

Appendix 8.1 Supply Options



Contents

1	Background	5
1.1	Scheme Types	5
1.2	SEA Assessment Scoring	5
2	Colliford Water Resource Zone	7
2.1	COL2 Colliford PS Stage 2 - River Camel Abstraction	7
2.2	COL3 Abstraction of Colliford compensation flows when making supply releases	10
2.3	COL4 Abstraction of Siblyback compensation flows when making supply releases	13
2.4	COL5 Increase Wendron annual licence and de-couple from Stithians	16
2.5	COL6 River Hayle Abstraction	18
2.6	COL20 River Fal new abstraction	21
2.7	COL9 Leswidden Pool	24
2.8	COL11 Hawk's Tor Pit	27
2.9	COL12 Stannon daily abstraction increase	30
2.10	COL15 Restormel WTW	33
2.11	COL18 Porth/Rialton	36
2.12	COL19 Boswyn stream/Cargenwen Reservoir/Carwynnen stream	39
3	Roadford Water Resource Zone	42
3.1	ROA2 River Erme	42
3.2	ROA3 River Yealm	45
3.3	ROA4 Abstraction of Roadford compensation flow at Gunnislake when making supply releases	48
3.4	ROA15 Gatherley phase 2	51
3.5	ROA6 Upper Tamar Lake increasing annual licence	54
3.6	ROA14 Raise Avon Dam	57
3.7	ROA7 Expansion of Northcombe WTW to 60 MI/d	60
3.8	ROA16 Littlehempston WTW	63
3.9	ROA8 Tottiford WTW - Reduce WTW minimum capacity	65
3.10	ROA10 Avon WTW - Reduce WTW minimum capacity	68
3.11	ROA11 Meldon WTW - Reduce WTW minimum capacity	71
3.12	ROA12 Slade and Horedown WTW (GAC)	74
3.13	ROA13 Duckaller and Vennbridge	77
4	Wimbleball Water Resource Zone	80
4.1	WIM1 Abstraction of Wimbleball compensation flow at Northbridge when making a supply releases	80
4.2	WIM2 Sidford borehole commissioning	83
4.3	WIM4 Wilmington springs annual abstraction increase	86
4.4	WIM8 Brampford Speke borehole	88

4.5	WIM9 Stoke Canon borehole	90
4.6	WIM5 Indirect potable reuse - Stream support for Dotton WTW.	93
4.7	WIM6 Increase Allers WTW capacity	96
4.8	WIM7 Increase Pynes to licence limit 66.46 MI/d	99
5 Bournemouth Water Resource Zone		102
5.1	BNW1 Borehole development, existing borehole remedial works.	102
5.2	BNW3 Wimborne transfer to Longham - Licence change	105
5.3	BNW6 Longham Aquifer Recharge	107
5.4	BNW7 Mendips Quarry - 30 MI/d scheme option – Raw water transfer and augmentation of the River Stour	110
5.5	BNW8 Poole Harbour FE-reuse	112
5.6	BNW11 Christchurch WWTW IPR 2 Transfer to Longham Lakes	113
5.7	BNW17 Cheddar 2 new strategic regional reservoir and transfer	116
6 Isles of Scilly Water Resource Zone		118
6.1	ISMY1 St. Mary's new borehole (location 1)	118
6.2	ISMY2 St. Mary's new borehole (location 2)	121
6.3	ISMY4 St Mary's – Increase Existing Desalination Plant Capacity	124
6.4	ISB4 Bryher – Increase Existing Desalination Plant Capacity	127
6.5	IST1 Tresco new borehole	130

Appendix 8.1 Supply Options

Document purpose & summary:

The 157 unconstrained options have been considered as part of developing of dWRMP. Through review and evaluation this unconstrained list has been distilled down to 45 feasible options.

This Appendix sets out details of the feasible supply-side options for each of the Water Resource Zones, including the Isles of Scilly. The schemes that are included in our adaptive strategy are defined in Chapter 11.

Key parameters for each scheme are highlighted – Gains in Water Available for Use in MI/d (both as an average and peak figure), a metric for meeting our biodiversity net gain (BNG) target (BNG baseline assessment +10% subtract the value for BNG post intervention), cost to implement, and cost per unit of increased resource (p/m³). Summary details are also extracted from the SEAA to provide context for potential environmental impacts in the short-term (during the construction of the options) and the long-term (the operation of the asset). The detailed SEAA findings, summarized here, are contained in Chapter 13.

Through consultation on our draft plan, we will look to identify options to improve BNG through both targeted stakeholder engagement with communities local to the proposed work and regional and national stakeholders and via reviewing proposed engineering scopes. Furthermore, when schemes are taken forward into delivery, we will engage further with stakeholders to identify additional benefits which can be realized as part of scheme delivery, either through direct environmental improvements actions or more widely through our Biodiversity Fund.

1 Background

The following section provides an explanation on the specific scoring and categorisation used for each supply-side scheme.

1.1 Scheme Types

We have developed the following scheme categories, to aid with the consistent description of each scheme in the following sections.

Scheme Type	Description
New reservoir	The large-scale construction of a holding area for water
Water reuse	Taking treated water from wastewater treatment works and using it for non-drinking water purposes or introducing it into the water treatment cycle
Reservoir enlargement	Increase the size of existing water holding area
Trunk mains renewal/new	Construction of new large pipes to transfer additional water in the water distribution network
New surface water	Facilitating the inclusion of new above-ground water sources into SWW water supply
Water treatment works capacity increase	Provide additional processes at existing water treatment works to increase the amount of water available for use
Groundwater enhancement	Making better use of existing below-ground water resource management practices or relocating assets to increase the amount of water available for use
New groundwater	Facilitating the inclusion of new below-ground water sources into SWW water supply
Aquifer recharge/Aquifer storage recovery	Manipulation of the natural water cycle by filling up suitable below-ground water holding areas
Surface water enhancement	Making better use of existing above ground-water resource management practices or relocating assets to increase the amount of water available for use
Conjunctive use	Revising the existing permits for taking water from the environment

Table 1: Scheme types used within following chapter

1.2 SEA Assessment Scoring

Information on the WRMP24 options was given to Mott MacDonalds, and the environmental assessments were undertaken based on national and local datasets and information. The WRMP options have been assessed following the UKWIR SEA guidance 11. The SEA assessment framework and scoring criteria described in the SEA report were used to assess the potential positive and negative effects of each option against each of the SEA objectives. An example of the scoring criteria used is shown in Table 2 below.

It should be noted that the yellow 'neutral' score has been assigned this colour to reflect that there have been no identified likely impacts on a given SEA objective. The results of the HRA, BNG, NCA and INNS assessments have fed into the SEA assessments for biodiversity, and the WFD assessments inform the SEA assessments for the water topic.

Effect	Description	Example Scoring Definition - Biodiversity Objective
+++	Major Positive	The option would result in a major enhancement of designated sites/habitats due to changes in flow or groundwater levels, water quality or habitat quality and availability. The option would result in a major increase in the population of a priority species. Effects could be caused by beneficial changes in water flows/water quality, or moderate amount of creation or enhancement of habitat, promoting a major increase in ecosystem structure, function or connectivity. The option would result in a major reduction or management of INNS.
++	Moderate Positive	The option would result in a moderate enhancement on the quality of designated and/or non-designated sites/habitats due to changes in flow or groundwater levels, water quality or habitat creation and enhancement measures. The option would result in a moderate increase in the population of a priority species. Effects could be caused by beneficial changes in water flows/water quality, or moderate amounts of creation or enhancement of habitat, promoting a moderate increase in ecosystem structure, function or connectivity. The option would result in a moderate reduction or management of INNS.
+	Minor Positive	The option would result in a minor enhancement on the quality of designated and/or non-designated sites/habitats due to changes in flow or groundwater levels, water quality or habitat creation and enhancement measures. The option would result in a minor increase in the population of a priority species. Effects could be caused by beneficial changes in water flows/water quality, or moderate amounts of creation or enhancement of habitat, promoting a minor increase in ecosystem structure, function or connectivity. The option would result in a minor reduction or management of INNS.
0	Neutral	The option would not result in any effects on designated or non-designated sites including habitats and/or species. It will not have an effect on INNS.
-	Minor Negative	The option would result in a minor negative effect on the quality of designated and/or non-designated sites/habitats due to changes in flow or groundwater levels, water quality or habitat loss or degradation. The option would result in a minor decrease in the population of a priority species. Effects could be caused by detrimental changes in flows/water quality or small losses or degradation of habitat leading to a minor loss of ecosystem structure, function or connectivity. The option would result in a minor increase or spread of INNS.
--	Moderate Negative	The option would result in a moderate negative effect on the quality of designated and/or non-designated sites/habitats due to changes in flow or groundwater levels, water quality or habitat loss or degradation. The option would result in a moderate decrease in the population of a priority species. Effects could be caused by detrimental changes in flows/water quality or small losses or degradation of habitat leading to a moderate loss of ecosystem structure, function or connectivity. The option would result in a moderate increase or spread of INNS.
---	Major Negative	The option would result in a major negative effect on the quality of designated and/or non-designated sites / habitats due to changes in flow or groundwater levels, water quality or habitat loss or degradation. The option would result in a major decrease in the population of a priority species. Effects could be caused by detrimental changes in flows/water quality, or large losses or degradation of habitat leading to a major loss of ecosystem structure and function. The option would result in a major increase or spread of INNS.
?	Unknown	From the level of information available, the effect that the option would have on this objective is uncertain.

Table 2: SEA scoring criteria

The scores presented in the following section set out the post-mitigation position, assuming the management of the environmental impacts are achieved through pre-construction activities and the selection of appropriate construction techniques. In deriving these post-mitigation scores, a summary of likely mitigation activities is set out for each scheme, in sub-section 4, of each scheme summary.

2 Colliford Water Resource Zone

2.1 COL2 Colliford PS Stage 2 - River Camel Abstraction

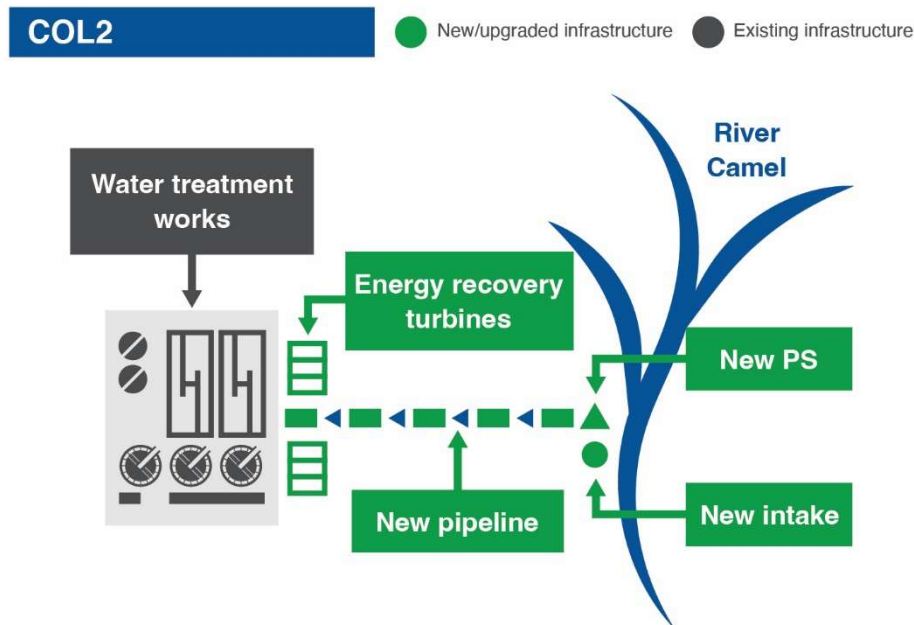
Scheme type	New Surface Water
Gains in Water Available For Use	5.00 ML/d
Biodiversity Net Gain	34.242 Ha
River	Lower River Camel
Catchment Information	Not designated artificial or heavily modified. Upper catchment drains Devonian slates and the Bodmin Moor granite. Land use is moorland and low-grade agriculture and grazing. Length - 25 km (approx.). Catchment area - 5254 ha (approx.).
If River: note on abstractions (in place of Q95)	Licensed volumes and other licence conditions will be identified to ensure protection of environmental flows and catchment ecology
Reservoir: Storage Capacity (ML)	Colliford Reservoir: 28,540ML

2.1.1 Description of the option

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, and pipeline to transfer raw water from the intake point to Restormel WTW. National data shows water to be available in the Lower Camel for portions of the year, although not during summer low flows.

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, Two 1 -megawatt turbines are proposed to recover energy from the pipeline at Restormel water treatment works (Colliford pipeline WINEP24 (AMP8) action ID: 08SW100007)



2.1.2 Indicative Costs

Totex expenditure prior to option in use (£m)	Average Incremental Cost (AIC) (p/m3)	Total NPC (£m)	Option benefits lead-in time (Years)
26.370	140.4	53.50	4

Table 3: COL2 indicative costs

2.1.3 Strategic Environmental Assessment summary table

SEA Topic	SEA Objectives	Short-Term Impact	Long-Term Impact
Biodiversity, Flora and Fauna	1.1 Protect and enhance designated and non-designated ecological sites	-	--
	1.2 Protect, conserve and enhance biodiversity, including priority species, vulnerable habitats and habitat connectivity	-	--
	1.3 Reduce the spread or presence of INNS	-	-
Water	2.1 Protect and enhance the quality of the water environment and water resources	-	--
	2.2 Increase resilience and reduce flood risk	-	-
	2.3 Deliver reliable and resilient water supplies	0	++
Soil	3.1 Protect and enhance the functionality, quantity and quality of soils, including the protection of sites of geological importance	0	0
Air	4.1 Reduce and minimise air emissions	0	0
Climatic Factors	5.1 Reduce embodied and operational carbon emissions	--	--
	5.2 Reduce vulnerability to climate change risks and hazards	0	-
Historic Environment	6.1 Conserve, protect and enhance the historic environment, including archaeology	0	0
Landscape	7.1 Conserve, protect and enhance landscape, townscape and seascape character and visual amenity	-	0
Population and Human Health	8.1 Maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing	-	+
	8.2 Maintain and enhance tourism and recreation	-	-
Material Assets	9.1 Minimise resource use and waste production	-	-
	9.2 Avoid negative effects on built assets and infrastructure	-	0

Effect	Major Negative Impact	Moderate Negative Impact	Minor Negative Impact	Neutral	Minor Positive Impact	Moderate Positive Impact	Major Positive Impact	Unknown
Key	---	--	-	0	+	++	+++	?

Table 4: COL2 SEA summary

2.1.4 Strategic Environmental Assessment Mitigation Table

SEA Objective	Mitigation
Water 2.1 & 2.3	Best-practice construction methods and ongoing monitoring will be undertaken to reduce the risks of over abstraction, negative impacts on groundwater and the impact of flooding during the construction phase.
Biodiversity 1.1 & 1.2	<p>Best-practice construction and mitigation methods would be implemented to minimise disturbance effects (e.g., dust suppression and pollution control measures)</p> <p>Where potential major negative impacts on designated and non-designated ecological sites could be expected, CIRIA guidance would be followed to help alleviate impact pathways during construction, e.g., through planning the construction programme to avoid the bird breeding period (March to August inclusive). If construction does occur, additional data could be required to determine presence of qualifying features.</p> <p>Trenchless techniques would be implemented, where feasible, to reduce the level of disturbance to habitats within close vicinity of the site.</p> <p>Habitat would be reinstated on completion of developments or, if impacts are unavoidable, compensatory habitat to be considered to replace damaged or lost habitat in line with Biodiversity Net Gain requirements. Consultation with statutory bodies would be undertaken to ensure impacts to protected species and habitats are avoided or mitigated appropriately according to statutory requirements.</p>

Table 5: COL 2 Mitigation Activities

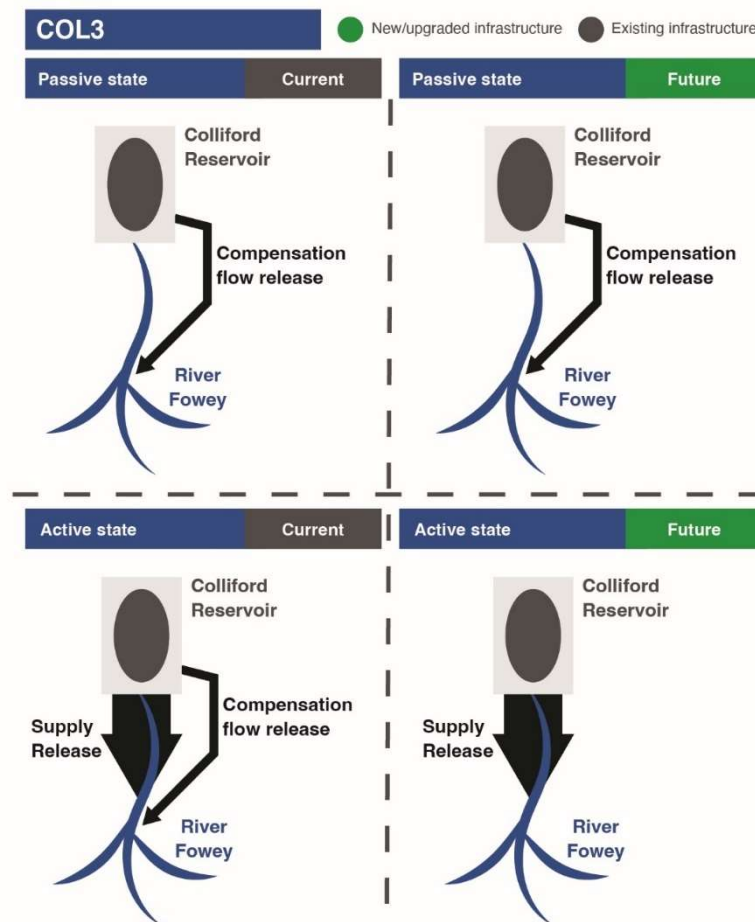
2.2 COL3 Abstraction of Colliford compensation flows when making supply releases

Scheme type	Surface Water Enhancement
Gains in Water Available For Use	1.00 Ml/d
Biodiversity Net Gain	TBC ¹
If River: note on abstractions (in place of Q95)	Licensed volumes and other licence conditions will be identified to ensure protection of environmental flows and catchment ecology
Reservoir: Storage Capacity (ML)	Colliford Reservoir: 28540
Reservoir Information	Dam type - china clay waste embankment. Designated as heavily modified. Majority of upper catchment on granite intrusion of Bodmin Moor. Surrounding land cover is mostly grassland and woodland. Catchment area - 1233 ha (approx.).

2.2.1 Description of the option

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 license 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 deliver 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.



¹ BNG data only available for options in the dWRMP best-value plan. Mott MacDonald have been commissioned to undertake further BNG calculations which will be published later in the year.

2.2.2 Indicative Costs

Totex expenditure prior to option in use (£m)	Average Incremental Cost (AIC) (p/m3)	Total NPC (£m)	Option benefits lead-in time (Years)
0.096	2.04	0.30	1

Table 6: COL3 indicative costs

2.2.3 Strategic Environmental Assessment summary table

SEA Topic	SEA Objectives	Short-Term Impact	Long-Term Impact					
Biodiversity, Flora and Fauna	1.1 Protect and enhance designated and non-designated ecological sites	0	-					
	1.2 Protect, conserve and enhance biodiversity, including priority species, vulnerable habitats and habitat connectivity	0	-					
	1.3 Reduce the spread or presence of INNS	0	0					
Water	2.1 Protect and enhance the quality of the water environment and water resources	-	--					
	2.2 Increase resilience and reduce flood risk	0	0					
	2.3 Deliver reliable and resilient water supplies	0	+					
Soil	3.1 Protect and enhance the functionality, quantity and quality of soils, including the protection of sites of geological importance	0	0					
Air	4.1 Reduce and minimise air emissions	0	0					
Climatic Factors	5.1 Reduce embodied and operational carbon emissions	0	0					
	5.2 Reduce vulnerability to climate change risks and hazards	0	-					
Historic Environment	6.1 Conserve, protect and enhance the historic environment, including archaeology	0	0					
Landscape	7.1 Conserve, protect and enhance landscape, townscape and seascape character and visual amenity	0	0					
Population and Human Health	8.1 Maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing	0	0					
	8.2 Maintain and enhance tourism and recreation	0	-					
Material Assets	9.1 Minimise resource use and waste production	0	0					
	9.2 Avoid negative effects on built assets and infrastructure	0	0					
Effect	Major Negative Impact	Moderate Negative Impact	Minor Negative Impact	Neutral	Minor Positive Impact	Moderate Positive Impact	Major Positive Impact	Unknown
Key	---	--	-	0	+	++	+++	?

Table 7: COL3 SEA summary

2.2.4 Strategic Environmental Mitigation Table

SEA Objective	Mitigation
Biodiversity 1.1 & 1.2	Best-practice and consultation of the INNS risk assessment would help minimise spread of INNS.

Table 8: COL 3 Mitigation Activities

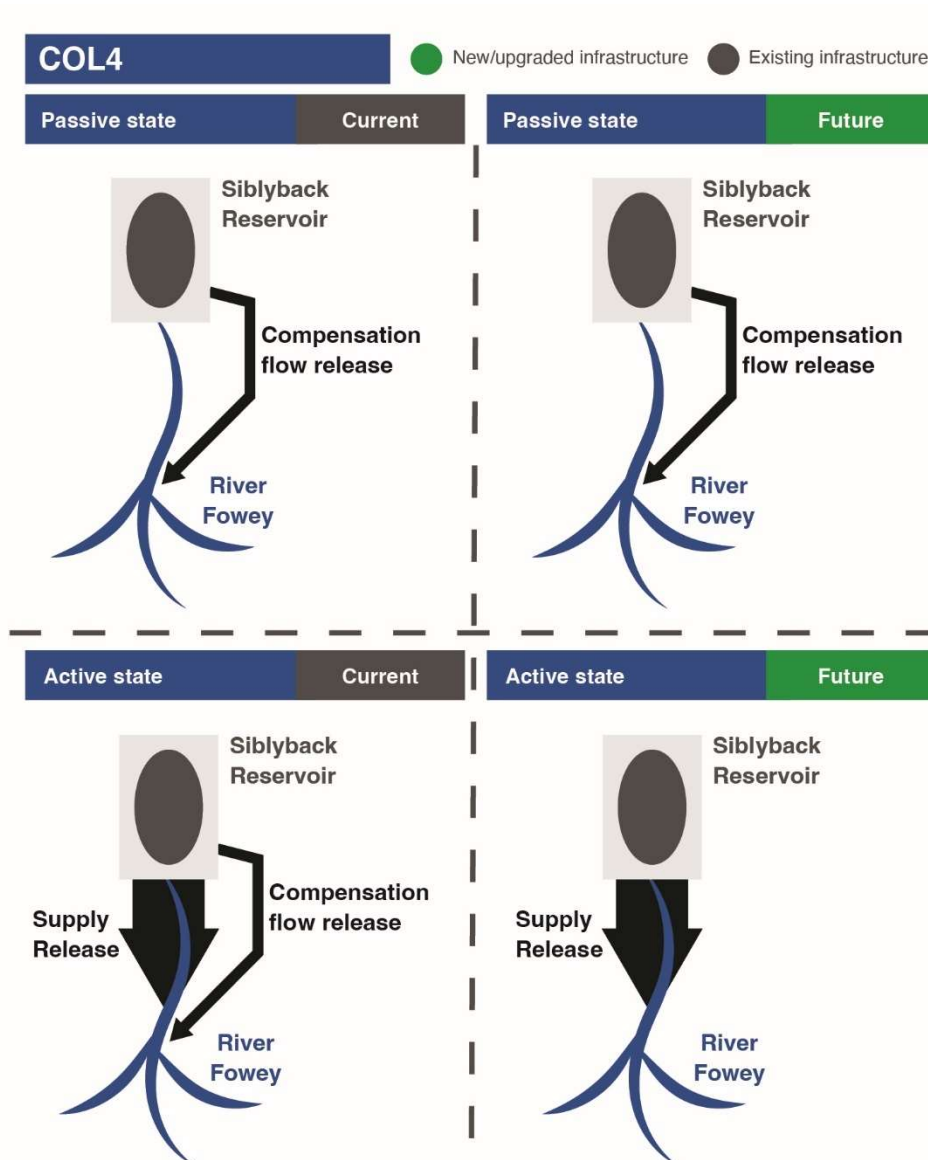
2.3 COL4 Abstraction of Sibilyback compensation flows when making supply releases

Scheme type	Surface Water Enhancement
Gains in Water Available For Use	0.75 MI/d
Biodiversity Net Gain	TBC
Reservoir: Storage Capacity (ML)	Siblyback Reservoir: 3182
Reservoir Information	Dam type - concrete gravity. Designated as heavily modified. Wet moorland catchment on Bodmin Moor granite. Catchment area - 794 ha (approx.).

2.3.1 Description of the option

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 license at the River Fowey, specifically reducing the compensation flow when large water supply releases are made from Sibilyback reservoir for downstream abstraction. The active supply release deliver 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.



2.3.2 Indicative Costs

Totex expenditure prior to option in use (£m)	Average Incremental Cost (AIC) (p/m3)	Total NPC (£m)	Option benefits lead-in time (Years)
0.096	16.87	1.10	1

Table 9: COL4 indicative costs

2.3.3 Strategic Environmental Assessment summary table

SEA Topic	SEA Objectives	Short-Term Impact	Long-Term Impact					
Biodiversity, Flora and Fauna	1.1 Protect and enhance designated and non-designated ecological sites	0	-					
	1.2 Protect, conserve and enhance biodiversity, including priority species, vulnerable habitats and habitat connectivity	0	-					
	1.3 Reduce the spread or presence of INNS	0	-					
Water	2.1 Protect and enhance the quality of the water environment and water resources	0	--					
	2.2 Increase resilience and reduce flood risk	0	0					
	2.3 Deliver reliable and resilient water supplies	0	+					
Soil	3.1 Protect and enhance the functionality, quantity and quality of soils, including the protection of sites of geological importance	0	0					
Air	4.1 Reduce and minimise air emissions	0	0					
Climatic Factors	5.1 Reduce embodied and operational carbon emissions	0	-					
	5.2 Reduce vulnerability to climate change risks and hazards	0	-					
Historic Environment	6.1 Conserve, protect and enhance the historic environment, including archaeology	0	0					
Landscape	7.1 Conserve, protect and enhance landscape, townscape and seascape character and visual amenity	0	0					
Population and Human Health	8.1 Maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing	0	0					
	8.2 Maintain and enhance tourism and recreation	0	-					
Material Assets	9.1 Minimise resource use and waste production	0	0					
	9.2 Avoid negative effects on built assets and infrastructure	0	0					
Effect	Major Negative Impact	Moderate Negative Impact	Minor Negative Impact	Neutral	Minor Positive Impact	Moderate Positive Impact	Major Positive Impact	Unknown
Key	---	--	-	0	+	++	+++	?

Table 10: COL4 SEA summary

2.3.4 Strategic Environmental Assessment Mitigation Table

SEA Objective	Mitigation
Biodiversity 1.1 & 1.2	Best practice and consultation of the INNS risk assessment would help minimise spread of INNS.

Table 11: COL4 Mitigation Activities

2.4 COL5 Increase Wendron annual licence and de-couple from Stithians

Scheme type	Surface Water Enhancement
Gains in Water Available For Use	1.50 MI/d
Biodiversity Net Gain	TBC
River	River Cober
Catchment Information	Upper River Cober not designated artificial or heavily modified, but Lower River Cober designated as heavily modified. Igneous catchment, granite with some areas of alluvium. Land use is mostly agricultural (grassland). Length - 28 km (approx.). Catchment area – 4,842 ha (approx.).
If River: note on abstractions (in place of Q95)	Licensed volumes and other licence conditions will be identified to ensure protection of environmental flows and catchment ecology
Reservoir: Storage Capacity (ML)	Stithians Reservoir: 4,967ML
Reservoir Information	Dam type - concrete gravity and arch. Designated as heavily modified. Catchment drains the Carnmenellis granite, with a small area of metamorphosed shales and grits. Land use predominantly grassland and arable. Catchment area - 882 ha (approx.).

2.4.1 Description of the option

This option proposes to decouple the abstraction licenses at River Cober and Stithians reservoir, in order to make full use of the water available in the River Cober. The required amount of water would remain the same (12.5 MI/d), meaning that more water would be taken from the River Cober annually. This change will need to be agreed upon with the EA in conjunction with environmental investigations and hydrological modelling.

2.4.2 Indicative Costs

Totex expenditure prior to option in use (£m)	Average Incremental Cost (AIC) (p/m3)	Total NPC (£m)	Option benefits lead-in time (Years)
0.056	31.21	4.00	1

Table 12: COL5 indicative costs

2.4.3 Strategic Environmental Assessment summary table

SEA Topic	SEA Objectives	Short-Term Impact	Long-Term Impact
Biodiversity, Flora and Fauna	1.1 Protect and enhance designated and non-designated ecological sites	0	-
	1.2 Protect, conserve and enhance biodiversity, including priority species, vulnerable habitats and habitat connectivity	0	-
	1.3 Reduce the spread or presence of INNS	0	-
Water	2.1 Protect and enhance the quality of the water environment and water resources	0	--
	2.2 Increase resilience and reduce flood risk	0	0
	2.3 Deliver reliable and resilient water supplies	0	+

SEA Topic	SEA Objectives							Short-Term Impact	Long-Term Impact
Soil	3.1 Protect and enhance the functionality, quantity and quality of soils, including the protection of sites of geological importance							0	0
Air	4.1 Reduce and minimise air emissions							0	0
Climatic Factors	5.1 Reduce embodied and operational carbon emissions							0	-
	5.2 Reduce vulnerability to climate change risks and hazards							0	-
Historic Environment	6.1 Conserve, protect and enhance the historic environment, including archaeology							0	0
Landscape	7.1 Conserve, protect and enhance landscape, townscape and seascape character and visual amenity							0	0
Population and Human Health	8.1 Maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing							0	+
	8.2 Maintain and enhance tourism and recreation							0	-
Material Assets	9.1 Minimise resource use and waste production							0	0
	9.2 Avoid negative effects on built assets and infrastructure							0	0
Effect	Major Negative Impact	Moderate Negative Impact	Minor Negative Impact	Neutral	Minor Positive Impact	Moderate Positive Impact	Major Positive Impact	Unknown	
Key	---	--	-	0	+	++	+++	?	

Table 13: COL5 SEA summary

2.4.4 Strategic Environmental Assessment Mitigation Table

SEA Objective	Mitigation
Biodiversity 1.1 & 1.2	Best practice and consultation of the INNS risk assessment would help minimise spread of INNS. Construction sites to follow best-practice biosecurity measures.

