4: Meldon/Vellake to Roadford

For this option, two artificial/heavily modified lake water bodes were identified as requiring further assessment: GB30845945: Meldon Reservoir and GB108050008080: West Okement river water body. The abstraction increase occurs from the West Okement River near confluence with Vellake Brook. As such, the downstream water bodies (Meldon Reservoir and the West Okement River) were taken forward to Level 2. A summary of the Level 2 WFD assessment is included in Table 3.48 and detailed outputs are presented in Annex B.

The Level 2 WFD assessment for the Meldon Reservoir artificial lake water body identified potential minor localised impacts (impact score 1) to biology (phytoplankton) and physicochemical quality elements (salinity, total nitrogen and total phosphorus). This is largely due to a potential periodic increase in surface water abstraction from the reservoir for drought purposes. This could lead to a reduction in flow velocity and volume, and changes to sedimentation patterns and water quality.

Mitigation is proposed in the form of setting abstraction conditions to minimise changes to hydrological regime and changes to reservoir water levels.

The RNAG status for this water body relate to mercury and its compounds and PBDE due to ‘no sector responsible’.This option will not affect any of these reasons for not achieving good status. It is also not anticipated to impede reaching GES / GEP or compromise any water body objectives.

For the Meldon Reservoir lake water body, the hydromorphological designation is ‘heavily modified’. Despite this, option activities are not expected to significantly increase the physical modification as no new infrastructure is proposed in this water body (use of existing intake).

The Level 2 WFD assessment for the West Okement river water body identified potential adverse impacts (impact score 2) to biology (fish and invertebrates) and hydromorphological supporting elements (hydrological regime and morphology), and potential minor localised impacts (impact score 1) to physico-chemical quality elements (ammonia, dissolved oxygen, pH, and phosphate). This is largely due to proposed periodic increase in surface water abstraction from the river water body for drought purposes. This could lead to a reduction in flow velocity and volume, and changes to sedimentation patterns and water quality which may create a minor, localised and periodic impact on biology downstream of the intake.

Mitigation is proposed in the form of setting abstraction conditions to minimise changes to hydrological regime and changes to river water levels.

The RNAG status for this water body relate to:

- Nickel and its compounds due to ‘pollution from towns, cities and transport’ and ‘pollution from abandoned mines’; and
- Mercury and its compounds, nickel and its compounds and PBDE due to ‘no sector responsible’.

This option will not affect any of these reasons for not achieving good status. However, it is anticipated to impede reaching GES / GEP and compromise any water body objectives if appropriate mitigation is not implemented.

Further investigations are the same for both water bodies and will be undertaken at an appropriate time, in line with the date the option is required for the plan. These investigations are required to confirm this assessment and could include a hydroecological assessment of the impacts of impacts groundwater abstraction on water course flow, hydromorphology and water quality, including the concentration of key physiochemical parameters, investigations into the

impact on EFI flow regime, reviewing all baseline WFD data, including the results of any surveys already undertaken as part of this scheme, and gathering further information about the option.

Following further investigation, design development and implementation of any resultant targeted mitigation, it is anticipated that WFD non-compliance risk can be reduced to minor localised (impact score 1) and therefore this option would be WFD compliant for both water bodies.

Table 3.48: dR4: Meldon/Vellake to Roadford – Level 2 WFD Summary

Water body ID	Water body name	Confidence in WFD data and option design	Deterioration between status classes	Compromises water body objectives	Assists attainment of water body objectives	Maximum Level 2 impact score	Requirements to improve confidence	Mitigation measures	Post mitigation impact score
GB30845945	**Meldon Reservoir**	**Low/Low**	**No**	**No**	**No**	**1 (minor localised impact)**	Hydroecological assessment of the impacts of increase in abstraction from watercourse on flow, hydromorphology and water quality / concentration of key physicochemical parameters. Detailed review of all baseline ecological WFD data, including results of any surveys already undertaken for this scheme. Further investigation into impact on EFI flow regime by option. Further information about option, including details on abstraction conditions and potential Siblyback Reservoir supply releases.	Abstraction conditions should be set in order to minimise changes to hydrological regime / minimise changes to levels in reservoir.	**1 (minor localised impact)**
GB108050008080	**West Okement**	**Low/Low**	**Possible**	**Possible**	**No**	**2 (potential adverse impact)**	Hydroecological assessment of the impacts of increase in abstraction from watercourse on flow, hydromorphology and water quality / concentration of key physicochemical parameters. Detailed review of all baseline ecological WFD data, including results of any surveys already undertaken for this scheme. Further investigation into impact on EFI flow regime by option. Further information about option, including details on abstraction conditions and potential Siblyback Reservoir supply releases.	Abstraction conditions should be set in order to minimise changes to hydrological regime / minimise changes to water levels in the river.	**1 (minor localised impact)**

3.6.8 dR5: Lee Moor unused quarries

For this option, one water body was identified as requiring further assessment: GB40802G806700 – Tamar groundwater body. A summary of the Level 2 WFD assessment is included in Table 3.49 and detailed outputs are presented in Annex B.

The Level 2 WFD assessment for this groundwater body identified potential adverse impacts (impact score 2) to quantitative status elements (quantitative GWDTEs test). Potential minor localised impacts (impact score 1) to quantitative status elements (quantitative dependent surface water body status and quantitative water balance) and chemical status elements (chemical dependent surface water body status, chemical drinking water protected area, chemical GWDTEs test and general chemical test) were also identified. Potential impacts are largely due to the fact that the nearby GWDTE (Dartmoor SSSI) could be impacted by the proposed abstraction from quarry sites for drought purposes. This could have implications on the integrity of the site.

Mitigation is proposed in the form of modelling the relationship between groundwater and surface water at quarry sites, in order to strengthen conclusions surrounding impact of abstraction on reliant watercourses (Piall and Tory Brook). Additionally, confirmation that increasing the drought licence will not lead to any risk to groundwater levels is also considered necessary.

The RNAG status for the groundwater body relates to:

- Trend assessment and chemical dependent surface water body status due to ‘pollution from abandoned mines’ and ‘pollution from rural areas’; and
- General chemical test and chemical drinking water protected area due to ‘pollution from rural areas’.

This option will not affect any of these RNAGs. Despite this, there is potential to impede achieving GES / GEP if appropriate mitigation is not implemented. This option is not anticipated to compromise any water body objectives.

Further investigations will be undertaken at an appropriate time, in line with the date the option is required for the plan. These investigations are required to confirm this assessment and could include a hydrogeological assessment of the potential implications of abstraction from three quarries on Dartmoor SSSI, as it is assumed that the site is reliant on groundwater. A review of all baseline WFD data should also be undertaken and further information about the option, including details on abstraction conditions should also be attained. These further investigations may help to identify further mitigation measures required to minimise the impact of option activities.

Following further investigation, design development and implementation of any resultant targeted mitigation, it is anticipated that WFD non-compliance risk can be reduced to minor localised (impact score 1) and therefore this option would be WFD compliant for this water body.

Table 3.49: dR5: Lee Moor unused quarries – Level 2 WFD Summary

Water body ID	Water body name	Confidence in WFD data and option design	Deterioration between status classes	Compromises water body objectives	Assists attainment of water body objectives	Maximum Level 2 impact score	Requirements to improve confidence	Mitigation measures	Post mitigation impact score
GB40802G806700	**Tamar**	**Low / Low**	**Possible**	**No**	**No**	**2 (potential adverse impact)**	Hydrogeological / groundwater investigations to better understand potential implications on GWDTE site as a result of abstraction from three quarries assumed reliant on groundwater. Review of all baseline WFD data, including results of any surveys already undertaken for this scheme. Further information about option, including details on abstraction conditions.	Potential requirement for environmental / groundwater modelling to strengthen conclusions surrounding relationship between groundwater and surface water at quarry sites and subsequent impact on reliant watercourses (Piall and Tory Brook). No significant deterioration risks to integrity of site should be identified following this. SWW to confirm increasing the drought licence will not lead to any risk to groundwater levels when implemented.	**1 (minor localised impact)**

3.6.9 dRS15/E: Roadford not releasing compensation flows when making supply releases

For this option one water body was identified as requiring further assessment: GB108047007860: Lower River Tamar River water body. A summary of the Level 2 WFD assessment is included in Table 3.50 and detailed outputs are presented in Annex B.

The Level 2 WFD assessment identified potential adverse effects (impact score 2) on biology (invertebrates) and minor localised impacts (impact score 1) on hydromorphological supporting elements (hydrological regime) and water quality (ammonia, dissolved oxygen, pH and phosphate), priority hazardous substances, specific pollutants and other pollutants. This is largely due to a periodic increase in surface water abstraction for drought purposes. This could lead to a reduction in flow velocity and volume, sedimentation patterns and water quality. It should be noted that the downstream water body is the Plymouth Tamar transitional water body and then the sea, and any downstream impact is anticipated to be minor. The majority of effects are anticipated to occur directly downstream of the intake and within the Lower River Tamar water body. As such, there is potential for impacts on biology during the operational period at increased capacity for drought use.

Mitigation is proposed in the form of continuation of appropriate supply release from Roadford Reservoir during the time where increased abstraction is not operational. It is deemed necessary to ensure that natural flow of Tamar is not inhibited by increased abstraction during operational period.

The RNAG status for the water body relate to:

- Copper due to ‘pollution from abandoned mines’;
- Macrophytes and phytobenthos combined due to ‘pollution from waste water’ and ‘pollution from rural areas’;
- PFOS due to ‘sector under investigation’; and,
- Mercury and its compounds and PBDE due to ‘no sector responsible’.

This option will not affect any of these RNAGs. However, this option could inhibit achieving GES / GEP if appropriate, provided mitigation is not implemented. The option is not anticipated to compromise any water body objectives.

Further investigations will be undertaken at an appropriate time, in line with the date the option is required for the plan. These investigations are required to confirm this assessment including a hydroecological assessment of the impacts of abstraction on water course flow, hydromorphology and water quality, including the concentration of key physiochemical parameters, investigations into the impact on EFI flow regime, reviewing all baseline WFD data, including the results of any surveys already undertaken as part of this scheme, and gathering further information about the option (regarding abstraction conditions and supply releases).

Following further investigation, design development and implementation of any resultant targeted mitigation, it is anticipated that WFD non-compliance risk can be reduced to minor localised (impact score 1) and therefore this option would be WFD compliant for this water body.

Table 3.50: dRS15/E: Roadford not releasing compensation flows when making supply releases – Level 2 WFD Summary

Water body ID	Water body name	Confidence in WFD data and option design	Deterioration between status classes	Compromises water body objectives	Assists attainment of water body objectives	Maximum Level 2 impact score	Requirements to improve confidence	Mitigation measures	Post mitigation impact score
GB108047007860	**Lower River Tamar**	**Low/Low**	**Possible**	**No**	**No**	**2 (potential adverse impact)**	Hydroecological assessment of the impacts of increase in abstraction from watercourse on flow, hydromorphology and water quality / concentration of key physicochemical parameters. Detailed review of all baseline ecological WFD data, including results of any surveys already undertaken for this scheme. Further investigation into impact on EFI flow regime by option. Further information about option, including details on abstraction conditions and potential Roadford Reservoir supply releases.	Operational period of abstraction is for approximately 6 months and as such water course should be able to withstand changes and recover (provided appropriate supply release from Roadford Reservoir is provided in summer months) during time increased abstraction is not operational. Despite this it is deemed necessary to ensure natural flow of Tamar is not inhibited by increased abstraction during operational period.	**1 (minor localised impact)**

3.6.10 dW1: Brampford Speke and Stoke Canon (North Exeter Boreholes)

For this option one water body and one groundwater body identified as requiring further assessment: GB108045015050: Exe (Barle to Culm) and GB40801G801700: Permian Aquifers in Central Devon groundwater body. A summary of the Level 2 WFD assessment is included in Table 3.51 and detailed outputs are presented in Annex B.

The Level 2 WFD assessment for the Exe (Barle to Culm) river water body identified minor localised impacts (impact score 1) to biological quality elements (invertebrates), hydromorphological supporting elements (hydrological regime and morphology) and physico-quality elements (ammonia, biochemical oxygen demand, dissolved oxygen, pH, phosphate and temperature). This is due to the new discharge and periodic increase in abstraction for drought purposes.

