# Strategic Regional Water Resource Solutions: Annex B3 Water Framework Directive (WFD) Assessment

# Standard Gate Two Submission for Thames to Southern Transfer (T2ST)

**Date: November 2022** 







Thames to Southern Transfer Water Framework Directive (WFD) Assessment T2ST-G2-REP-09 (Annex B3)

November 2022

# **Notice**

# **Position Statement**

- This document has been produced as the part of the process set out by RAPID for the development of
  the Strategic Resource Options (SROs). This is a regulatory gated process allowing there to be control
  and appropriate scrutiny on the activities that are undertaken by the water companies to investigate
  and develop efficient solutions on behalf of customers to meet future drought resilience challenges.
- This report forms part of suite of documents that make up the 'Gate 2 submission.' That submission
  details all the work undertaken by Thames Water and Southern Water in the ongoing development of
  the proposed SROs. The intention of this stage is to provide RAPID with an update on the concept
  design, feasibility, cost estimates and programme for the schemes, allowing decisions to be made on
  their progress and future funding requirements.
- Should a scheme be selected and confirmed in the Thames Water and Southern Water final Water Resources Management Plans, in most cases it would need to enter a separate process to gain permission to build and run the final solution. That could be through either the Town and Country Planning Act 1990 or the Planning Act 2008 development consent order process. Both options require the designs to be fully appraised, and in most cases an environmental statement to be produced. Where required that statement sets out the likely environmental impacts and what mitigation is required.
- Community and stakeholder engagement is crucial to the development of the SROs. Some 'high level' activity has been undertaken to date. Much more detailed community engagement and formal consultation is required on all the schemes at the appropriate point. Before applying for permission Thames Water and Southern Water will need to demonstrate that they have presented information about the proposals to the community, gathered feedback and considered the views of stakeholders. We will have regard to that feedback and, where possible, make changes to the designs as a result.
- The SROs are at a very early stage of development, despite some options having been considered for several years. The details set out in the Gate 2 documents are still at a formative stage and consideration should be given to that when reviewing the proposals. They are for the purposes of allocating further funding not seeking permission.

# Disclaimer

This document has been written in line with the requirements of the RAPID Gate 2 Guidance and to comply with the regulatory process pursuant to Thames Water's and Southern Water's statutory duties. The information presented relates to material or data which is still in the course of completion. Should the solution presented in this document be taken forward, Thames Water and Southern Water will be subject to the statutory duties pursuant to the necessary consenting process, including environmental assessment and consultation as required. This document should be read with those duties in mind.

Thames to Southern Transfer Water Framework Directive (WFD) Assessment T2ST-G2-REP-09 (Annex B3)

November 2022







# **THAMES TO SOUTHERN TRANSFER (T2ST)**

Annex B3 Water Framework Directive (WFD) Assessment

Atkins Ref: T2ST-G2-REP-09 (Annex B3)

November 2022

# **Contents**

Not	tice			V				
Glo	ssary			1				
Exe	ecutive	summa	ry	2				
1	Introduction							
	1.1	ew	4					
	1.2	Gate 2	Thames to Southern Transfer Options	4				
2	Sum	mary sc	cheme description	5				
	2.1	Overvie	ew .	5				
	2.2	Option B - Central route via Newbury (West of Newbury and remaining west of the A34, to Winchester)						
		2.2.1	Option B Section 1 – Water Treatment Works to BS3	6				
		2.2.2	Option B Section 2 – BS3 to north of the River Enbourne	7				
		2.2.3	Option B Section 3 – River Enbourne, west of the A34 to River Test	7				
		2.2.4	Option B Section 4 – River Test to Yew Hill WSR	7				
		2.2.5	Option B summary	7				
	2.3	Option C - Central route via Newbury (West of Newbury and then crossing to the east of the A34, to Winchester)						
		2.3.1	Option C Section 1 –Water Treatment Works to CS3	8				
		2.3.2	Option C Section 2 – CS3 to north of the River Enbourne	8				
		2.3.3	Option C Section 3 – River Enbourne, east of the A34 to River Test	8				
		2.3.4	Option C Section 4 – River Test to Yew Hill WSR	9				
		2.3.5	Option C summary	9				
	2.4	Asset description						
		2.4.1	BS1/CS1 WTW and PS	9				
		2.4.2	BS2/CS2 BPT, BS5 BPT	10				
		2.4.3	BS3/CS3 PS and BPT, BS4 PS and BPT and CS4 PS and BPT	10				
		2.4.4	BS6/CS5 PS	10				
	2.5	Progran	mme assumptions	10				
3	Meth	nodology	/	11				
	3.1	Approa	ch	11				
	3.2	Level 1		11				
	3.3	Level 2		12				
	3.4	Consult	ation	12				
	3.5							