Table 14: CO5 Mitigation Activities

2.5 COL6 River Hayle Abstraction

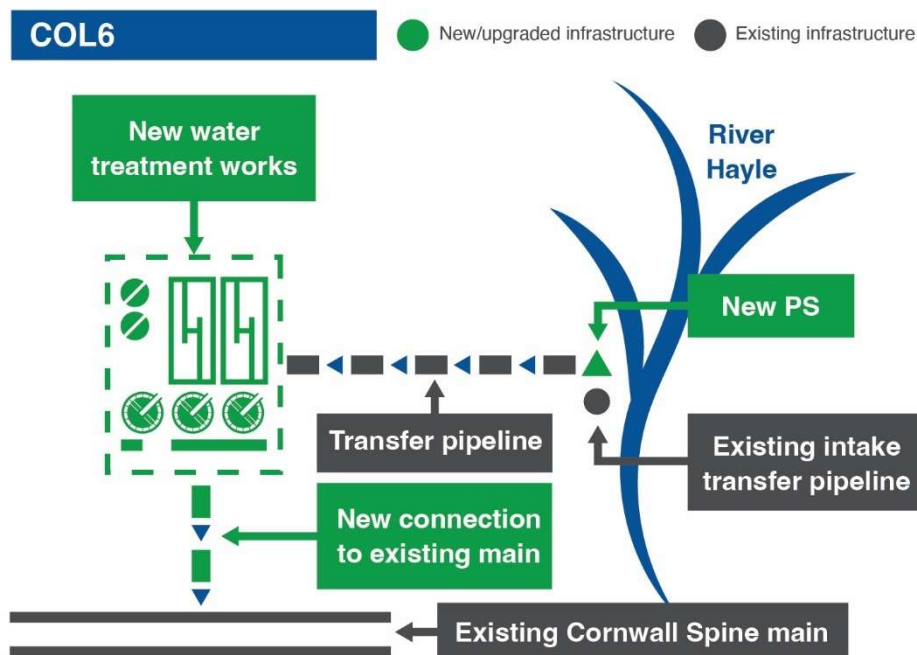
Scheme type	Surface Water Enhancement
Gains in Water Available For Use	1.50 ML/d
Biodiversity Net Gain	15.12 Ha
River	River Hayle
Catchment Information	Not designated artificial or heavily modified. Majority of the catchment is underlain by Devonian grits and shales. Land use a mix of arable and grassland. Length - 24 km (approx.). Catchment area - 5015 ha (approx.).
If River: note on Abstractions (in place of Q95)	Licensed volumes and other licence conditions will be identified to ensure protection of environmental flows and catchment ecology.

2.5.1 Description of the option

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 2 ML/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.



2.5.2 Indicative Costs

Totex expenditure prior to option in use (£m)	Average Incremental Cost (AIC) (p/m3)	Total NPC (£m)	Option benefits lead-in time (Years)
18.561	248.90	29.50	3

Table 15: COL6 indicative costs

2.5.3 Strategic Environmental Assessment summary table

SEA Topic		SEA Objectives				Short-Term Impact	Long-Term Impact	
Biodiversity, Flora and Fauna	1.1 Protect and enhance designated and non-designated ecological sites				-	-		
	1.2 Protect, conserve and enhance biodiversity, including priority species, vulnerable habitats and habitat connectivity				-	-		
	1.3 Reduce the spread or presence of INNS				-	-		
Water	2.1 Protect and enhance the quality of the water environment and water resources				-	--		
	2.2 Increase resilience and reduce flood risk				-	-		
	2.3 Deliver reliable and resilient water supplies				0	+		
Soil	3.1 Protect and enhance the functionality, quantity and quality of soils, including the protection of sites of geological importance				-	-		
Air	4.1 Reduce and minimise air emissions				-	0		
Climatic Factors	5.1 Reduce embodied and operational carbon emissions				--	-		
	5.2 Reduce vulnerability to climate change risks and hazards				0	+	-	
Historic Environment	6.1 Conserve, protect and enhance the historic environment, including archaeology				0	0		
Landscape	7.1 Conserve, protect and enhance landscape, townscape and seascape character and visual amenity				-	-		
Population and Human Health	8.1 Maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing				-	-	+	
	8.2 Maintain and enhance tourism and recreation				-	-		
Material Assets	9.1 Minimise resource use and waste production				-	0		
	9.2 Avoid negative effects on built assets and infrastructure				-	0		
Effect	Major Negative Impact	Moderate Negative Impact	Minor Negative Impact	Neutral	Minor Positive Impact	Moderate Positive Impact	Major Positive Impact	Unknown
Key	---	--	-	0	+	++	+++	?

Table 16: COL6 SEA summary

2.5.4 Strategic Environmental Assessment Mitigation Table

SEA Objective	Mitigation
Water 2.1	Best-practice construction methods and ongoing monitoring will be undertaken to reduce the risks of over abstraction, negative impacts on groundwater and the impact of flooding during the construction phase.
Biodiversity 1.1 & 1.2	<p>Best-practice construction and mitigation methods would be implemented to minimise disturbance effects (e.g. dust suppression and pollution control measures)</p> <p>Where potential major negative impacts on designated and non-designated ecological sites could be expected, CIRIA guidance would be followed to help alleviate impact pathways during construction, e.g. through planning the construction programme to avoid the bird breeding period (March to August inclusive). If construction does occur, additional data could be required to determine presence of qualifying features.</p> <p>Trenchless techniques would be implemented, where feasible, to reduce the level of disturbance to habitats within close vicinity of the site.</p> <p>Habitat would be reinstated on completion of developments or, if impacts are unavoidable, compensatory habitat to be considered to replace damaged or lost habitat in line with Biodiversity Net Gain requirements.</p> <p>Consultation with statutory bodies would be undertaken to ensure impacts to protected species and habitats are avoided or mitigated appropriately according to statutory requirements.</p>
Soil 3	Best-practice mitigation measures would be implemented during the construction phase (stripping, stockpiling, the conservation of topsoil and subsoil, etc). Construction on greenfield land would be avoided where possible, to reduce the impacts on undisturbed soils. Reinstatement of land excavated for the pipeline to minimise land take and disturbance. During operation, careful monitoring of abstraction via the borehole would be implemented to avoid the any impacts on soil subsidence.
Air 4	Best-practice construction and mitigation methods would be implemented to minimise disturbance effects (e.g., dust suppression and pollution control measures)

Table 17: COL6 Mitigation Actions

2.6 COL20 River Fal new abstraction

Scheme type	New Surface Water
Gains in Water Available For Use	15.00 MI/d
Biodiversity Net Gain	TBC
River	River Fal
Catchment Information	Not designated artificial or heavily modified. Catchment drains Devonian slates, shales and grits. Land use is low grade agriculture and grazing, with some woodland. Length - 41 km (approx.). Catchment area - 8516 ha (approx.).
If River: note on abstractions (in place of Q95)	Licensed volumes and other licence conditions will be identified to ensure protection of environmental flows and catchment ecology.

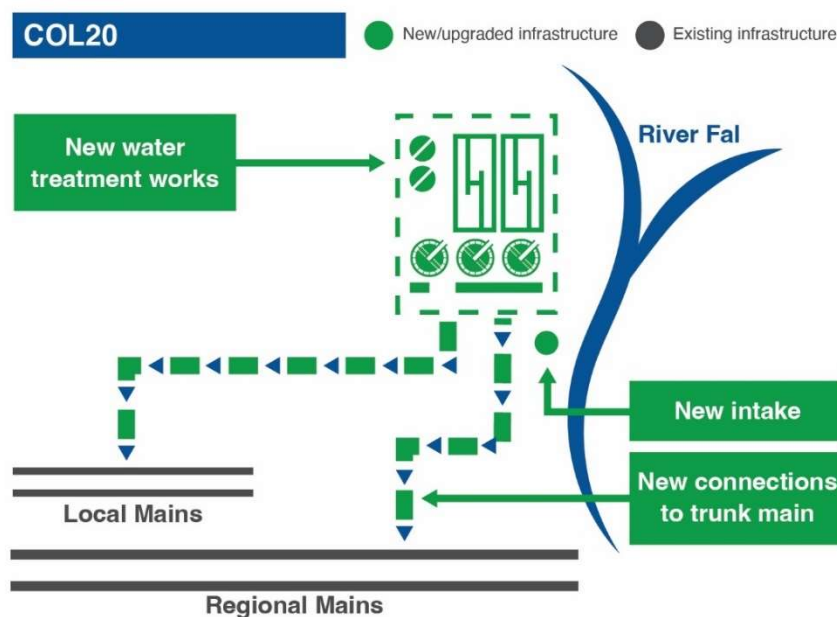
2.6.1 Description of the option

This scheme will construct a new abstraction on the River Fal near Tregony, including a new gravity intake (up to 25 MI/d) and a new onsite WTW (up to 25 MI/d capacity).

The new connections to the distribution system will total up to 25 MI/d, split between the local trunk mains and the regional trunk mains.

The new WTW would consist of

- screening (three screens with a capacity of 12.5 MI/d)
- a water pumping station including three 21kW raw-water pumps and a 90m³ wet well
- dosing systems: Coagulant, lime chemical, and acid chemical
- five clarifiers and rapid gravity filters with a capacity of 6 MI/d each
- five granular activated carbon (GAC) contactors with a capacity of 6 MI/d each
- three UV disinfection units with a capacity of 12.5 MI/d each
- a washwater recovery tank
- sludge thickening to remove 0.5 tonnes total dry solids (TDS) per year
- a sludge tank (200 m³) plus sludge dewatering (0.5 tonnes TDS/year)
- treatment buildings covering 3000 m²
- treated water storage for up to 6 MI/d
- three 95kW clean-water pumps to local mains
- three 214kW clean-water pumps to regional water mains
- power supply (1000 kVa)
- two hectares of land purchases



2.6.2 Indicative Costs

Totex expenditure prior to option in use (£m)	Average Incremental Cost (AIC) (p/m3)	Total NPC (£m)	Option benefits lead-in time (Years)
57.424	87.80	96.80	5

Table 18: COL20 indicative costs

2.6.3 Strategic Environmental Assessment summary table

SEA Topic	SEA Objectives	Short-Term Impact	Long-Term Impact					
Biodiversity, Flora and Fauna	1.1 Protect and enhance designated and non-designated ecological sites	-	-					
	1.2 Protect, conserve and enhance biodiversity, including priority species, vulnerable habitats and habitat connectivity	--	-					
	1.3 Reduce the spread or presence of INNS	-	-					
Water	2.1 Protect and enhance the quality of the water environment and water resources	-	--					
	2.2 Increase resilience and reduce flood risk	-	+					
	2.3 Deliver reliable and resilient water supplies	0	+					
Soil	3.1 Protect and enhance the functionality, quantity and quality of soils, including the protection of sites of geological importance	-	0					
Air	4.1 Reduce and minimise air emissions	0	0					
Climatic Factors	5.1 Reduce embodied and operational carbon emissions	--	-					
	5.2 Reduce vulnerability to climate change risks and hazards	0	-					
Historic Environment	6.1 Conserve, protect and enhance the historic environment, including archaeology	-	0					
Landscape	7.1 Conserve, protect and enhance landscape, townscape and seascape character and visual amenity	-	-					
Population and Human Health	8.1 Maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing	-	+					
	8.2 Maintain and enhance tourism and recreation	-	-					
Material Assets	9.1 Minimise resource use and waste production	-	0					
	9.2 Avoid negative effects on built assets and infrastructure	-	0					
Effect	Major Negative Impact	Moderate Negative Impact	Minor Negative Impact	Neutral	Minor Positive Impact	Moderate Positive Impact	Major Positive Impact	Unknown
Key	---	--	-	0	+	++	+++	?

Table 19: COL20 SEA summary

2.6.4 Strategic Environmental Assessment Mitigation Table

SEA Objective	Mitigation
Water 2.1	Best-practice construction methods and ongoing monitoring will be undertaken to reduce the risks of over abstraction, negative impacts on groundwater and the impact of flooding during the construction phase.
Biodiversity 1.1 & 1.2	<p>Best-practice construction and mitigation methods would be implemented to minimise disturbance effects (e.g. dust suppression and pollution control measures)</p> <p>Where potential major negative impacts on designated and non-designated ecological sites could be expected (e.g. Option ISB5), CIRIA guidance would be followed to help alleviate impact pathways during construction, e.g. through planning the construction programme to avoid the bird breeding period (March to August inclusive). If construction does occur, additional data could be required to determine presence of qualifying features.</p> <p>Trenchless techniques would be implemented, where feasible, to reduce the level of disturbance to habitats within close vicinity of the site.</p> <p>Habitat would be reinstated on completion of developments or, if impacts are unavoidable, compensatory habitat to be considered to replace damaged or lost habitat in line with Biodiversity Net Gain requirements.</p> <p>Consultation with statutory bodies would be undertaken to ensure impacts to protected species and habitats are avoided or mitigated appropriately according to statutory requirements.</p>
Soil 3	Best-practice mitigation measures would be implemented during the construction phase (stripping, stockpiling, the conservation of topsoil and subsoil, etc). Construction on greenfield land would be avoided where possible, to reduce the impacts on undisturbed soils. Reinstatement of land excavated for the pipeline to minimise land take and disturbance. During operation, careful monitoring of abstraction via the borehole would be implemented to avoid the any impacts on soil subsidence.

Table 20: COL20 Mitigation Activities

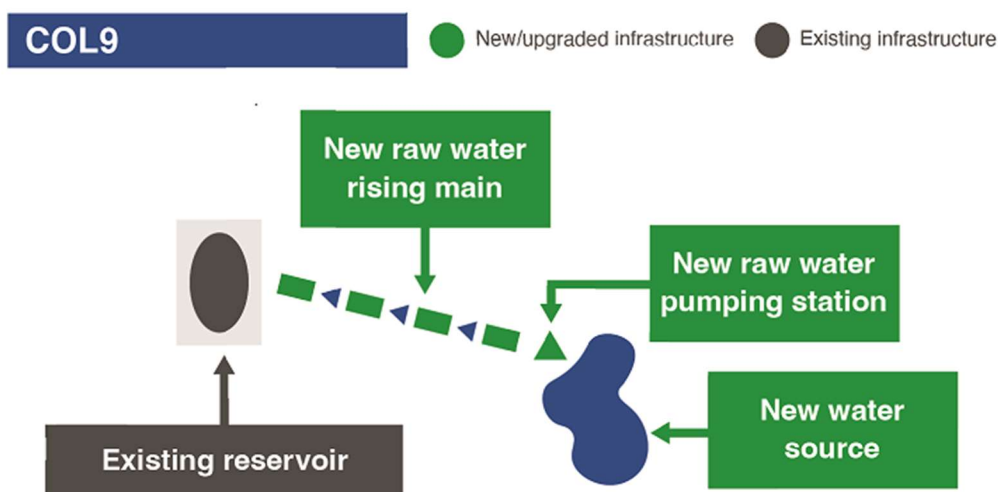
2.7 COL9 Leswidden Pool

Scheme type	New reservoir
Gains in Water Available For Use	2.50 MI/d
Biodiversity Net Gain	3.64 Ha

2.7.1 Description of the option

The option proposes to transfer raw water from a new reservoir at Leswidden Pool to Drift reservoir, to be used at Drift WTW to augment the raw water supply.

Either the existing infrastructure or a new pipe route (1.4km) has been proposed. We will need to deliver more detailed work to assess whether a pipeline or a combined pipe and river transfer from Leswidden Pool to an approved point of discharge for treatment at Drift WTW will be most beneficial. This would need to be of sufficient volume and duration to represent commercial viability for SWW. The total volume capacity at Leswidden Pool is 288.3 MI (top of reservoir reference : 173.04m above ODN).



2.7.2 Indicative Costs

Totex expenditure prior to option in use (£m)	Average Incremental Cost (AIC) (p/m3)	Total NPC (£m)	Option benefits lead-in time (Years)
4.873	35.80	7.60	1

Table 21: COL9 indicative costs

2.7.3 Strategic Environmental Assessment summary table

SEA Topic	SEA Objectives	Short-Term Impact	Long-Term Impact
Biodiversity, Flora and Fauna	1.1 Protect and enhance designated and non-designated ecological sites	-	-
	1.2 Protect, conserve and enhance biodiversity, including priority species, vulnerable habitats and habitat connectivity	-	-
	1.3 Reduce the spread or presence of INNS	-	-

SEA Topic	SEA Objectives	Short-Term Impact	Long-Term Impact					
Water	2.1 Protect and enhance the quality of the water environment and water resources	-	-					
	2.2 Increase resilience and reduce flood risk	-	-					
	2.3 Deliver reliable and resilient water supplies	0	+					
Soil	3.1 Protect and enhance the functionality, quantity and quality of soils, including the protection of sites of geological importance	-	0					
Air	4.1 Reduce and minimise air emissions	-	0					
Climatic Factors	5.1 Reduce embodied and operational carbon emissions	-	-					
	5.2 Reduce vulnerability to climate change risks and hazards	0	0					
Historic Environment	6.1 Conserve, protect and enhance the historic environment, including archaeology	-	0					
Landscape	7.1 Conserve, protect and enhance landscape, townscape and seascape character and visual amenity	-	0					
Population and Human Health	8.1 Maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing	-	+					
	8.2 Maintain and enhance tourism and recreation	-	0					
Material Assets	9.1 Minimise resource use and waste production	0	0					
	9.2 Avoid negative effects on built assets and infrastructure	-	0					
Effect	Major Negative Impact	Moderate Negative Impact	Minor Negative Impact	Neutral	Minor Positive Impact	Moderate Positive Impact	Major Positive Impact	Unknown
Key	---	--	-	0	+	++	+++	?

Table 22: COL9 SEA summary

2.7.4 Strategic Environmental Assessment Mitigation Table

SEA Objective	Mitigation
Biodiversity 1.1 & 1.2	<p>Best-practice construction and mitigation methods would be implemented to minimise disturbance effects (e.g. dust suppression and pollution control measures)</p> <p>Where potential major negative impacts on designated and non-designated ecological sites could be expected (e.g. Option ISB5), CIRIA guidance would be followed to help alleviate impact pathways during construction, e.g. through planning the construction programme to avoid the bird breeding period (March to August inclusive). If construction does occur, additional data could be required to determine presence of qualifying features.</p>

SEA Objective	Mitigation
	<p>Trenchless techniques would be implemented, where feasible, to reduce the level of disturbance to habitats within close vicinity of the site.</p> <p>Habitat would be reinstated on completion of developments or, if impacts are unavoidable, compensatory habitat to be considered to replace damaged or lost habitat in line with Biodiversity Net Gain requirements.</p> <p>Consultation with statutory bodies would be undertaken to ensure impacts to protected species and habitats are avoided or mitigated appropriately according to statutory requirements.</p>
Soil 3	<p>Best-practice mitigation measures would be implemented during the construction phase (stripping, stockpiling, the conservation of topsoil and subsoil, etc). Construction on greenfield land would be avoided where possible, to reduce the impacts on undisturbed soils. Reinstatement of land excavated for the pipeline to minimise land take and disturbance. During operation, careful monitoring of abstraction via the borehole would be implemented to avoid the any impacts on soil subsidence.</p>

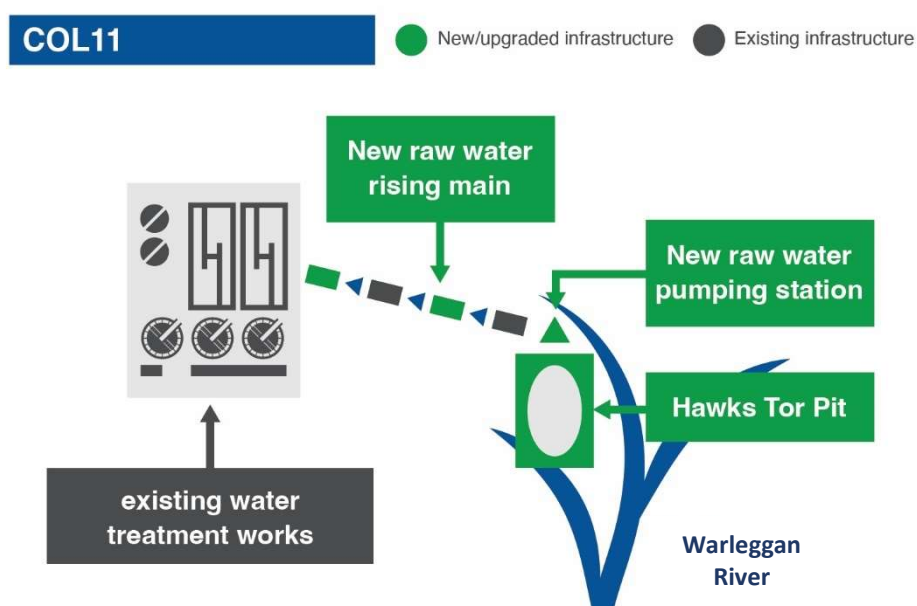
Table 23: COL9 Mitigation Activities

2.8 COL11 Hawk's Tor Pit

Scheme type	New reservoir
Gains in Water Available For Use	1.5 Ml/d
Biodiversity Net Gain	15.35 Ha
Catchment Information	Designation unknown. Upper part of the catchment drains Kaolinised granite, the lower drains Devonian slates. Land use predominantly rough grazing.

2.8.1 Description of the option

This option involves turning an existing quarry at Hawk's Tor Pit into a raw water reservoir that would then feed into Colliford reservoir, using the existing infrastructure where possible (intake, pumps, and pipeline). Further survey work on existing infrastructure is required, as they have not been in service for 20+ years.



2.8.2 Indicative Costs

Totex expenditure prior to option in use (£m)	Average Incremental Cost (AIC) (p/m ³)	Total NPC (£m)	Option benefits lead-in time (Years)
6.771	38.80	4.80	2

Table 24: COL11 indicative costs

2.8.3 Strategic Environmental Assessment summary table

SEA Topic	SEA Objectives	Short-Term Impact	Long-Term Impact					
Biodiversity, Flora and Fauna	1.1 Protect and enhance designated and non-designated ecological sites	-	-					
	1.2 Protect, conserve and enhance biodiversity, including priority species, vulnerable habitats and habitat connectivity	--	-					
	1.3 Reduce the spread or presence of INNS	-	-					
Water	2.1 Protect and enhance the quality of the water environment and water resources	-	-					
	2.2 Increase resilience and reduce flood risk	-	+					
	2.3 Deliver reliable and resilient water supplies	0	+					
Soil	3.1 Protect and enhance the functionality, quantity and quality of soils, including the protection of sites of geological importance	0	0					
Air	4.1 Reduce and minimise air emissions	0	0					
Climatic Factors	5.1 Reduce embodied and operational carbon emissions	--	-					
	5.2 Reduce vulnerability to climate change risks and hazards	0	0					
Historic Environment	6.1 Conserve, protect and enhance the historic environment, including archaeology	-	-					
Landscape	7.1 Conserve, protect and enhance landscape, townscape and seascape character and visual amenity	-	0					
Population and Human Health	8.1 Maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing	-	0					
	8.2 Maintain and enhance tourism and recreation	-	0					
Material Assets	9.1 Minimise resource use and waste production	-	0					
	9.2 Avoid negative effects on built assets and infrastructure	-	0					
Effect	Major Negative Impact	Moderate Negative Impact	Minor Negative Impact	Neutral	Minor Positive Impact	Moderate Positive Impact	Major Positive Impact	Unknown
Key	---	--	-	0	+	++	+++	?

Table 25: COL11 SEA summary

2.8.4 Strategic Environmental Assessment Mitigation Table

SEA Objective	Mitigation
<p>Biodiversity 1.1 & 1.2</p>	<p>Best-practice construction and mitigation methods would be implemented to minimise disturbance effects (e.g. dust suppression and pollution control measures)</p> <p>Where potential major negative impacts on designated and non-designated ecological sites could be expected, CIRIA guidance would be followed to help alleviate impact pathways during construction, e.g. through planning the construction programme to avoid the bird breeding period (March to August inclusive). If construction does occur, additional data could be required to determine presence of qualifying features.</p> <p>Trenchless techniques would be implemented, where feasible, to reduce the level of disturbance to habitats within close vicinity of the site.</p> <p>Habitat would be reinstated on completion of developments or, if impacts are unavoidable, compensatory habitat to be considered to replace damaged or lost habitat in line with Biodiversity Net Gain requirements.</p> <p>Consultation with statutory bodies would be undertaken to ensure impacts to protected species and habitats are avoided or mitigated appropriately according to statutory requirements.</p>

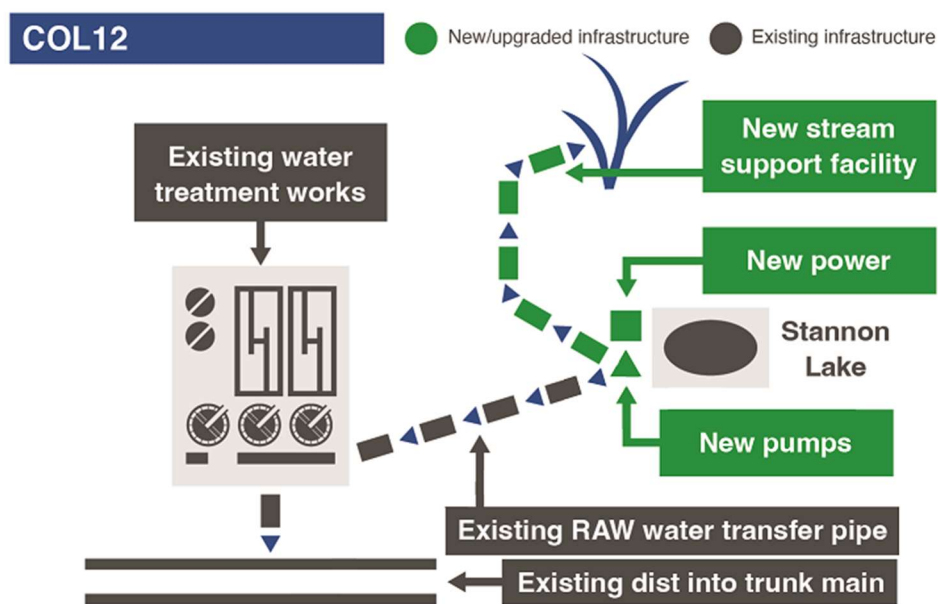
Table 26: COL11 Mitigation Activities

2.9 COL12 Stannon daily abstraction increase

Scheme type	Groundwater enhancement
Gains in Water Available For Use	1.50 MI/d
Biodiversity Net Gain	TBC
Reservoir: Storage Capacity (ML)	Stannon Lake: 840 ML
Reservoir Information	Dam type - N/A (flooded quarry pit). Designated as heavily modified. Catchment drains Devonian slates and Bodmin Moor granite. Land use is moorland and low grade agriculture. Catchment area – 1,576 ha (approx.).

2.9.1 Description of the option

This option is centred on increasing the daily limit that can be taken from Stannon lake. Our expectation is that the increase in water removed will go from 4 MI/d to 8 MI/d for up to three months in any one year. This will require the existing pumps and power supply to be upgraded and a 0.2 MI/d stream-support discharging from Stannon lake to minimise the environmental impact of this option.



2.9.2 Indicative Costs

Totex expenditure prior to option in use (£m)	Average Incremental Cost (AIC) (p/m3)	Total NPC (£m)	Option benefits lead-in time (Years)
1.443	24.70	4.20	1

Table 27: COL12 indicative costs

2.9.3 Strategic Environmental Assessment summary table

SEA Topic	SEA Objectives							Short-Term Impact	Long-Term Impact	
Biodiversity, Flora and Fauna	1.1 Protect and enhance designated and non-designated ecological sites							0	-	
	1.2 Protect, conserve and enhance biodiversity, including priority species, vulnerable habitats and habitat connectivity							-	-	
	1.3 Reduce the spread or presence of INNS							-	0	
Water	2.1 Protect and enhance the quality of the water environment and water resources							0	-	
	2.2 Increase resilience and reduce flood risk							-	0	
	2.3 Deliver reliable and resilient water supplies							0	+	
Soil	3.1 Protect and enhance the functionality, quantity and quality of soils, including the protection of sites of geological importance							0	0	
Air	4.1 Reduce and minimise air emissions							-	0	
Climatic Factors	5.1 Reduce embodied and operational carbon emissions							0	-	
	5.2 Reduce vulnerability to climate change risks and hazards							0	0	
Historic Environment	6.1 Conserve, protect and enhance the historic environment, including archaeology							0	0	
Landscape	7.1 Conserve, protect and enhance landscape, townscape and seascape character and visual amenity							-	0	
Population and Human Health	8.1 Maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing							-	+	+
	8.2 Maintain and enhance tourism and recreation							-	0	
Material Assets	9.1 Minimise resource use and waste production							-	0	
	9.2 Avoid negative effects on built assets and infrastructure							-	0	
Effect	Major Negative Impact	Moderate Negative Impact	Minor Negative Impact	Neutral	Minor Positive Impact	Moderate Positive Impact	Major Positive Impact	Unknown		
Key	---	--	-	0	+	++	+++	?		

Table 28: COL12 SEA summary

2.9.4 Strategic Environmental Assessment Mitigation Table

SEA Objective	Mitigation
<p>Biodiversity 1.1 & 1.2</p>	<p>Best-practice construction and mitigation methods would be implemented to minimise disturbance effects (e.g. dust suppression and pollution control measures)</p> <p>Where potential major negative impacts on designated and non-designated ecological sites could be expected (e.g. Option ISB5), CIRIA guidance would be followed to help alleviate impact pathways during construction, e.g. through planning the construction programme to avoid the bird breeding period (March to August inclusive). If construction does occur, additional data could be required to determine presence of qualifying features.</p> <p>Trenchless techniques would be implemented, where feasible, to reduce the level of disturbance to habitats within close vicinity of the site.</p> <p>Habitat would be reinstated on completion of developments or, if impacts are unavoidable, compensatory habitat to be considered to replace damaged or lost habitat in line with Biodiversity Net Gain requirements.</p> <p>Consultation with statutory bodies would be undertaken to ensure impacts to protected species and habitats are avoided or mitigated appropriately according to statutory requirements.</p>
<p>Air 4</p>	<p>Best-practice construction and mitigation methods would be implemented to minimise disturbance effects (e.g. dust suppression and pollution control measures).</p>

Table 29: COL12 Mitigation Activities

2.10 COL15 Restormel WTW

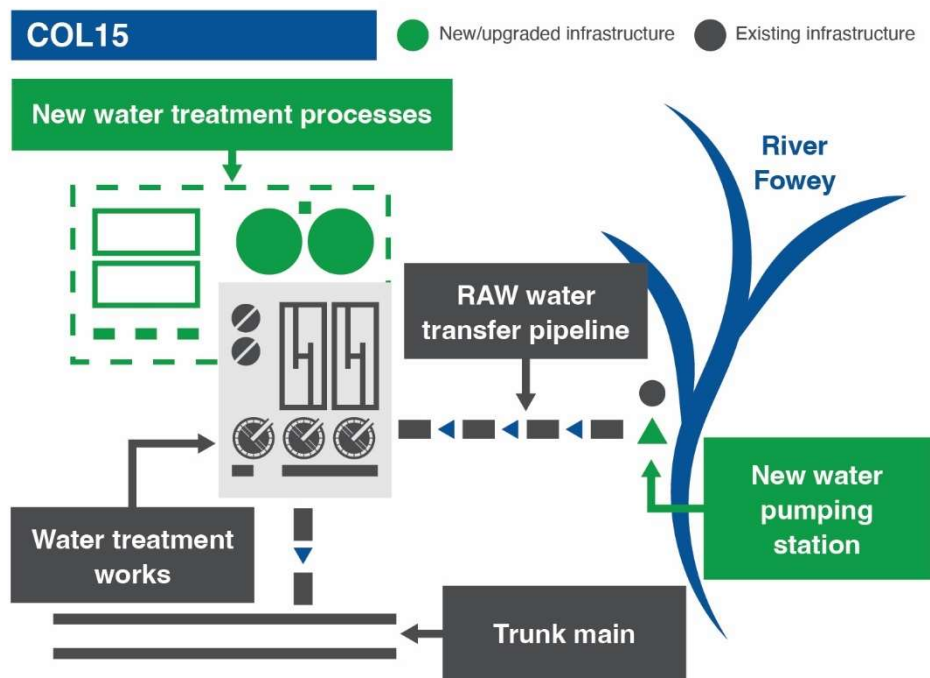
Scheme type	Water Treatment Works Capacity Increase
Gains in Water Available For Use	5 MI/d
Biodiversity Net Gain	TBC

2.10.1 Description of the option

This option is centred on increasing the existing abstraction license at Restormel WTW from 100 MI/d to either 110 MI/d or 120 MI/d, pending further engineering/environmental studies. It will be enabled increased WAFU through better usage of the Colliford reservoir/River Fowey water resources.