Mitigation measures are proposed in the form of ensuring that the natural flow of the watercourse is maintained to minimise impacts on biology and water quality.

The RNAG for this river water body relate to:

- Macrophytes and Phytobenthos Combined due to ‘pollution from rural areas’, ‘pollution from waste water’ and ‘Pollution from towns, cities and transport’; and
- Mercury and its compounds and PBDE due to ‘no sector responsible’.

This option will not affect any of these reasons for not achieving good status. It is also not anticipated to impede reaching GES / GEP or compromise any water body objectives.

Further investigations are proposed, in line with the date the option is required for the plan. These investigations are required to confirm this assessment and could include a hydroecological assessment of the impacts of abstraction on water course flow, hydromorphology and water quality, including the concentration of key physiochemical parameters, investigations into the impact on EFI flow regime, reviewing all baseline WFD data, including the results of any surveys already undertaken as part of this scheme, and gathering further information about the option.

Following further investigation, design development and implementation of any resultant targeted mitigation, it is anticipated that WFD non-compliance risk can remain as minor localised (impact score 1) and therefore this option would be WFD compliant for this water body.

The Level 2 WFD assessment for the Permian Aquifers in Central Devon groundwater body identified potential adverse impacts (impact score 2) to quantitative status elements (quantitative water balance) and minor localised impacts (impact score 1) to quantitative status elements (quantitative dependent surface water body status). This is primarily due to a periodic increase in groundwater abstraction for drought purposes, which could reduce groundwater levels and impact surface water flow in the River Exe.

No mitigation has been identified as it is anticipated that following further investigation appropriate mitigation will be identified.

The RNAG status for the groundwater body relate to general chemical test, trend assessment and chemical drinking water protected area due to ‘pollution from rural areas’. This option will not affect any of these reasons for not achieving good status. However, this option is anticipated to impede achieving GES / GEP if appropriate mitigation is not identified and implemented. Despite this, no water body objectives are anticipated to be compromised by the option.

Further investigations are proposed, including confirming the results of the WINEP AMP7 investigation for WFD deterioration, hydrogeological investigations into the impacts of increased groundwater abstraction on the water balance and flows to surface watercourses, a review of all

baseline ecological WFD data, and gathering further information about the option. This will help better understand impact of option activities and identify appropriate mitigation measures.

Following further investigation, design development and implementation of any resultant targeted mitigation, this assessment concludes that there is still potential for WFD deterioration risk (impact score 2). Therefore, for this water body, this option may be non-compliant under WFD.

Table 3.51: dW1: Brampford Speke and Stoke Canon (North Exeter Boreholes) - Level 2 WFD summary

Water body ID	Water body name	Confidence in WFD data and option design	Deterioration between status classes	Compromises water body objectives	Assists attainment of water body objectives	Maximum Level 2 impact score	Requirements to improve confidence	Mitigation measures	Post mitigation impact score
GB108045015050	**Exe (Barle to Culm)**	**Low/Low**	**No**	**No**	**No**	**1 (minor localised impact)**	Hydroecological assessment of the impacts of increase in abstraction from watercourse as well as new discharge on flow, hydromorphology and water quality / concentration of key physicochemical parameters. Detailed review of all baseline ecological WFD data, including results of any surveys already undertaken for this scheme. Further investigation into impact on EFI flow regime by option. Further information about option, including details on abstraction conditions and potential Roadford Reservoir supply releases.	Operational period of abstraction is not confirmed but assumed up to 6 months and along with that assumption, the water course should be able to withstand changes (as abstracted volume from surface water is added to this water body upstream in new discharge). Despite this it is deemed necessary to ensure natural flow of Exe is not significantly inhibted by increased abstraction at North Bridge during operational period.	**1 (minor localised impact)**
GB40801G801700	**Permian Aquifers in Central Devon**	**Low/Low**	**Possible**	**Possible**	**No**	**2 (potential adverse impact)**	This licence is under WINEP investigation in AMP7 for the potential for WFD deterioration, which would affect the sustainability of this option. The results of this investigation are not available at the time of writing and pending these results this option assessment may change. Pending outcome of above further hydrogeological assessment of the impacts of increased groundwater abstraction on water balance and flows to surface water courses may be needed. Review of all baseline ecological WFD data, including results of any surveys already undertaken for this scheme. Further information about option, including details on abstraction conditions.	N/A	**2 (potential adverse impact)**

3.6.11 dW2: Hook Springs Licence

For this option one water body was identified as requiring further assessment: GB40801G802400: East Devon – Greensand groundwater body. A summary of the Level 2 WFD assessment is included in Table 3.52 and detailed outputs are presented in Annex B.

The Level 2 WFD assessment identified minor localised effects (impact score 1) on quantitative status elements (quantitative dependent surface water body status and quantitative water balance) and chemical status elements (chemical dependent surface water body status). This is largely due to an increase in abstraction leading to a potential reduction in groundwater levels.

Mitigation is proposed in the form of confirmation of current and historical usage of this abstraction licence, and the review previous assessments regarding this abstraction to confirm that increasing the drought licence daily limit will not lead to any risk in groundwater levels.

The RNAG status for the groundwater body relate to chemical drinking water protected area, general chemical test and trend assessment due to ‘pollution from rural areas’. This option will not affect any of these reasons for not achieving good status. It is also not anticipated to impede reaching GES / GEP or compromise any water body objectives.

Further investigations will be undertaken at an appropriate time, in line with the date the option is required for the plan. These investigations are required to confirm this assessment including a hydrogeological assessment of the impacts of increased groundwater abstraction on water balance and flow to surface water courses, reviewing all baseline WFD data, including the results of any surveys already undertaken as part of this scheme, and gathering further information about the option.

Following further investigation, design development and implementation of any resultant targeted mitigation, it is anticipated that WFD non-compliance risk can remain as minor localised (impact score 1) and therefore this option would be WFD compliant for this water body.

Table 3.52: dW2: Hook Springs Licence - Level 2 WFD summary

Water body ID	Water body name	Confidence in WFD data and option design	Deterioration between status classes	Compromises water body objectives	Assists attainment of water body objectives	Maximum Level 2 impact score	Requirements to improve confidence	Mitigation measures	Post mitigation impact score
GB40801G802400	**East Devon - Greensand**	**Low**	No	No	No	**1 (minor localised impact)**	Hydrogeological assessment of the impacts of increased groundwater abstraction on water balance and flows to surface water courses. Review of all baseline WFD data, including results of any surveys already undertaken for this scheme. Further information about option, including details on abstraction conditions.	SWW to confirm current / historical usage and review previous assessments to confirm if borehole licence operated sustainably at time of operation and would therefore lead to no risk when reinstated.	**1 (minor localised impact)**

3.6.12 dW3: Wilmington Springs Licence

For this option one water body was identified as requiring further assessment: GB108045008880: Umborne Brook surface water body. A summary of the Level 2 WFD assessment is included in Table 3.53 and detailed outputs are presented in Annex B.

The Level 2 WFD assessment identified minor localised effects (impact score 1) on biology (invertebrates), hydromorphological elements (hydrological regime) and water quality (ammonia, dissolved oxygen, pH, phosphate and temperature). This is largely due to a periodic increase in abstraction at Wilmington for drought purposes. This will likely lead to periodic, localised reductions in flow and velocity at Umborne Brook as the watercourse will not receive as much groundwater via the springs. This could lead to periodic, minor reductions in flow volume and velocity within the river, which could impact sedimentation and water quality downstream of where spring reaches Umbourne Brook.

Mitigation is proposed in the form of ensuring that natural flows in Umborne Brook are not inhibited by increased abstraction during operational period at increased capacity.

The RNAG status for the Umborne Brook river water body relate to:

- Macrophytes and phytobenthos combined and phosphate due to ‘pollution from rural areas’
- and ‘pollution from urban areas’
- Mercury and its compounds and PBDEs due to ‘no sector responsible’.

This option will not affect any of these reasons for not achieving good status. It is also not anticipated to impede reaching GES / GEP or compromise any water body objectives.

Further investigations will be undertaken at an appropriate time, in line with the date the option is required for the plan. These investigations are required to confirm this assessment and could include hydroecological assessments of the impacts of abstraction on flow, hydromorphology, water quality, concentrations of key physicochemical parameters and biology, reviewing all baseline WFD data, including the results of any surveys already undertaken as part of this scheme, and gathering further information about the option. Furthermore, it is recommended to explore river restoration measures to address flow concerns in Umborne Book and ensure the health of Umborne Brook is maintained post anticipated reduced flow if necessary.

Following further investigation, design development and implementation of any resultant targeted mitigation, it is anticipated that WFD non-compliance risk can remain as minor localised (impact score 1) and therefore this option would be WFD compliant for this water body.

Table 3.53: dW3: Wilmington Springs Licence - Level 2 WFD summary

Water body ID	Water body name	Confidence in WFD data and option design	Deterioration between status classes	Compromises water body objectives	Assists attainment of water body objectives	Maximum Level 2 impact score	Requirements to improve confidence	Mitigation measures	Post mitigation impact score	Further comments
GB108045008880	**Umborne Brook**	**Low**	**No**	**No**	**No**	**1 (minor localised impact)**	Hydroecological assessment of the impacts of increase in abstraction from watercourse on flow, hydromorphology and water quality / concentration of key physicochemical parameters. Review of all baseline ecological WFD data, including results of any surveys already undertaken for this scheme. Carry out additional assessment of the potential implications on flow and biology of Umborne stream as a result of reduced water from springs / reduced baseflow supplying it. Further information about option, including details on abstraction conditions.	Operational period of abstraction is assumed periodic and as such water course should be able to withstand changes and recover. Despite this it is deemed necessary to ensure natural flow of Umborne Brook is not inhibited by increased abstraction during operational period.	**1 (minor localised impact)**	Explore river restoration measures to address flow concerns in Umborne Book and ensure health of Umborne Brook is maintained post anticipated reduced flow if necessary. Could be an option to consider particularly as PR24 methodology encourages further implementation of NbS like river restoration and integrating said solutions as BAU practice.

3.6.13 dW4: Wimbleball not releasing compensation flows when making supply releases

For this option one water body was identified as requiring further assessment: GB108045009060: Exe (Culm to Creedy) surface water body. A summary of the Level 2 WFD assessment is included in Table 3.54 and detailed outputs are presented in Annex B.

The Level 2 WFD assessment identified potential adverse impacts localised effects (impact score 2) on biological quality elements (invertebrates) and minor localised impacts (impact score 1) on hydromorphological elements (hydrological regime) and water quality (ammonia, dissolved oxygen, pH, phosphate and temperature). This is largely due to the periodic abstraction of compensation flow from the River Exe for drought purposes. This could lead to changes in flow velocity and volume, sedimentation patterns and changes in water quality downstream.

Mitigation is proposed in the form of ensuring natural flow of the River Exe is not inhibited by the loss of compensation flow during abstraction periods.

The RNAG status for the river water body relate to:

- Macrophytes and phytobenthos combined and phosphate due to ‘pollution from rural areas’ and ‘pollution from waste water’; and
- Mercury and its compounds and PBDEs due to ‘no sector responsible’.

This option will not affect any of these RNAGs. However, this option could inhibit achieving GES / GEP if appropriate, provided mitigation is not implemented. The option is not anticipated to compromise any water body objectives.

Further investigations will be undertaken at an appropriate time, in line with the date the option is required for the plan. These investigations are required to confirm this assessment including hydroecological assessments of the impacts of abstraction on flow, hydromorphology, water quality, concentrations of key physicochemical parameters and biology, reviewing all baseline WFD data, including the results of any surveys already undertaken as part of this scheme, and gathering further information about the option (and its impact on flow regime).

Following further investigation, design development and implementation of any resultant targeted mitigation, it is anticipated that WFD non-compliance risk can be reduced to minor localised (impact score 1) and therefore this option would be WFD compliant for this water body.