4	WFD Assessment						
	4.1	Option B assessment	14				
		4.1.1 Level 1 findings	14				
		4.1.2 Level 2 findings	16				
	4.2	Option C assessment	24				
		4.2.1 Level 1 findings	24				
		4.2.2 Level 2 findings	25				
	4.3	Cumulative effects	34				
5	Sum	mary and next steps	37				
A.	Leve	el 1 output sheets	39				
B.	Leve	el 2 output sheets	40				
Tab	iles						
		Option B scheme description summary	8				
Tabl	e 2.2: C	Option C scheme description summary	9				
Tabl	e 3.1: V	VFD assessment impact scoring	11				
Tabl	e 3.2: L	imitations and assumptions applied to Gate 2 WFD assessment	13				
Tabl	e 4.1: L	evel 1 WFD screening colour coding summary	14				
Tabl	e 4.2: C	Option B Level 1 results	14				
Tabl	e 4.3: V	VFD Level 2 assessment summary	18				
Tabl	e 4.4: L	evel 1 WFD screening colour coding summary	24				
Tabl	e 4.5: C	Option C Level 1 results	24				
Table 4.6: WFD Level 2 assessment summary							
Tabl	e 4.7: V	VFD cumulative effects assessment for Options B and C	35				
Figu	ures						
		Schematic of preferred T2ST options B and C	6				
0		•					

# **Glossary**

Acronym	Definition
ACWG	All Company Working Group
BPT	Break pressure tanks
CEMP	Construction Environmental Management Plan
EAR	Environmental Assessment Report
GWDTE	Groundwater Dependent Terrestrial Ecosystems
HRA	Habitats Regulations Assessment
INNS	Invasive Non-Native Species
IROPI	imperative reasons for overriding public interest
PS	Pumping Station
RAPID	Regulators' Alliance for Progressing Infrastructure Development
SEA	Strategic Environmental Assessment
SESRO	South East Strategic Reservoir Option
SPZ	Source protection zone
SRO	Strategic Resource Option
STT	Severn Thames Transfer
T2ST	Thames to Southern Transfer
UKWIR	UK Water Industry Research
WRMP24	Water Resources Management Plan 2024
WRSE	Water Resources South East
WSR	Water supply reservoir
WTW	Water Treatment Works
Zol	Zone of Influence

# **Executive summary**

This report presents the findings of the Level 1 and Level 2 Water Framework Directive (WFD) Assessment undertaken at plan level for Gate 2 for the Thames to Southern Transfer (T2ST) Strategic Resource Option (SRO). Potential impacts on the water environment from pipeline route options have been assessed and summarised.

Both indirect and direct effects of potential impact have been explored to ensure assessment captures the additional upstream and downstream consequences of certain option specific activities.

For Option B the Gate 2 Level 1 WFD assessment indicated that 16 out of 24 waterbodies could be screened out as not requiring further assessment.

The Option B Gate 2 Level 2 WFD assessment has been completed for the remaining eight waterbodies that were screened in. The Level 2 assessment considers that the scheme will have a direct impact on WFD supporting conditions as part of the scheme in one waterbody (River Test Chalk). The findings indicate that there are potential WFD compliance risks associated with the operation of the scheme, due to the works taking place adjacent to and potentially within the River Test SSSI and Groundwater Dependent Terrestrial Ecosystem (GWDTE) and East Aston Common SSSI & GWDTE. Further design detail and mitigation is required to ensure that there is no risk of WFD deterioration to the waterbodies due to the construction and presence of the scheme. Mitigation might include returning groundwater abstracted during temporary construction dewatering back into the ground to help maintain groundwater levels, or additional measures, such as gravel beds and clay stanks, to minimise the disruption to groundwater flow paths from the presence of the pipeline.

For Option C the Gate 2 Level 1 WFD assessment indicated that 16 out of 24 waterbodies could be screened out as not requiring further assessment.