The additional treatment processes required to facilitate this option are

- A new Flash mixer
- New chemical dosing systems
- A new Flocculator
- A new Clarifier
- A new Rapid Gravity Filter (RGF)
- A new Building to house RGF Pipework, valves and controls
- Washwater recovery and sludge treatment systems
- Associated interprocess pipework, controls, and ancillaries
- Possible land purchase if 120 MI/d is preferred



2.10.2 Indicative Costs

Totex expenditure prior to option in use (£m)	Average Incremental Cost (AIC) (p/m3)	Total NPC (£m)	Option benefits lead-in time (Years)
13.434	43.00	17.60	2

Table 30: COL15 indicative costs

2.10.3 Strategic Environmental Assessment summary table

SEA Topic	SEA Objectives		Short-Term Impact	Long-Term Impact				
Biodiversity, Flora and Fauna	1.1 Protect and enhance designated and non-designated ecological sites		0	-				
	1.2 Protect, conserve and enhance biodiversity, including priority species, vulnerable habitats and habitat connectivity		0	-				
	1.3 Reduce the spread or presence of INNS		0	0				
Water	2.1 Protect and enhance the quality of the water environment and water resources		0	-				
	2.2 Increase resilience and reduce flood risk		-	0				
	2.3 Deliver reliable and resilient water supplies		-	+				
Soil	3.1 Protect and enhance the functionality, quantity and quality of soils, including the protection of sites of geological importance		0	0				
Air	4.1 Reduce and minimise air emissions		-	0				
Climatic Factors	5.1 Reduce embodied and operational carbon emissions		--	-				
	5.2 Reduce vulnerability to climate change risks and hazards		0	+				
Historic Environment	6.1 Conserve, protect and enhance the historic environment, including archaeology		-	0				
Landscape	7.1 Conserve, protect and enhance landscape, townscape and seascape character and visual amenity		-	-				
Population and Human Health	8.1 Maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing		-	+				
	8.2 Maintain and enhance tourism and recreation		-	-				
Material Assets	9.1 Minimise resource use and waste production		-	-				
	9.2 Avoid negative effects on built assets and infrastructure		0	0				
Effect	Major Negative Impact	Moderate Negative Impact	Minor Negative Impact	Neutral	Minor Positive Impact	Moderate Positive Impact	Major Positive Impact	Unknown
Key	---	--	-	0	+	++	+++	?

Table 31: COL15 SEA summary

2.10.4 Strategic Environmental Assessment Mitigation Table

SEA Objective	Mitigation
Water 2.1	Best-practice construction methods and ongoing monitoring will be undertaken to reduce the risks of over abstraction, negative impacts on groundwater and the impact of flooding during the construction phase. All measures to be in line with the EA's PPGs.
Biodiversity 1.1 &1.2	<p>Best-practice construction and mitigation methods would be implemented to minimise disturbance effects (e.g. dust suppression and pollution control measures)</p> <p>Where potential major negative impacts on designated and non-designated ecological sites could be expected (e.g. Option ISB5), CIRIA guidance would be followed to help alleviate impact pathways during construction, e.g. through planning the construction programme to avoid the bird breeding period (March to August inclusive). If construction does occur, additional data could be required to determine presence of qualifying features.</p> <p>Trenchless techniques would be implemented, where feasible, to reduce the level of disturbance to habitats within close vicinity of the site.</p> <p>Habitat would be reinstated on completion of developments or, if impacts are unavoidable, compensatory habitat to be considered to replace damaged or lost habitat in line with Biodiversity Net Gain requirements.</p> <p>Consultation with statutory bodies would be undertaken to ensure impacts to protected species and habitats are avoided or mitigated appropriately according to statutory requirements.</p>
Air 4	Best-practice construction and mitigation methods would be implemented to minimise disturbance effects (e.g. dust suppression and pollution control measures).

Table 32: COL15 Mitigation Activities

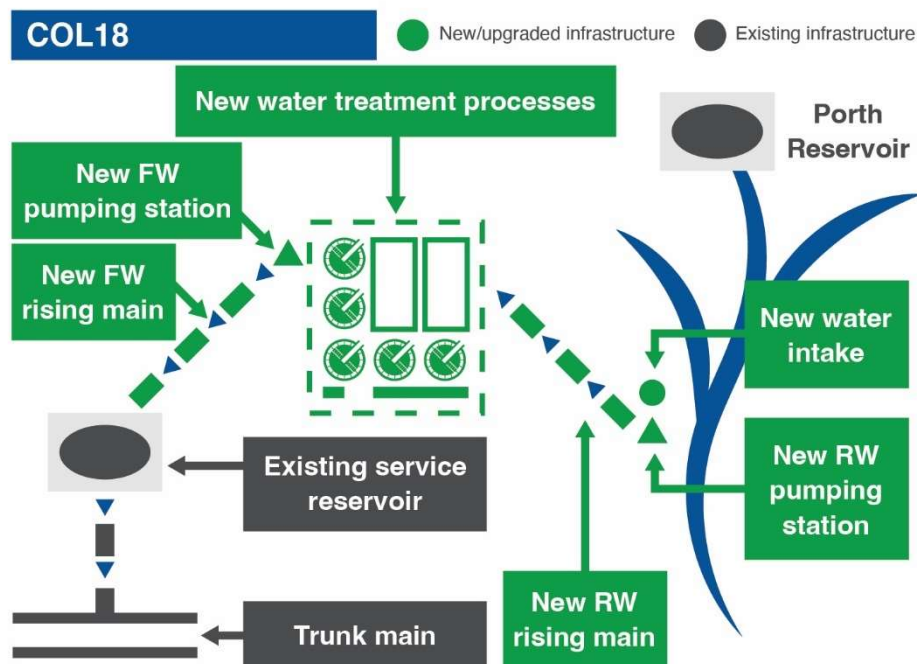
2.11 COL18 Porth/Rialton

Scheme type	Surface Water Enhancement
Gains in Water Available For Use	4 MI/d
Biodiversity Net Gain	2.68 Ha
Reservoir: Storage Capacity (ML)	Porth Reservoir: 514
Reservoir Information	Dam type - concrete gravity. Not designated as artificial or heavily modified. Catchment area 3635 ha (approx.).

2.11.1 Description of the option

The scheme will include:

- Reinstatement of the existing intake and sluice gate at Rialton Mill with gravity pipes to a newly constructed raw water pumping station (170kW power requirement) with associated ancillaries (valve chambers, power supply, flowmeter, and rising main)
- A new 6 MI/d (8.2 MI/d maximum) modular water treatment unit located at Coswarth Service Reservoir
- A new low-lift pumping station to transport treated water flows into Porth service reservoir
- A foul sewage pumping station and rising main to discharge the water treatment waste flows



2.11.2 Indicative Costs

Totex expenditure prior to option in use (£m)	Average Incremental Cost (AIC) (p/m3)	Total NPC (£m)	Option benefits lead-in time (Years)
33.889	182.40	55.50	4

Table 33: COL18 indicative costs

2.11.3 Strategic Environmental Assessment summary table

SEA Topic		SEA Objectives				Short-Term Impact	Long-Term Impact	
Biodiversity, Flora and Fauna	1.1 Protect and enhance designated and non-designated ecological sites					0	0	
	1.2 Protect, conserve and enhance biodiversity, including priority species, vulnerable habitats and habitat connectivity					-	-	
	1.3 Reduce the spread or presence of INNS					-	-	
Water	2.1 Protect and enhance the quality of the water environment and water resources					-	--	
	2.2 Increase resilience and reduce flood risk					0	-	
	2.3 Deliver reliable and resilient water supplies					0	+	
Soil	3.1 Protect and enhance the functionality, quantity and quality of soils, including the protection of sites of geological importance					0	0	
Air	4.1 Reduce and minimise air emissions					-	0	
Climatic Factors	5.1 Reduce embodied and operational carbon emissions					--	-	
	5.2 Reduce vulnerability to climate change risks and hazards					0	-	
Historic Environment	6.1 Conserve, protect and enhance the historic environment, including archaeology					0	0	
Landscape	7.1 Conserve, protect and enhance landscape, townscape and seascape character and visual amenity					-	-	
Population and Human Health	8.1 Maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing					-	+	+
	8.2 Maintain and enhance tourism and recreation					-	0	
Material Assets	9.1 Minimise resource use and waste production					-	0	
	9.2 Avoid negative effects on built assets and infrastructure					-	-	
Effect	Major Negative Impact	Moderate Negative Impact	Minor Negative Impact	Neutral	Minor Positive Impact	Moderate Positive Impact	Major Positive Impact	Unknown
Key	---	--	-	0	+	++	+++	?

Table 34: COL18 SEA summary

2.11.4 Strategic Environmental Assessment Mitigation Table

SEA Objective	Mitigation
Water 2.1	Best-practice construction methods and ongoing monitoring will be undertaken to reduce the risks of over abstraction, negative impacts on groundwater and the impact of flooding during the construction phase.
Biodiversity 1.1 & 1.2	<p>Best-practice construction and mitigation methods would be implemented to minimise disturbance effects (e.g. dust suppression and pollution control measures)</p> <p>Where potential major negative impacts on designated and non-designated ecological sites could be expected (e.g. Option ISB5), CIRIA guidance would be followed to help alleviate impact pathways during construction, e.g. through planning the construction programme to avoid the bird breeding period (March to August inclusive). If construction does occur, additional data could be required to determine presence of qualifying features.</p> <p>Trenchless techniques would be implemented, where feasible, to reduce the level of disturbance to habitats within close vicinity of the site.</p> <p>Habitat would be reinstated on completion of developments or, if impacts are unavoidable, compensatory habitat to be considered to replace damaged or lost habitat in line with Biodiversity Net Gain requirements.</p> <p>Consultation with statutory bodies would be undertaken to ensure impacts to protected species and habitats are avoided or mitigated appropriately according to statutory requirements.</p>
Air 4	Best-practice construction and mitigation methods would be implemented to minimise disturbance effects (e.g. dust suppression and pollution control measures).

Table 35: COL18 Mitigation Activities

2.12 COL19 Boswyn stream/Cargenwen Reservoir/Carwynnen stream

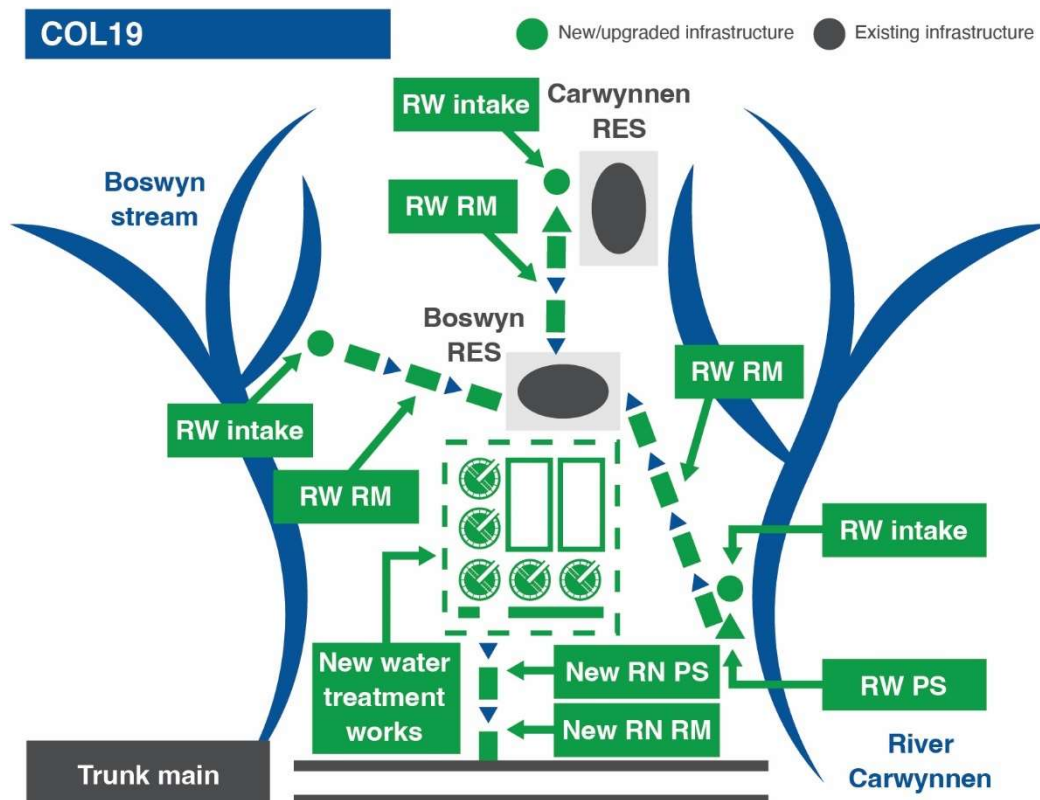
Scheme type	New Surface Water
Gains in Water Available For Use	1.5 ML/d
Biodiversity Net Gain	TBC
Reservoir: Storage Capacity (ML)	Carwynnen Reservoir: 115ML
Reservoir Information	Dam type - earth embankment.

2.12.1 Description of the option

The scheme involves the following:

- Pumped abstraction at the Carwynnen Stream transferring raw water to Boswyn Reservoir
- Pumped abstraction at Cargenwen Reservoir transferring water to Boswyn Reservoir (We may be able to repurpose and existing 150mm diameter pipe)
- Gravity abstraction from the Boswyn Stream at Boswyn Reservoir to Boswyn Reservoir
- A new 5.1 ML/d water treatment facility at Boswyn Reservoir on the site of the existing water treatment works buildings
- A treated water pump station and trunk main from Boswyn WTW leading to Trevu Service Reservoir
- New licensing for all abstractions will be required through consultation with the EA

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. Note that the scheme is also a drought option – if required it would run under a drought permit.



2.12.2 Indicative Costs

Totex expenditure prior to option in use (£m)	Average Incremental Cost (AIC) (p/m3)	Total NPC (£m)	Option benefits lead-in time (Years)
10.000	172.28	21.10	2

Table 36: COL19 indicative costs

2.12.3 Strategic Environmental Assessment summary table

SEA Topic	SEA Objectives	Short-Term Impact	Long-Term Impact					
Biodiversity, Flora and Fauna	1.1 Protect and enhance designated and non-designated ecological sites	-	-					
	1.2 Protect, conserve and enhance biodiversity, including priority species, vulnerable habitats and habitat connectivity	-	-					
	1.3 Reduce the spread or presence of INNS	-	-					
Water	2.1 Protect and enhance the quality of the water environment and water resources	-	--					
	2.2 Increase resilience and reduce flood risk	0	0					
	2.3 Deliver reliable and resilient water supplies	0	+					
Soil	3.1 Protect and enhance the functionality, quantity and quality of soils, including the protection of sites of geological importance	0	0					
Air	4.1 Reduce and minimise air emissions	-	0					
Climatic Factors	5.1 Reduce embodied and operational carbon emissions	-	-					
	5.2 Reduce vulnerability to climate change risks and hazards	0	-					
Historic Environment	6.1 Conserve, protect and enhance the historic environment, including archaeology	-	0					
Landscape	7.1 Conserve, protect and enhance landscape, townscape and seascape character and visual amenity	-	0					
Population and Human Health	8.1 Maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing	-	+					
	8.2 Maintain and enhance tourism and recreation	-	-					
Material Assets	9.1 Minimise resource use and waste production	-	0					
	9.2 Avoid negative effects on built assets and infrastructure	0	0					
Effect	Major Negative Impact	Moderate Negative Impact	Minor Negative Impact	Neutral	Minor Positive Impact	Moderate Positive Impact	Major Positive Impact	Unknown
Key	---	--	-	0	+	++	+++	?

Table 37: COL19 SEA summary

2.12.4 Strategic Environmental Assessment Mitigation Table

SEA Objective	Mitigation
Water 2.1	Best-practice construction methods and ongoing monitoring will be undertaken to reduce the risks of over abstraction, negative impacts on groundwater and the impact of flooding during the construction phase. All measures to be in line with the EA's PPGs.
Biodiversity 1.1 & 1.2	<p>Best-practice construction and mitigation methods would be implemented to minimise disturbance effects (e.g. dust suppression and pollution control measures)</p> <p>Where potential major negative impacts on designated and non-designated ecological sites could be expected, CIRIA guidance would be followed to help alleviate impact pathways during construction, e.g. through planning the construction programme to avoid the bird breeding period (March to August inclusive). If construction does occur, additional data could be required to determine presence of qualifying features.</p> <p>Trenchless techniques would be implemented, where feasible, to reduce the level of disturbance to habitats within close vicinity of the site.</p> <p>Habitat would be reinstated on completion of developments or, if impacts are unavoidable, compensatory habitat to be considered to replace damaged or lost habitat in line with Biodiversity Net Gain requirements.</p> <p>Consultation with statutory bodies would be undertaken to ensure impacts to protected species and habitats are avoided or mitigated appropriately according to statutory requirements.</p>

Table 38: COL19 Mitigation Activities

3 Roadford Water Resource Zone

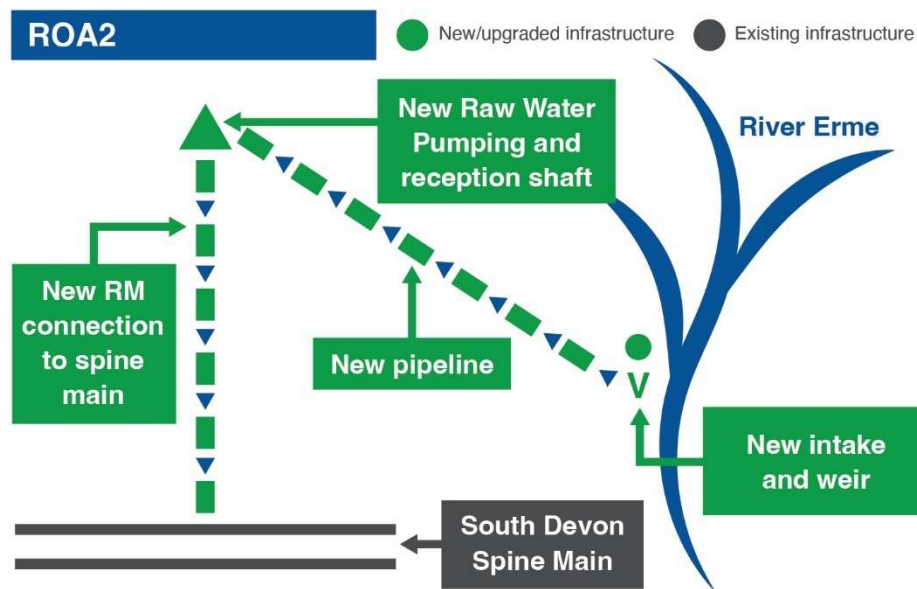
3.1 ROA2 River Erme

Scheme type	Surface Water Enhancement
Gains in Water Available For Use	1.50 MI/d
Biodiversity Net Gain	TBC
River	River Erme
Catchment Information	Not designated artificial or heavily modified. Catchment drains Dartmoor granite. Land use is moorland in the upper catchment, and predominantly low-grade agriculture elsewhere. Length - 21 km (approx.). Catchment area – 4,548 ha (approx.).
If River: Note on abstractions (in place of Q95)	Licensed volumes and other licence conditions will be identified to ensure protection of environmental flows and catchment ecology.

3.1.1 Description of the option

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 8km 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 3-4 m deep.
- A new raw water connection to the South Devon Spine Main - approximately 910m.
- Transfer raw water to Little Hempston WTW
- A new license in conjunction with the EA.



3.1.2 Indicative Costs

Totex expenditure prior to option in use (£m)	Average Incremental Cost (AIC) (p/m3)	Total NPC (£m)	Option benefits lead-in time (Years)
1.072	32.00	3.90	2

Table 39: ROA2 indicative costs

3.1.3 Strategic Environmental Assessment summary table

SEA Topic	SEA Objectives	Short-Term Impact	Long-Term Impact					
Biodiversity, Flora and Fauna	1.1 Protect and enhance designated and non-designated ecological sites	-	-					
	1.2 Protect, conserve and enhance biodiversity, including priority species, vulnerable habitats and habitat connectivity	-	-					
	1.3 Reduce the spread or presence of INNS	-	-					
Water	2.1 Protect and enhance the quality of the water environment and water resources	-	--					
	2.2 Increase resilience and reduce flood risk	0	0					
	2.3 Deliver reliable and resilient water supplies	-	+					
Soil	3.1 Protect and enhance the functionality, quantity and quality of soils, including the protection of sites of geological importance	-	--					
Air	4.1 Reduce and minimise air emissions	-	0					
Climatic Factors	5.1 Reduce embodied and operational carbon emissions	---	-					
	5.2 Reduce vulnerability to climate change risks and hazards	0	- +					
Historic Environment	6.1 Conserve, protect and enhance the historic environment, including archaeology	0	0					
Landscape	7.1 Conserve, protect and enhance landscape, townscape and seascape character and visual amenity	-	-					
Population and Human Health	8.1 Maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing	- +	+					
	8.2 Maintain and enhance tourism and recreation	-	-					
Material Assets	9.1 Minimise resource use and waste production	-	0					
	9.2 Avoid negative effects on built assets and infrastructure	0	0					
Effect	Major Negative Impact	Moderate Negative Impact	Minor Negative Impact	Neutral	Minor Positive Impact	Moderate Positive Impact	Major Positive Impact	Unknown
Key	---	--	-	0	+	++	+++	?

Table 40: ROA2 SEA summary

3.1.4 Strategic Environmental Assessment Mitigation Table

SEA Objective	Mitigation
<p>Biodiversity 1.1, 1.2 & 1.3</p>	<p>Best-practice construction and mitigation methods would be implemented to minimise disturbance effects (e.g. dust suppression and pollution control measures).</p> <p>Trenchless techniques would be implemented, where feasible, to reduce the level of disturbance to habitats within close vicinity of the site. Where possible, development on priority habitat would be avoided to minimise effects.</p> <p>Where potential major negative impacts on designated and non-designated ecological sites could be expected (e.g. Option ISB5), CIRIA guidance would be followed to help alleviate impact pathways during construction, e.g. through planning the construction programme to avoid the bird breeding period (March to August inclusive). If construction does occur, additional data could be required to determine presence of qualifying features.</p> <p>Consultation with statutory bodies would be undertaken to ensure impacts to protected species and habitats are avoided or mitigated appropriately according to statutory requirements.</p> <p>Best practice and consultation of the INNS risk assessment would help minimise spread of INNS. Construction sites to follow best-practice biosecurity measures.</p> <p>CIRIA guidance would be followed to help alleviate impact pathways during construction, e.g. through planning the construction programme to avoid the bird breeding period (March to August inclusive). If construction does occur, additional data could be required to determine presence of qualifying features.</p> <p>Habitat would be reinstated on completion of developments or, if impacts are unavoidable, compensatory habitat to be considered to replace damaged or lost habitat in line with Biodiversity Net Gain requirements.</p> <p>For various options, ecology surveys would be required at future design stages to determine effects and mitigation required.</p>
<p>Soil 3</p>	<p>Best-practice mitigation measures would be implemented during the construction phase (stripping, stockpiling, the conservation of topsoil and subsoil, etc).</p> <p>Construction on greenfield land would be avoided, where possible, to reduce the impacts on undisturbed soils. Reinstatement of land excavated for the pipeline to minimise land take and disturbance.</p> <p>During operation, careful monitoring of abstraction via the borehole would be implemented to avoid the any impacts on soil subsidence.</p>
<p>Water 2.1 & 2.3</p>	<p>Best-practice construction methods and ongoing monitoring will be undertaken to reduce the risks of over abstraction, negative impacts on groundwater and the impact of flooding during the construction phase.</p>

Table 41: ROA2 Mitigation Activities

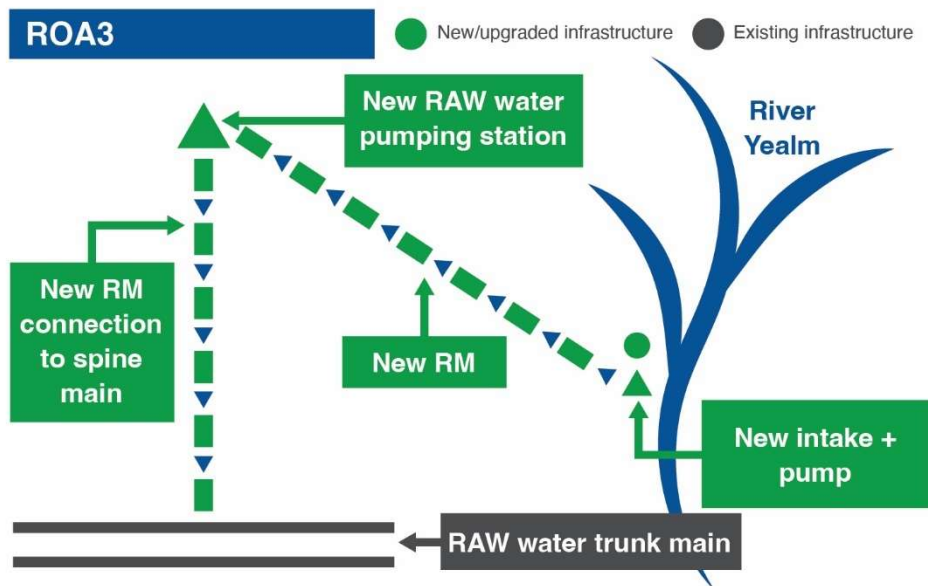
3.2 ROA3 River Yealm

Scheme type	Surface Water Enhancement
Gains in Water Available For Use	1.50 MI/d
Biodiversity Net Gain	TBC
River	River Yealm
Catchment Information	Not designated artificial or heavily modified. Majority of catchment underlain by Devonian shales with subordinate limestone. Land use is meadowland, arable and low grade agriculture. Length - 24 km (approx.). Catchment area – 4,592 ha (approx.).
If River: Note on abstractions (in place of Q95)	Licensed volumes and other licence conditions will be identified to ensure protection of environmental flows and catchment ecology.

3.2.1 Description of the option

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. It involves the following:

- Construction of a new intake approximately 8km 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 45m from the new abstraction point
- A new reception shaft approximately 3-4 m deep
- A new raw water connection to the South Devon Spine Main (raw water main) - approximately 200m
- A new license in conjunction with the EA



3.2.2 Indicative Costs

Totex expenditure prior to option in use (£m)	Average Incremental Cost (AIC) (p/m3)	Total NPC (£m)	Option benefits lead-in time (Years)
0.917	46.40	5.70	2

Table 42: ROA3 indicative costs

3.2.3 Strategic Environmental Assessment summary table

SEA Topic	SEA Objectives				Short-Term Impact	Long-Term Impact		
Biodiversity, Flora and Fauna	1.1 Protect and enhance designated and non-designated ecological sites				-	0		
	1.2 Protect, conserve and enhance biodiversity, including priority species, vulnerable habitats and habitat connectivity				-	-		
	1.3 Reduce the spread or presence of INNS				-	-		
Water	2.1 Protect and enhance the quality of the water environment and water resources				-	-		
	2.2 Increase resilience and reduce flood risk				0	+		
	2.3 Deliver reliable and resilient water supplies				0	-	+	
Soil	3.1 Protect and enhance the functionality, quantity and quality of soils, including the protection of sites of geological importance				-	-		
Air	4.1 Reduce and minimise air emissions				-	0		
Climatic Factors	5.1 Reduce embodied and operational carbon emissions				-	-		
	5.2 Reduce vulnerability to climate change risks and hazards				0	-	+	
Historic Environment	6.1 Conserve, protect and enhance the historic environment, including archaeology				0	0		
Landscape	7.1 Conserve, protect and enhance landscape, townscape and seascape character and visual amenity				-	-		
Population and Human Health	8.1 Maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing				-	+	+	-
	8.2 Maintain and enhance tourism and recreation				-	-		
Material Assets	9.1 Minimise resource use and waste production				-	0		
	9.2 Avoid negative effects on built assets and infrastructure				-	0		
Effect	Major Negative Impact	Moderate Negative Impact	Minor Negative Impact	Neutral	Minor Positive Impact	Moderate Positive Impact	Major Positive Impact	Unknown
Key	---	--	-	0	+	++	+++	?