Table 3.54: dW4: Wimbleball not releasing compensation flows when making supply releases – Level 2 WFD Summary

Water body ID	Water body name	Confidence in WFD data and option design	Deterioration between status classes	Compromises water body objectives	Assists attainment of water body objectives	Maximum Level 2 impact score	Requirements to improve confidence	Mitigation measures	Post mitigation impact score
GB108045009060	**Exe (Culm to Creedy)**	**Low**	Possible	No	No	**1 (minor localised impact)**	Hydroecological assessment of the impacts of the loss of compensation flow from watercourse on flow, hydromorphology and water quality / concentration of key physicochemical parameters. Detailed review of all baseline ecological WFD data, including results of any surveys already undertaken for this scheme. Further investigation into impact on flow regime by option. Further information about option.	Abstraction of compensation flow is assumed to operate periodically and as such the water course should be able to withstand changes and recover, provided appropriate supply release from is provided in summer months. Despite this, it is deemed necessary to ensure natural flow of Exe is not inhibited by the loss of compensation flow during drought periods.	**1 (minor localised impact)**

3.7 Drought EAR options

These seven options were appraised in specific EARs accompanying licence changes, drought permits or habitat regulations assessment (HRA) reports in 2023. These options were assessed for compliance with WFD regulations, using a single stage screening and assessment process. There have been no changes to these options since these reports were issued and therefore the WFD assessments have been summarised in this section.

3.7.1 dC1 – Restormel Licence EAR

The WFD ecological status of the Lower River Fowey is currently Good, based on 2019 data. The proposed abstraction scenario represents flows within the zone of influence in recent years that did not affect the WFD ecological status. The magnitude of the impact on flows downstream of Restormel Weir are predicted to be **medium** and impacts to the wetted perimeter and Froude number are **Negligible**. **Negligible** impacts on water quality are predicted. Potential impacts on receptors that are WFD elements (macroinvertebrates, macrophytes, fish, Invasive Non-Native Species) are predicted to be **minor and localised**. On this basis, the sensitivity of the WFD ecological status receptor is considered to be **low**, with **minor and localised** impacts. Confidence on this assessment is classified as **medium**.

The WFD chemical status of the water body is Fail (2019), due to two priority hazardous substances. The proposed abstraction will not affect this situation as effects on dilution are predicted to be **Negligible**. On this basis the sensitivity of the WFD chemical status to the proposed abstraction is considered **Low**, with significance of impact **Minor and localised** in the absence of a negligible category. Confidence in this assessment is classified as **Medium**. See Table 3.55.

Table 3.55: Summary of predicted impacts of dC1 on WFD status

Receptor	Sensitivity	Significance of impact	Confidence level
GB108048001420 WFD ecological status	Low	Minor and Localised	Medium
GB108048001420 WFD chemical status	Low	Minor* and Localised	Medium

*: Impact predicted to be negligible but categorised as Minor and localised in the absence of a negligible category.

3.7.2 dC2 – Stannon Lake Licence EAR

The main WFD surface water bodies considered in this assessment are: GB108049007040 (Stannon Stream Water Body) and GB108049006980 (Camel (De Lank to Stannon) Water Body).

This assessment has concluded **major adverse** significance of impacts on macroinvertebrates, Atlantic salmon, brown/ sea trout, bullhead and lamprey spawning and lamprey juvenile life stages and Moderate significance of impacts on Phytobenthos and other fish species/ life stages within the Stannon Stream (GB108049007040) water body.

The hydrological zone of influence has been estimated to not extend to the confluence with River Camel under the proposed licence change. The magnitude of impact of increased Stannon Lake abstraction on the River Camel is considered to be **negligible**. The assessment level of uncertainty is considered **medium**, although the Confidence certainty for the drought permit assessment (High) should be noted.

Table 3.56: Summary of predicted impacts of dC2 on WFD status

Receptor	Significance of impact	Confidence level
GB108049007040 WFD ecological status	Major Adverse	Medium
GB108049006980 WFD ecological status	Negligible	Medium

3.7.3 dC3 – Porth Reservoir and Rialton Intake EAR

The main WFD surface water body considered in this assessment is GB108049000000: Porth Stream Water Body.

The Porth Stream Water Body (GB108049000000) is located within the Gannel Porth and Menalhyl operational catchment. Stream flow will include overflow from Porth Reservoir when full, which has occurred continually (apart from March 2018 – January 2019) since the abstraction from the Porth Stream at Rialton ceased in 1999.

For the 2019 WFD assessment cycle, the EA changed the monitoring and assessment of chemical status in surface water bodies to include new priority substances and stricter standards. The EA now also measures the presence of more persistent chemical substances and more accurately reflect the extent of these chemicals in the environment. As a result, the Porth Stream Water Body was classified as failing to meet good chemical status. The introduction of these new standards has meant that no surface water bodies have met the criteria for achieving good chemical status (Environment Agency, 2022). It is therefore extremely unlikely that the overspill from Porth Reservoir to the Porth Stream has contributed to the reported deterioration in status.

There is **no evidence to suggest that Porth Reservoir produces significant negative impacts** on WFD status and hence the achievement of compliant WFD objectives for the Porth Stream Water Body. The failing chemical WFD status is due to concentrations of Mercury and PBDE (a man-made compound used in flame retardants), which will not be linked to overspill from Porth Reservoir to the river.

Table 3.57: Summary of predicted impacts of dC3 on WFD status

Receptor	Significance of impact
GB108049000000 WFD chemical status	Negligible

3.7.4 dCS2/E – Park Lake Licence EAR

As part of the licence renewal, the following river water bodies were assessed: GB108048001420: Fowey (Warleggan to St Neot), GB108048007650: Lower River Fowey and GB108048001410: Fowey (Upper). None of the water bodies are designated as artificial or heavily modified. All three water bodies were assessed as ‘Good’ overall WFD status (EA Catchment Data Explorer, 2023[6]).

Three stretches of the wider Fowey catchment were surveyed as part of the abstraction licence renewal for the nearby Park Lake in 2015[7], which indicate recent water quality status for the River Fowey. Each survey considered the following parameters: Ecological, Chemical, Fish, Invertebrates, Macrophytes, Ammonia, BOD, Dissolved Oxygen, pH, Phosphate, Temperature, Priority Hazardous Substances, Other Pollutants and Specific Pollutants.

All three of the above sites were assessed as ‘Good’ or ‘High’ status.

The results of this assessment suggested Park Lake produces **no significant negative impacts** on the status of these parameters and hence the achievement of compliant WFD objectives for the River Fowey and its tributaries.

Table 3.58: Summary of predicted impacts of dCS2/E on WFD status

Receptor	Significance of impact
GB108048001420 WFD ecological and chemical status	Negligible

[6] Environment Agency (2023) Catchment Data explorer. Available online at: https://environment.data.gov.uk/catchment-planning/

[7] South West Water, November 2022. Park Lake Drough Permit Application 2022.

Receptor	Significance of impact
GB108048007650 WFD ecological and chemical status	Negligible
GB108048001410 WFD ecological and chemical status	Negligible

3.7.5 dCS3/E – Blackpool Pit EAR

Blackpool Pit is not a WFD lake water body; however, the majority of the site including the water body lies within the catchment of the St Austell River water body (GB108048002280). Blackpool Pit is not naturally hydrologically connected to the St Austell River or any its tributaries or the Upper River Fal.

The Colliford Reservoir WFD water body (GB30846225) may also be impacted by the water transfer from Blackpool pit if there are differences in water quality between the two water bodies. For this reason, this section reviews the chemical status of this water body (ecological potential of the water body is not within the scope of this impact assessment). Likewise, the chemical status in the St Neot River water body (GB108048007640) has been considered in this assessment because it is the main outflow from Colliford Reservoir.

Under the abstraction licence scenario, it is expected that Colliford Reservoir Water Body will show Low sensitivity to the predicted changes in water quality, relative to the predicted water quality in the Blackpool Pit baseline scenario. The predicted magnitude of impact on this pathway is Low and therefore the significance of impacts to this receptor would be Minor. Table 3.59 summarises the predicted impacts on water quality within the Colliford Reservoir water body. Confidence in the assessment is Low due to data discrepancies with total and dissolved metal concentrations. However, the pH in both Blackpool and Colliford Reservoir are close to neutral (pH 7) and as such the likelihood of increased solubilisation of metal ions in Colliford Reservoir is low. As it is expected that Colliford Reservoir water body will show Low sensitivity to the predicted changes in water quality, it is also predicted the St Neot River water body will show Low sensitivity. The predicted magnitude of impact on this pathway is Low and therefore the significance of impacts to this receptor would be **minor and localised**. Confidence in the assessment is **low** as for Colliford Reservoir.

Table 3.59: Summary of predicted impacts of dCS3/E on WFD status

Receptor	Sensitivity	Significance of impact	Confidence level
GB30846225 WFD chemical status	Low	Minor	Low
GB108048007640 WFD chemical status	Low	Minor	Low

3.7.6 dCS6/E – Hawks Tor Pit EAR

As part of the licence renewal, the following river water bodies were assessed: GB108048001420: Fowey (Warleggan to St Neot), GB108048007650: Lower River Fowey and GB108048001410: Fowey (Upper). None of the water bodies are designated as artificial or heavily modified. All three water bodies were assessed as ‘Good’ overall WFD status (EA Catchment Data Explorer, 2023).

Three stretches of the wider Fowey catchment were surveyed as part of the abstraction licence renewal for the nearby Park Lake in 2015, which indicate recent water quality status for the River Fowey. Each survey considered the following parameters: Ecological, Chemical, Fish, Invertebrates, Macrophytes, Ammonia, BOD, Dissolved Oxygen, pH, Phosphate, Temperature, Priority Hazardous Substances, Other Pollutants and Specific Pollutants.

All three of the above sites were assessed as ‘Good’ or ‘High’ status.

In conclusion, the drought permit shows **no evidence of producing significant negative impacts** on water quality in either Hawk's Tor or Colliford Reservoir, with the previous hands-off level of 12m (applied for the 1995/6 Drought Permits) remaining in place.

Table 3.60: Summary of predicted impacts of dCS6/E on WFD status

Receptor	Significance of impact
GB108048001420 WFD ecological and chemical status	Negligible
GB108048007650 WFD ecological and chemical status	Negligible
GB108048001410 WFD ecological and chemical status	Negligible

3.7.7 dRS1/E: River Lyd – Summer abstraction EAR

The following water bodies were assessed: GB108047007731: Lower River Lyd and GB30847000: Roadford Lake. The Lower River Lyd and Roadford Lake water bodies are currently at Good and Moderate status, respectively. Roadford Lake is classed as Artificial and for all WFD classification items the reason for not achieving Good Potential is due to 'disproportionate burdens' with an objective date of 2027. The only ecological element assessed is phytoplankton (Moderate status in 2016 and 2019) and the phosphorus and nitrogen physicochemical supporting elements also indicated Moderate status. The 2019 Cycle 2 classification data demonstrated High status for all physico-chemical elements within the Lower River Lyd water body. The combined phytobenthos/ macrophyte element was indicative of Good status while fish and invertebrates were indicative of High status.

No significant impact of the proposed drought permit on water quality in the River Lyd is predicted.

- The baseline dataset demonstrates that water quality on the River Lyd is at Good status or higher and there are few consented discharges within the affected area;
- Impacts of the proposed drought permit on dilution of water quality parameters are predicted to be Negligible in magnitude;
- The baseline water quality dataset is spatially robust. The data set is less robust over the proposed drought period due to fewer samples available for statistical analysis.

Therefore, a **medium** level of certainty has been assigned to this assessment. No change in the WFD status of the River Lyd is predicted with respect to water quality (physico-chemical quality elements) based on the assessment described above. No significant increase in taste and odour problems at Roadford reservoir are predicted for the Lyd abstraction.

Table 3.61: Summary of predicted impacts of dRS1/E on WFD status

Receptor	Significance of impact	Confidence level
GB108047007731 WFD ecological and chemical status	Negligible	Medium
GB30847000 WFD ecological and chemical status	Negligible	Medium

4 Cumulative and in combination effects

The SWW Preferred Plan comprises the combination of options that make up the BVP. Prior to selection, SWW tested other scenarios of the plan including BVP, BESP, LCP, Ofwat and alternative/ adaptive plans. This comprises a selection of supply, drought and demand options drawn from the Bournemouth, Colliford, Roadford and Wimbleball WRZs.

This section represents a programme level assessment to determine the cumulative effects of the options selected in each plan. The options comprising the BVP were also assessed against other published plans outside of the updated dWRMP24 to determine in combination effects.