The Option C Gate 2 Level 2 WFD assessment has been completed for the remaining eight waterbodies that were screened in. The Level 2 assessment considers that the scheme will have a direct impact on WFD supporting conditions as part of the scheme in one waterbody (River Test Chalk). The findings indicate that there are potential WFD compliance risks associated with the operation of the scheme, due to the works taking place adjacent to and potentially within the River Test SSSI & GWDTE, East Aston Common SSSI & GWDTE and Bere Mill Meadows SSSI & GWDTE. Further design detail and mitigation is required to ensure that there is no risk of WFD deterioration to the waterbodies due to the construction and presence of the scheme. Mitigation might include returning groundwater abstracted during temporary construction dewatering back into the ground to help maintain groundwater levels, or additional measures, such as gravel beds and clay stanks, to minimise the disruption to groundwater flow paths from the presence of the pipeline.

This Water Framework Directive Assessment, undertaken at plan level, finds that if mitigation measures suggested are followed that no adverse, permanent impacts on the water environment will occur as a result of the implementation of Option B or Option C. A distinguishing factor between the two options is the number of expected crossings of rivers, and roads within 500m of sensitive groundwater features (for example Option C has an additional crossing of the River Test and is located close to an additional GWDTE, Bere Mill Meadows SSSI).

A WFD cumulative effects assessment was undertaken on both route options B and C. The assessment found that cumulative WFD effects were likely during operation from other SROs

(South East Strategic Reservoir Option (SESRO) and Severn to Thames Transfer (STT)), but cumulative effects during construction were unlikely. These effects were identified given the potential for changes in flow and water quality in the River Thames, from SESRO, STT and T2ST. Since T2ST cannot be considered as an option without the use of either SESRO or STT, the in-combination assessment in the River Thames water body is integrated into this assessment. No construction cumulative effects were identified. T2ST is not identified to have any construction or operational related cumulative effects with other water company schemes, or other projects under Local Development Frameworks and Planning Applications.

Further WFD assessment will be required beyond Gate 2 and for future planning/consent applications, to improve the confidence and certainty of WFD risks outlined in the Gate 2 WFD Level 2 assessments and to update the assessment as design progresses.

# Areas for further assessment include:

- Hydroecological risk assessments into the impact of construction dewatering on groundwater levels, and potential implications on watercourses and GWDTE of Kennet and Lambourn Floodplains SSSI, Kennet Valley Alderwoods SSSI, River Test SSSI, East Aston Common SSSI and Bere Mill Meadows SSSI;
- If dewatering is discharged to surface watercourses to help maintain flow, there is the
  potential for short term impacts on water quality. Water quality analysis is required to
  understand the relative quality of groundwater and surface water in these areas and identify
  the significance of any changes in water quality in the watercourses;
- Detailed hydrological assessment of the impacts of changes in groundwater levels due to construction dewatering on flow in the Chalk streams and GWDTE which it supports;
- Consideration of pipejack or micro tunnel crossings for the more sensitive ordinary watercourses; and
- Additional groundwater investigation to understand groundwater levels across the route and how they interact with the pipeline during operation of the scheme. Further investigation should consider where groundwater levels are likely to be intersect with the pipeline, calculation of whether the pipeline could form a barrier to groundwater flow (and potential to increase flood risk), and identification of additional mitigation if required.

Proposed mitigation measures for reducing option impact have also been included as part of the WFD assessment (as set out in Table 4.3 and Table 4.6) and the implementation of this mitigation will determine the overall WFD assessment result. Mitigation measures should also include standard best practice dewatering methods and standard best practice water pollution control measures. Consideration of mitigation measures will be subject to further developments in the optioneering for the routes.

# 1 Introduction

#### 1.1 Overview

This Annex supports the Environmental Assessment Report (EAR) that accompanies the Gate 2 submission to the Regulators' Alliance for Progressing Infrastructure Development (RAPID) for the Thames to Southern Transfer (T2ST). This Annex presents the findings of a Strategic Environmental Assessment (SEA) applied to Options B and C for the Gate 2 T2ST pipeline route options.

# 1.2 Gate 2 Thames to Southern Transfer Options

The assessment presented here develops work undertaken at Gate 1. The assessments undertaken at Gate 1 were applied to six options for transferring water between the Thames Water Region and the Southern Water Region.

Route and site selection undertaken at Gate 2 has identified two options for the T2ST SRO, with 3 possible capacities of 50Ml/d, 80Ml/d and 120Ml/d, transferring potable water from land to the west of A34 near Drayton in Oxfordshire in the Thames Water region to the existing Yew Hill Water Supply Reservoir (WSR) near Winchester in the Southern Water region. These options have been developed based on series of criteria that consider engineering, environmental, social, and planning constraints. The route for each option has been identified within a wider corridor that meets a majority of the criteria and therefore the pipeline can avoid a large number of environmental designations and communities along its route. These options are listed below and further detailed in Section 2.