Table 43: ROA3 SEA summary

3.2.4 Strategic Environmental Assessment Mitigation Table

SEA Objective	Mitigation
<p>Biodiversity 1.1, 1.2 & 1.3</p>	<p>Best-practice construction and mitigation methods would be implemented to minimise disturbance effects (e.g. dust suppression and pollution control measures).</p> <p>Trenchless techniques would be implemented, where feasible, to reduce the level of disturbance to habitats within close vicinity of the site. Where possible, development on priority habitat would be avoided to minimise effects.</p> <p>Where potential major negative impacts on designated and non-designated ecological sites could be expected (e.g. Option ISB5), CIRIA guidance would be followed to help alleviate impact pathways during construction, e.g. through planning the construction programme to avoid the bird breeding period (March to August inclusive). If construction does occur, additional data could be required to determine presence of qualifying features.</p> <p>Consultation with statutory bodies would be undertaken to ensure impacts to protected species and habitats are avoided or mitigated appropriately according to statutory requirements.</p> <p>Best practice and consultation of the INNS risk assessment would help minimise spread of INNS. Construction sites to follow best-practice biosecurity measures.</p> <p>CIRIA guidance would be followed to help alleviate impact pathways during construction, e.g. through planning the construction programme to avoid the bird breeding period (March to August inclusive). If construction does occur, additional data could be required to determine presence of qualifying features. Habitat would be reinstated on completion of developments or, if impacts are unavoidable, compensatory habitat to be considered to replace damaged or lost habitat in line with Biodiversity Net Gain requirements.</p> <p>For various options, ecology surveys would be required at future design stages to determine effects and mitigation required.</p>
<p>Water 2.1, 2.2 & 2.3</p>	<p>Best-practice construction methods and ongoing monitoring will be undertaken to reduce the risks of over abstraction, negative impacts on groundwater and the impact of flooding during the construction phase.</p>
<p>Soil 3</p>	<p>Best-practice mitigation measures would be implemented during the construction phase (stripping, stockpiling, the conservation of topsoil and subsoil, etc). Construction on greenfield land would be avoided where possible, to reduce the impacts on undisturbed soils. Reinstatement of land excavated for the pipeline to minimise land take and disturbance. During operation, careful monitoring of abstraction via the borehole would be implemented to avoid the any impacts on soil subsidence.</p>

Table 44: ROA3 Mitigation Activities

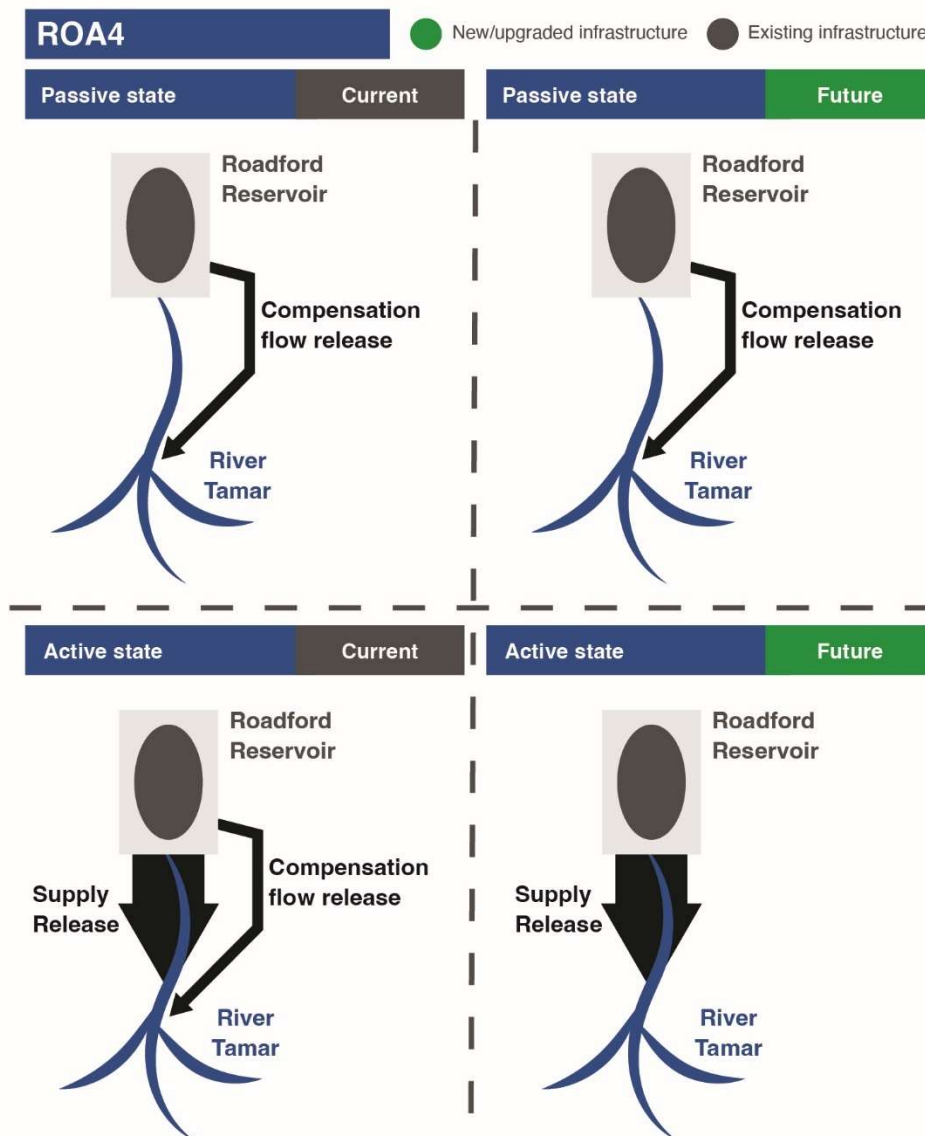
3.3 ROA4 Abstraction of Roadford compensation flow at Gunnislake when making supply releases

Scheme type	Surface Water Enhancement
Gains in Water Available For Use	2.00 Ml/d
Biodiversity Net Gain	TBC
Reservoir: Storage Capacity (ML)	Roadford Reservoir: 34,500 ML
Reservoir Information	Dam type - embankment. Designated as heavily modified. Catchment drains shales and sandstones of the Carboniferous Coal Measures. Land uses are grazing and low-level agriculture. Catchment area – 3,932 ha (approx.).

3.3.1 Description of the option

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 license 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 deliver 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.



3.3.2 Indicative Costs

Totex expenditure prior to option in use (£m)	Average Incremental Cost (AIC) (p/m3)	Total NPC (£m)	Option benefits lead-in time (Years)
0.098	2.10	0.30	2

Table 45: ROA4 indicative costs

3.3.3 Strategic Environmental Assessment summary table

SEA Topic	SEA Objectives	Short-Term Impact	Long-Term Impact
Biodiversity, Flora and Fauna	1.1 Protect and enhance designated and non-designated ecological sites	0	-
	1.2 Protect, conserve and enhance biodiversity, including priority species, vulnerable habitats and habitat connectivity	0	-
	1.3 Reduce the spread or presence of INNS	0	-
Water	2.1 Protect and enhance the quality of the water environment and water resources	0	--
	2.2 Increase resilience and reduce flood risk	0	0
	2.3 Deliver reliable and resilient water supplies	0	+
Soil	3.1 Protect and enhance the functionality, quantity and quality of soils, including the protection of sites of geological importance	0	0
Air	4.1 Reduce and minimise air emissions	0	0
Climatic Factors	5.1 Reduce embodied and operational carbon emissions	0	-
	5.2 Reduce vulnerability to climate change risks and hazards	0	- +
Historic Environment	6.1 Conserve, protect and enhance the historic environment, including archaeology	0	0
Landscape	7.1 Conserve, protect and enhance landscape, townscape and seascape character and visual amenity	0	0
Population and Human Health	8.1 Maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing	0	0
	8.2 Maintain and enhance tourism and recreation	0	0
Material Assets	9.1 Minimise resource use and waste production	0	0
	9.2 Avoid negative effects on built assets and infrastructure	0	0

Effect	Major Negative Impact	Moderate Negative Impact	Minor Negative Impact	Neutral	Minor Positive Impact	Moderate Positive Impact	Major Positive Impact	Unknown
Key	---	--	-	0	+	++	+++	?

Table 46: ROA4 SEA summary

3.3.4 Strategic Environmental Assessment Mitigation Table

SEA Objective	Mitigation
Biodiversity 1.3	Best practice and consultation of the INNS risk assessment would help minimise spread of INNS.
Water 2.1	Best-practice construction methods and ongoing monitoring will be undertaken to reduce the risks of over abstraction and negative impacts on groundwater.

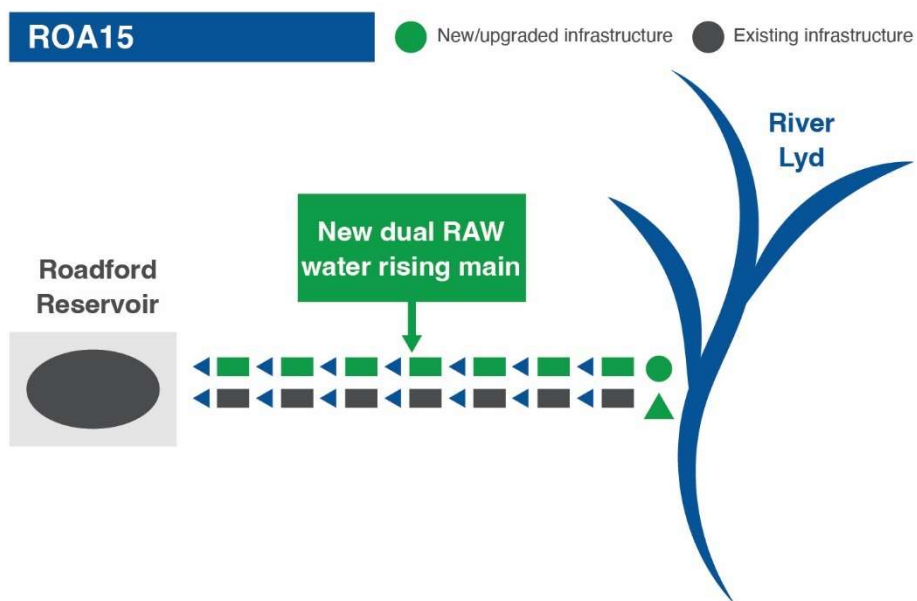
Table 47: ROA4 Mitigation Activities

3.4 ROA15 Gatherley phase 2

Scheme type	Trunk Mains Renewal/New
Gains in Water Available For Use	20.00 MI/d
Biodiversity Net Gain	29.4 Ha
Reservoir: Storage Capacity (ML)	Roadford Reservoir: 34,500 ML
Reservoir Information	Dam type - embankment. Designated as heavily modified. Catchment drains shales and sandstones of the Carboniferous Coal Measures. Land uses are grazing and low level agriculture. Catchment area – 3,932 ha (approx.).

3.4.1 Description of the option

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 148 MI/d to be transferred to Roadford Reservoir. We intend to apply for the full abstraction license in AMP 7 prior to implementing the option.



3.4.2 Strategic Environmental Assessment summary table

SEA Topic	SEA Objectives	Short-Term Impact	Long-Term Impact
Biodiversity, Flora and Fauna	1.1 Protect and enhance designated and non-designated ecological sites	-	0
	1.2 Protect, conserve and enhance biodiversity, including priority species, vulnerable habitats and habitat connectivity	-	-
	1.3 Reduce the spread or presence of INNS	--	--
Water	2.1 Protect and enhance the quality of the water environment and water resources	-	--

SEA Topic		SEA Objectives					Short-Term Impact	Long-Term Impact
		2.2 Increase resilience and reduce flood risk					--	--
		2.3 Deliver reliable and resilient water supplies					0	+++
Soil		3.1 Protect and enhance the functionality, quantity and quality of soils, including the protection of sites of geological importance					-	-
Air		4.1 Reduce and minimise air emissions					-	0
Climatic Factors		5.1 Reduce embodied and operational carbon emissions					--	-
		5.2 Reduce vulnerability to climate change risks and hazards					-	+ -
Historic Environment		6.1 Conserve, protect and enhance the historic environment, including archaeology					-	0
Landscape		7.1 Conserve, protect and enhance landscape, townscape and seascape character and visual amenity					-	-
Population and Human Health		8.1 Maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing					++ +	- +
		8.2 Maintain and enhance tourism and recreation					-	+
Material Assets		9.1 Minimise resource use and waste production					--	-
		9.2 Avoid negative effects on built assets and infrastructure					--	0
Effect	Major Negative Impact	Moderate Negative Impact	Minor Negative Impact	Neutral	Minor Positive Impact	Moderate Positive Impact	Major Positive Impact	Unknown
Key	---	--	-	0	+	++	+++	?

Table 48: ROA15 SEA summary

3.4.3 Indicative Costs

Totex expenditure prior to option in use (£m)	Average Incremental Cost (AIC) (p/m3)	Total NPC (£m)	Option benefits lead-in time (Years)
42.641	34.10	55.8	2

Table 49: ROA 15 indicative costs

3.4.4 Strategic Environmental Assessment Mitigation Table

SEA Objective	Mitigation
Biodiversity 1.1 & 1.2	<p>Where possible, development on priority habitat would be avoided to minimise effects.</p> <p>Where potential major negative impacts on designated and non-designated ecological sites could be expected (e.g. Option ISB5), CIRIA guidance would be followed to help alleviate impact pathways during construction, e.g. through planning the construction programme to avoid the bird breeding period (March to August inclusive). If construction does occur, additional data could be required to determine presence of qualifying features.</p> <p>Habitat would be reinstated on completion of developments or, if impacts are unavoidable, compensatory habitat to be considered to replace damaged or lost habitat in line with Biodiversity Net Gain requirements.</p> <p>Best-practice construction and mitigation methods would be implemented to minimise disturbance effects (e.g., dust suppression and pollution control measures).</p> <p>Trenchless techniques would be implemented, where feasible, to reduce the level of disturbance to habitats within close vicinity of the site.</p> <p>Consultation with statutory bodies would be undertaken to ensure impacts to protected species and habitats are avoided or mitigated appropriately according to statutory requirements.</p>
Water 2.1 & 2.3	<p>Best-practice construction methods and ongoing monitoring will be undertaken to reduce the risks of over abstraction, negative impacts on groundwater and the impact of flooding during the construction phase. All measures to be in line with the EA's PPGs.</p>
Soil 3	<p>Best-practice mitigation measures would be implemented during the construction phase (stripping, stockpiling, the conservation of topsoil and subsoil, etc). Construction on greenfield land would be avoided where possible, to reduce the impacts on undisturbed soils. Reinstatement of land excavated for the pipeline to minimise land take and disturbance. During operation, careful monitoring of abstraction via the borehole would be implemented to avoid the any impacts on soil subsidence.</p>

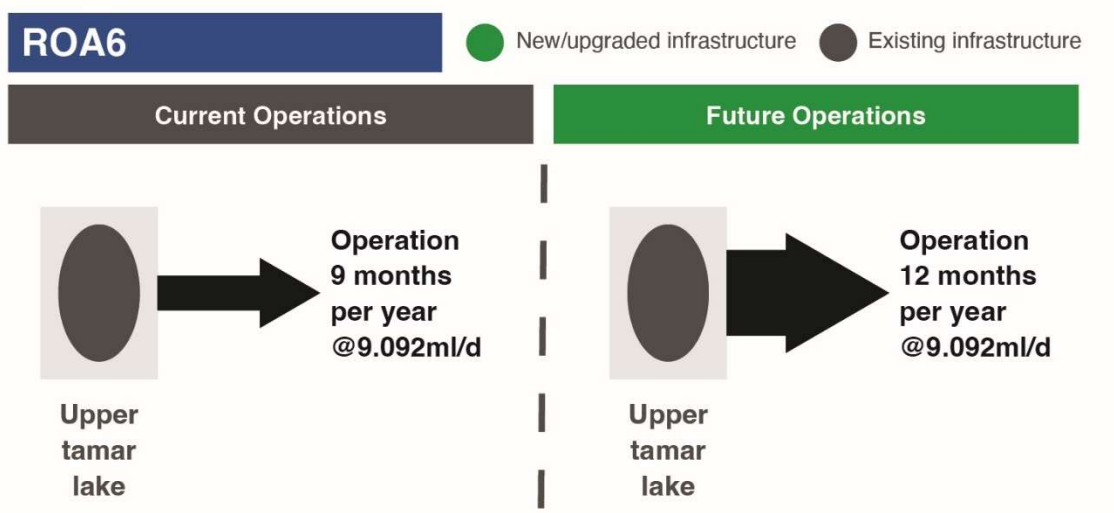
Table 50: ROA15 Mitigation Activities

3.5 ROA6 Upper Tamar Lake increasing annual licence

Scheme type	Surface Water Enhancement
Gains in Water Available For Use	1.00 Ml/d
Biodiversity Net Gain	TBC
Reservoir: Storage Capacity (ML)	Upper Tamar Lake: 1,477 ML
Reservoir Information	Upper Tamar Lake designated as heavily modified, but Upper River Tamar water body not designated artificial or heavily modified. Catchment is made up of hard mudstones, shales, siltstones, sandstones and minor limestones. Land use is predominantly grassland and arable. Catchment area 2,390 ha (approx.).

3.5.1 Description of the option

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 license change will have to be agreed upon 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) action ID: 08SW100019d).



3.5.2 Indicative Costs

Totex expenditure prior to option in use (£m)	Average Incremental Cost (AIC) (p/m3)	Total NPC (£m)	Option benefits lead-in time (Years)
0.077	1.53	0.10	2

Table 51: ROA6 indicative costs

3.5.3 Strategic Environmental Assessment summary table

SEA Topic	SEA Objectives	Short-Term Impact	Long-Term Impact					
Biodiversity, Flora and Fauna	1.1 Protect and enhance designated and non-designated ecological sites	-	-					
	1.2 Protect, conserve and enhance biodiversity, including priority species, vulnerable habitats and habitat connectivity	-	-	+				
	1.3 Reduce the spread or presence of INNS	-	0					
Water	2.1 Protect and enhance the quality of the water environment and water resources	-	-					
	2.2 Increase resilience and reduce flood risk	--	-					
	2.3 Deliver reliable and resilient water supplies	0	-	+				
Soil	3.1 Protect and enhance the functionality, quantity and quality of soils, including the protection of sites of geological importance	0	+					
Air	4.1 Reduce and minimise air emissions	-	0					
Climatic Factors	5.1 Reduce embodied and operational carbon emissions	-	0					
	5.2 Reduce vulnerability to climate change risks and hazards	0	-	+				
Historic Environment	6.1 Conserve, protect and enhance the historic environment, including archaeology	0	0					
Landscape	7.1 Conserve, protect and enhance landscape, townscape and seascape character and visual amenity	0	0					
Population and Human Health	8.1 Maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing	-	0					
	8.2 Maintain and enhance tourism and recreation	-	0					
Material Assets	9.1 Minimise resource use and waste production	-	0					
	9.2 Avoid negative effects on built assets and infrastructure	0	0					
Effect	Major Negative Impact	Moderate Negative Impact	Minor Negative Impact	Neutral	Minor Positive Impact	Moderate Positive Impact	Major Positive Impact	Unknown
Key	---	--	-	0	+	++	+++	?

Table 52: ROA6 SEA summary

3.5.4 Strategic Environmental Assessment Mitigation Table

SEA Objective	Mitigation
Biodiversity 1.1, 1.2 & 1.3	<p>Consultation with statutory bodies would be undertaken to ensure impacts to protected species and habitats are avoided or mitigated appropriately according to statutory requirements.</p> <p>Best practice and consultation of the INNS risk assessment would help minimise spread of INNS. Construction sites to follow best-practice biosecurity measures.</p>
Water 2.1 & 2.2	<p>Best-practice construction methods and ongoing monitoring will be undertaken to reduce the risks of over abstraction, negative impacts on groundwater and the impact of flooding during the construction phase. All measures to be in line with the EA's PPGs.</p>

Table 53: ROA6 Mitigation Activities

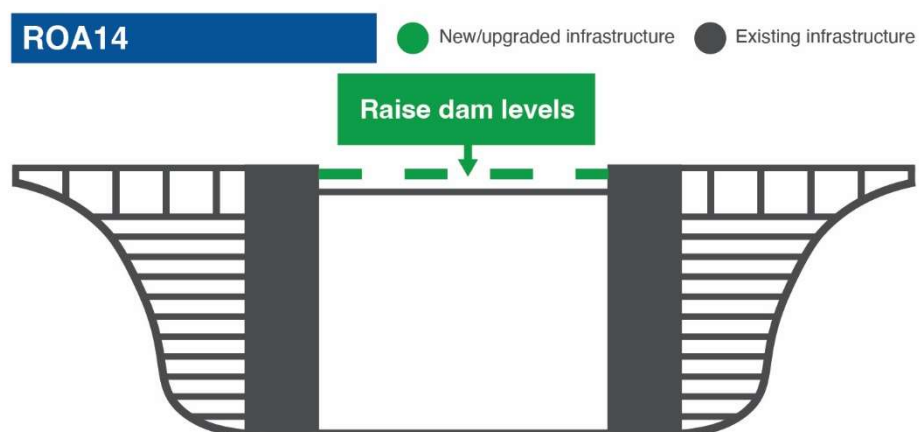
3.6 ROA14 Raise Avon Dam

Scheme type	Reservoir Enlargement
Gains in Water Available For Use	2.50 MI/d
Biodiversity Net Gain	95.52 Ha
Reservoir: Storage Capacity (ML)	Avon Reservoir: 1313
Reservoir Information	Dam type - concrete gravity. Designated as heavily modified. Catchment comprised of Dartmoor granite, Culm Measures and Lower Old Red Sandstone. Land use is rural, grazing and woodland. Catchment area – 1,656 ha (approx.).

3.6.1 Description of the option

Our preference 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 project information suggests that the Avon dam was provisioned for raising to a limited height by stressed cables. A high-level schedule of quantities and method statement were produced and can be provided if required.



3.6.2 Indicative Costs

Totex expenditure prior to option in use (£m)	Average Incremental Cost (AIC) (p/m3)	Total NPC (£m)	Option benefits lead-in time (Years)
60.769	203.00	37.3	5

Table 54: ROA14 indicative costs

3.6.3 Strategic Environmental Assessment summary table

SEA Topic		SEA Objectives				Short-Term Impact	Long-Term Impact	
Biodiversity, Flora and Fauna	1.1 Protect and enhance designated and non-designated ecological sites				-	0		
	1.2 Protect, conserve and enhance biodiversity, including priority species, vulnerable habitats and habitat connectivity				-	+	-	
	1.3 Reduce the spread or presence of INNS				-	---		
Water	2.1 Protect and enhance the quality of the water environment and water resources				-	-		
	2.2 Increase resilience and reduce flood risk				-	+		
	2.3 Deliver reliable and resilient water supplies				0	++		
Soil	3.1 Protect and enhance the functionality, quantity and quality of soils, including the protection of sites of geological importance				-	-		
Air	4.1 Reduce and minimise air emissions				-	0		
Climatic Factors	5.1 Reduce embodied and operational carbon emissions				--	--	+	
	5.2 Reduce vulnerability to climate change risks and hazards				-	++		
Historic Environment	6.1 Conserve, protect and enhance the historic environment, including archaeology				--	--		
Landscape	7.1 Conserve, protect and enhance landscape, townscape and seascape character and visual amenity				-	-	+	
Population and Human Health	8.1 Maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing				-	++	+	
	8.2 Maintain and enhance tourism and recreation				-	+		
Material Assets	9.1 Minimise resource use and waste production				--	0		
	9.2 Avoid negative effects on built assets and infrastructure				-	0		
Effect	Major Negative Impact	Moderate Negative Impact	Minor Negative Impact	Neutral	Minor Positive Impact	Moderate Positive Impact	Major Positive Impact	Unknown
Key	---	--	-	0	+	++	+++	?

Table 55: ROA 14 SEA summary

3.6.4 Strategic Environmental Assessment Mitigation Table

SEA Objective	Mitigation
Biodiversity 1.1, 1.2 & 1.3	<p>Best-practice construction and mitigation methods would be implemented to minimise disturbance effects (e.g. dust suppression and pollution control measures).</p> <p>Where possible, development on priority habitat would be avoided to minimise effects.</p> <p>Where potential major negative impacts on designated and non-designated ecological sites could be expected, CIRIA guidance would be followed to help alleviate impact pathways during construction, e.g. through planning the construction programme to avoid the bird breeding period (March to August inclusive). If construction does occur, additional data could be required to determine presence of qualifying features.</p> <p>Consultation with statutory bodies would be undertaken to ensure impacts to protected species and habitats are avoided or mitigated appropriately according to statutory requirements.</p> <p>Best practice and consultation of the INNS risk assessment would help minimise spread of INNS. Construction sites to follow best-practice biosecurity measures.</p>
Water 2.1 & 2.3	<p>Best-practice construction methods and ongoing monitoring will be undertaken to reduce the risks of over abstraction, negative impacts on groundwater and the impact of flooding during the construction phase. All measures to be in line with the EA's PPGs.</p>
Soil 3	<p>Best-practice mitigation measures would be implemented during the construction phase (stripping, stockpiling, the conservation of topsoil and subsoil, etc). Construction on greenfield land would be avoided where possible, to reduce the impacts on undisturbed soils. Reinstatement of land excavated for the pipeline to minimise land take and disturbance. During operation, careful monitoring of abstraction via the borehole would be implemented to avoid the any impacts on soil subsidence.</p>

Table 56: ROA14 Mitigation Activities

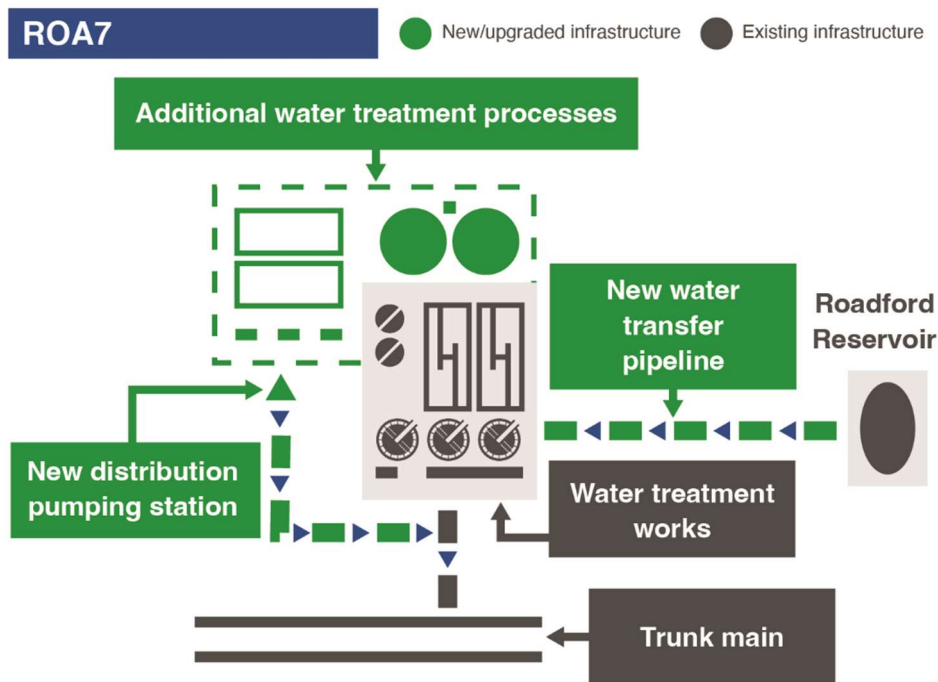
3.7 ROA7 Expansion of Northcombe WTW to 60 MI/d

Scheme type	Water Treatment Works Capacity Increase
Gains in Water Available For Use	5.00 MI/d
Biodiversity Net Gain	TBC

3.7.1 Description of the option

This option involves upgrading the existing water treatment works to make full use of the current abstraction license (60 MI/d) and will include the following:

- Additional treatment processes with DO of 10MLD (including, pumping stations, inlet works, screens, dosing systems, clarifiers, filters, GACs, UV treatment, and Manganese filters)
- Additional sludge treatment and disposal infrastructure (including thickening systems, dewatering systems, and holding tanks)
- Additional buildings and inter-process ancillaries/power supplies
- Consultation with the EA with amendments to abstraction rates



3.7.2 Indicative Costs

Totex expenditure prior to option in use (£m)	Average Incremental Cost (AIC) (p/m3)	Total NPC (£m)	Option benefits lead-in time (Years)
32.154	43.00	35.20	2

Table 57: ROA7 indicative costs

3.7.3 Strategic Environmental Assessment summary table

SEA Topic	SEA Objectives	Short-Term Impact	Long-Term Impact					
Biodiversity, Flora and Fauna	1.1 Protect and enhance designated and non-designated ecological sites	-	0					
	1.2 Protect, conserve and enhance biodiversity, including priority species, vulnerable habitats and habitat connectivity	-	-					
	1.3 Reduce the spread or presence of INNS	-	0					
Water	2.1 Protect and enhance the quality of the water environment and water resources	-	-					
	2.2 Increase resilience and reduce flood risk	0	0					
	2.3 Deliver reliable and resilient water supplies	0	+					
Soil	3.1 Protect and enhance the functionality, quantity and quality of soils, including the protection of sites of geological importance	-	0					
Air	4.1 Reduce and minimise air emissions	-	0					
Climatic Factors	5.1 Reduce embodied and operational carbon emissions	-	--					
	5.2 Reduce vulnerability to climate change risks and hazards	0	- +					
Historic Environment	6.1 Conserve, protect and enhance the historic environment, including archaeology	0	0					
Landscape	7.1 Conserve, protect and enhance landscape, townscape and seascape character and visual amenity	-	0					
Population and Human Health	8.1 Maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing	- +	+					
	8.2 Maintain and enhance tourism and recreation	0	0					
Material Assets	9.1 Minimise resource use and waste production	-	-					
	9.2 Avoid negative effects on built assets and infrastructure	-	0					
Effect	Major Negative Impact	Moderate Negative Impact	Minor Negative Impact	Neutral	Minor Positive Impact	Moderate Positive Impact	Major Positive Impact	Unknown
Key	---	--	-	0	+	++	+++	?

Table 58: ROA7 SEA summary

3.7.4 Strategic Environmental Assessment Mitigation Table

SEA Objective	Mitigation
Biodiversity 1.1, 1.2 & 1.3	<p>Best-practice construction and mitigation methods would be implemented to minimise disturbance effects (e.g., dust suppression and pollution control measures).</p> <p>Trenchless techniques would be implemented, where feasible, to reduce the</p>

SEA Objective	Mitigation
	<p>level of disturbance to habitats within close vicinity of the site.</p> <p>Where possible, development on priority habitat would be avoided to minimise effects.</p> <p>Where potential major negative impacts on designated and non-designated ecological sites could be expected (e.g., Option ISB5), CIRIA guidance would be followed to help alleviate impact pathways during construction, e.g., through planning the construction programme to avoid the bird breeding period (March to August inclusive). If construction does occur, additional data could be required to determine presence of qualifying features.</p> <p>Consultation with statutory bodies would be undertaken to ensure impacts to protected species and habitats are avoided or mitigated appropriately according to statutory requirements.</p> <p>Best practice and consultation of the INNS risk assessment would help minimise spread of INNS. Construction sites to follow best-practice biosecurity measures.</p>
Water 2.1 & 2.2	<p>Best-practice construction methods and ongoing monitoring will be undertaken to reduce the risks of over abstraction, negative impacts on groundwater and the impact of flooding during the construction phase. All measures to be in line with the EA's PPGs.</p>
Soil 3	<p>Best-practice mitigation measures would be implemented during the construction phase (stripping, stockpiling, the conservation of topsoil and subsoil, etc). Construction on greenfield land would be avoided where possible, to reduce the impacts on undisturbed soils. Reinstatement of land excavated for the pipeline to minimise land take and disturbance. During operation, careful monitoring of abstraction via the borehole would be implemented to avoid the any impacts on soil subsidence.</p>

Table 59: ROA7 Mitigation Activities

3.8 ROA16 Littlehempston WTW

Scheme type	Water Treatment Works Capacity Increase
Gains in Water Available For Use	2.50 Ml/d
Biodiversity Net Gain	0.19 Ha

3.8.1 Description of the option

The primary option for upgrading the existing water treatment works to make full use of the current licensed flow will include the following:

- Installation of an additional clarifier with associated ancillaries and telemetry works (including pipework from the distribution tank to the new clarifier, pipework from the new clarifier to the existing rapid gravity filters, and connection from the new clarifier to the existing sludge balancing tank)
- Consultation with the EA on increasing the abstraction rate to the licensed maximum

Investigations are ongoing into the off-site high lift pumping and treated main.