4.1 Best Value Plan

4.1.1 Options selected

In combination effects have been assessed for options which fall under the SWW BVP, or Preferred Plan laid out by SWW. The BESP and Ofwat plan comprises the exact same options as the BVP, and as such has the same cumulative effects as reported in this section. The options selected as part of the BVP, BESP & Ofwat for the SWW updated dWRMP24 are presented in Table 4.1.

Table 4.1: SWW updated dWRMP24 BVP & BESP options

Option ID	Option title
BNW1	Borehole development, existing borehole remedial works
BNW6	Longham Aquifer Recharge
BNW7	Mendips Quarry Raw water transfer and augmentation of the River Stour
BNW8	Poole Harbour FE reuse
BNW14	Ibsley Lake
COL15	Restormel WTW- increase treatment capacity to 110Ml/d
dW1	Brampford Speke and Stoke Canon (North Exeter boreholes)
dW2	Hook Springs licence
dW3	Wilmington Springs licence
dW4	Wimbleball not releasing compensation flows when making supply releases
ROA21	Roborough to Littlehempston WTW
WIM14	Whitecross distribution upgrade
WIM18	Cheddar 2 to Bickham Moor

WIM18 has been selected as part of the BVP, however at present this option does not have a formal WFD Level 1 and Level 2 assessment. The information provided in this report for WIM18 has been summarised based on the available SEA appraisal. It is anticipated that the water bodies intersected along the Cheddar 2 to Bickham Moor route could align with water bodies impacted by other SWW options and thus be subject to cumulative and in-combination effects. However, Level 1 and 2 ACWG WFD assessments for this option will be required before this can be confirmed. Therefore, due to lack of formal WFD assessment WIM18 has excluded from the cumulative and in-combination effects assessment at this time.

4.1.2 Cumulative effects assessment

Table 4.2 identifies water bodies which are impacted by more than one of the BVP options, but where the high-level cumulative effects assessment has shown that it is unlikely that the multiple BVP options will lead to a risk of WFD deterioration at the water body scale.

Table 4.2: BVP water bodies where cumulative effects are unlikely to lead to increased risk of WFD deterioration.

Water body name and ID	Options	Comments
GB108043011040: Stour (Lower)	• BNW6: Longham Aquifer Recharge • BNW7: Mendips Quarry – 30Ml/d scheme option – raw water transfer and augmentation of the River Stour • BNW8: Poole Harbour FE-reuse	Both options BNW6 and BNW7 involve below ground construction activity and construction / modification of existing water treatment works / pumping station. The BNW7 and BNW8 options propose new or increased surface water abstractions. The BNW8 option also includes the transfer of water via a river, canal or aqueduct. The BNW7 option also involves installation of below-ground pipelines in this water body. Currently all options are proposed to have overlapping design / construction periods (commencing 2024 for BNW7, 2027 for BNW8 and 2029 for BNW6). Both BNW6 and BNW8 are planned to be operational / see benefit by 2035/2036, with BNW7 in 2042/2043. Cumulative effects are not likely to increase risk of deterioration outside of what is already described in the BNW7 Level 2 assessment. Risk **remains as potential adverse impact (impact score 2)** as per post mitigation scoring of BNW7 Level 2 assessment.
GB108043015842: Hampshire Avon (Lower)	• BNW14: Ibsley Lake • BNW8: Poole Harbour FE-reuse	The BNW14 option includes impacts associated with a low volume discharge of water with a quality element of a lower WFD status than the receiving water body. It also involves a minor increase in abstraction which will be compensated, in addition to the installation of new below-ground pipelines. The modification of an existing WTW or PS is also an activity identified for this option. Option BNW8 was scoped in this water body due to a potential indirect effect through unconfirmed changes in abstraction. As such it was scoped out of any additional assessment and was considered WFD compliant. Currently BNW8 and BNW14 will have overlapping design / construction period (commencing 2027 for BNW8 and 2031 for BNW14). Both options are planned to be operational / see benefit by 2035/2036. Cumulative effects are unlikely to increase risk of deterioration. Risk **remains as minor localised impact (impact score 1)** as per post mitigation scoring in the BNW14 Level 2 assessment.
GB108043016052: Stour (Middle d/s Pimperne Brook)	• BNW7: Mendips Quarry - 30Ml/d scheme option - raw water transfer and augmentation of the River Stour • BNW8: Poole Harbour FE-reuse	The BNW7 option involves discharge of water with a quality element of a lower WFD status than the receiving water body and trenching. The BNW8 option involves a low volume discharge of water with a quality element of the same or higher WFD status than the receiving water body, which following further assessment was concluded as having a minor and localised effect on the water body. Currently BNW7 and BNW8 will have overlapping design / construction periods (commencing 2024 for BNW7 and 2027 for BNW8). BNW7 is planned to be operational / see benefit by 2042/2043, and BNW8 by 2035/2036. Cumulative effects are unlikely to increase risk of deterioration outside of what is described in the BNW7 Level 2 assessment. Risk **remains as potential adverse impact (impact score 2)** as per post mitigation scoring in the BNW7 Level 2 assessment.
GB108045015050: Exe (Barle to Culm)	• dW1: Brampford Speke and Stoke Canon (North Exeter boreholes) • dW4: Wimbleball not releasing compensation flows when making supply releases	The dW1 option involves a low volume discharge of water of same quality of receiver. It also involves emergency / drought use of existing surface water abstraction. dW4 also involves emergency / drought use of an existing surface water abstraction although scoring has been downgraded in this instance as the abstraction point would only impact approximately 50m of Exe (Barle to Culm) with most expense on downstream water body. Currently dW1 and dW4 will have overlapping design / construction periods (both commencing 2025). Both options are planned to be operational / see benefit by 2025/2026. Cumulative effects are unlikely to increase risk of deterioration outside of what is described in the dW1 Level 2 assessment.

Water body name and ID	Options	Comments
		Risk **remains as minor localised impact (impact score 1)** as per post mitigation scoring in the dW1 Level 2 assessment.
GB40801G801700: Permian Aquifers in Central Devon	• dW1: Brampford Speke and Stoke Canon (North Exeter boreholes) • WIM14; Whitecross distribution upgrade	The dW1 option involves emergency / drought use of existing groundwater abstraction. WIM14 involves below ground construction activity and the installation of below-ground pipelines with associated crossings in addition to the decommissioning of existing pipelines. Currently dW1 and WIM14 will have overlapping design / construction periods (both commencing 2025). dW1 is planned to be operational by 2025/2026 and WIM14 by 2030/2031. Cumulative effects are unlikely to increase risk of deterioration outside of what is described in the dW1 Level 2 assessment. Risk **remains as minor localised impact (impact score 1)** as per post mitigation scoring in the dW1 Level 2 assessment.
GB40801G802400: East Devon - Greensand	• dW2: Hook Springs licence • dW3: Wilmington Springs licence	Both options involve emergency / drought use of an existing groundwater abstraction. Currently both options will have overlapping design / construction periods (both commencing 2025). Both are planned to be operational / see benefit by 2025/2026. Despite this, cumulative effects are unlikely to increase risk of deterioration outside of what is described in each options Level 2 assessment due to relative size of groundwater body. Risk **remains as minor localised impact (impact score 1)** as per post mitigation scoring in the dW2 and dW3 Level 2 assessment sheets.
GB40802G805800: Lower Dorset Stour and Lower Hampshire Avon	• BNW14: Ibsley Lake • BNW6: Longham Aquifer Recharge • BNW7: Mendips Quarry - 30Ml/d scheme option - raw water transfer and augmentation of the River Stour	All three options include below ground construction activity. Options BNW7 and BNW14 involve installation of new below-ground pipelines with and without watercourse crossings respectively. Option BNW14 also includes below ground construction activity within 500m of a groundwater feature, a new or increased groundwater abstraction, with associated borehole construction. Borehole construction and modification of an existing WTW / PS is also associated with option BNW6. Currently all options will have overlapping design / construction periods (commencing in 2024 for BNW7, 2029 for BNW6 and 2031 for BNW14). Both BNW6 and BNW14 are planned to be operational / see benefit by 2035/2036, with BNW7 by 2042/2043. Cumulative effects are unlikely to increase risk of deterioration outside of what is already described in the BNW14 Level 2 assessment. Risk **remains as potential adverse impact (impact score 2)** as per post mitigation scoring of the BNW14 Level 2 assessment.

No water bodies were there is the potential for an increased risk of WFD deterioration at a water body scale as a result of the combination of BVP options.

4.1.3 In-combination effects assessment

In addition to the updated dWRMP BVP options, other planning applications and projects along with other water company WRMP options could lead to potential in-combination effects to some water bodies. This section sets out the assessment of the potential implications on WFD of multiple options and plans.

Table 4.3 lists the relevant water companies between whom in-combination effects could occur, with a summary of the level of information available within their published dWRMPs. It should be noted that while the published dWRMP plans have been used, it is anticipated that most water companies will be in the process of updating these at the time of writing. Therefore, the options lists and preferred plans may change, which could alter the conclusions of this in-combination effects assessment.

Table 4.3: Other water companies dWRMPs reviewed

Water company	Level of information available
Bristol	Only reports water bodies at risk of deterioration for individual options; no assessment possible of in-combination due to multiple minor effects.
Wessex	Only reports water bodies at risk of deterioration for individual options; no assessment possible of in-combination due to multiple minor effects.

In addition to other water company options, other planning applications and planning allocations, which could lead to in-combination effects, have been considered.

One major development, A30 Temple to Higher Carblake Improvement, has been completed and another, Bere Alston to Tavistock Railway Reinstatement and Associated Trails, is in the pre-application stage of planning and as such there is insufficient publicly available data for use in this in-combination effects assessment.

As a result, only one major development was considered in the assessment of in-combination effects, the National Highways A30 Chiverton to Charland Cross Scheme alongside five other local planning allocations related to mineral extraction. Table 4.4 outlines this major development and the five mineral allocations.

Table 4.4 Major developments and local planning allocations considered

Project	Brief description
Major developments	
National Highways A30 Chiverton to Charland Cross Scheme	Upgrading the A30 single carriageway between Chiverton Cross and Carland Cross roundabouts.
Local Planning Allocations (LPA)	
Drakelands Mine Lateral Extension (Sand and Gravel)	Mineral extraction option, extension of existing site for use extracting sand and gravel.
Straitgate Farm (Sand and Gravel)	Mineral extraction option, for sand and gravel.
West of Penslade Cross, Uffculme (Sand and Gravel)	Mineral extraction option, for sand and gravel.
Land to the east of Burton, and north of the A35 at Christchurch (Sand and Gravel)	Mineral extraction option, for sand and gravel.
Land at Horton Heath, Horton, Wimborne (Sand and Gravel)	Mineral extraction option, for sand and gravel.

Table 4.5 identifies water bodies which are impacted by one of the BVP options, one or more planning projects/other water company dWRMP24s, but where the in-combination effects assessment has shown that the options will not lead to an increased risk of WFD deterioration at the water body scale in-combination, over those risks already identified for individual options.