- Option B Central route via Newbury (West of Newbury and remaining west of the A34, to Winchester); and
- Option C Central route via Newbury (West of Newbury and then crossing to the east of the A34, to Winchester).

Option C is a variation of option B. The majority of the route is common to both, with the only difference being the central section of the route to the south of Newbury which goes west of the A34 in Option B, and east of the A34 in Option C.

Full details of the route and site selection undertaken at Gate 2 is included in the Route and Site Selection Annex A2, which also details the discounted options.

# 2 Summary scheme description

#### 2.1 Overview

The T2ST route begins at a new WTW at the intake location to be located on existing agricultural land to the west of A34 near Drayton in Oxfordshire in the Thames Water region and ends at the existing Yew Hill WSR near Winchester in the Southern Water region. The transfer scheme has 3 possible capacities of 50Ml/d, 80Ml/d and 120Ml/d and includes a number of intermediate break pressure tanks and pumping stations to allow hydraulic transfer of the water between the new WTW at the intake location and Yew Hill WSR. In practice T2ST will either be supplied by either the Severn to Thames Transfer SRO (STT) or the South East Strategic Reservoir Option (SESRO).

A full scheme description can be found in the RAPID Gate 2 Report and in Annex A3 the Concept Design Report, however a summary of the main aspects of the options are included below.

The transfer route between the new WTW at the intake location and Yew Hill WSR is approximately 80-85km in length.

The majority of the pipeline installed will be 1000 to 1100mm diameter at maximum capacity of 120Ml/d which will be installed primarily using open cut excavation. The pipeline route passes predominantly through open rural countryside, crossing a number of roads, rivers and railways. To provide sufficient working space to construct the pipeline a temporary working easement will be required, typically up to 40m wide depending on the final design depth of the pipeline. During construction the topsoil within the easement would be stripped back and stored locally within the easement, followed by excavation of the pipe trench which would be approximately 1.8m wide x 2.2m deep, to allow minimum cover of 900mm above the pipe and 300mm pipe bedding under the pipeline, for a 1000mm diameter pipeline.

Smaller diameter connection pipelines are also required in two locations, to the existing water supply network at Beacon Hill WSR and Micheldever WSR, as detailed in the sections below.

There are expected to be several major road, rail and river crossings located along the preliminary pipeline routes which are anticipated to require trenchless technology. Through consultation with Thames Water and Southern Water it has been assumed at concept design stage that all expected trenchless crossings will comprise a single tunnelled crossing, using pipe jacking and micro tunnelling. Launch and reception shafts would be constructed either side of the surface feature and a concrete tunnel section then constructed between the two shafts.

Pipejack or micro tunnel crossings will be required to cross existing railways, motorways, A roads and B Roads. Other minor road crossings will be installed using open cut methods and temporary road closure.

Pipejack or micro tunnel crossings will also be required to cross main watercourses. Crossings for ordinary watercourses will be installed using open cut methods and temporary culverts.

Full details of the crossings lengths and locations can be found in Annex A3, the Concept Design Report.

There are two options within the T2ST SRO for transferring water from the new WTW site at the intake location to the west of A34 near Drayton to the existing Yew Hill WSR near Winchester as described below:

- Option B Central route via Newbury (West of Newbury and remaining west of the A34, to Winchester), with a total pipeline length including spur connections of 93.8km; and
- Option C Central route via Newbury (West of Newbury and then crossing to the east of the A34, to Winchester), with a total pipeline length including spur connections of 94.2km.

Option C is a variation of option B. The majority of the route is common to both, with the only difference being the central section of the route to the south of Newbury which goes west of the A34 in Option B, and east of the A34 in Option C.

A schematic of the Options B and C is provided in Figure 2.1 which shows indicative locations for the WTW, pipe route corridors and connection points to the existing water network.



Figure 2.1: Schematic of preferred T2ST options B and C

Each route can be split into 4 sections as discussed in the below sections.

# 2.2 Option B - Central route via Newbury (West of Newbury and remaining west of the A34, to Winchester)

# 2.2.1 Option B Section 1 – Water Treatment Works to BS3

This section is approximately 18.0km in length.

2no. Pipe jack crossings will be required along this section including the Didcot to Swindon railway line and the A417. The following above ground assets are located within this section:

- BS1 Water Treatment Works (WTW) and Pumping Station (PS) 120Ml/d, approx. land area 300m x 150m;
- BS2 Break Pressure Tank (BPT) 5MI/d, approx. land area 75 x 55m; and
- BS3 PS and BPT 5MI/d, approx. land area 80 x 80m.