3.8.2 Indicative Costs

Totex expenditure prior to option in use (£m)	Average Incremental Cost (AIC) (p/m ³)	Total NPC (£m)	Option benefits lead-in time (Years)
3.200	10.30	5.10	2

Table 60: ROA16 indicative costs

3.8.3 Strategic Environmental Assessment summary table

SEA Topic	SEA Objectives	Short-Term Impact	Long-Term Impact
Biodiversity, Flora and Fauna	1.1 Protect and enhance designated and non-designated ecological sites	0	0
	1.2 Protect, conserve and enhance biodiversity, including priority species, vulnerable habitats and habitat connectivity	0	0
	1.3 Reduce the spread or presence of INNS	0	0
Water	2.1 Protect and enhance the quality of the water environment and water resources	0	0
	2.2 Increase resilience and reduce flood risk	0	0
	2.3 Deliver reliable and resilient water supplies	0	+
Soil	3.1 Protect and enhance the functionality, quantity and quality of soils, including the protection of sites of geological importance	0	0
Air	4.1 Reduce and minimise air emissions	0	0
Climatic Factors	5.1 Reduce embodied and operational carbon emissions	-	-

SEA Topic		SEA Objectives					Short-Term Impact	Long-Term Impact	
		5.2 Reduce vulnerability to climate change risks and hazards					0	-	+
Historic Environment		6.1 Conserve, protect and enhance the historic environment, including archaeology					0	0	
Landscape		7.1 Conserve, protect and enhance landscape, townscape and seascape character and visual amenity					-	0	
Population and Human Health		8.1 Maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing					-	+	0
		8.2 Maintain and enhance tourism and recreation					0	0	
Material Assets		9.1 Minimise resource use and waste production					-	-	
		9.2 Avoid negative effects on built assets and infrastructure					0	0	
Effect	Major Negative Impact	Moderate Negative Impact	Minor Negative Impact	Neutral	Minor Positive Impact	Moderate Positive Impact	Major Positive Impact	Unknown	
Key	---	--	-	0	+	++	+++	?	

Table 61: ROA16 SEA summary

3.8.4 Strategic Environmental Assessment Mitigation Table

SEA Objective	Mitigation
Biodiversity 1.1	Best-practice construction and mitigation methods would be implemented to minimise disturbance effects (e.g., dust suppression and pollution control measures). Trenchless techniques would be implemented, where feasible, to reduce the level of disturbance to habitats within close vicinity of the site.

Table 62: ROA16 Mitigation Activities

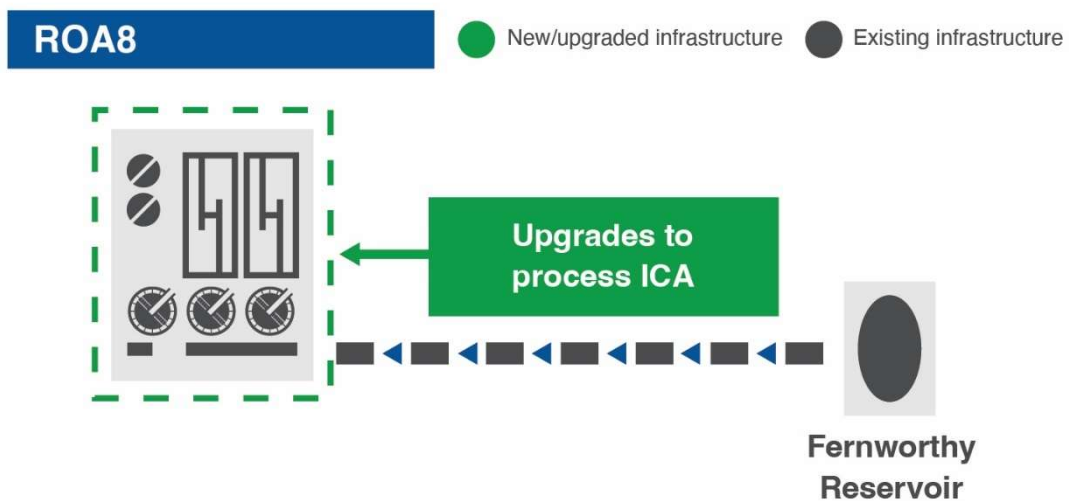
3.9 ROA8 Tottiford WTW - Reduce WTW minimum capacity

Scheme type	Conjunctive Use
Gains in Water Available For Use	1.00 MI/d
Biodiversity Net Gain	TBC

3.9.1 Description of the option

This option will optimise the WTW to work at lower capacities, allowing finer control of the supply, as currently the WTW will treat over and above what the demand is during times of year when demand in the catchment is low (i.e., winter). This enables SWW to optimise the operation of the available water resources in the WRZ and retain more water in the reservoir. It will be comprised of the following:

- A new control valve and actuator on the Fernworthy trunk main
- Modifications to existing treatment process including the sludge scrapers, installation of new variable speed drives (VSDs) at various points within the works, new saturated water isolations valves, and a new static mixer
- Upgrades to software, control and sensing equipment will also be required as well as the replacement of chemical dosing pumps with digital dosing pumps capable of the full range of operation



3.9.2 Indicative Costs

Totex expenditure prior to option in use (£m)	Average Incremental Cost (AIC) (p/m3)	Total NPC (£m)	Option benefits lead-in time (Years)
1.035	25.10	2.00	2

Table 63: ROA 8 indicative costs

3.9.3 Strategic Environmental Assessment summary table

SEA Topic	SEA Objectives					Short-Term Impact	Long-Term Impact	
Biodiversity, Flora and Fauna	1.1 Protect and enhance designated and non-designated ecological sites					-	0	
	1.2 Protect, conserve and enhance biodiversity, including priority species, vulnerable habitats and habitat connectivity					0	0	
	1.3 Reduce the spread or presence of INNS					0	0	
Water	2.1 Protect and enhance the quality of the water environment and water resources					0	0	
	2.2 Increase resilience and reduce flood risk					0	+	
	2.3 Deliver reliable and resilient water supplies					0	+	
Soil	3.1 Protect and enhance the functionality, quantity and quality of soils, including the protection of sites of geological importance					0	0	
Air	4.1 Reduce and minimise air emissions					0	+ -	
Climatic Factors	5.1 Reduce embodied and operational carbon emissions					0	0	
	5.2 Reduce vulnerability to climate change risks and hazards					0	- +	
Historic Environment	6.1 Conserve, protect and enhance the historic environment, including archaeology					0	0	
Landscape	7.1 Conserve, protect and enhance landscape, townscape and seascape character and visual amenity					0	0	
Population and Human Health	8.1 Maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing					0	0	
	8.2 Maintain and enhance tourism and recreation					0	0	
Material Assets	9.1 Minimise resource use and waste production					0	0	
	9.2 Avoid negative effects on built assets and infrastructure					0	0	
Effect	Major Negative Impact	Moderate Negative Impact	Minor Negative Impact	Neutral	Minor Positive Impact	Moderate Positive Impact	Major Positive Impact	Unknown
Key	---	--	-	0	+	++	+++	?

Table 64: ROA8 SEA summary

3.9.4 Strategic Environmental Assessment Mitigation Table

SEA Objective	Mitigation
Water 2.2 & 2.3	During operation, an ongoing review of water quality should be conducted to ensure no long-term effects.
Air 4	Best-practice construction and mitigation methods would be implemented to minimise disturbance effects (e.g., dust suppression and pollution control measures).

Table 65: ROA8 Mitigation Activities

3.10 ROA10 Avon WTW - Reduce WTW minimum capacity

Scheme type	Conjunctive Use
Gains in Water Available For Use	1.00 Ml/d
Biodiversity Net Gain	TBC

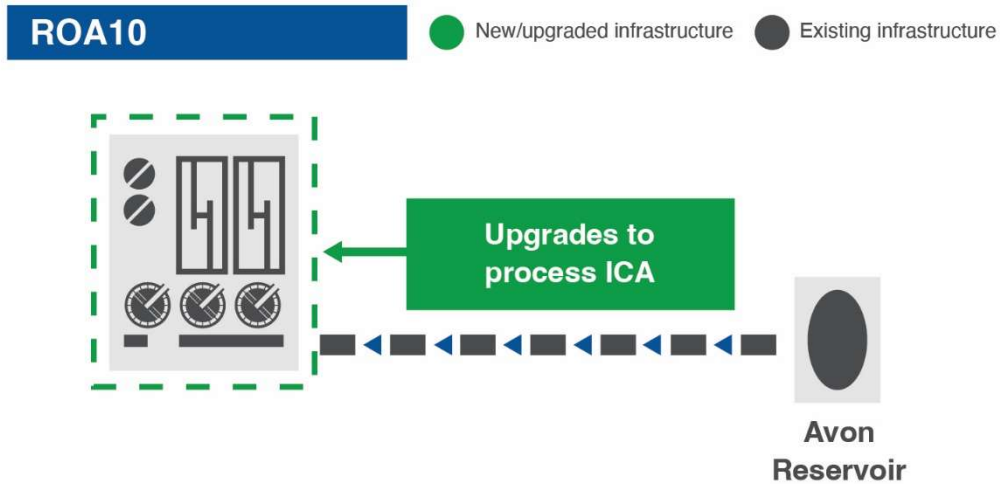
3.10.1 Description of the option

This option will optimise the WTW to work at lower capacities allowing finer control of the supply, as currently the WTW will treat over and above what the demand is during times of year when demand in the catchment is low (i.e., winter). This enables SWW to optimise the operation of the available water resources in the WRZ and preserves water in the reservoir.

Automatic variable speed drives (VSDs) will be provided to give greater control of flows at various points within the works including the supernatant return pumps and clean backwash transfer pumps.

It includes a new permanent powder-activated carbon dosing package, two new polymer dosing spargers at the flow split chamber and a new additional sludge draw-off valve.

Upgrades to software, control and sensing equipment will also be required as well as the replacement of chemical dosing pumps with digital dosing pumps capable of the full range of operation.



3.10.2 Indicative Costs

Totex expenditure prior to option in use (£m)	Average Incremental Cost (AIC) (p/m3)	Total NPC (£m)	Option benefits lead-in time (Years)
0.896	22.20	1.80	2

Table 66: ROA10 indicative costs

3.10.3 Strategic Environmental Assessment summary table

SEA Topic	SEA Objectives				Short-Term Impact	Long-Term Impact		
Biodiversity, Flora and Fauna	1.1 Protect and enhance designated and non-designated ecological sites				-	0		
	1.2 Protect, conserve and enhance biodiversity, including priority species, vulnerable habitats and habitat connectivity				0	-		
	1.3 Reduce the spread or presence of INNS				0	0		
Water	2.1 Protect and enhance the quality of the water environment and water resources				0	+		
	2.2 Increase resilience and reduce flood risk				0	- +		
	2.3 Deliver reliable and resilient water supplies				0	+		
Soil	3.1 Protect and enhance the functionality, quantity and quality of soils, including the protection of sites of geological importance				0	0		
Air	4.1 Reduce and minimise air emissions				0	+ -		
Climatic Factors	5.1 Reduce embodied and operational carbon emissions				0	0		
	5.2 Reduce vulnerability to climate change risks and hazards				0	- +		
Historic Environment	6.1 Conserve, protect and enhance the historic environment, including archaeology				0	0		
Landscape	7.1 Conserve, protect and enhance landscape, townscape and seascape character and visual amenity				0	0		
Population and Human Health	8.1 Maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing				0	0		
	8.2 Maintain and enhance tourism and recreation				0	0		
Material Assets	9.1 Minimise resource use and waste production				0	0		
	9.2 Avoid negative effects on built assets and infrastructure				0	0		
Effect	Major Negative Impact	Moderate Negative Impact	Minor Negative Impact	Neutral	Minor Positive Impact	Moderate Positive Impact	Major Positive Impact	Unknown
Key	---	--	-	0	+	++	+++	?

Table 67: ROA10 SEA summary

3.10.4 Strategic Environmental Assessment Mitigation Table

SEA Objective	Mitigation
Water 2.1, 2.2 & 2.3	<p>During operation, ongoing reviews of water levels in the dam should be carried out in order to minimise the risk of future flood events, and abstraction conditions may need to be adjusted if impacted by operational activities.</p> <p>During operation, an ongoing review of water quality should be conducted to ensure no long-term effects.</p>
Air 4	<p>Best-practice construction and mitigation methods would be implemented to minimise disturbance effects (e.g. dust suppression and pollution control measures).</p>
Biodiversity 1.1	<p>Best-practice construction and mitigation methods would be implemented to minimise disturbance effects (e.g. dust suppression and pollution control measures).</p> <p>Trenchless techniques would be implemented, where feasible, to reduce the level of disturbance to habitats within close vicinity of the site.</p>

Table 68: ROA10 Mitigation Activities

3.11 ROA11 Meldon WTW - Reduce WTW minimum capacity

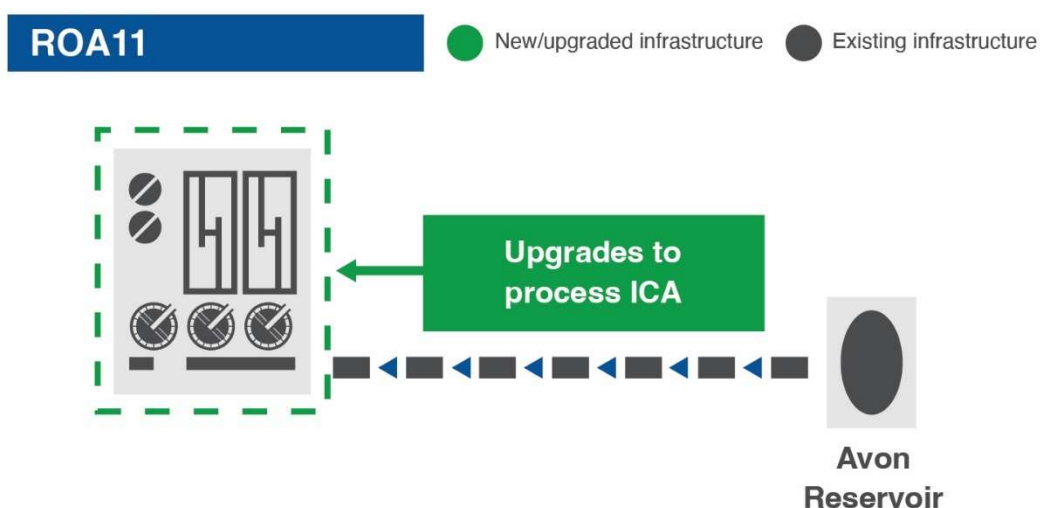
Scheme type	Conjunctive Use
Gains in Water Available For Use	1.00 MI/d
Biodiversity Net Gain	TBC

3.11.1 Description of the option

This option will optimise the WTW to work at lower capacities allowing finer control of the supply, as currently the WTW will treat over and above what the demand is during times of year when demand in the catchment is low (i.e. winter). This enables SWW to optimise the operation of the available water resources in the WRZ and maintain resources in Avon reservoir.

Automatic variable speed drives (VSDs) will be provided to give greater control of flows at various points within the works including the supernatant return pumps and clean backwash transfer pumps.

Upgrades to software, control and sensing equipment will also be required as well as the replacement of chemical dosing pumps with digital dosing pumps capable of the full range of operation.



3.11.2 Indicative Costs

Totex expenditure prior to option in use (£m)	Average Incremental Cost (AIC) (p/m3)	Total NPC (£m)	Option benefits lead-in time (Years)
1.035	25.10	2.00	2

Table 69: ROA11 indicative costs

3.11.3 Strategic Environmental Assessment summary table

SEA Topic	SEA Objectives				Short-Term Impact	Long-Term Impact		
Biodiversity, Flora and Fauna	1.1 Protect and enhance designated and non-designated ecological sites				0	0		
	1.2 Protect, conserve and enhance biodiversity, including priority species, vulnerable habitats and habitat connectivity				0	0		
	1.3 Reduce the spread or presence of INNS				0	0		
Water	2.1 Protect and enhance the quality of the water environment and water resources				0	+		
	2.2 Increase resilience and reduce flood risk				0	-	+	
	2.3 Deliver reliable and resilient water supplies				0	+		
Soil	3.1 Protect and enhance the functionality, quantity and quality of soils, including the protection of sites of geological importance				0	0		
Air	4.1 Reduce and minimise air emissions				0	-	+	
Climatic Factors	5.1 Reduce embodied and operational carbon emissions				0	-		
	5.2 Reduce vulnerability to climate change risks and hazards				0	-	+	
Historic Environment	6.1 Conserve, protect and enhance the historic environment, including archaeology				0	0		
Landscape	7.1 Conserve, protect and enhance landscape, townscape and seascape character and visual amenity				0	0		
Population and Human Health	8.1 Maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing				0	0		
	8.2 Maintain and enhance tourism and recreation				0	0		
Material Assets	9.1 Minimise resource use and waste production				0	0		
	9.2 Avoid negative effects on built assets and infrastructure				0	+		
Effect	Major Negative Impact	Moderate Negative Impact	Minor Negative Impact	Neutral	Minor Positive Impact	Moderate Positive Impact	Major Positive Impact	Unknown
Key	---	--	-	0	+	++	+++	?

Table 70: ROA11 SEA summary

3.11.4 Strategic Environmental Assessment Mitigation Table

SEA Objective	Mitigation
Water 2.1, 2.2 & 2.3	<p>During operation, ongoing reviews of water levels in the dam should be carried out in order to minimise the risk of future flood events, and abstraction conditions may need to be adjusted if impacted by operational activities.</p> <p>During operation, an ongoing review of water quality should be conducted to ensure no long-term effects.</p>
Air 4	<p>Best-practice construction and mitigation methods would be implemented to minimise disturbance effects (e.g. dust suppression and pollution control measures).</p>

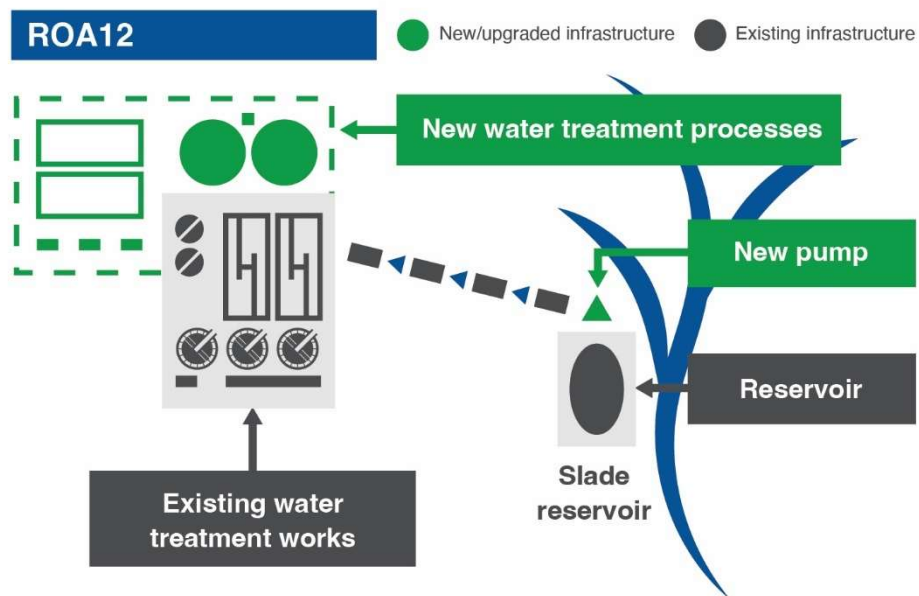
Table 71: ROA11 Mitigation Activities

3.12 ROA12 Slade and Horedown WTW (GAC)

Scheme type	Water Treatment Works Capacity Increase
Gains in Water Available For Use	1.00 MI/d
Biodiversity Net Gain	17.36 Ha
Reservoir: Storage Capacity (ML)	Slade Reservoir: 220
Reservoir Information	Dam type - earth embankment. Designated as heavily modified / artificial.

3.12.1 Description of the option

This option is to install a new pumping station at Slade reservoir and a new 4 MI/d granular activated carbon (GAC) plant at Horedown WTW. This will increase works output and allow a greater range of waters to be treated.



3.12.2 Indicative Costs

Totex expenditure prior to option in use (£m)	Average Incremental Cost (AIC) (p/m3)	Total NPC (£m)	Option benefits lead-in time (Years)
1.197	38.40	3.10	2

Table 72:ROA12 indicative costs

3.12.3 Strategic Environmental Assessment summary table

SEA Topic		SEA Objectives				Short-Term Impact	Long-Term Impact	
Biodiversity, Flora and Fauna	1.1 Protect and enhance designated and non-designated ecological sites				-	0		
	1.2 Protect, conserve and enhance biodiversity, including priority species, vulnerable habitats and habitat connectivity				--	--	+	
	1.3 Reduce the spread or presence of INNS				-	-		
Water	2.1 Protect and enhance the quality of the water environment and water resources				-	-	+	
	2.2 Increase resilience and reduce flood risk				--	--	+	
	2.3 Deliver reliable and resilient water supplies				0	-	+	
Soil	3.1 Protect and enhance the functionality, quantity and quality of soils, including the protection of sites of geological importance				--	--		
Air	4.1 Reduce and minimise air emissions				--	-		
Climatic Factors	5.1 Reduce embodied and operational carbon emissions				-	0		
	5.2 Reduce vulnerability to climate change risks and hazards				-	-	++	
Historic Environment	6.1 Conserve, protect and enhance the historic environment, including archaeology				-	0		
Landscape	7.1 Conserve, protect and enhance landscape, townscape and seascape character and visual amenity				--	--		
Population and Human Health	8.1 Maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing				-	+	0	
	8.2 Maintain and enhance tourism and recreation				--	-		
Material Assets	9.1 Minimise resource use and waste production				--	-		
	9.2 Avoid negative effects on built assets and infrastructure				--	0		
Effect	Major Negative Impact	Moderate Negative Impact	Minor Negative Impact	Neutral	Minor Positive Impact	Moderate Positive Impact	Major Positive Impact	Unknown
Key	---	--	-	0	+	++	+++	?

Table 73: ROA12 SEA summary

3.12.4 Strategic Environmental Assessment Mitigation Table

SEA Objective	Mitigation
Water 2.1, 2.2 & 2.3	Best-practice construction methods and ongoing monitoring will be undertaken to reduce the risks of over abstraction, negative impacts on groundwater and the impact of flooding during the construction phase.
Air 4	Best-practice construction and mitigation methods would be implemented to minimise disturbance effects (e.g. dust suppression and pollution control measures).
Biodiversity 1.1 & 1.2	<p>Best-practice construction and mitigation methods would be implemented to minimise disturbance effects (e.g. dust suppression and pollution control measures).</p> <p>Trenchless techniques would be implemented, where feasible, to reduce the level of disturbance to habitats within close vicinity of the site. Where possible, development on priority habitat would be avoided to minimise effects.</p> <p>Where potential major negative impacts on designated and non-designated ecological sites could be expected (e.g. Option ISB5), CIRIA guidance would be followed to help alleviate impact pathways during construction, e.g. through planning the construction programme to avoid the bird breeding period (March to August inclusive). If construction does occur, additional data could be required to determine presence of qualifying features.</p> <p>Habitat would be reinstated on completion of developments or, if impacts are unavoidable, compensatory habitat to be considered to replace damaged or lost habitat in line with Biodiversity Net Gain requirements.</p>
Soil 3	Best-practice mitigation measures would be implemented during the construction phase (stripping, stockpiling, the conservation of topsoil and subsoil, etc). Construction on greenfield land would be avoided where possible, to reduce the impacts on undisturbed soils. Reinstatement of land excavated for the pipeline to minimise land take and disturbance. During operation, careful monitoring of abstraction via the borehole would be implemented to avoid the any impacts on soil subsidence.

Table 74: ROA12 Mitigation Activities

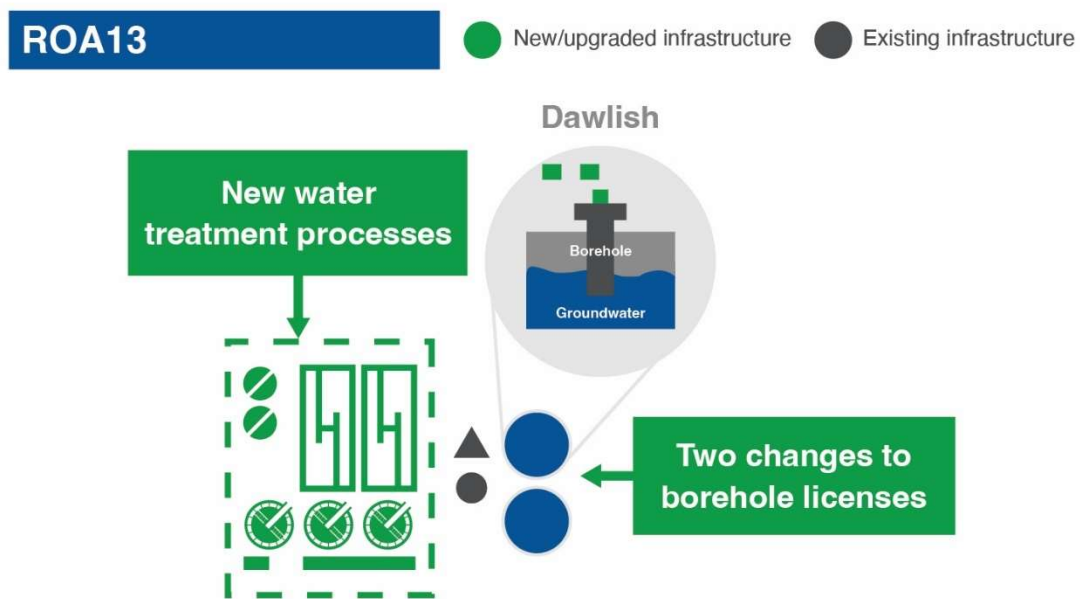
3.13 ROA13 Duckaller and Vennbridge

Scheme type	Groundwater Enhancement
Gains in Water Available For Use	0.40 MI/d
Biodiversity Net Gain	0.36 Ha

3.13.1 Description of the option

This option is based on proposed changes to two abstraction licenses and the installation of a 4 MI/d nitrate-removal plant at Duckaller pumping station to facilitate full use of sources.

The abstraction license change is to be agreed upon with the EA in conjunction with environmental investigations and hydrological modelling.



3.13.2 Indicative Costs

Totex expenditure prior to option in use (£m)	Average Incremental Cost (AIC) (p/m3)	Total NPC (£m)	Option benefits lead-in time (Years)
26.338	1354.7	41.30	3

Table 75: ROA 13 indicative costs

3.13.3 Strategic Environmental Assessment summary table

SEA Topic		SEA Objectives				Short-Term Impact	Long-Term Impact	
Biodiversity, Flora and Fauna	1.1 Protect and enhance designated and non-designated ecological sites				-	-		
	1.2 Protect, conserve and enhance biodiversity, including priority species, vulnerable habitats and habitat connectivity				-	-		
	1.3 Reduce the spread or presence of INNS				0	-		
Water	2.1 Protect and enhance the quality of the water environment and water resources				-	+		
	2.2 Increase resilience and reduce flood risk				-	+		
	2.3 Deliver reliable and resilient water supplies				0	++		
Soil	3.1 Protect and enhance the functionality, quantity and quality of soils, including the protection of sites of geological importance				0	--		
Air	4.1 Reduce and minimise air emissions				-	-		
Climatic Factors	5.1 Reduce embodied and operational carbon emissions				-	0		
	5.2 Reduce vulnerability to climate change risks and hazards				0	- +		
Historic Environment	6.1 Conserve, protect and enhance the historic environment, including archaeology				0	0		
Landscape	7.1 Conserve, protect and enhance landscape, townscape and seascape character and visual amenity				-	0		
Population and Human Health	8.1 Maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing				+ -	+		
	8.2 Maintain and enhance tourism and recreation				-	0		
Material Assets	9.1 Minimise resource use and waste production				-	-		
	9.2 Avoid negative effects on built assets and infrastructure				--	0		
Effect	Major Negative Impact	Moderate Negative Impact	Minor Negative Impact	Neutral	Minor Positive Impact	Moderate Positive Impact	Major Positive Impact	Unknown
Key	---	--	-	0	+	++	+++	?

Table 76: ROA13 SEA summary

3.13.4 Strategic Environmental Assessment Mitigation Table

SEA Objective	Mitigation
Water 2.1, 2.2 & 2.3	Best-practice construction methods and ongoing monitoring will be undertaken to reduce the risks of over abstraction, negative impacts on groundwater and the impact of flooding during the construction phase.
Air 4	Best-practice construction and mitigation methods would be implemented to minimise disturbance effects (e.g. dust suppression and pollution control measures).
Biodiversity 1.1, 1.2 & 1.3	<p>Best-practice construction and mitigation methods would be implemented to minimise disturbance effects (e.g. dust suppression and pollution control measures).</p> <p>Trenchless techniques would be implemented, where feasible, to reduce the level of disturbance to habitats within close vicinity of the site.</p> <p>Where possible, development on priority habitat would be avoided to minimise effects.</p> <p>Where potential major negative impacts on designated and non-designated ecological sites could be expected (e.g. Option ISB5), CIRIA guidance would be followed to help alleviate impact pathways during construction, e.g. through planning the construction programme to avoid the bird breeding period (March to August inclusive). If construction does occur, additional data could be required to determine presence of qualifying features.</p> <p>Habitat would be reinstated on completion of developments or, if impacts are unavoidable, compensatory habitat to be considered to replace damaged or lost habitat in line with Biodiversity Net Gain requirements.</p>
Soil 3	Best-practice mitigation measures would be implemented during the construction phase (stripping, stockpiling, the conservation of topsoil and subsoil, etc). Construction on greenfield land would be avoided where possible, to reduce the impacts on undisturbed soils. Reinstatement of land excavated for the pipeline to minimise land take and disturbance. During operation, careful monitoring of abstraction via the borehole would be implemented to avoid the any impacts on soil subsidence.