Table 4.5: Water bodies where in-combination effects are unlikely to lead to increased risk of WFD deterioration

Water body name and ID	Options	Comments
GB40801G806900: Upper Hampshire Avon	• BNW7: Mendips Quarry - 30Ml/d scheme option - raw water transfer and augmentation of the River Stour • Wessex Water: 39_02: under-utilised licence - North Warminster	BVP option BNW7 involves below ground construction activity, including installation of new below ground pipelines involving watercourse crossings. Other option activities in this water body include a Wessex Water option, 39_02, which involves groundwater abstraction from two new boreholes. The existing licence (at 6Ml/d) will accommodate the current output (3.5Ml/d) + new borehole yield (2.5Ml/d). The current licence has been underutilised in recent years due to water quality issues and the option does not seek to change the licence. In this respect, it is considered a low risk option. However, contemporary modelling of expected impact on groundwater and linked surface waters based on recent actual data has been recommended in line with a

Water body name and ID	Options	Comments
		precautionary approach, to ensure no WFD deterioration. No in-combination risk of WFD deterioration is expected. Risk to water body remains as **minor localised impact (impact score 1).**
GB40802G801800: Central Devon and Exe – Aylesbeare Mudstone	• WIM14: Whitecross distribution upgrade • LPA: Straitgate Farm (Sand and Gravel) • LPA: West of Penslade Cross, Uffculme (Sand and Gravel)	BVP option WIM14 involves below ground construction activity and installation of new below ground pipelines as well as abandonment of the existing main. Other option activities include to mineral allocation options. These involve extraction of sand and gravel. This has potential dewatering implications as a result of quarrying activity. Despite this, no in-combination risk of WFD deterioration is anticipated due to nature of option activities and relative size of water body. Risk to water body remains as **minor localised impact (impact score 1).**
GB40802G805800: Lower Dorset Stour and Lower Hampshire Avon	• BNW6: Longham Aquifer Recharge • BNW7: Mendips Quarry - 30Ml/d scheme option - raw water transfer and augmentation of the River Stour • BNW14: Ibsley Lake • LPA: Land to the east of Burton, and north of the A35 at Christchurch (Sand and Gravel) • LPA: Land at Horton Heath, Horton, Wimborne (Sand and Gravel)	All three BVP options include below ground construction activity. Options BNW7 and BNW14 involve installation of new below-ground pipelines with and without watercourse crossings respectively. Option BNW14 also includes below ground construction activity within 500m of a groundwater feature, a new or increased groundwater abstraction, with associated borehole construction. Borehole construction and modification of an existing WTW / PS is also associated with option BNW6. Other option activities include two mineral allocations. These involve extraction of sand and gravel. This has potential dewatering implications as a result of quarrying activity. Despite this, in-combination risk of WFD deterioration is unlikely to increase risk of deterioration outside of what is already described in the BNW14 Level 2 assessment. Risk **remains as potential adverse impact (impact score 2)** as per post mitigation scoring of the BNW14 Level 2 assessment.
GB40802G806700: Tamar	• ROA21: Roborough to Littlehempston WTW • LPA: Drakelands Mine Lateral Extension (Sand and Gravel)	BVP option ROA21 includes below ground construction activity, and installation of new below ground pipelines with associated crossing(s). Other option activities include the proposed Drakelands Mine Lateral Extension, a mineral extraction option with potential minor surface water implications. In the Devon County Council mineral plan[8] for this allocation prior to beginning works an assessment of the potential impacts on surface water and groundwater quality and flows should be undertaken, including cumulative impacts in conjunction with currently permitted operations, and identify necessary mitigation, enhancement and monitoring measures. No in-combination risk of WFD deterioration is expected. Risk to water body **remains as potential minor localised impact (impact score 1)**.
GB109053027371: Bristol Avon (By Bk to Netham Weir)	• BNW7: Mendips Quarry - 30Ml/d scheme option - raw water transfer and	BVP option BNW7 includes a new abstraction from this water body which could impact hydrological regime and fish passage. Other option activities in this water body include Bristol Water option R007, which involves a new river

[8] Devon County Council Mineral Plan, 2017. Available at: https://devoncc.sharepoint.com/sites/PublicDocs/Planning/Planning/Minerals%20policy%20documents/Devon%20Minerals%20Plan/Final%20Adopted%20Version/Devon%20Minerals%20Plan%202011-2033.pdf?ga=1

Water body name and ID	Options	Comments
	augmentation of the River Stour • Bristol Water: R007: Pumped Refill of P39R	abstraction. This would reduce flow in this water body and potentially increase concentrations of any point source pollutants. The latest CAMS assessment indicates that water is available in this catchment for abstraction under Q95, Q70, and Q50 conditions indicating that there is not flow pressure in the reach. The abstraction of water is proposed during the winter months when the flow is high, meaning that the abstraction will not reduce low flows. As such, it is unlikely that the option R007 would significantly change in-river habitats and would not, by itself, lead to WFD deterioration. In-combination, risk to the water body is unlikely to exceed what is already described in further assessment carried out for BNW7. Risk to the water body **remains as potential adverse impact (impact score 2)** as per the post mitigation scoring of BNW7 Level 2 assessment.
GB40901G804600: Mendips	• BNW7: Mendips Quarry - 30Ml/d scheme option - raw water transfer and augmentation of the River Stour • Bristol Water: P01-01: Increase performance of existing sources to increase DO near to licensed quantity	BVP option BNW7 includes modification of an existing quarry into a storage reservoir which has potential groundwater implications, with anticipated localised changes in the groundwater table. Other option activities include Bristol Water option, P01-01, which is assessed as non-compliant with WFD due to the potential deterioration in dependent surface water body status following additional groundwater abstraction. This could reduce groundwater levels in this water body and potentially increase concentrations of any point source groundwater pollutants. In combination, Risk to the water body is unlikely to exceed what is already described in further assessment carried out for BNW7 due to the relative size of the ground water body. Risk **remains as potential adverse impact (impact score 2)** as per post mitigation scoring of BNW7 Level 2 assessment. There is also potential to reduce risk of deterioration to WFD status for both options through assessment of the extent the flow regime changes as a result of the option activities as well as establishing sensitivity of the biological receptors to the proposed changes in order to improve confidence in each assessment.
GB108043016052: Stour (Middle d/s Pimperne Brook)	• BNW7: Mendips Quarry - 30Ml/d scheme option - raw water transfer and augmentation of the River Stour • BNW8: Poole Harbour FE-reuse • 41_01: Drought permits options (only until 2039/2040) • 52_01: Poole Reuse – 50% usage	BVP option BNW7 involves discharge of water with a quality element of a lower WFD status than the receiving water body and trenching. Option BNW8 involves a low volume discharge of water with a quality element of the same or higher WFD status than the receiving water body, which following further assessment was concluded as having a minor and localised effect on the water body. Other option activities include Wessex Water options 41_01 and 52_01. 41_01 involves allowing groundwater abstraction to continue at existing daily limits even when this could exceed the annual licence limit. Option 52_01 is an alternative arrangement of option BNW8, operated at 50% capacity / usage and redirecting treated effluent into the Stour as opposed to Poole Harbour. In the separate cumulative impact assessment completed for Wessex Water, options 41_01 and 52_01 were assessed to have a potential additional impact on WFD objectives then when assessed separately. Although it should be noted that deterioration risk would not increase above what is already described in 52_01 further assessment (possible WFD non-compliance). Despite this possible cumulative impact between the Wessex Water options, it is deemed unlikely that in combination with the two SWW BVP options, there would be

Water body name and ID	Options	Comments
		an increased risk of deterioration above what is already described in the 52_01 and BNW7 Level 2 assessments. This is in part due to 52_01 and BNW8 being mutually exclusive options (only one of these options will be taken forward). Risk to water body **remains as potential adverse impact (impact score 2)** as described in post mitigation scoring of BNW7 Level 2 assessment.
GB108047003640: Tory Brook	• ROA21: Roborough to Littlehempston WTW • LPA: Drakelands Mine Lateral Extension (Sand and Gravel)	BVP option ROA21 involves below ground construction activity associated with installation of below-ground pipelines with crossing(s). Other option activities include the proposed Drakelands Mine Lateral Extension, a mineral extraction option with potential minor surface water implications. In the Devon County Council mineral plan for this allocation prior to beginning works an assessment of the potential impacts on surface water and groundwater quality and flows should be undertaken, including cumulative impacts in conjunction with currently permitted operations, and identify necessary mitigation, enhancement and monitoring measures. No in-combination risk of WFD deterioration is expected. Risk to water body **remains as potential minor localised impact (impact score 1)**.
GB520804415800: Poole Harbour	• BNW8: Poole Harbour FE-reuse • 52_01: Poole Reuse - 50% usage	Option BNW8 also involves minor changes in flow and below ground construction activity. Poole Harbour has been screened as WFD compliant as effluent from the Poole STW is discharged into Holes Bay, which feeds into Poole Harbour. Option 52_01 involves a reduction in effluent discharge to Poole Harbour, as effluent will be piped to Stour. Potential effects on all 6 WFD objectives could not be ruled out during assessment and detailed hydro-ecological and water quality modelling has been recommended to ensure no deterioration to WFD status. Option 52_01 is an alternative arrangement of Poole Harbour SRO (BNW8), operated at 50% capacity / usage and redirecting treated effluent into the Stour as opposed to Poole Harbour. In reality these options would not be constructed or operated at the same time. They are mutually exclusive options and only one would be taken forward. Further assessment is needed to confirm which arrangement of Poole Harbour Reuse SRO will be put in place and risk to this water body will not exceed what is already described in each of the separate assessments completed for both arrangements of the SRO. Impact as a result of these options will not exceed what is described in 52_01 assessment. Risk to water body (subject to further assessment) **remains as potentially WFD non compliant** as per Level 2 WFD assessment completed for 52_01.

The in-combination effects assessment identified one water body where in-combination effects could occur due to multiple options leading to an increased risk of WFD deterioration. See Table 4.6 below.

Table 4.6: Water bodies where in-combination effects could lead to an increased risk of WFD deterioration

Water body name and ID	Options	Comments
GB108043011040: Stour (Lower)	• BNW6: Longham Aquifer Recharge • BNW7: Mendips Quarry - 30Ml/d scheme option - raw water transfer and augmentation of the River Stour • BNW8: Poole Harbour FE-reuse • 41_01: Drought permits options (only until 2039/2040) • 52_01: Poole Reuse - 50% usage	Options BNW6 and BNW7 involve below ground construction activity and construction/modification of existing water treatment works / pumping station. Options BNW7 and BNW8 propose new or increased surface water abstractions. BNW8 also includes the transfer of water via a river, canal or aqueduct. Option BNW7 also involves installation of below-ground pipelines in this water body. Other option activities in this water body include Wessex Water options 41_01 and 52_01. 41_01 involves allowing groundwater abstraction to continue at existing daily limits, even when this would exceed the annual limit. This option individually is considered to have a minor level of impact. Option 52_01 involves an inflow (treated effluent from Poole WTW) from the River Stour at 22Ml/d to transfer into Longham lakes. Option 52_01 is an alternative adaption of the option BNW8. These options are mutually exclusive and only one will be taken forward. Despite this, further investigations are required to appropriately establish in combination effects on this water body. These would include hydrological and hydroecological assessments of the impacts of proposed abstractions on flow volume and velocity, water quality and potential sub-daily fluctuations in water level, in the Stour. This should consider the upstream discharge of water from Mendips Quarry and include an assessment of the quantity of water lost to ground or other abstractions between the two locations. Furthermore, water quality analysis is required to understand the impact of abstraction on water quality downstream and a review of all baseline ecological WFD data, including results of any surveys already undertaken for this scheme. Overall, **further information about the options is required**, including details on abstraction conditions where new or increased abstraction occurs, to establish potential for additional deterioration in WFD status and objectives in this water body.

4.2 Least Cost Plan

4.2.1 Options selected

The options selected as part of the Least Cost Plan (LCP) for the SWW updated dWRMP24 are presented in Table 4.7.

Table 4.7: SWW updated dWRMP24 LCP options

Option ID	Option title
BNW7	Mendips Quarry - 30Ml/d scheme option – Raw water transfer and augmentation of the River Stour
BNW8	Poole Harbour FE reuse
dW1	Brampford Speke and Stoke Canon (North Exeter boreholes)
dW2	Hook Springs licence

Option ID	Option title
dW3	Wilmington Springs licence
dW4	Wimbleball not releasing compensation flows when making supply releases
ROA21	Roborough to Littlehempston WTW
WIM5	Indirect potable reuse - stream support for Dotton WTW.
WIM11	Couchill Springs, Seaton
WIM12	Allers Springs
WIM14	Whitecross distribution upgrade
dB1	Wimborne Borehol
dB2	Stanbridge Licence

4.2.2 Cumulative effects assessment

Table 4.8 identifies water bodies which are impacted by more than one of the LCP options where the high-level cumulative effects assessment has shown that it is unlikely that the multiple LCP options will lead to a risk of WFD deterioration at the water body scale.

Table 4.8: LCP Water bodies where cumulative effects are unlikely to a lead to an increased risk of WFD deterioration

Water body ID and name	Options	Comments
GB108043011040: Stour (Lower)	• BNW7: Mendips Quarry – 30Ml/d scheme option – raw water transfer and augmentation of the River Stour • BNW8: Poole Harbour FE-reuse	BNW7 involves below ground construction activity and construction / modification of existing water treatment works / pumping station. The BNW7 and BNW8 options propose new or increased surface water abstractions. The BNW8 option also includes the transfer of water via a river, canal or aqueduct. The BNW7 option also involves installation of below-ground pipelines in this water body. Currently both options are proposed to have overlapping design / construction periods (commencing 2024 for BNW7 and 2027 for BNW8). BNW8 is planned to be operational / see benefit by 2035/2036, with BNW7 by 2042/2043. Cumulative effects are not likely to increase risk of deterioration outside of what is already described in the BNW7 Level 2 assessment. Risk **remains as potential adverse impact (impact score 2)** as per post mitigation scoring of BNW7 Level 2 assessment.
GB108043016052: Stour (Middle d/s Pimperne Brook)	• BNW7: Mendips Quarry - 30Ml/d scheme option - raw water transfer and augmentation of the River Stour • BNW8: Poole Harbour FE-reuse	The BNW7 option involves discharge of water with a quality element of a lower WFD status than the receiving water body and trenching. The BNW8 option involves a low volume discharge of water with a quality element of the same or higher WFD status than the receiving water body, which following further assessment was concluded as having a minor and localised effect on the water body. Currently both options are proposed to have overlapping design / construction periods (commencing 2024 for BNW7 and 2027 for BNW8). BNW8 is planned to be operational / see benefit by 2035/2036, with BNW7 by 2042/2043. Cumulative effects are unlikely to increase risk of deterioration outside of what is described in the BNW7 Level 2 assessment. Risk **remains as potential adverse impact (impact score 2)** as per post mitigation scoring in the BNW7 Level 2 assessment.
GB108045015050: Exe (Barle to Culm)	• dW1: Brampford Speke and Stoke Canon (North Exeter boreholes) • dW4: Wimbleball not releasing compensation flows when making supply releases	The dW1 option involves a low volume discharge of water of same quality of receiver. It also involves emergency / drought use of existing surface water abstraction. dW4 also involves emergency / drought use of an existing surface water abstraction although scoring has been downgraded in this instance as the abstraction point would only impact approximately 50m of Exe (Barle to Culm) with most expense on downstream water body. Currently dW1 and dW4 will have overlapping design / construction periods (both commencing 2025). Both options are planned to be

Water body ID and name	Options	Comments
		operational / see benefit by 2025/2026. Cumulative effects are unlikely to increase risk of deterioration outside of what is described in the dW1 Level 2 assessment. Risk **remains as minor localised impact (impact score 1)** as per post mitigation scoring in the dW1 Level 2 assessment.
GB40801G801700: Permian Aquifers in Central Devon	• dW1: Brampford Speke and Stoke Canon (North Exeter boreholes) • WIM12: Allers Springs - New raw water supply • WIM14; Whitecross distribution upgrade	The dW1 option involves emergency / drought use of existing groundwater abstraction. WIM14 involves below ground construction activity and the installation of below-ground pipelines with associated crossings in addition to the decommissioning of existing pipelines. WIM12 also involves below ground construction activity, alongside refurbishment of existing borehole(s) and a new / increased ground water abstraction. Currently all options will have overlapping design / construction periods (with both dW1 and WIM14 commencing 2025 and WIM12 in 2034). dW1 is planned to be operational / see benefit by 2025/2026, WIM12 by 2035/2036 and WIM14 by 2030/2031. Cumulative effects are unlikely to increase risk of deterioration outside of what is described in the dW1 and WIM12 Level 2 assessments given relative size of groundwater body. Risk **remains as minor localised impact (impact score 1)** as per post mitigation scoring in the dW1 and WIM12 Level 2 assessments.
GB40801G802400: East Devon - Greensand	• dW2: Hook Springs licence • dW3: Wilmington Springs licence • WIM11: Couchill Springs - New raw water supply and new onsite treatment	Both dW2 and dW3 options involve emergency / drought use of an existing groundwater abstraction. WIM11 involves below ground construction activity and installation of new below ground pipelines. Currently both dW2 and dW3 will have overlapping design / construction periods (both commencing in 2025). Both dW2 and dW3 are planned to be operational / see benefit by 2025/2026. WIM11 will commence design / construction in 2031 being operational / seeing benefit by 2035/2036. Despite this, cumulative effects are unlikely to increase risk of deterioration outside of what is described in dW2 and dW3 Level 2 assessment due to the relative size of the groundwater body. Risk **remains as minor localised impact (impact score 1)** as per post mitigation scoring in the dW2 and dW3 Level 2 assessments.
GB40802G801800: Central Devon and Exe – Aylesbeare Mudstone (GW)	• WIM12: Allers Springs - New raw water supply • WIM14: Whitecross distribution upgrade	Both options involve below ground construction activity. WIM12 also involves a new groundwater abstraction. WIM14 also involves installation of new below ground pipelines and removal of existing pipelines. Currently both WIM12 and WIM14 will not have overlapping design / construction periods (with WIM12 commencing in 2034 and WIM14 commencing in 2025). WIM12 is planned to be operational / see benefit by 2035/2036 whereas WIM14 is by 2030/2031. Cumulative effects are unlikely to increase risk of deterioration outside of what is described in the WIM12 Level 2 assessment given relative size of groundwater body. Risk **remains as minor localised impact (impact score 1)** as per post mitigation scoring in the WIM12 Level 2 assessments.

No water bodies were there is the potential for an increased risk of WFD deterioration at a water body scale as a result of the combination of LCP options.

4.3 Alternative Plan (Med)

4.3.1 Options selected

This Alternative Plan features all the BVP options as well as an additional four options. The options selected as part of the Alternative Plan (Med) for the SWW updated dWRMP24 are presented in Table 4.9.

Table 4.9: SWW updated dWRMP24 Alternative Plan (Med) options

Option ID	Option title
BNW1	Borehole development, existing borehole remedial works
BNW6	Longham Aquifer Recharge
BNW7	Mendips Quarry – 30Ml/d scheme option – Raw water transfer and augmentation of the River Stour
BNW8	Poole Harbour FE reuse
BNW14	Ibsley Lake
COL15	Restormel WTW- increase treatment capacity to 110Ml/d
COL22	Roadford to Colliford via Saltash
dW1	Brampford Speke and Stoke Canon (North Exeter boreholes)
dW2	Hook Springs licence
dW3	Wilmington Springs licence
dW4	Wimbleball not releasing compensation flows when making supply releases
ROA7	Expansion of Northcombe WTW to 60Ml/d
ROA17	Littlehempston WTW
ROA21	Roborough to Littlehempston WTW
WIM5	Indirect potable reuse – stream support for Dotton WTW.
WIM14	Whitecross distribution upgrade
WIM18	Cheddar 2 to Bickham Moor – New strategic regional reservoir, treatment, and transfer

WIM18 has been selected as part of the BVP, however at present this option does not have a formal WFD Level 1 and Level 2 assessment. The information provided in this report for WIM18 has been summarised based on the available SEA appraisal. It is anticipated that the water bodies intersected along the Cheddar 2 to Bickham Moor route could align with water bodies impacted by other SWW options and thus be subject to cumulative and in-combination effects. However, Level 1 and 2 ACWG WFD assessments for this option will be required before this can be confirmed. Therefore, due to lack of formal WFD assessment WIM18 has excluded from the cumulative and in-combination effects assessment at this time.

4.3.2 Cumulative effects assessment

As this alternative plan contains all BVP options, only the additional water bodies with cumulative effects have been reported in Table 4.10 below.

Table 4.10: Alternative Plan (Med) water bodies where cumulative effects are unlikely to a lead to an increased risk of WFD deterioration

Water body ID and name	Options	Comments
GB108046005170: Harbourne River	• ROA17: Littlehempston WTW – Dual supply mains • ROA21: Roborough transfer to Littlehempston WTW	Both options involve below ground construction activity and installation of new below ground pipelines with associated crossing(s). Currently both options will have overlapping construction periods (commencing 2026 for ROA17 and 2030 for ROA21). ROA17 is planned to be operational / see benefit by 2033/2034 and ROA21 by 2035/2036. Cumulative effects are unlikely to increase risk of deterioration. Risk **remains as minor localised impact (impact score 1).**
GB40802G800700: Teign, Avon, Dart and Erme	• ROA17: Littlehempston WTW – Dual supply mains • ROA21: Roborough transfer to Littlehempston WTW	Both options involve below ground construction activity. ROA21 involves installation of new below ground pipelines with associated crossing(s). ROA17 also involves use of existing groundwater abstraction licence. Currently both options will have overlapping construction periods (commencing 2026 for ROA17 and 2030 for ROA21). ROA17 is planned to be operational / see benefit by 2033/2034 and ROA21 by 2035/2036. Cumulative effects

Water body ID and name	Options	Comments
		are unlikely to increase risk of deterioration. Risk **remains as minor localised impact (impact score 1).**
GB40802G806700: Tamar	• ROA7: Northcombe WTW – Increase treatment capacity to licence limit • ROA21: Roborough transfer to Littlehempston WTW • COL22: Roadford to Colliford transfer via Saltash	All options involve below ground construction activity. ROA7 also involves modification of a WTW. ROA21 also involves installation of new below ground pipelines with associated crossing(s). COL22 also involves construction of a new PS. Currently all options will have overlapping construction periods (with ROA7 commencing in 2031, ROA21 in 2030 and COL22 in 2034). Both ROA7 and ROA21 are planned to be operational / see benefit by 2035/2036 and COL22 by 2034. Cumulative effects are unlikely to increase risk of deterioration. Risk **remains as minor localised impact (impact score 1).**
GB510804605900: Dart (transitional)	• ROA17: Littlehempston WTW – Dual supply mains • ROA21: Roborough transfer to Littlehempston WTW	Both options involve below ground construction activity, installation of new below ground pipelines and modification of an existing WTW. ROA21 also involves construction of a new PS. Currently both options will have overlapping construction periods (commencing 2026 for ROA17 and 2030 for ROA21). ROA17 is planned to be operational / see benefit by 2033/2034 and ROA21 by 2035/2036. Cumulative effects are unlikely to increase risk of deterioration. Risk **remains as minor localised impact (impact score 1).**
GB108046008350: Dart (river)	• ROA17: Littlehempston WTW – Dual supply mains • ROA21: Roborough transfer to Littlehempston WTW	ROA17 involves use of existing surface water abstraction and installation of new below ground pipelines. ROA21 involves below ground construction activity and installation of new below ground pipelines with associated crossing(s). Currently both options will have overlapping construction periods (commencing 2026 for ROA17 and 2030 for ROA21). ROA17 is planned to be operational / see benefit by 2033/2034 and ROA21 by 2035/2036. Cumulative effects are unlikely to increase risk of deterioration. Risk **remains as minor localised impact (impact score 1).**

No water bodies were there is the potential for an increased risk of WFD deterioration at a water body scale as a result of the combination of Alternative Plan (Med) options.

4.4 Alternative Plan (High)

4.4.1 Options selected

This Alternative Plan features all the BVP options as well as an additional four options. The options selected as part of the Alternative Plan (High) for the SWW updated dWRMP24 are presented in Table 4.11.

Table 4.11: SWW updated dWRMP24 Alternative Plan (High) options

Option ID	Option title
BNW1	Borehole development, existing borehole remedial works
BNW6	Longham Aquifer Recharge
BNW7	Mendips Quarry – 30Ml/d scheme option – Raw water transfer and augmentation of the River Stour
BNW8	Poole Harbour FE reuse
BNW14	Ibsley Lake
COL15	Restormel WTW- increase treatment capacity to 110Ml/d
COL22	Roadford to Colliford via Saltash
dW1	Brampford Speke and Stoke Canon (North Exeter boreholes)
dW2	Hook Springs licence
dW3	Wilmington Springs licence
dW4	Wimbleball not releasing compensation flows when making supply releases
ROA7	Expansion of Northcombe WTW to 60Ml/d

Option ID	Option title
ROA17	Littlehempston WTW
ROA21	Roborough to Littlehempston WTW
WIM2	Sidford Borehole Commissioning
WIM5	Indirect potable reuse – stream support for Dotton WTW.
WIM11	Couchill Springs, Seaton
WIM12	Allers Springs
WIM14	Whitecross distribution upgrade
WIM18	Cheddar 2 to Bickham Moor – New strategic regional reservoir, treatment, and transfer

WIM18 has been selected as part of the BVP, however at present this option does not have a formal WFD Level 1 and Level 2 assessment. The information provided in this report for WIM18 has been summarised based on the available SEA appraisal. It is anticipated that the water bodies intersected along the Cheddar 2 to Bickham Moor route could align with water bodies impacted by other SWW options and thus be subject to cumulative and in-combination effects. However, Level 1 and 2 ACWG WFD assessments for this option will be required before this can be confirmed. Therefore, due to lack of formal WFD assessment WIM18 has excluded from the cumulative and in-combination effects assessment at this time.