Table 77: ROA13 Mitigation Activities

4 Wimbleball Water Resource Zone

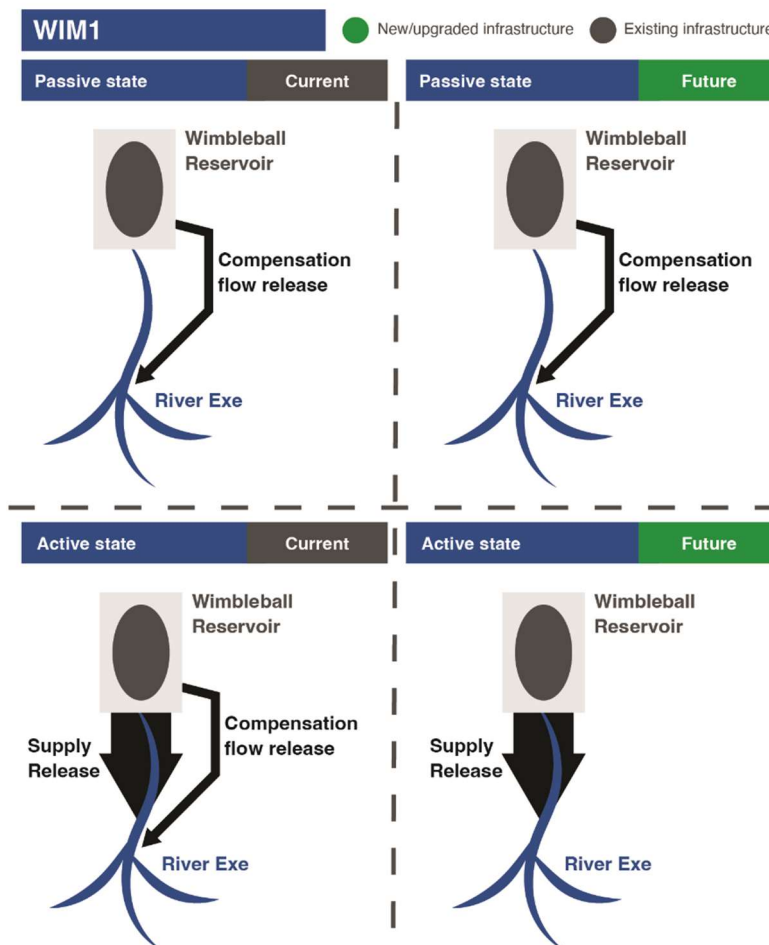
4.1 WIM1 Abstraction of Wimbleball compensation flow at Northbridge when making a supply releases

Scheme type	Surface Water Enhancement
Gains in Water Available For Use	1.00 Ml/d
Biodiversity Net Gain	TBC
Reservoir: Storage Capacity (ML)	Wimbleball Reservoir: 21,320 ML
Reservoir Information	Dam type - concrete buttress. Designated as heavily modified. Land use predominantly grassland. Catchment area – 2,940 ha (approx.).

4.1.1 Description of the option

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 license 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 deliver 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.



4.1.2 Indicative Costs

Totex expenditure prior to option in use (£m)	Average Incremental Cost (AIC) (p/m3)	Total NPC (£m)	Option benefits lead-in time (Years)
0.098	4.70	0.80	2

Table 78: WIM1 indicative costs

4.1.3 Strategic Environmental Assessment summary table

SEA Topic	SEA Objectives	Short-Term Impact	Long-Term Impact
Biodiversity, Flora and Fauna	1.1 Protect and enhance designated and non-designated ecological sites	0	0
	1.2 Protect, conserve and enhance biodiversity, including priority species, vulnerable habitats and habitat connectivity	0	-
	1.3 Reduce the spread or presence of INNS	0	0
Water	2.1 Protect and enhance the quality of the water environment and water resources	0	--
	2.2 Increase resilience and reduce flood risk	0	0
	2.3 Deliver reliable and resilient water supplies	0	-- +
Soil	3.1 Protect and enhance the functionality, quantity and quality of soils, including the protection of sites of geological importance	0	0
Air	4.1 Reduce and minimise air emissions	0	0
Climatic Factors	5.1 Reduce embodied and operational carbon emissions	0	-
	5.2 Reduce vulnerability to climate change risks and hazards	0	- +
Historic Environment	6.1 Conserve, protect and enhance the historic environment, including archaeology	0	0
Landscape	7.1 Conserve, protect and enhance landscape, townscape and seascape character and visual amenity	0	0
Population and Human Health	8.1 Maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing	+	0
	8.2 Maintain and enhance tourism and recreation	0	-
Material Assets	9.1 Minimise resource use and waste production	0	0
	9.2 Avoid negative effects on built assets and infrastructure	0	0

SEA Topic	SEA Objectives							Short-Term Impact	Long-Term Impact
Effect	Major Negative Impact	Moderate Negative Impact	Minor Negative Impact	Neutral	Minor Positive Impact	Moderate Positive Impact	Major Positive Impact	Unknown	
Key	---	--	-	0	+	++	+++	?	

Table 79: WIM1 SEA summary

4.1.4 Strategic Environmental Assessment Mitigation Table

SEA Objective	Mitigation
Water 2.1 & 2.3	Ongoing monitoring will be undertaken to reduce the risks of over abstraction and negative impacts on groundwater. All measures to be in line with the EA's PPGs.

Table 80: WIM1 Mitigation Activities

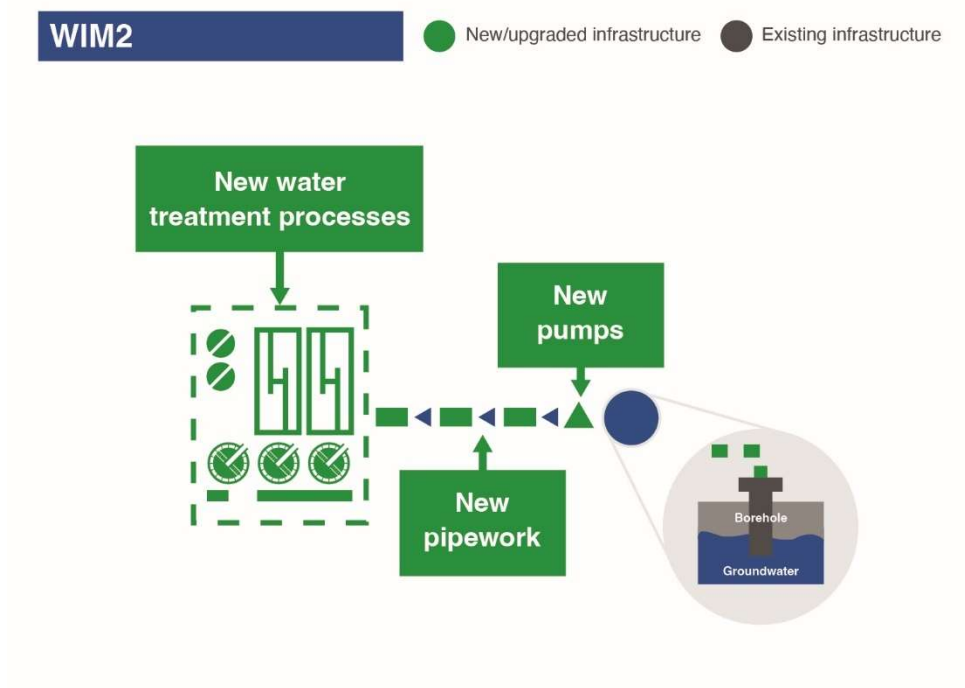
4.2 WIM2 Sidford borehole commissioning

Scheme type	New Groundwater
Gains in Water Available For Use	1.50 Ml/d
Biodiversity Net Gain	TBC

4.2.1 Description of the option

This option will be centred on reinstating an existing borehole in Sidford including the following:

- New pumps and headworks
- A new control and monitoring system
- A new groundwater source treatment system, including chlorination, Iron, and Manganese removal systems
- New delivery pipework from borehole to treatment
- A new power supply



4.2.2 Indicative Costs

Totex expenditure prior to option in use (£m)	Average Incremental Cost (AIC) (p/m3)	Total NPC (£m)	Option benefits lead-in time (Years)
17.917	239.40	28.30	3

Table 81: WIM2 indicative costs

4.2.3 Strategic Environmental Assessment summary table

SEA Topic		SEA Objectives				Short-Term Impact	Long-Term Impact	
Biodiversity, Flora and Fauna	1.1 Protect and enhance designated and non-designated ecological sites				0	0		
	1.2 Protect, conserve and enhance biodiversity, including priority species, vulnerable habitats and habitat connectivity				-	-		
	1.3 Reduce the spread or presence of INNS				-	0		
Water	2.1 Protect and enhance the quality of the water environment and water resources				-	-		
	2.2 Increase resilience and reduce flood risk				0	0		
	2.3 Deliver reliable and resilient water supplies				0	-	+	
Soil	3.1 Protect and enhance the functionality, quantity and quality of soils, including the protection of sites of geological importance				-	0		
Air	4.1 Reduce and minimise air emissions				-	0		
Climatic Factors	5.1 Reduce embodied and operational carbon emissions				-	-		
	5.2 Reduce vulnerability to climate change risks and hazards				0	-		
Historic Environment	6.1 Conserve, protect and enhance the historic environment, including archaeology				0	0		
Landscape	7.1 Conserve, protect and enhance landscape, townscape and seascape character and visual amenity				0	0		
Population and Human Health	8.1 Maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing				-	+	+	
	8.2 Maintain and enhance tourism and recreation				-	0		
Material Assets	9.1 Minimise resource use and waste production				-	-		
	9.2 Avoid negative effects on built assets and infrastructure				0	0		
Effect	Major Negative Impact	Moderate Negative Impact	Minor Negative Impact	Neutral	Minor Positive Impact	Moderate Positive Impact	Major Positive Impact	Unknown
Key	---	--	-	0	+	++	+++	?

Table 82: WIM2 SEA summary

4.2.4 Strategic Environmental Assessment Mitigation Table

SEA Objective	Mitigation
Water 2.2 & 2.3	Best-practice construction methods and ongoing monitoring will be undertaken to reduce the risks of over abstraction, negative impacts on groundwater and the impact of flooding during the construction phase. All measures to be in line with the EA's PPGs.

Table 83: WIM2 Mitigation Activities

4.3 WIM4 Wilmington Springs annual abstraction increase

Scheme type	Groundwater Enhancement
Gains in Water Available For Use	0.20 Ml/d
Biodiversity Net Gain	TBC

4.3.1 Description of the option

This option is centred on increasing the frequency of abstractions from Wilmington Springs, from 9 months to 12 months of the year. The abstraction license change will have to be agreed upon with the EA in conjunction with environmental investigations, long term monitoring and hydrological modelling.

4.3.2 Indicative Costs

Totex expenditure prior to option in use (£m)	Average Incremental Cost (AIC) (p/m3)	Total NPC (£m)	Option benefits lead-in time (Years)
0.048	3.58	0.10	2

Table 84: WIM 4

4.3.3 Strategic Environmental Assessment summary table

SEA Topic	SEA Objectives	Short-Term Impact	Long-Term Impact
Biodiversity, Flora and Fauna	1.1 Protect and enhance designated and non-designated ecological sites	0	0
	1.2 Protect, conserve and enhance biodiversity, including priority species, vulnerable habitats and habitat connectivity	0	-
	1.3 Reduce the spread or presence of INNS	0	0
Water	2.1 Protect and enhance the quality of the water environment and water resources	0	-
	2.2 Increase resilience and reduce flood risk	0	0
	2.3 Deliver reliable and resilient water supplies	0	- +
Soil	3.1 Protect and enhance the functionality, quantity and quality of soils, including the protection of sites of geological importance	0	0
Air	4.1 Reduce and minimise air emissions	0	0
Climatic Factors	5.1 Reduce embodied and operational carbon emissions	0	-
	5.2 Reduce vulnerability to climate change risks and hazards	0	-
Historic Environment	6.1 Conserve, protect and enhance the historic environment, including archaeology	0	0

SEA Topic	SEA Objectives							Short-Term Impact	Long-Term Impact
Landscape	7.1 Conserve, protect and enhance landscape, townscape and seascape character and visual amenity							0	0
Population and Human Health	8.1 Maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing							0	0
	8.2 Maintain and enhance tourism and recreation							0	0
Material Assets	9.1 Minimise resource use and waste production							0	0
	9.2 Avoid negative effects on built assets and infrastructure							0	0
Effect	Major Negative Impact	Moderate Negative Impact	Minor Negative Impact	Neutral	Minor Positive Impact	Moderate Positive Impact	Major Positive Impact	Unknown	
Key	---	--	-	0	+	++	+++	?	

Table 85: WIM4 SEA summary

4.3.4 Strategic Environmental Assessment Mitigation Table

SEA Objective	Mitigation
Water 2.2 & 2.3	During operation, the timing of abstraction should be monitored to reduce impacts.

Table 86: WIM4 Mitigation Activities

4.4 WIM8 Brampford Speke borehole

Scheme type	New Groundwater
Gains in Water Available For Use	2.00 Ml/d
Biodiversity Net Gain	TBC

4.4.1 Description of the option

Further engineering and commissioning work will be required to enable permanent use of the existing borehole, as well as license changes to be agreed upon with the EA in conjunction with environmental investigations and hydrological modelling.

The current WINEP19 investigation will ensure that the new license will be improved and more sustainable.

4.4.2 Indicative Costs

Totex expenditure prior to option in use (£m)	Average Incremental Cost (AIC) (p/m3)	Total NPC (£m)	Option benefits lead-in time (Years)
0.047	8.71	1.40	2

Table 87: WIM 8 indicative costs

4.4.3 Strategic Environmental Assessment summary table

SEA Topic	SEA Objectives	Short-Term Impact	Long-Term Impact
Biodiversity, Flora and Fauna	1.1 Protect and enhance designated and non-designated ecological sites	0	0
	1.2 Protect, conserve and enhance biodiversity, including priority species, vulnerable habitats and habitat connectivity	0	- +
	1.3 Reduce the spread or presence of INNS	0	0
Water	2.1 Protect and enhance the quality of the water environment and water resources	0	- +
	2.2 Increase resilience and reduce flood risk	0	0
	2.3 Deliver reliable and resilient water supplies	0	- +
Soil	3.1 Protect and enhance the functionality, quantity and quality of soils, including the protection of sites of geological importance	0	0
Air	4.1 Reduce and minimise air emissions	0	0
Climatic Factors	5.1 Reduce embodied and operational carbon emissions	0	-
	5.2 Reduce vulnerability to climate change risks and hazards	0	- +
Historic Environment	6.1 Conserve, protect and enhance the historic environment, including archaeology	0	0

SEA Topic	SEA Objectives							Short-Term Impact	Long-Term Impact
Landscape	7.1 Conserve, protect and enhance landscape, townscape and seascape character and visual amenity							0	0
Population and Human Health	8.1 Maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing							0	+
	8.2 Maintain and enhance tourism and recreation							0	0
Material Assets	9.1 Minimise resource use and waste production							0	-
	9.2 Avoid negative effects on built assets and infrastructure							0	0
Effect	Major Negative Impact	Moderate Negative Impact	Minor Negative Impact	Neutral	Minor Positive Impact	Moderate Positive Impact	Major Positive Impact	Unknown	
Key	---	--	-	0	+	++	+++	?	

Table 88: WIM8 SEA summary

4.4.4 Strategic Environmental Assessment Mitigation Table

SEA Objective	Mitigation
Water 2.1 & 2.2	Best-practice construction methods and ongoing monitoring will be undertaken to reduce the risks of over abstraction, negative impacts on groundwater and the impact of flooding during the construction phase.
Biodiversity 1.2	<p>Best-practice construction and mitigation methods would be implemented to minimise disturbance effects (e.g. dust suppression and pollution control measures).</p> <p>Where possible, development on priority habitat would be avoided to minimise effects. For various options, ecology surveys would be required at future design stages to determine effects and mitigation required.</p> <p>Measures from the Construction Environmental Management Plan (CEMP) would be followed to ensure compliance and best practice. Trenchless techniques would be implemented, where feasible, to reduce the level of disturbance to habitats within close vicinity of the site.</p>

Table 89: WIM8 Mitigation Activities

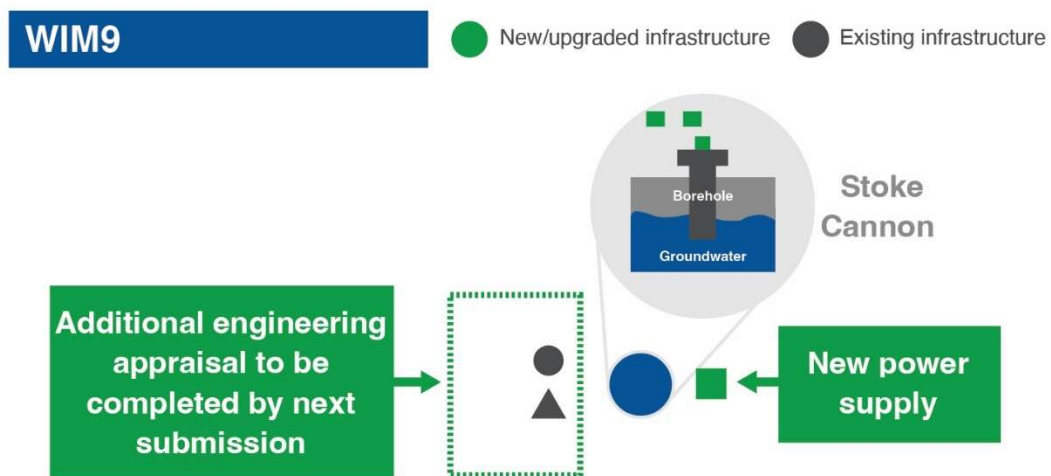
4.5 WIM9 Stoke Canon borehole

Scheme type	New Groundwater
Gains in Water Available For Use	2.00 Ml/d
Biodiversity Net Gain	TBC

4.5.1 Description of the option

Further engineering and commissioning work will be required to enable permanent use of the existing borehole as well as license changes to be agreed upon with the EA in conjunction with environmental investigations and hydrological modelling. Engineering works will include the provision of a permanent power supply.

The current WINEP19 investigation will ensure that the new license will be improved and more sustainable.



4.5.2 Indicative Costs

Totex expenditure prior to option in use (£m)	Average Incremental Cost (AIC) (p/m3)	Total NPC (£m)	Option benefits lead-in time (Years)
0.147	9.82	1.60	2

Table 90: WIM9 indicative costs

4.5.3 Strategic Environmental Assessment summary table

SEA Topic		SEA Objectives				Short-Term Impact	Long-Term Impact	
Biodiversity, Flora and Fauna	1.1 Protect and enhance designated and non-designated ecological sites				0	0		
	1.2 Protect, conserve and enhance biodiversity, including priority species, vulnerable habitats and habitat connectivity				0	-	+	
	1.3 Reduce the spread or presence of INNS				0	0		
Water	2.1 Protect and enhance the quality of the water environment and water resources				0	-	+	
	2.2 Increase resilience and reduce flood risk				0	0		
	2.3 Deliver reliable and resilient water supplies				0	-	+	
Soil	3.1 Protect and enhance the functionality, quantity and quality of soils, including the protection of sites of geological importance				0	0		
Air	4.1 Reduce and minimise air emissions				-	0		
Climatic Factors	5.1 Reduce embodied and operational carbon emissions				-	-		
	5.2 Reduce vulnerability to climate change risks and hazards				0	-	+	
Historic Environment	6.1 Conserve, protect and enhance the historic environment, including archaeology				-	0		
Landscape	7.1 Conserve, protect and enhance landscape, townscape and seascape character and visual amenity				0	0		
Population and Human Health	8.1 Maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing				+	+		
	8.2 Maintain and enhance tourism and recreation				0	0		
Material Assets	9.1 Minimise resource use and waste production				-	-		
	9.2 Avoid negative effects on built assets and infrastructure				0	0		
Effect	Major Negative Impact	Moderate Negative Impact	Minor Negative Impact	Neutral	Minor Positive Impact	Moderate Positive Impact	Major Positive Impact	Unknown
Key	---	--	-	0	+	++	+++	?

Table 91: WIM9 SEA summary

4.5.4 Strategic Environmental Assessment Mitigation Table

SEA Objective	Mitigation
Water 2.1, 2.2 & 2.3	Best-practice construction methods and ongoing monitoring will be undertaken to reduce the risks of over abstraction, negative impacts on groundwater and the impact of flooding during the construction phase.
Biodiversity 1.2	<p>Best-practice construction and mitigation methods would be implemented to minimise disturbance effects (e.g., dust suppression and pollution control measures).</p> <p>Where possible, development on priority habitat would be avoided to minimise effects. For various options, ecology surveys would be required at future design stages to determine effects and mitigation required.</p> <p>Measures from the Construction Environmental Management Plan (CEMP) would be followed to ensure compliance and best practice. Trenchless techniques would be implemented, where feasible, to reduce the level of disturbance to habitats within close vicinity of the site.</p>
Climate 5.1	Investigate the use of substitute materials with lower embodied carbon and use of renewables to power new facilities. In general, decarbonisation of the national grid is likely to help reduce future carbon emissions. For certain options, the water levels should be carefully monitored during operation to ensure they remain at an appropriate level. Best-practice measures should be applied to prevent over abstraction and negative impacts on the environment.

Table 92: WIM9 Mitigation Activities

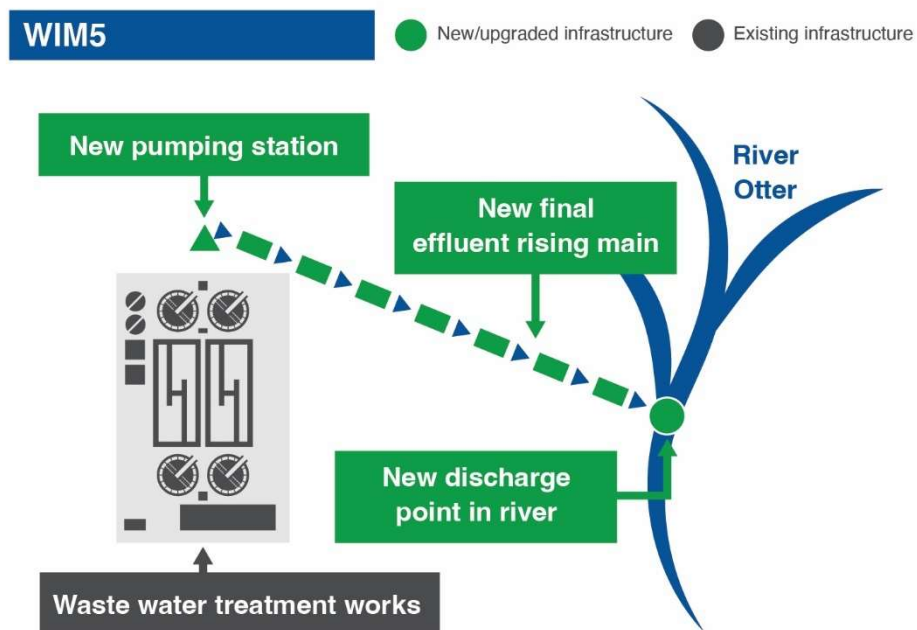
4.6 WIM5 Indirect potable reuse - Stream support for Dotton WTW.

Scheme type	Water Reuse
Gains in Water Available For Use	2.00 MI/d
Biodiversity Net Gain	1.54 Ha

4.6.1 Description of the option

This option is to augment the River Otter during low-flow periods by pumping treated effluent from Sidmouth WWTW directly to the river using a new pipeline (4.55 km). In addition to the pipeline, it will require two air valves and two washouts and an outfall.

We currently pump groundwater into the river to maintain flows, if we can replace this with treated effluent, we can preserve groundwater resources for public water supply.



4.6.2 Indicative Costs

Totex expenditure prior to option in use (£m)	Average Incremental Cost (AIC) (p/m3)	Total NPC (£m)	Option benefits lead-in time (Years)
4.126	30.00	4.90	2

Table 93: WIM5 indicative costs

4.6.3 Strategic Environmental Assessment summary table

SEA Topic		SEA Objectives				Short-Term Impact	Long-Term Impact	
Biodiversity, Flora and Fauna	1.1 Protect and enhance designated and non-designated ecological sites				-	0		
	1.2 Protect, conserve and enhance biodiversity, including priority species, vulnerable habitats and habitat connectivity				-	-	+	
	1.3 Reduce the spread or presence of INNS				-	0		
Water	2.1 Protect and enhance the quality of the water environment and water resources				-	-		
	2.2 Increase resilience and reduce flood risk				-	0		
	2.3 Deliver reliable and resilient water supplies				0	-	+	
Soil	3.1 Protect and enhance the functionality, quantity and quality of soils, including the protection of sites of geological importance				-	0		
Air	4.1 Reduce and minimise air emissions				-	0		
Climatic Factors	5.1 Reduce embodied and operational carbon emissions				-	-		
	5.2 Reduce vulnerability to climate change risks and hazards				0	+		
Historic Environment	6.1 Conserve, protect and enhance the historic environment, including archaeology				-	0		
Landscape	7.1 Conserve, protect and enhance landscape, townscape and seascape character and visual amenity				--	0		
Population and Human Health	8.1 Maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing				-	+	-	
	8.2 Maintain and enhance tourism and recreation				-	-		
Material Assets	9.1 Minimise resource use and waste production				-	0		
	9.2 Avoid negative effects on built assets and infrastructure				--	0		
Effect	Major Negative Impact	Moderate Negative Impact	Minor Negative Impact	Neutral	Minor Positive Impact	Moderate Positive Impact	Major Positive Impact	Unknown
Key	---	--	-	0	+	++	+++	?

Table 94: WIM5 SEA summary

4.6.4 Strategic Environmental Assessment Mitigation Table

SEA Objective	Mitigation
Water 2.2 & 2.3	Best-practice construction methods and ongoing monitoring will be undertaken to reduce the risks of over abstraction, negative impacts on groundwater and the impact of flooding during the construction phase.

Table 95: WIM5 Mitigation Activities

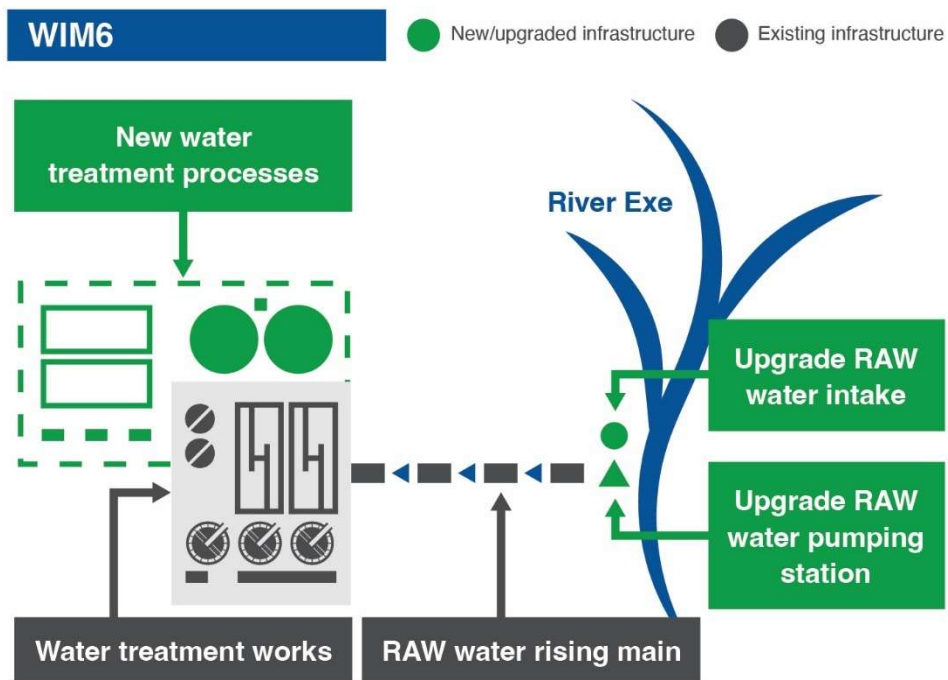
4.7 WIM6 Increase Allers WTW capacity

Scheme type	Water Treatment Works Capacity Increase
Gains in Water Available For Use	2.00 MI/d
Biodiversity Net Gain	TBC

4.7.1 Description of the option

This option will look to supply East Devon and the east coast in the winter, with Dotton at a minimum in the winter. It involves the following:

- An increase in the Bolham licence (winter) and a reduction in the Dotton license (winter) to be agreed with EA consultations
- Upgrade to Bolham abstraction to pump an additional 4 MI/d.
- Upgrade to the WTW to treat an additional 4 MI/d. with distribution network improvements.
- Distribution network improvements



4.7.2 Indicative Costs

Totex expenditure prior to option in use (£m)	Average Incremental Cost (AIC) (p/m3)	Total NPC (£m)	Option benefits lead-in time (Years)
7.828	78.00	12.80	2

Table 96: WIM6 indicative costs

4.7.3 Strategic Environmental Assessment summary table

SEA Topic		SEA Objectives				Short-Term Impact	Long-Term Impact	
Biodiversity, Flora and Fauna	1.1 Protect and enhance designated and non-designated ecological sites				0	0		
	1.2 Protect, conserve and enhance biodiversity, including priority species, vulnerable habitats and habitat connectivity				-	-		
	1.3 Reduce the spread or presence of INNS				0	0		
Water	2.1 Protect and enhance the quality of the water environment and water resources				0	-		
	2.2 Increase resilience and reduce flood risk				--	--		
	2.3 Deliver reliable and resilient water supplies				0	+		
Soil	3.1 Protect and enhance the functionality, quantity and quality of soils, including the protection of sites of geological importance				-	-		
Air	4.1 Reduce and minimise air emissions				-	0		
Climatic Factors	5.1 Reduce embodied and operational carbon emissions				-	-		
	5.2 Reduce vulnerability to climate change risks and hazards				0	-	+	
Historic Environment	6.1 Conserve, protect and enhance the historic environment, including archaeology				0	0		
Landscape	7.1 Conserve, protect and enhance landscape, townscape and seascape character and visual amenity				-	0		
Population and Human Health	8.1 Maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing				-	+	+	
	8.2 Maintain and enhance tourism and recreation				0	0		
Material Assets	9.1 Minimise resource use and waste production				-	-		
	9.2 Avoid negative effects on built assets and infrastructure				-	0		
Effect	Major Negative Impact	Moderate Negative Impact	Minor Negative Impact	Neutral	Minor Positive Impact	Moderate Positive Impact	Major Positive Impact	Unknown
Key	---	--	-	0	+	++	+++	?

Table 97: WIM6 SEA summary

4.7.4 Strategic Environmental Assessment Mitigation Table

SEA Objective	Mitigation
Water 2.2 & 2.3	Best-practice construction methods and ongoing monitoring will be undertaken to reduce the risks of over abstraction, negative impacts on groundwater and the impact of flooding during the construction phase.