4.4.2 Cumulative effects assessment

As this alternative plan contains all BVP options, only the additional water bodies with cumulative effects have been reported in Table 4.

Table 4.12: Alternative Plan (High) Water bodies where cumulative effects are unlikely to a lead to an increased risk of WFD deterioration

Water body ID and name	Options	Comments
GB108045009160: Sid	• WIM2: Sidford - Borehole Commissioning • WIM5: Indirect potable reuse – stream support for Dotton WTW.	WIM2 involves below ground construction activity, installation of below ground pipelines and modification of an existing WTW as well as construction of a new PS. WIM5 involves installation of below ground pipelines and cessation of an existing discharge. Currently both options will have overlapping construction periods (with WIM2 commencing in 2031 and WIM5 in 2033). Both options are planned to be operational / see benefit by 2035/2036. Cumulative effects are not likely to increase risk of deterioration outside of what is already described in the WIM5 Level 2 assessment. Risk **remains as potential adverse impact (impact score 2)** as per post mitigation scoring of WIM5 Level 2 assessment.
GB108046005170: Harbourne River	• ROA17: Littlehempston WTW – Dual supply mains • ROA21: Roborough transfer to Littlehempston WTW	Both options involve below ground construction activity and installation of new below ground pipelines with associated crossing(s). Currently both options will have overlapping construction periods (commencing 2026 for ROA17 and 2030 for ROA21). ROA17 is planned to be operational / see benefit by 2033/2034 and ROA21 by 2035/2036. Cumulative effects are unlikely to increase risk of deterioration. Risk **remains as minor localised impact (impact score 1).**
GB40801G801700: Permian Aquifers in Central Devon	• dW1: Brampford Speke and Stoke Canon (North Exeter boreholes) • WIM12: Allers Springs - New raw water supply • WIM14; Whitecross distribution upgrade	The dW1 option involves emergency / drought use of existing groundwater abstraction. WIM14 involves below ground construction activity and the installation of below-ground pipelines with associated crossings in addition to the decommissioning of existing pipelines. WIM12 also involves below ground construction activity, alongside refurbishment of existing borehole(s) and a new / increased ground water abstraction. Currently both dW1 and WIM14 will have overlapping construction periods (both commencing in 2025). dW1 is planned to be operational . see benefit by 2025/2026 and WIM14 in 2030/2031. WIM12 will not overlap with construction periods of other options commencing in 2034, planned to be operational / see benefit by 2035/2036. Cumulative effects are unlikely to increase risk of deterioration

Water body ID and name	Options	Comments
		outside of what is described in the dW1 and WIM12 Level 2 assessments given relative size of groundwat er body. Risk **remains as minor localised impact (impact score 1)** as per post mitigation scoring in the dW1 and WIM12 Level 2 assessments.
GB40801G802400 East Devon - Greensand	• dW2: Hook Springs licence • dW3: Wilmington Springs licence • WIM11: Couchill Springs - New raw water supply and new onsite treatment	Both dW2 and dW3 options involve emergency / drought use of an existing groundwater abstraction. WIM11 involves below ground construction activity and installation of new below ground pipelines. Currently both options will have overlapping construction periods (both commencing in 2025). Both options are planned to be operational / see benefit by 2025/2026. Despite this, cumulative effects are unlikely to increase risk of deterioration outside of what is described in dW2 and dW3 Level 2 assessment due to the relative size of the groundwater body. Risk **remains as minor localised impact (impact score 1)** as per post mitigation scoring in the dW2 and dW3 Level 2 assessments.
GB40802G800700: Teign, Avon, Dart and Erme	• ROA17: Littlehempston WTW – Dual supply mains • ROA21: Roborough transfer to Littlehempston WTW	Both options involve below ground construction activity. ROA21 involves installation of new below ground pipelines with associated crossing(s). ROA17 also involves use of existing groundwater abstraction licence. Currently both options will have overlapping construction periods (commencing 2026 for ROA17 and 2030 for ROA21). ROA17 is planned to be operational / see benefit by 2033/2034 and ROA21 by 2035/2036. Cumulative effects are unlikely to increase risk of deterioration. Risk **remains as minor localised impact (impact score 1).**
GB40802G801800: Central Devon and Exe – Aylesbeare Mudstone (GW)	• WIM12: Allers Springs - New raw water supply • WIM14: Whitecross distribution upgrade	Both options involve below ground construction activity. WIM12 also involves a new groundwater abstraction. WIM14 also involves installation of new below ground pipelines and removal of existing pipelines. Currently these options will not have overlapping construction periods with WIM12 commencing in 2034 and WIM14 commencing in 2025. Wim12 is planned to be operational / see benefit by 2035/2036 and WIM14 by 2030/2031. Cumulative effects are unlikely to increase risk of deterioration outside of what is described in the WIM12 Level 2 assessment given relative size of groundwater body. Risk **remains as minor localised impact (impact score 1)** as per post mitigation scoring in the WIM12 Level 2 assessments.
GB40802G802800: Sidmouth-Honinton, Mercia Mudstone	• WIM2: Sidford - Borehole Commissioning • WIM5: Indirect potable reuse – stream support for Dotton WTW.	WIM2 involves below ground construction activity, construction of a new abstraction borehole and headworks, installation of new below ground pipelines, construction of a new PS and a new groundwater abstraction licence. WIM5 involves installation of new pipelines in this water body. Currently both options will have overlapping construction periods (with WIM2 commencing in 2031 and WIM5 in 2033). Both options are planned to be operational / see benefit by 2035/2036. Cumulative effects are unlikely to increase risk of deterioration. Risk **remains as minor localised impact (impact score 1).**
GB40802G806700: Tamar	• ROA7: Northcombe WTW – Increase treatment capacity to licence limit • ROA21: Roborough transfer to Littlehempston WTW • COL22: Roadford to Colliford transfer via Saltash	All options involve below ground construction activity. ROA7 also involves modification of a WTW. ROA21 also involves installation of new below ground pipelines with associated crossing(s). COL22 also involves construction of a new PS. Currently all options will have overlapping construction periods (with ROA7 commencing in 2031, ROA21 in 2030 and COL22 in 2034). Both ROA7 and ROA21 are planned to be operational / see benefit by 2035/2036 and COL22 by 2034. Cumulative effects are unlikely to increase risk of deterioration. Risk **remains as minor localised impact (impact score 1).**
GB510804605900: Dart (transitional)	• ROA17: Littlehempston WTW – Dual supply mains • ROA21: Roborough transfer to Littlehempston WTW	Both options involve below ground construction activity, installation of new below ground pipelines and modification of an existing WTW. ROA21 also involves construction of a new PS. Currently both options will have overlapping construction periods (commencing 2026 for ROA17 and 2030 for ROA21). ROA17 is planned to be operational / see benefit by 2033/2034 and ROA21 by 2035/2036. Cumulative effects are unlikely to increase risk of deterioration. Risk **remains as minor localised impact (impact score 1).**

Water body ID and name	Options	Comments
GB108046008350: Dart (river)	• ROA17: Littlehempston WTW – Dual supply mains • ROA21: Roborough transfer to Littlehempston WTW	ROA17 involves use of existing surface water abstraction and installation of new below ground pipelines. ROA21 involves below ground construction activity and installation of new below ground pipelines with associated crossing(s). Currently both options will have overlapping construction periods (commencing 2026 for ROA17 and 2030 for ROA21). ROA17 is planned to be operational / see benefit by 2033/2034 and ROA21 by 2035/2036. Cumulative effects are unlikely to increase risk of deterioration. Risk **remains as minor localised impact (impact score 1).**

No water bodies were there is the potential for an increased risk of WFD deterioration at a water body scale as a result of the combination of Alternative Plan (High) options.

5 Conclusions

5.1 Level 1 Summary

Sixty-two updated dWRMP supply and drought options and six SROs have been subject to a WFD Level 1 assessment. In addition, seven options which have previously been reported in EAR have been considered.

The WFD assessments for three of the SRO projects were conducted under the relevant SRO RAPID gated process. Full assessments of the three SRO options are presented in separate SRO documentation, although summaries have been included in Section 2 and 3 of this report. In addition, three SRO sub-options in early stages of development have been included and summarised using the available information.

Seven drought options have been assessed in separate EAR documents. No additional WFD assessments have been carried out for this updated dWRMP, and the EAR WFD assessments have been utilised in this report (summarises provided in Section 3.7 of this report).

The WFD Level 1 assessments indicated that of the 62 updated dWRMP options and six SRO options reviewed, 11 have a very low risk of impacting on WFD status and objectives. At the time of writing, these options are considered to be compliant with the WFD, and do not merit any further assessment. These options are set out in Table 5.1 below.

Table 5.1: SWW updated dWRMP24 supply options with no requirement for additional assessment

WRZ	Option ID	Option title
Colliford	COL22	Roadford to Colliford via Saltash
Colliford	COL24	Northcombe WTW to Launceston
Colliford	COL25	Brent Tor to Launceston
Colliford	COL26	Restormel WTW to East Cornwall
Roadford	ROA13	Duckaller and Vennbridge
Roadford	ROA17	Littlehempston WTW
Roadford	ROA20	Mayflower WTW to Littlehempston WTW
Roadford	ROA21	Roborough to Littlehempston WTW
Wimbleball	WIM6	Increase Allers WTW Capacity
Wimbleball	WIM11	Couchill Springs, Seaton
Wimbleball	WIM14	Whitecross Distribution Upgrade

5.2 Level 2 Summary

WFD Level 2 assessments were required for the remaining 51 WRMP supply and drought options (shown in Table 5.2 and Table 5.3) and the six SRO options (as shown in Table 5.4). In addition, the previous WFD assessments of the seven EAR drought options (as shown in Table 5.5) have been summarised.

Table 5.2: SWW updated dWRMP24 supply options which have been subject to Level 2 assessment

WRZ	Option ID	Option title
Bournemouth	BNW1	Borehole development, existing borehole remedial works
Bournemouth	BNW6	Longham Aquifer Recharge

WRZ	Option ID	Option title
Bournemouth	BNW14	Ibsley Lake
Bournemouth	BNW16	Christchurch and Holdenhurst WwTW IPR 3 - Further treatment and transfer to Knapp Mill WTW
Bournemouth	BNW18	Alderney WTW - Reduce Treatment Losses
Bournemouth	BNW19	Knapp Mill WTW - Reduce Treatment Losses
Colliford	COL2	Colliford Reservoir Pumped Storage Stage 2 - Lower River Camel Abstraction
Colliford	COL3	Abstraction of Colliford compensation flows when making supply releases
Colliford	COL4	Abstraction of Siblyback compensation flows when making supply releases
Colliford	COL5	Increase Wendron annual licence and de-couple from Stithians
Colliford	COL6	River Hayle abstraction
Colliford	COL9	Leswidden Pool
Colliford	COL15	Restormel WTW- increase treatment capacity to 110Ml/d
Colliford	COL16	College WTW Improvements - treatment and distribution system
Colliford	COL19	Boswyn stream / Cargenwen Reservoir / Carwynnen stream
Colliford	COL20	River Fal new abstraction
Colliford	COL21	South Crofty & Wheal Jane - Mine Water Reclamation
Colliford	COL23	Mayflower WTW to Kit Hill (St. Cleer)
Colliford	COL28	Desalination Plant at Par
Coliford	COL29	Increase Restormel WTW capaictry to 120Ml/d
Roadford	ROA2	River Erme
Roadford	ROA3	River Yealm
Roadford	ROA4	Abstraction of Roadford Reservoir compensation flow at Gunnislake when making supply releases
Roadford	ROA6	Upper Tamar Lake increasing annual licence
Roadford	ROA7	Expansion of Northcombe WTW to 60Ml/d
Roadford	ROA12	Slade and Horedown WTW (GAC)
Roadford	ROA14	Raise Avon Dam
Roadford	ROA15	Gatherley Phase 2
Wimbleball	WIM1	Abstraction of Wimbleball Reservoir compensation flow at Northbridge when making supply releases
Wimbleball	WIM2	Sidford borehole commissioning
Wimbleball	WIM4	Wilmington springs annual abstraction increase
Wimbleball	WIM5	Indirect potable reuse - stream support for Dotton WTW
Wimbleball	WIM7	Increase Pynes to licence limit 66.46Ml/d
Wimbleball	WIM8	Brampford Speke borehole
Wimbleball	WIM9	Stoke Canon borehole
Wimbleball	WIM12	Aller Springs
Wimbleball	WIM15	Northcombe WTW to Allers WTW
Wimbleball	WIM16	FE reuse - Countess Wear and Mear Lane WwTW to River Exe

Table 5.3: SWW updated dWRMP24 SRO options which have been subject to Level 2 assessment

WRZ	Option ID	Option title
Bournemouth	BNW7	Mendips Quarry - 30Ml/d SCHEME OPTION - Raw water transfer and augmentation of the River Stour
Bournemouth	BNW8	Poole Harbour FE-reuse
Bournemouth	BNW17	Cheddar 2 New Strategic Regional Reservoir and Transfer

Table 5.4: SWW updated dWRMP24 drought options which have been subject to Level 2 assessment

WRZ	Option ID	Option title
Drought Option	dB1	Wimborne Borehole
Drought Option	dB2	Stanbridge Licence
Drought Option	dCS1/E	Colliford not releasing compensation flows when making supply releases
Drought Option	dCS11/E	Siblyback not releasing compensation flows when making supply releases
Drought Option	dR2	Slade Reservoir
Drought Option	dR3	Challacombe Reservoir
Drought Option	dR4	Meldon/Vellake to Roadford
Drought Option	dR5	Lee Moor unused quarries
Drought Option	dRS15/E	Roadford not releasing compensation flows when making supply releases
Drought Option	dW1	Brampford Speke and Stoke Canon (North Exeter Boreholes)
Drought Option	dW2	Hook Springs Licence
Drought Option	dW3	Wilmington Springs Licence
Drought Option	dW4	Wimbleball not releasing compensation flows when making supply releases

Table 5.5: SWW updated dWRMP24 drought options assessed in separate EAR documents

Option ID	Option title
dC1	Restormel Licence
dC2	Stannon Lake Licence
dC3	Porth Reservoir and Rialton Intake
dCS2/E	Park Lake Licence
dCS3/E	Blackpool Pit
dCS6/E	Hawks Tor Pot
dRS1/E	River Lyd – Summer Abstraction

The majority of the options assessed have only been subject to high level design. If these options are taken forward, they would require additional design and assessment as they progress to the next stage of optioneering. Due to this, the confidence in the option design has been rated as low throughout most of the Level 2 assessments undertaken.

The findings indicate that there are precautionary WFD compliance risks for surface water bodies, associated primarily with the operation of additional/new abstractions, and new or ceased discharges (see summaries provided in Section 3). The potential hydrological effects of these activities, among several other varying impacts, could conflict with achieving WFD status objectives. This is particularly the case where hydrology/river flow is an existing limiting factor, recorded in WFD baseline data as a ‘reason for not achieving good’. The potential biological

effects, particularly on fish, and physio-chemical changes (for example, reduced dilution as a result of a new or increased abstraction) would require further assessment to improve certainty of the scale of effects.

Deterioration risks on coastal water bodies were generally attributed to the intake and discharge of water for desalination projects, leading to changes in biological status elements, morphology and water quality.

For groundwater bodies, deterioration risks were primarily associated with either changes to quantitative and chemical saline intrusion and chemical drinking water protected area status, as a result of new groundwater abstractions, or to construction of below ground structures close to GWDTE.

For new or modified intakes, it is recognised that appropriate fish and eel screening would be required to prevent entrainment. At this stage, this has been considered as likely mitigation. The same approach has been taken with other likely mitigation such as using trenchless methods to cross larger watercourses where feasible or discharging construction dewatering into a watercourse to maintain flow.

5.3 Further investigations and assessment

The Level 2 WFD assessments identified that 25 WRMP options and 1 SRO pose a potential post mitigation risk of deterioration to one or more water bodies. These options are set out in Table 5.6 and Table 5.7.

Table 5.6: SWW updated dWRMP24 Level 2 assessed options which require further investigation.

WRZ	Option ID	Water bodies currently at risk of deterioration
Bournemouth	BNW1	GB40702G503500: SW Hants Barton Group GB40702G504000: SW Hants Solent Group
Bournemouth	BNW6	GB40801G804500: Upper Dorset Stour
Bournemouth	BNW14	GB40802G805: Lower Dorset Stour and Lower Hampshire Avon
Colliford	COL2	GB108049000190: Lower River Camel
Colliford	COL3	GB108048001420: Lower River Fowey
Colliford	COL4	GB108048001420: Lower River Fowey
Colliford	COL5	GB108048001171: Upper River Cober
Colliford	COL6	GB108049000380: Hayle GB530804906700: HAYLE
Colliford	COL19	GB108049000560: Roseworthy Stream
Colliford	COL20	GB108048001270: Lower River Fal
Colliford	COL21	GB108048001231: Lower River Carnon GB610807680001: Lands End to Trevose Head
Roadford	ROA2	GB108046005200: Erme
Roadford	ROA3	GB108047004010: Lower River Yealm
Roadford	ROA4	GB108047007860: Lower River Tamar
Roadford	ROA6	GB30845277: Upper Tamar Lake
Roadford	ROA7	GB30847000: Roadford Lake GB108047008020: Wolf
Roadford	ROA12	GB30843764: Slade Lower Reservoir
Roadford	ROA14	GB30846291: Avon Dam Reservoir
Roadford	ROA15	GB108047007731: Lower River Lyd

WRZ	Option ID	Water bodies currently at risk of deterioration
Wimbleball	WIM1	GB108045009060: Exe (Culm to Creedy)
Wimbleball	WIM2	GB40802G802800: Sidmouth-Honiton, Mercia Mudstone
Wimbleball	WIM5	GB108045009160: Sid
Wimbleball	WIM8	GB40801G801700: Permian Aquifers in Central Devon
Wimbleball	WIM9	GB40801G801700: Permian Aquifers in Central Devon
Drought Option	dW1	GB40801G801700: Permian Aquifers in Central Devon

Table 5.7: Level 2 assessed SRO option which requires further investigation

WRZ	Option ID	Water bodies currently at risk of deterioration
Bournemouth	BNW7	GB109053027371: Bristol Avon (By Bk to Netham Weir) GB40901G804600: Mendips GB108043016051: Stour (Middle u/s Pimperne Brook) GB108043016052: Stour (Middle d/s Pimperne Brook) GB108043011040: Stour (Lower)

5.4 Cumulative and in combination effects assessment

5.4.1 BVP

The cumulative effects assessment included all options within the BVP and identified seven water bodies where more than one option is planned:

- GB108043011040: Stour (Lower)
- GB108043015842: Hampshire Avon (Lower)
- GB108043016052: Stour (Middle d/s Pimperne Brook)
- GB108045015050: Exe (Barle to Culm)
- GB40801G801700: Permian Aquifers in Central Devon
- GB40801G802400: East Devon - Greensand
- GB40802G805800: Lower Dorset Stour and Lower Hampshire Avon

The cumulative effects assessment suggests that there is unlikely to be an increased risk of WFD deterioration due to the combination of updated dWRMP BVP options in any of these seven water bodies.

The in-combination effects assessment included all options within the updated dWRMP BVP, local planning applications/allocations and the major development, National Highways A30 Chiverton to Charland Cross Scheme and other water company dWRMP BVP options. The in-combination effects assessment identified nine water bodies where multiple options were planned but the assessment suggested it was unlikely that this combination of options would lead to an increased risk of WFD deterioration:

- GB40801G806900: Upper Hampshire Avon;
- GB109053027371: Bristol Avon (By Bk to Netham Weir);
- GB40901G804600: Mendips;
- GB108043016052: Stour (Middle d/s Pimperne Brook;
- GB520804415800: Poole Harbour;
- GB40802G801800: Central Devon and Exe – Aylesbeare Mudstone;
- GB40802G805800: Lower Dorset Stour and Lower Hampshire Avon;
- GB40802G806700: Tamar; and,
- GB108047003640: Tory Brook.

The in-combination effects assessment identified one water body, GB108043011040: Stour (Lower), where it is possible that the combination of updated dWRMP options, planning applications and other water company dWRMP options could lead to an increased risk of WFD deterioration.

5.4.2 LCP

The cumulative effects assessment included all options within the LCP and identified six water bodies where more than one option is planned:

- GB108043011040: Stour (Lower);
- GB108043016052: Stour (Middle d/s Pimperne Brook);
- GB108045015050: Exe (Barle to Culm)
- GB40801G801700: Permian Aquifers in Central Devon
- GB40801G802400: East Devon - Greensand
- GB40802G801800: Central Devon and Exe – Aylesbeare Mudstone

The cumulative effects assessment suggests that there is unlikely to be an increased risk of WFD deterioration due to the combination of updated dWRMP LCP options in any of these six water bodies.

5.4.3 Alternative Plan (Med)

The cumulative effects assessment included all options within the Alternative Plan (Med) and identified five water bodies where more than one option is planned:

- GB108046005170: Harbourne River
- GB40802G800700: Teign, Avon, Dart and Erme
- GB40802G806700: Tamar
- GB510804605900: Dart (transitional)
- GB108046008350: Dart (river)

The cumulative effects assessment suggests that there is unlikely to be an increased risk of WFD deterioration due to the combination of updated dWRMP Alternative Plan (Med) options in any of these five water bodies.

5.4.4 Alternative Plan (High)

The cumulative effects assessment included all options within the Alternative Plan (High) and identified ten water bodies where more than one option is planned:

- GB108045009160: Sid
- GB108046005170: Harbourne River
- GB40801G801700: Permian Aquifers in Central Devon
- GB40801G802400: East Devon - Greensand
- GB40802G800700: Teign, Avon, Dart and Erme
- GB40802G801800: Central Devon and Exe – Aylesbeare Mudstone
- GB40802G802800: Sidmouth-Honinton, Mercia Mudstone
- GB40802G806700: Tamar
- GB510804605900: Dart (transitional)
- GB108046008350: Dart (river)

The cumulative effects assessment suggests that there is unlikely to be an increased risk of WFD deterioration due to the combination of updated dWRMP Alternative Plan (High) options in any of these ten water bodies.

5.5 Next Steps

Areas of future focus for any options carried forward include:

- Consultation with the Environment Agency to present and discuss key WFD risks and proposed approach to improving certainty of assessments;
- Collation and review of HMWB measures, programme of measures and mitigation measures assessments information from the Environment Agency for inclusion into the assessment of potential impediment to obtaining Good Ecological Potential (GEP);
- Collation and review of detailed baseline data concerning WFD biological, physico-chemical and hydromorphological elements identified as being at yellow, amber, or red risk in the Level 2 assessments. This may include existing Environment Agency and South West Water long term WFD and water quality monitoring data within the relevant water bodies, and targeted baseline surveys being undertaken specifically for the option assessments;
- Further development of conceptual models linking together how potential hydrological changes (from abstractions or discharges) could influence water quality and the sensitivity of aquatic communities to those changes. This will include a diagrammatic/visual presentation of linkages between abstraction impacts and the direct and indirect effects on physico-chemical and biological WFD status elements, indicating thresholds of WFD classes or tolerance to change. This step would aid consultation and discussion with stakeholders and the requirement for/scoping of any detailed modelling;
- Further assessment and investigations as set out in the WFD assessment and SRO WFD assessments;
- Further information on the design and operation of the options;
- Update Level 2 WFD assessments to incorporate any additional information;
- Carry out full Level 1 and Level 2 assessments on WIM18 option, once further design information available.

A. WFD Level 1 output tables

The SWW WFD Level 1 outputs can be provided upon request.

B. Further assessment Level 2 output tables

The SWW WFD Level 2 outputs can be provided upon request.

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