Table 98: WIM6 Mitigation Activities

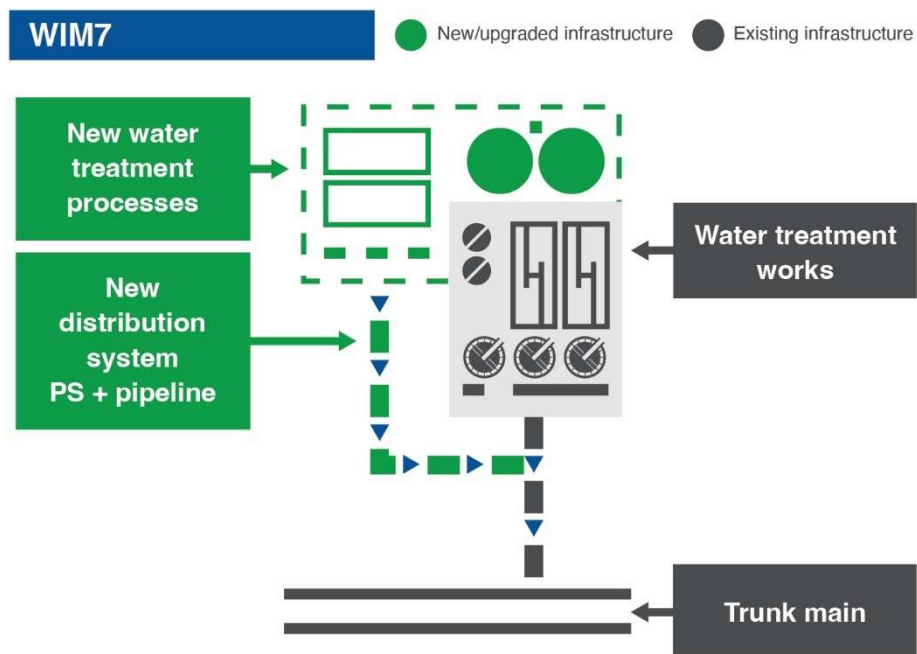
4.8 WIM7 Increase Pynes to licence limit 66.46 MI/d

Scheme type	Water Treatment Works Capacity Increase
Gains in Water Available For Use	3.25 MI/d
Biodiversity Net Gain	TBC

4.8.1 Description of the option

This option is to upgrade the existing water treatment works to make full use of the current licensed flow (66.46 MI/d) through the following:

- Construction of intake structure including screening and pumping
- A new clarifier
- Additional granular activated carbon (GAC) contactors
- Additional chemical dosing system
- Additional interprocess pumping
- Increased diameter interprocess pipelines
- Additional pumping between the chlorine contact tanks and final-water tank
- Consultation with the EA regarding changes to abstraction license



4.8.2 Indicative Costs

Totex expenditure prior to option in use (£m)	Average Incremental Cost (AIC) (p/m3)	Total NPC (£m)	Option benefits lead-in time (Years)
13.949	85.70	22.00	3

Table 99: WIM7 indicative costs

4.8.3 Strategic Environmental Assessment summary table

SEA Topic		SEA Objectives					Short-Term Impact	Long-Term Impact	
Biodiversity, Flora and Fauna	1.1 Protect and enhance designated and non-designated ecological sites					-	0		
	1.2 Protect, conserve and enhance biodiversity, including priority species, vulnerable habitats and habitat connectivity					0	-		
	1.3 Reduce the spread or presence of INNS					0	0		
Water	2.1 Protect and enhance the quality of the water environment and water resources					0	-		
	2.2 Increase resilience and reduce flood risk					-	0		
	2.3 Deliver reliable and resilient water supplies					0	-	+	
Soil	3.1 Protect and enhance the functionality, quantity and quality of soils, including the protection of sites of geological importance					-	0		
Air	4.1 Reduce and minimise air emissions					-	0		
Climatic Factors	5.1 Reduce embodied and operational carbon emissions					--	-		
	5.2 Reduce vulnerability to climate change risks and hazards					0	-	+	
Historic Environment	6.1 Conserve, protect and enhance the historic environment, including archaeology					-	-		
Landscape	7.1 Conserve, protect and enhance landscape, townscape and seascape character and visual amenity					-	0		
Population and Human Health	8.1 Maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing					-	+	+	
	8.2 Maintain and enhance tourism and recreation					0	-		
Material Assets	9.1 Minimise resource use and waste production					-	-		
	9.2 Avoid negative effects on built assets and infrastructure					0	0		
Effect	Major Negative Impact	Moderate Negative Impact	Minor Negative Impact	Neutral	Minor Positive Impact	Moderate Positive Impact	Major Positive Impact	Unknown	
Key	---	--	-	0	+	++	+++	?	

Table 100: WIM7 SEA summary

4.8.4 Strategic Environmental Assessment Mitigation Table

SEA Objective	Mitigation
Water 2.2 & 2.3	Best-practice construction methods and ongoing monitoring will be undertaken to reduce the risks of over abstraction, negative impacts on groundwater and the impact of flooding during the construction phase. Supplementation of flow via Wimbleball Reservoir via River Haddeo if needed to maintain natural river flow.

Table 101: WIM7 Mitigation Activities

5 Bournemouth Water Resource Zone

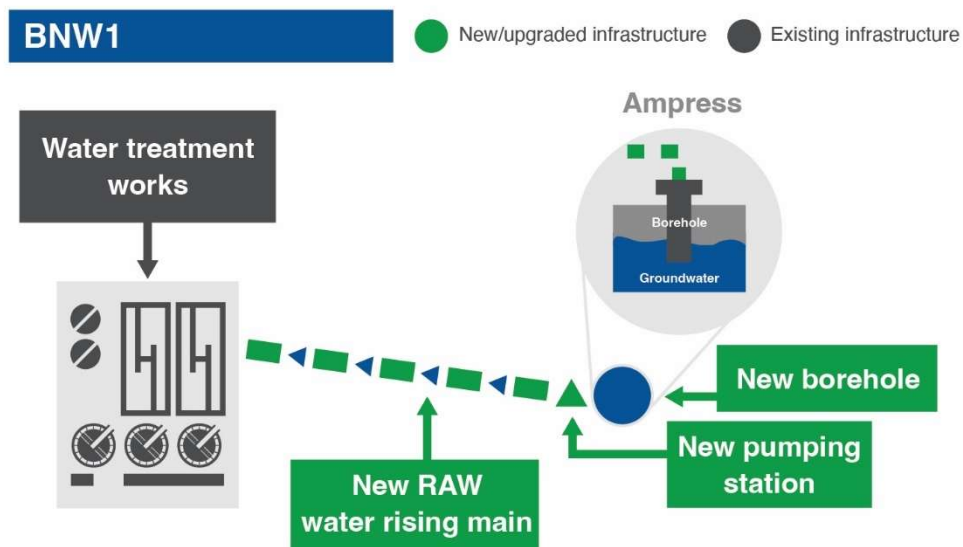
5.1 BNW1 Borehole development, existing borehole remedial works.

Scheme type	New Groundwater
Gains in Water Available For Use	1.00 MI/d
Biodiversity Net Gain	TBC

5.1.1 Description of the option

This option will provide additional water from a new borehole, which will be distributed to the nearby water treatment works. Additional headworks, kiosk, and pipework will be required to connect it into the works as well as upgrades to the dosing pumps at the works.

This option assumes that there will be no additional WTW capacity required and that the existing power source will be sufficient.



5.1.2 Indicative Costs

Totex expenditure prior to option in use (£m)	Average Incremental Cost (AIC) (p/m3)	Total NPC (£m)	Option benefits lead-in time (Years)
1.692	41.10	3.50	1

Table 102: BNW1 indicative costs

5.1.3 Strategic Environmental Assessment summary table

SEA Topic		SEA Objectives					Short-Term Impact	Long-Term Impact	
Biodiversity, Flora and Fauna	1.1 Protect and enhance designated and non-designated ecological sites					-	--		
	1.2 Protect, conserve and enhance biodiversity, including priority species, vulnerable habitats and habitat connectivity					-	-		
	1.3 Reduce the spread or presence of INNS					0	0		
Water	2.1 Protect and enhance the quality of the water environment and water resources					0	-		
	2.2 Increase resilience and reduce flood risk					0	0		
	2.3 Deliver reliable and resilient water supplies					0	-	+	
Soil	3.1 Protect and enhance the functionality, quantity and quality of soils, including the protection of sites of geological importance					-	0		
Air	4.1 Reduce and minimise air emissions					-	0		
Climatic Factors	5.1 Reduce embodied and operational carbon emissions					-	-		
	5.2 Reduce vulnerability to climate change risks and hazards					0	0	+	
Historic Environment	6.1 Conserve, protect and enhance the historic environment, including archaeology					0	0		
Landscape	7.1 Conserve, protect and enhance landscape, townscape and seascape character and visual amenity					-	0		
Population and Human Health	8.1 Maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing					0	0		
	8.2 Maintain and enhance tourism and recreation					-	0	0	
Material Assets	9.1 Minimise resource use and waste production					-	-		
	9.2 Avoid negative effects on built assets and infrastructure					-	0	0	
Effect	Major Negative Impact	Moderate Negative Impact	Minor Negative Impact	Neutral	Minor Positive Impact	Moderate Positive Impact	Major Positive Impact	Unknown	
Key	---	--	-	0	+	++	+++	?	

Table 103: BNW1 SEA summary

5.1.4 Strategic Environmental Assessment Mitigation Table

SEA Objective	Mitigation
Water 2.3	Best-practice construction methods and ongoing monitoring will be undertaken to reduce the risks of over abstraction, negative impacts on groundwater and the impact of flooding during the construction phase.
Soil 3	<p>Best-practice construction and mitigation methods would be implemented to minimise disturbance effects (e.g., dust suppression and pollution control measures).</p> <p>Best-practice mitigation measures would be implemented during the construction phase (stripping, stockpiling, the conservation of top soil and subsoil, etc).</p>

Table 104: BNW1 Mitigation Activities

5.2 BNW3 Wimborne transfer to Longham - Licence change

Scheme type	Conjunctive Use
Gains in Water Available For Use	4.00 Ml/d
Biodiversity Net Gain	13.14 Ha

5.2.1 Description of the option

This option will make smarter conjunctive use of the Stour sources by transferring the current Wimborne license (approximately 4 Ml/d) to Longham on the Stour. It will require no changes to the current infrastructure.

The abstraction licence change is to be agreed upon with the EA in conjunction with environmental investigations and hydrological modelling.

5.2.2 Indicative Costs

Totex expenditure prior to option in use (£m)	Average Incremental Cost (AIC) (p/m3)	Total NPC (£m)	Option benefits lead-in time (Years)
0.129	0.29	0.10	1

Table 105: BNW3 indicative costs

5.2.3 Strategic Environmental Assessment summary table

SEA Topic	SEA Objectives	Short-Term Impact	Long-Term Impact
Biodiversity, Flora and Fauna	1.1 Protect and enhance designated and non-designated ecological sites	0	0
	1.2 Protect, conserve and enhance biodiversity, including priority species, vulnerable habitats and habitat connectivity	0	0
	1.3 Reduce the spread or presence of INNS	0	0
Water	2.1 Protect and enhance the quality of the water environment and water resources	0	0
	2.2 Increase resilience and reduce flood risk	0	0
	2.3 Deliver reliable and resilient water supplies	0	+
Soil	3.1 Protect and enhance the functionality, quantity and quality of soils, including the protection of sites of geological importance	0	0
Air	4.1 Reduce and minimise air emissions	0	0
Climatic Factors	5.1 Reduce embodied and operational carbon emissions	0	0
	5.2 Reduce vulnerability to climate change risks and hazards	0	- +
Historic Environment	6.1 Conserve, protect and enhance the historic environment, including archaeology	0	0

SEA Topic	SEA Objectives							Short-Term Impact	Long-Term Impact
Landscape	7.1 Conserve, protect and enhance landscape, townscape and seascape character and visual amenity							0	0
Population and Human Health	8.1 Maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing							0	0
	8.2 Maintain and enhance tourism and recreation							0	0
Material Assets	9.1 Minimise resource use and waste production							0	0
	9.2 Avoid negative effects on built assets and infrastructure							0	0
Effect	Major Negative Impact	Moderate Negative Impact	Minor Negative Impact	Neutral	Minor Positive Impact	Moderate Positive Impact	Major Positive Impact	Unknown	
Key	---	--	-	0	+	++	+++	?	

Table 106: BNW3 SEA summary

5.2.4 Strategic Environmental Assessment Mitigation Table

SEA Objective	Mitigation
Water 2.3	Best-practice construction methods and ongoing monitoring will be undertaken to reduce the risks of over abstraction, negative impacts on groundwater and the impact of flooding during the construction phase.
Air 4	Best-practice construction and mitigation methods would be implemented to minimise disturbance effects (e.g., dust suppression and pollution control measures).

Table 107: BNW3 Mitigation Activities

5.3 BNW6 Longham Aquifer Recharge

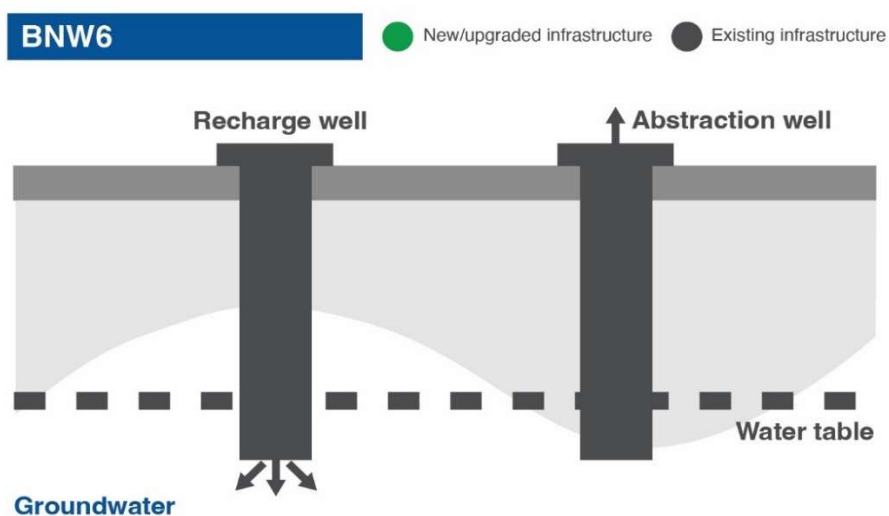
Scheme type	Aquifer Recharge/Aquifer Storage Recovery
Gains in Water Available For Use	10.00 MI/d
Biodiversity Net Gain	TBC

5.3.1 Description of the option

This scheme assumes the development of an aquifer storage and recovery operation that will deliver a deployable output of approximately 10 MI/d. The presumption is that the completed scheme will operate in the following way:

- Abstractions will occur for three months at a rate of 10 MI/d, followed by a recharge phase injecting approximately 1,500 MI :
 - During the recharge phase, 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 5,000 m³ per day (208 m³ per hour) - totalling 1,458,000 m³ over the 9 months
 - Achievable infiltration rate per well would be 75 m³ 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 (417 m³ per hour) - totalling 900,000 m³ over the 3 months
 - The achievable abstraction rate per well would be 150 m³ per hour

The abstraction rate is likely to require at least three wells to achieve 10 MI/d, particularly if the wells are near one another. Borehole location will need careful consideration at an early stage in the investigation.



5.3.2 Indicative Costs

Totex expenditure prior to option in use (£m)	Average Incremental Cost (AIC) (p/m ³)	Total NPC (£m)	Option benefits lead-in time (Years)
10.000	15.51	12.70	5

Table 108: BNW6 indicative costs

5.3.3 Strategic Environmental Assessment summary table

SEA Topic		SEA Objectives				Short-Term Impact		Long-Term Impact	
Biodiversity, Flora and Fauna	1.1 Protect and enhance designated and non-designated ecological sites				-	-	-	+	
	1.2 Protect, conserve and enhance biodiversity, including priority species, vulnerable habitats and habitat connectivity				-	-	-	+	
	1.3 Reduce the spread or presence of INNS				-	-	-	-	
Water	2.1 Protect and enhance the quality of the water environment and water resources				-	-	-	-	
	2.2 Increase resilience and reduce flood risk				-	-	-	+	
	2.3 Deliver reliable and resilient water supplies				0	0	++	++	
Soil	3.1 Protect and enhance the functionality, quantity and quality of soils, including the protection of sites of geological importance				-	-	0	0	
Air	4.1 Reduce and minimise air emissions				-	-	-	-	
Climatic Factors	5.1 Reduce embodied and operational carbon emissions				-	-	-	-	
	5.2 Reduce vulnerability to climate change risks and hazards				0	0	+	+	
Historic Environment	6.1 Conserve, protect and enhance the historic environment, including archaeology				0	0	0	0	
Landscape	7.1 Conserve, protect and enhance landscape, townscape and seascape character and visual amenity				0	0	0	0	
Population and Human Health	8.1 Maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing				-	++	+	+	
	8.2 Maintain and enhance tourism and recreation				-	-	-	-	
Material Assets	9.1 Minimise resource use and waste production				-	-	-	-	
	9.2 Avoid negative effects on built assets and infrastructure				0	0	-	-	
Effect	Major Negative Impact	Moderate Negative Impact	Minor Negative Impact	Neutral	Minor Positive Impact	Moderate Positive Impact	Major Positive Impact	Unknown	
Key	---	--	-	0	+	++	+++	?	

Table 109: BNW6 SEA summary

5.3.4 Strategic Environmental Assessment Mitigation Table

SEA Objective	Mitigation
Water 2.3	Best-practice construction methods and ongoing monitoring will be undertaken to reduce the risks of over abstraction, negative impacts on groundwater and the impact of flooding during the construction phase.
Air 4	Best-practice construction and mitigation methods would be implemented to minimise disturbance effects (e.g., dust suppression and pollution control measures).
Soil 3	<p>Best-practice construction and mitigation methods would be implemented to minimise disturbance effects (e.g., dust suppression and pollution control measures).</p> <p>Best-practice mitigation measures would be implemented during the construction phase (stripping, stockpiling, the conservation of top soil and subsoil, etc).</p>

Table 110: BNW6 Mitigation Activities

5.4 BNW7 Mendips Quarry - 30 MI/d scheme option – Raw water transfer and augmentation of the River Stour

Scheme type	New Reservoir
Gains in Water Available For Use	30 MI/d
Biodiversity Net Gain	TBC
River	River Stour
Catchment Information	Not designated artificial or heavily modified. Catchment is mixed geology - predominantly chalk, clay and some limestone. Land use a mixture of grassland and arable. Length - 106 km (approx.). Catchment area - 25,731 ha (approx.).
If River: Note on abstractions (in place of Q95)	Licensed volumes and other licence conditions will be identified to ensure protection of environmental flows and catchment ecology.

5.4.1 Description of the option

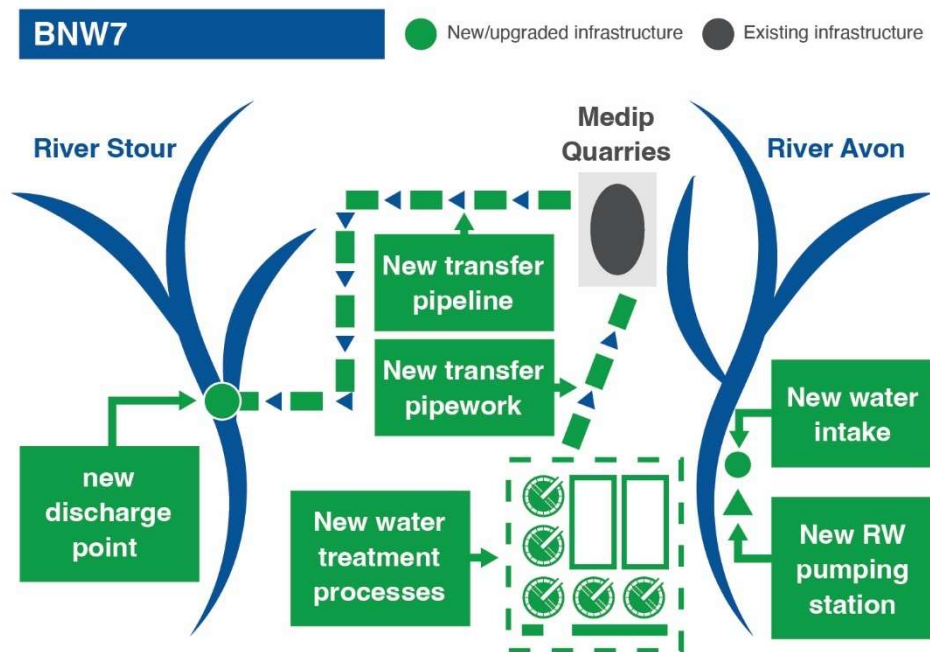
This option is to abstract raw water from Mendip Quarries and then transfer it to augment flows in the River Stour, to subsequently be abstracted by existing infrastructure to serve Wessex and Bournemouth Water.

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.

The raw river water would be treated for invasive non-native species and water quality before being transferred to the quarry/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.

Transfer of water to the River Stour (near Hinton St. Mary) from the quarry would be via a new pipeline (31.5 km).

An abstraction of 30 MI/d has been considered at the current RAPID stage.



5.4.2 Indicative Costs

Totex expenditure prior to option in use (£m)	Average Incremental Cost (AIC) (p/m3)	Total NPC (£m)	Option benefits lead-in time (Years)
182.476	263.22	135.00	7

Table 111: BNW7 indicative costs

5.4.3 Strategic Environmental Assessment summary table

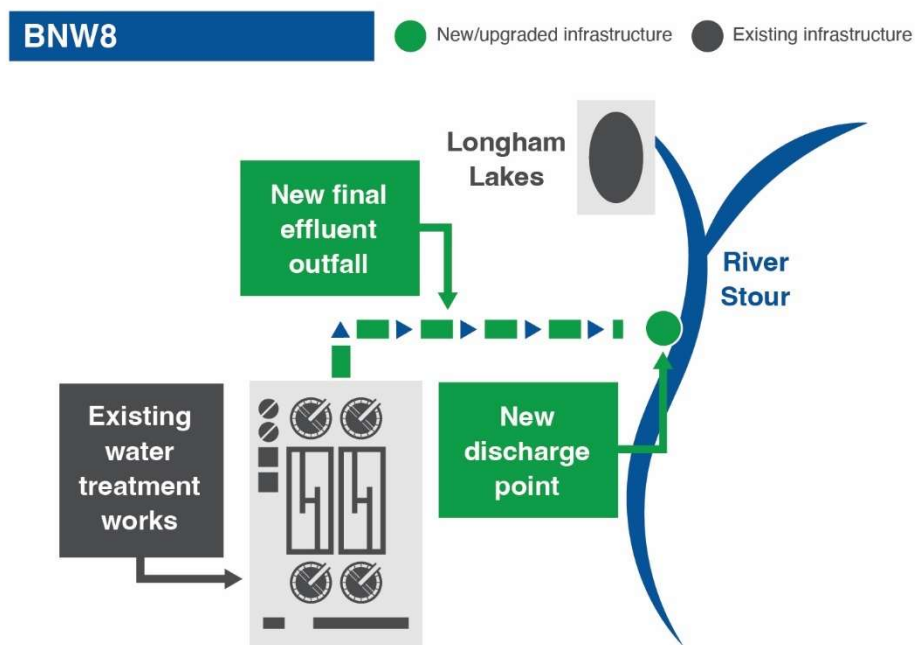
This option is being developed as part of the regional plan, as is the strategic environmental assessment. Therefore, the summary table, mitigation, and opportunities will not be included in our WRMP supply option appendix.

5.5 BNW8 Poole Harbour Final Effluent -reuse

Scheme type	Water Reuse
Gains in Water Available For Use	12.50 MI/d
Biodiversity Net Gain	TBC
River	River Stour
Catchment Information	Not designated artificial or heavily modified. Catchment is mixed geology - predominantly chalk, clay and some limestone. Land use a mixture of grassland and arable. Length - 106 km (approx.). Catchment area - 25,731 ha (approx.).
If River: Note on abstractions (in place of Q95)	Licensed volumes and other licence conditions will be identified to ensure protection of environmental flows and catchment ecology.

5.5.1 Description of the option

This option is to recycle treated effluent from Poole WWTW 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.



5.5.2 Indicative Costs

Totex expenditure prior to option in use (£m)	Average Incremental Cost (AIC) (p/m3)	Total NPC (£m)	Option benefits lead-in time (Years)
61.875	295.59	49.00	5

Table 112: BNW8 indicative costs

5.5.3 Strategic Environmental Assessment

This option is being developed as part of the regional plan, as is the strategic environmental assessment. Therefore, the summary table, mitigation, and opportunities will not be included in our WRMP supply option appendix.

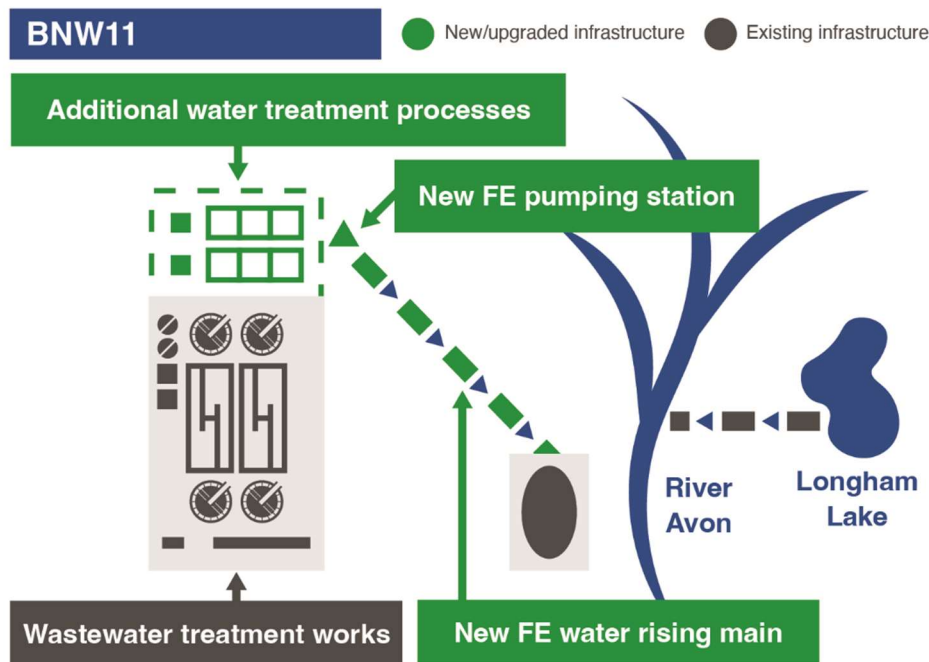
5.6 BNW11 Christchurch WWTW IPR 2 Transfer to Longham Lakes

Scheme type	Water Reuse
Gains in Water Available For Use	10.00 Ml/d
Biodiversity Net Gain	18.74 Ha

5.6.1 Description of the option

This option will provide additional treatment (nutrient removal) at Christchurch WWTW (operated by Wessex Water) before pumped transfer (29km of rising main) to Longham Lakes.

For the purpose of the draft WRMP, it has been assumed that we can take the effluent discharges (13Ml/d) from the mouth of the Avon. This option will need to be tested as part of consultation as part of our final plan.



5.6.2 Indicative Costs

Totex expenditure prior to option in use (£m)	Average Incremental Cost (AIC) (p/m3)	Total NPC (£m)	Option benefits lead-in time (Years)
28.974	34.59	26.30	4

Table 113: BNW11 indicative costs

5.6.3 Strategic Environmental Assessment summary table

SEA Topic		SEA Objectives				Short-Term Impact	Long-Term Impact	
Biodiversity, Flora and Fauna	1.1 Protect and enhance designated and non-designated ecological sites				-	0		
	1.2 Protect, conserve and enhance biodiversity, including priority species, vulnerable habitats and habitat connectivity				--	-	+	
	1.3 Reduce the spread or presence of INNS				-	0		
Water	2.1 Protect and enhance the quality of the water environment and water resources				-	0		
	2.2 Increase resilience and reduce flood risk				-	-	+	
	2.3 Deliver reliable and resilient water supplies				0	++		
Soil	3.1 Protect and enhance the functionality, quantity and quality of soils, including the protection of sites of geological importance				-	0		
Air	4.1 Reduce and minimise air emissions				-	-		
Climatic Factors	5.1 Reduce embodied and operational carbon emissions				--	-		
	5.2 Reduce vulnerability to climate change risks and hazards				0	-	+	
Historic Environment	6.1 Conserve, protect and enhance the historic environment, including archaeology				--	0		
Landscape	7.1 Conserve, protect and enhance landscape, townscape and seascape character and visual amenity				--	0		
Population and Human Health	8.1 Maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing				-	+	0	
	8.2 Maintain and enhance tourism and recreation				-	0		
Material Assets	9.1 Minimise resource use and waste production				-	-		
	9.2 Avoid negative effects on built assets and infrastructure				-	0		
Effect	Major Negative Impact	Moderate Negative Impact	Minor Negative Impact	Neutral	Minor Positive Impact	Moderate Positive Impact	Major Positive Impact	Unknown
Key	---	--	-	0	+	++	+++	?

Table 114: BNW11 SEA summary

5.6.4 Strategic Environmental Assessment Mitigation Table

SEA Objective	Mitigation
Water 2.2 & 2.3	Best-practice construction methods and ongoing monitoring will be undertaken to reduce the risks of over abstraction, negative impacts on groundwater and the impact of flooding during the construction phase.
Air 4	Best-practice construction and mitigation methods would be implemented to minimise disturbance effects (e.g. dust suppression and pollution control measures).
Soil 3	Best-practice construction and mitigation methods would be implemented to minimise disturbance effects (e.g. dust suppression and pollution control measures). Best-practice mitigation measures would be implemented during the construction phase (stripping, stockpiling, the conservation of top soil and subsoil, etc).

Table 115: BNW11 Mitigation Activities

5.7 BNW17 Cheddar 2 new strategic regional reservoir and transfer

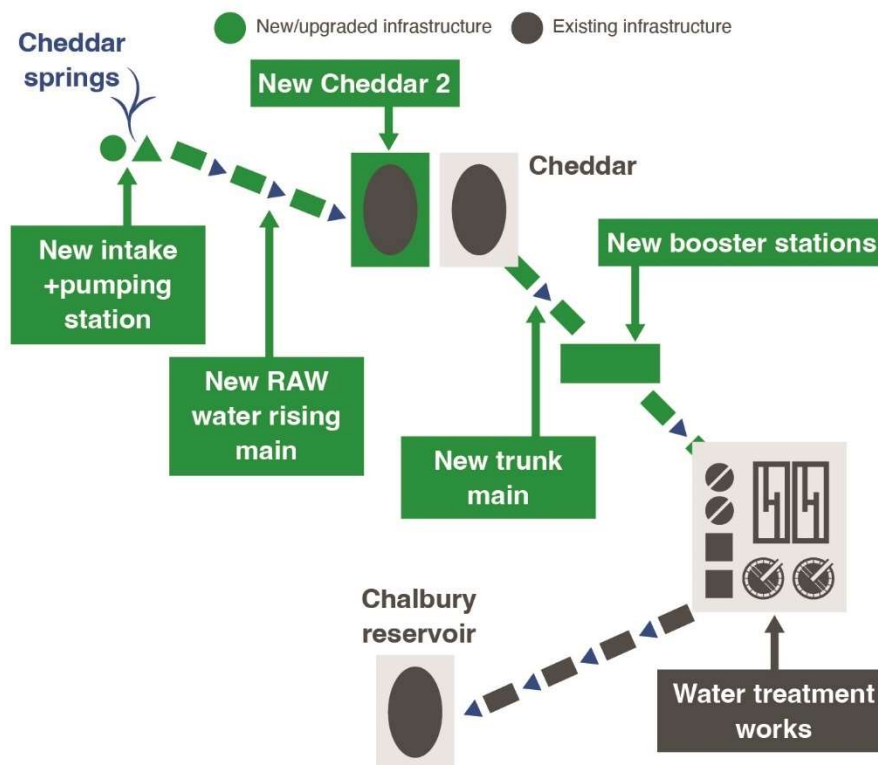
Scheme type	New reservoir
Gains in Water Available For Use	36 MI/d
Biodiversity Net Gain	217.745 Ha

5.7.1 Description of the option

This option builds upon the concept design that has been developed for the Cheddar 2 reservoir and transfer SRO gate 2 submission to RAPID.

The SRO is to provide a summer peak, potable supply to support Wessex Water’s groundwater area. The scheme is to fill a new, Cheddar 2 reservoir, alongside the existing reservoir, from Cheddar Springs and the river Axe, under the constraints of Bristol Water’s (BRL) existing abstraction licences.

Water resources modelling has determined that the new reservoir could provide an annual average output of 14MI/d and a summer, 2-month, critical period output of 36MI/d in a 1-in-500 year drought. Water would be transferred to a new water treatment works from where a potable water main and associated pumping would take it to a strategic service reservoir in Wessex Water’s system south of Warminster. The SRO potable pipeline has then been conceptually extended to our service reservoir in Chalbury, from where water can be displaced to meet demands currently met from the Matchams abstraction, via Longham lakes and Alderney WTW or Knapp Mill WTW.



5.7.2 Indicative Costs

Totex expenditure prior to option in use (£m)	Average Incremental Cost (AIC) (p/m3)	Total NPC (£m)	Option benefits lead-in time (Years)
689.149	660.56	713.393	8

Table 116: Cheddar 2 indicative costs

5.7.3 Strategic Environmental Assessment summary table

The table below was collated using the Cheddar SRO – Gate 2 Annex 5 – Initial Environmental Assessment (Nov 2022) and, as such, will differ from the other WRMP supply options SEA summaries listed in this appendix. This is due to the different assessment methodologies used. To present our initial appraisal, we have firstly filtered the activities relating to the construction and operation of the raw water supply from Cheddar Springs to Cheddar 2 reservoir and the construction and operation of Cheddar 2 reservoir. We have then taken an average of the ‘red, amber, and green’ risks under each of the SEA topics. It is envisaged that an additional SEA assessment will be undertaken once the option has been scoped for delivering water to a SWW water resource zone.

SEA Topic	Short-Term Impact	Long-Term Impact
Biodiversity, Flora and Fauna		
Water		
Soil		Not Assessed
Air		
Climatic Factors	Not Assessed	Not Assessed
Historic Environment		Not Assessed
Landscape		Not Assessed
Population and Human Health		Not Assessed
Material Assets	Not Assessed	Not Assessed

Table 117: Cheddar 2 SEA summary

6 Isles of Scilly Water Resource Zone

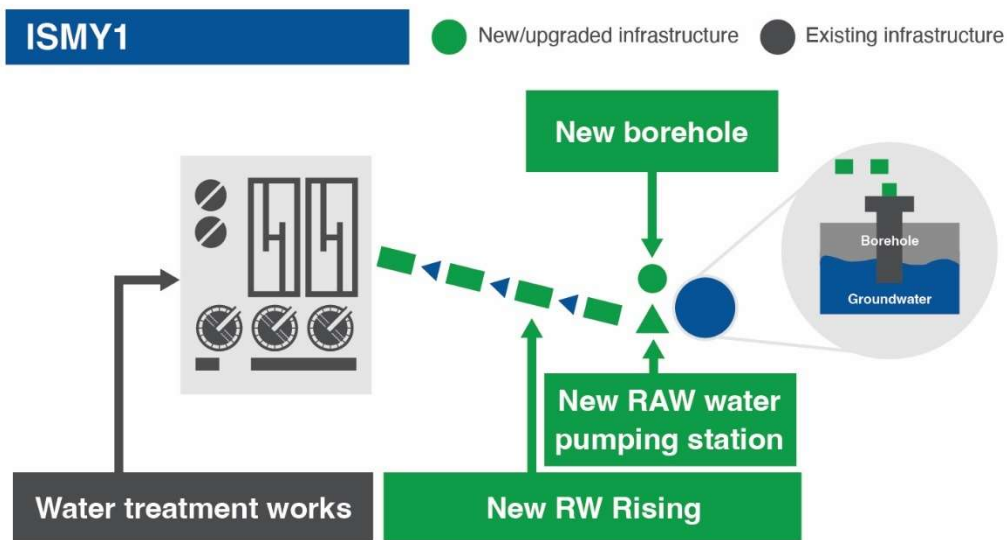
6.1 ISMY1 St. Mary's new borehole (location 1)

Scheme type	New Groundwater
Gains in Water Available For Use	0.15 MI/d
Biodiversity Net Gain	TBC

6.1.1 Description of the option

This option involves the following

- Drilling a new supply borehole
- A new raw water transfer infrastructure to the existing treatment plant (including a new rising main, headworks, kiosk, and pumping station).



6.1.2 Indicative Costs

Totex expenditure prior to option in use (£m)	Average Incremental Cost (AIC) (p/m3)	Total NPC (£m)	Option benefits lead-in time (Years)
0.886	69.15	0.88	1

Table 118: ISMY1 indicative costs

6.1.3 Strategic Environmental Assessment summary table

SEA Topic	SEA Objectives					Short-Term Impact	Long-Term Impact	
Biodiversity, Flora and Fauna	1.1 Protect and enhance designated and non-designated ecological sites					-	0	
	1.2 Protect, conserve and enhance biodiversity, including priority species, vulnerable habitats and habitat connectivity					-	-	
	1.3 Reduce the spread or presence of INNS					-	0	
Water	2.1 Protect and enhance the quality of the water environment and water resources					-	-	
	2.2 Increase resilience and reduce flood risk					0	0	
	2.3 Deliver reliable and resilient water supplies					0	- +	
Soil	3.1 Protect and enhance the functionality, quantity and quality of soils, including the protection of sites of geological importance					-	0	
Air	4.1 Reduce and minimise air emissions					-	0	
Climatic Factors	5.1 Reduce embodied and operational carbon emissions					-	-	
	5.2 Reduce vulnerability to climate change risks and hazards					0	+	
Historic Environment	6.1 Conserve, protect and enhance the historic environment, including archaeology					-	0	
Landscape	7.1 Conserve, protect and enhance landscape, townscape and seascape character and visual amenity					-	-	
Population and Human Health	8.1 Maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing					-	0	
	8.2 Maintain and enhance tourism and recreation					0	0	
Material Assets	9.1 Minimise resource use and waste production					-	-	
	9.2 Avoid negative effects on built assets and infrastructure					-	0	
Effect	Major Negative Impact	Moderate Negative Impact	Minor Negative Impact	Neutral	Minor Positive Impact	Moderate Positive Impact	Major Positive Impact	Unknown
Key	---	--	-	0	+	++	+++	?

Table 119: ISMY1 SEA summary

6.1.4 Strategic Environmental Assessment Mitigation Table

SEA Objective	Mitigation
Water 2.1	Best-practice construction methods and ongoing monitoring will be undertaken to reduce the risks of over abstraction, negative impacts on groundwater and the impact of flooding during the construction phase.
Air 4	Best-practice construction and mitigation methods would be implemented to minimise disturbance effects (e.g. dust suppression and pollution control measures).
Biodiversity 1.2	<p>CIRIA guidance would be followed to help alleviate impact pathways during construction, e.g. through planning the construction programme to avoid the bird breeding period (March to August inclusive). If construction does occur, additional data could be required to determine presence of qualifying features.</p> <p>Measures from the Construction Environmental Management Plan (CEMP) would be followed to ensure compliance and best practice.</p> <p>Trenchless techniques would be implemented, where feasible, to reduce the level of disturbance to habitats within close vicinity of the site. Where possible, development on priority habitat would be avoided to minimise effects.</p> <p>For various options, ecology surveys would be required at future design stages to determine effects and mitigation required. Consultation with statutory bodies would be undertaken to ensure impacts to protected species and habitats are avoided or mitigated appropriately according to statutory requirements.</p>

Table 120: ISMY1 Mitigation Activities

6.2 ISMY2 St. Mary's new borehole (location 2)

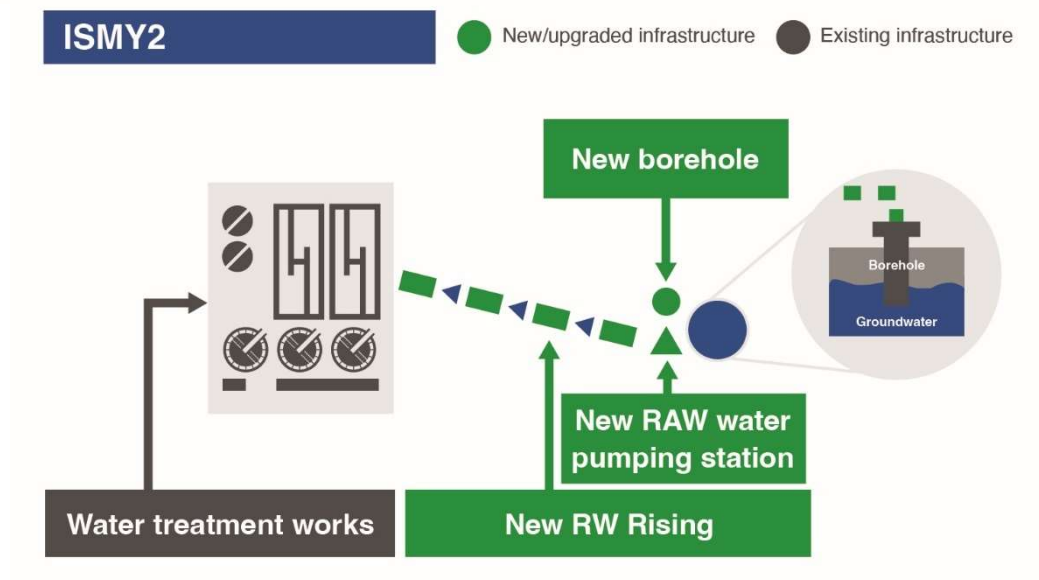
Scheme type	New Groundwater
Gains in Water Available For Use	0.15 Ml/d
Biodiversity Net Gain	TBC

6.2.1 Description of the option

This option involves the following

- Drilling a new supply borehole
- A new raw water transfer infrastructure to existing treatment plant (including a new rising main, headworks, kiosk, and pumping station).

Drilling the new borehole in Location 2 would potentially require a new WTW Stream (not costed for). The new stream would require Amazon Pressure Filters (Duty/Standby) and associated civil requirements.



6.2.2 Indicative Costs

Totex expenditure prior to option in use (£m)	Average Incremental Cost (AIC) (p/m3)	Total NPC (£m)	Option benefits lead-in time (Years)
0.990	78.10	0.99	1

Table 121: ISMY2 indicative costs

6.2.3 Strategic Environmental Assessment summary table

SEA Topic		SEA Objectives					Short-Term Impact	Long-Term Impact
Biodiversity, Flora and Fauna	1.1 Protect and enhance designated and non-designated ecological sites					-	0	
	1.2 Protect, conserve and enhance biodiversity, including priority species, vulnerable habitats and habitat connectivity					-	-	
	1.3 Reduce the spread or presence of INNS					-	0	
Water	2.1 Protect and enhance the quality of the water environment and water resources					-	-	
	2.2 Increase resilience and reduce flood risk					0	0	
	2.3 Deliver reliable and resilient water supplies					0	- +	
Soil	3.1 Protect and enhance the functionality, quantity and quality of soils, including the protection of sites of geological importance					-	0	
Air	4.1 Reduce and minimise air emissions					-	0	
Climatic Factors	5.1 Reduce embodied and operational carbon emissions					-	-	
	5.2 Reduce vulnerability to climate change risks and hazards					0	- +	
Historic Environment	6.1 Conserve, protect and enhance the historic environment, including archaeology					-	-	
Landscape	7.1 Conserve, protect and enhance landscape, townscape and seascape character and visual amenity					-	-	
Population and Human Health	8.1 Maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing					-	0	
	8.2 Maintain and enhance tourism and recreation					0	0	
Material Assets	9.1 Minimise resource use and waste production					-	-	
	9.2 Avoid negative effects on built assets and infrastructure					-	0	
Effect	Major Negative Impact	Moderate Negative Impact	Minor Negative Impact	Neutral	Minor Positive Impact	Moderate Positive Impact	Major Positive Impact	Unknown
Key	---	--	-	0	+	++	+++	?

Table 122: ISMY2 SEA summary

6.2.4 Strategic Environmental Assessment Mitigation Table

SEA Objective	Mitigation
Water 2.1	Best-practice construction methods and ongoing monitoring will be undertaken to reduce the risks of over abstraction, negative impacts on groundwater and the impact of flooding during the construction phase.
Air 4	Best-practice construction and mitigation methods would be implemented to minimise disturbance effects (e.g. dust suppression and pollution control measures).
Biodiversity 1.2	<p>CIRIA guidance would be followed to help alleviate impact pathways during construction, e.g. through planning the construction programme to avoid the bird breeding period (March to August inclusive). If construction does occur, additional data could be required to determine presence of qualifying features.</p> <p>Measures from the Construction Environmental Management Plan (CEMP) would be followed to ensure compliance and best practice.</p> <p>Trenchless techniques would be implemented, where feasible, to reduce the level of disturbance to habitats within close vicinity of the site. Where possible, development on priority habitat would be avoided to minimise effects.</p> <p>For various options, ecology surveys would be required at future design stages to determine effects and mitigation required. Consultation with statutory bodies would be undertaken to ensure impacts to protected species and habitats are avoided or mitigated appropriately according to statutory requirements.</p>

Table 123: ISMY2 Mitigation Activities

6.3 ISMY4 St Mary's – Increase Existing Desalination Plant Capacity

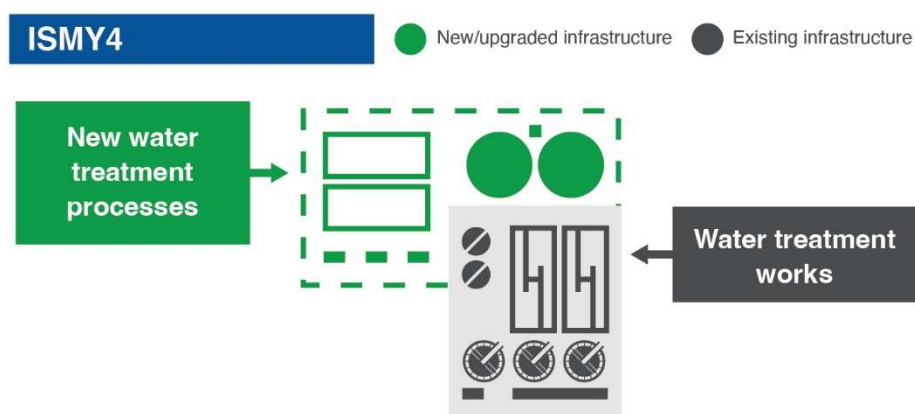
Scheme type	Desalination
Gains in Water Available For Use	0.25 Ml/d
Biodiversity Net Gain	0.48 Ha

6.3.1 Description of the option

This option consists of the addition of another stream to the existing plant to increase the plant's output capacity, which will account for demand as well as a resilience factor.

A new operation building will be required to house the new desalination equipment. A marine works boat and crew will also be required to support marine works as described below.

The current seawater intake structure will require some upgrade works so that it can supply the increased flows to the existing desalination plant. A new seawater intake screening, pumping and infrastructure protection have therefore been included.



6.3.2 Indicative Costs

Totex expenditure prior to option in use (£m)	Average Incremental Cost (AIC) (p/m3)	Total NPC (£m)	Option benefits lead-in time (Years)
6.620	376.94	7.71	2

Table 124: ISMY4 indicative costs

6.3.3 Strategic Environmental Assessment summary table

SEA Topic	SEA Objectives					Short-Term Impact	Long-Term Impact	
Biodiversity, Flora and Fauna	1.1 Protect and enhance designated and non-designated ecological sites					?	?	
	1.2 Protect, conserve and enhance biodiversity, including priority species, vulnerable habitats and habitat connectivity					?	?	
	1.3 Reduce the spread or presence of INNS					-	-	
Water	2.1 Protect and enhance the quality of the water environment and water resources					-	-	
	2.2 Increase resilience and reduce flood risk					0	0	
	2.3 Deliver reliable and resilient water supplies					0	+	
Soil	3.1 Protect and enhance the functionality, quantity and quality of soils, including the protection of sites of geological importance					?	0	
Air	4.1 Reduce and minimise air emissions					-	-	
Climatic Factors	5.1 Reduce embodied and operational carbon emissions					-	-	
	5.2 Reduce vulnerability to climate change risks and hazards					0	- +	
Historic Environment	6.1 Conserve, protect and enhance the historic environment, including archaeology					?	0	
Landscape	7.1 Conserve, protect and enhance landscape, townscape and seascape character and visual amenity					-	-	
Population and Human Health	8.1 Maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing					-	0	
	8.2 Maintain and enhance tourism and recreation					-	-	
Material Assets	9.1 Minimise resource use and waste production					-	-	
	9.2 Avoid negative effects on built assets and infrastructure					?	0	
Effect	Major Negative Impact	Moderate Negative Impact	Minor Negative Impact	Neutral	Minor Positive Impact	Moderate Positive Impact	Major Positive Impact	Unknown
Key	---	--	-	0	+	++	+++	?

Table 125: ISMY4 SEA summary

6.3.4 Strategic Environmental Assessment Mitigation Table

SEA Objective	Mitigation
Water 2.1	Best-practice construction methods and ongoing monitoring will be undertaken to reduce the risks of over abstraction, negative impacts on groundwater and the impact of flooding during the construction phase. Further investigation into brine water disposal should be undertaken.
Air 4	Best-practice construction and mitigation methods would be implemented to minimise disturbance effects (e.g. dust suppression and pollution control measures).

Table 126: ISMY4 Mitigation Activities

6.4 ISB4 Bryher – Increase Existing Desalination Plant Capacity

Scheme type	Desalination
Gains in Water Available For Use	0.20 Ml/d
Biodiversity Net Gain	TBC

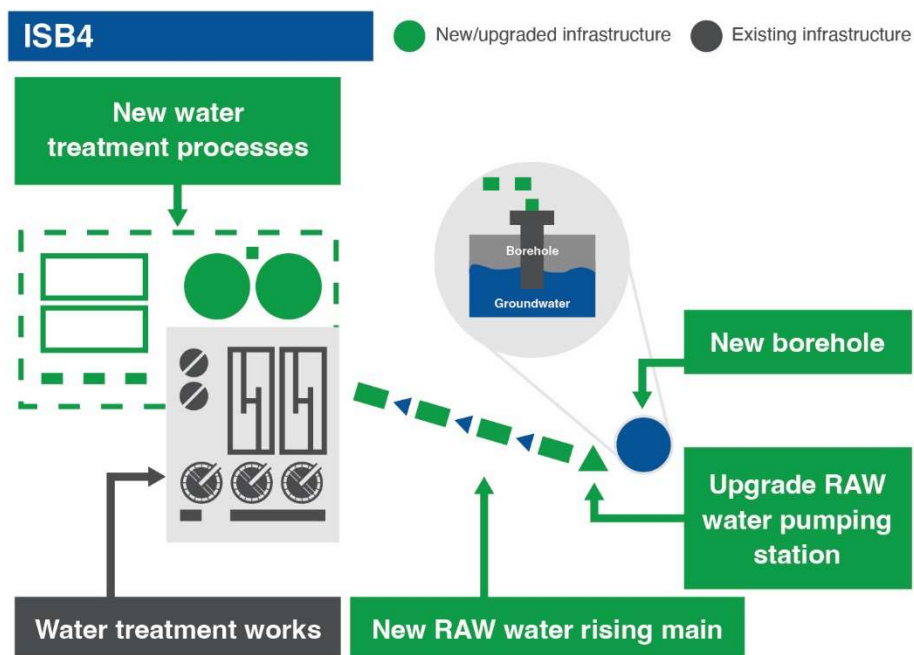
6.4.1 Description of the option

This option involves constructing an additional process stream at the Island’s desalination plant. The scope includes increasing the borehole abstraction and/or drilling a new borehole to fulfil the increased supply requirements of the additional Reverse Osmosis (RO) process stream. The use of cartridge filters on the RO plant would negate the need for clean and dirty backwash tanks.

No seawater intake structure modifications would be required, with brackish water RO being used. New pumps would however be required to lift the water from the borehole to the RO Plant. As work would be required on the RO discharge, the scope includes for a marine works boat and crew.

As with the other desalination plants, the scope of the solution includes support for the installation, commissioning and testing of the RO Membranes, which require DWI approval. As well as this, a cost has been included for the upgrade of the power supply infrastructure on the Islands.

This option would involve the construction of mostly new equipment and infrastructure including UV Turbidity Protection, Treated Water Storage, RO Pre-treatment, etc. The existing desalination plant will be maintained, but a new operational building will be required to house the expanded plant/new process stream.



6.4.2 Indicative Costs

Totex expenditure prior to option in use (£m)	Average Incremental Cost (AIC) (p/m3)	Total NPC (£m)	Option benefits lead-in time (Years)
4.061	282.54	4.62	2

Table 127: ISB4 indicative costs

6.4.3 Strategic Environmental Assessment summary table

SEA Topic	SEA Objectives	Short-Term Impact	Long-Term Impact					
Biodiversity, Flora and Fauna	1.1 Protect and enhance designated and non-designated ecological sites	-	0					
	1.2 Protect, conserve and enhance biodiversity, including priority species, vulnerable habitats and habitat connectivity	-	-					
	1.3 Reduce the spread or presence of INNS	0	-					
Water	2.1 Protect and enhance the quality of the water environment and water resources	-	--					
	2.2 Increase resilience and reduce flood risk	0	0					
	2.3 Deliver reliable and resilient water supplies	0	+					
Soil	3.1 Protect and enhance the functionality, quantity and quality of soils, including the protection of sites of geological importance	0	-					
Air	4.1 Reduce and minimise air emissions	-	0					
Climatic Factors	5.1 Reduce embodied and operational carbon emissions	-	0					
	5.2 Reduce vulnerability to climate change risks and hazards	0	0					
Historic Environment	6.1 Conserve, protect and enhance the historic environment, including archaeology	-	?					
Landscape	7.1 Conserve, protect and enhance landscape, townscape and seascape character and visual amenity	-	0					
Population and Human Health	8.1 Maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing	0	0					
	8.2 Maintain and enhance tourism and recreation	0	-					
Material Assets	9.1 Minimise resource use and waste production	-	-					
	9.2 Avoid negative effects on built assets and infrastructure	-	0					
Effect	Major Negative Impact	Moderate Negative Impact	Minor Negative Impact	Neutral	Minor Positive Impact	Moderate Positive Impact	Major Positive Impact	Unknown
Key	---	--	-	0	+	++	+++	?

Table 128: ISB4 SEA summary

6.4.4 Strategic Environmental Assessment Mitigation Table

SEA Objective	Mitigation
Water 2.1	Best-practice construction methods and ongoing monitoring will be undertaken to reduce the risks of over abstraction, negative impacts on groundwater and the impact of flooding during the construction phase.
Air 4	Best-practice construction and mitigation methods would be implemented to minimise disturbance effects (e.g. dust suppression and pollution control measures).
Biodiversity 1.1 & 1.2	<p>CIRIA guidance would be followed to help alleviate impact pathways during construction, e.g. through planning the construction programme to avoid the bird breeding period (March to August inclusive). If construction does occur, additional data could be required to determine presence of qualifying features.</p> <p>Measures from the Construction Environmental Management Plan (CEMP) would be followed to ensure compliance and best practice.</p> <p>Trenchless techniques would be implemented, where feasible, to reduce the level of disturbance to habitats within close vicinity of the site. Where possible, development on priority habitat would be avoided to minimise effects.</p> <p>For various options, ecology surveys would be required at future design stages to determine effects and mitigation required. Consultation with statutory bodies would be undertaken to ensure impacts to protected species and habitats are avoided or mitigated appropriately according to statutory requirements.</p>

Table 129: ISB4 Mitigation Activities

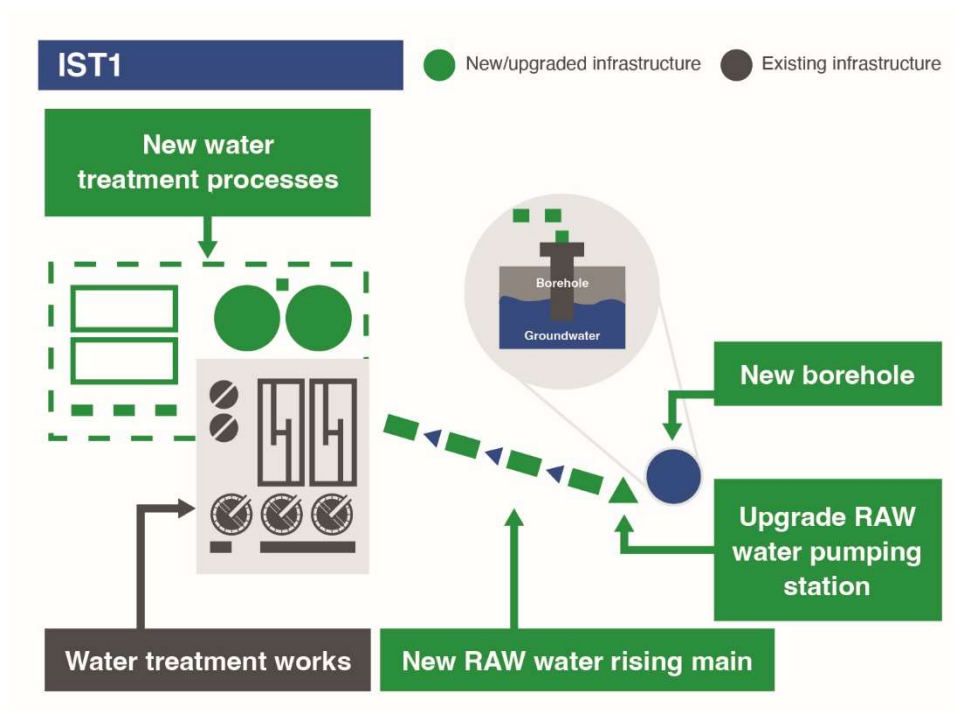
6.5 IST1 Tresco new borehole

Scheme type	New Groundwater
Gains in Water Available For Use	0.03 MI/d
Biodiversity Net Gain	TBC

6.5.1 Description of the option

This option involves the following

- Drilling a new supply borehole
- A new raw water transfer infrastructure (including a new rising main, pumping station, and kiosk)
- A new onsite WTW (including conventional filtration and UV treatment) with new distribution infrastructure to supply flows to Tresco WTW



6.5.2 Indicative Costs

Totex expenditure prior to option in use (£m)	Average Incremental Cost (AIC) (p/m3)	Total NPC (£m)	Option benefits lead-in time (Years)
1.068	395.20	1.01	1

Table 130: IST1 indicative costs

6.5.3 Strategic Environmental Assessment summary table

SEA Topic	SEA Objectives					Short-Term Impact	Long-Term Impact	
Biodiversity, Flora and Fauna	1.1 Protect and enhance designated and non-designated ecological sites					--	-	
	1.2 Protect, conserve and enhance biodiversity, including priority species, vulnerable habitats and habitat connectivity					--	--	
	1.3 Reduce the spread or presence of INNS					0	0	
Water	2.1 Protect and enhance the quality of the water environment and water resources					-	---	
	2.2 Increase resilience and reduce flood risk					0	0	
	2.3 Deliver reliable and resilient water supplies					0	- +	
Soil	3.1 Protect and enhance the functionality, quantity and quality of soils, including the protection of sites of geological importance					-	-	
Air	4.1 Reduce and minimise air emissions					-	0	
Climatic Factors	5.1 Reduce embodied and operational carbon emissions					-	-	
	5.2 Reduce vulnerability to climate change risks and hazards					0	0	
Historic Environment	6.1 Conserve, protect and enhance the historic environment, including archaeology					-	0	
Landscape	7.1 Conserve, protect and enhance landscape, townscape and seascape character and visual amenity					-	-	
Population and Human Health	8.1 Maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing					0	0	
	8.2 Maintain and enhance tourism and recreation					-	-	
Material Assets	9.1 Minimise resource use and waste production					-	-	
	9.2 Avoid negative effects on built assets and infrastructure					-	0	
Effect	Major Negative Impact	Moderate Negative Impact	Minor Negative Impact	Neutral	Minor Positive Impact	Moderate Positive Impact	Major Positive Impact	Unknown
Key	---	--	-	0	+	++	+++	?

Table 131: IST1 SEA summary

6.5.4 Strategic Environmental Assessment Mitigation Table

SEA Objective	Mitigation
Water 2.1	Best-practice construction methods and ongoing monitoring will be undertaken to reduce the risks of over abstraction, negative impacts on groundwater and the impact of flooding during the construction phase.
Air 4	Best-practice construction and mitigation methods would be implemented to minimise disturbance effects (e.g. dust suppression and pollution control measures).
Biodiversity 1.1 & 1.2	<p>CIRIA guidance would be followed to help alleviate impact pathways during construction, e.g. through planning the construction programme to avoid the bird breeding period (March to August inclusive). If construction does occur, additional data could be required to determine presence of qualifying features.</p> <p>Measures from the Construction Environmental Management Plan (CEMP) would be followed to ensure compliance and best practice.</p> <p>Trenchless techniques would be implemented, where feasible, to reduce the level of disturbance to habitats within close vicinity of the site. Where possible, development on priority habitat would be avoided to minimise effects.</p> <p>For various options, ecology surveys would be required at future design stages to determine effects and mitigation required. Consultation with statutory bodies would be undertaken to ensure impacts to protected species and habitats are avoided or mitigated appropriately according to statutory requirements.</p>

Table 132 IST1 Mitigation Activities



South West
Water



Bournemouth
Water

South West Water Limited, Peninsula House, Rydon Lane, Exeter EX2 7HR, Registered in England No 02366665

This document is available in different formats.