#### 2.2.2 Option B Section 2 – BS3 to north of the River Enbourne

This section is approximately 19.6km in length.

8no. Pipe jack crossings will be required along this section including B4494, M4, Winterbourne Road, River Lambourn, B4000, A4, Wick Wood, and River Kennet & Newbury railway line (including the Kennet and Avon Canal). There are no above ground assets required within this section.

#### 2.2.3 Option B Section 3 – River Enbourne, west of the A34 to River Test

This section is approximately 32.1km in length.

The route includes a 250mm diameter pipeline connection to an existing tank at Beacon Hill, approximately 1.8km in length.

The route also includes a 700mm diameter pipeline connection to the existing Micheldever WSR, approximately 7km in length.

9no. Pipe jack crossings will be required along this section including River Enbourne, A343, Bourne Rivulet/B3048, Andover railway line, B3400, A303 (1), A303 (2), B3048 and the River Test.

The following assets are located within this section:

- BS4 PS and BPT Options 1, 2 and 3 (only one location required, but currently reviewing 3 options) 5MI/d, approx. land area 80 x 80m;
- BS5 BPT 5MI/d, approx. land area 75 x 55m;
- Beacon Hill WSR existing asset, not part of this assessment;
- Micheldever WSR existing asset, not part of this assessment; and
- BS6 PS, approx. size 65 x 40m.

# 2.2.4 Option B Section 4 – River Test to Yew Hill WSR

This section is approximately 24.1km in length.

6no. Pipe jack crossings will be required along this section including A303, River Dever, A30, A272, B3049, and A3090.

The route includes a connection to the existing Crabwood WSR.

The route ends with a connection to the existing Yew Hill WSR.

There are no above ground assets proposed for this section.

# 2.2.5 Option B summary

Table 2.1 summarises the proposed works for Option B.

Table 2.1: Option B scheme description summary

Section	Pipe length	New assets	Trenchless crossings of natural features
Section 1 – Water Treatment Works to BS3	18.0km	BS1 WTW and PS BS2 BPT BS3 PS and BPT	None
Section 2 –BS3 to north of the River Enbourne	19.6km	None	River Lambourn Wick Wood River Kennet
Section 3 – River Enbourne, west of A34 to River Test	32.1km	BS4 PS and BPT BS5 BPT BS6 PS	River Enbourne Bourne Rivulet River Test
Section 4 – River Test to Yew Hill WSR	24.1km	None	River Dever

# 2.3 Option C - Central route via Newbury (West of Newbury and then crossing to the east of the A34, to Winchester)

# 2.3.1 Option C Section 1 –Water Treatment Works to CS3

As per option B.

This section is approximately 18.0km in length.

2no. Pipe jack crossings will be required along this section including the Didcot to Swindon railway line and the A417.

The following assets are located within this section:

- CS1 WTW and PS 120Ml/d, approx. land area 300m x 150m;
- CS2 BPT 5MI/d, approx. land area 75 x 55m; and
- CS3 PS and BPT 5MI/d, approx. land area 80 x 80m.

### 2.3.2 Option C Section 2 – CS3 to north of the River Enbourne

As per option B.

This section is approximately 19.6km in length.

8no. Pipe jack crossings will be required along this section including B4494, M4, Winterbourne Road, River Lambourn, B4000, A4, Wick Wood, and River Kennet & Newbury railway line (including the Kennet and Avon Canal).

There are no above ground assets required within this section.

# 2.3.3 Option C Section 3 – River Enbourne, east of the A34 to River Test

This section is approximately 32.5km in length.

The route includes a 250mm diameter pipeline connection to an existing tank at Beacon Hill, approximately 4.2km in length.

The route also includes a 700mm diameter pipeline connection to the existing Micheldever WSR, approximately 9.2km in length.

15No. Pipe jack or micro tunnel crossings will be required along this section including, River Enbourne, A34 (1), A343, Penwood Road, Woodland (1), Hopping Common and B4640,

Woodland (2), A34 (2), Whitchurch railway line, B3400, River Test (1), A34 (3), River Test (2), B3048, A303 (1), A303 (2).

The following assets are located within this section:

- CS4 PS and BPT 5MI/d, approx. land area 80 x 80m;
- Beacon Hill WSR existing asset, not part of this assessment;
- · Micheldever WSR existing asset, not part of this assessment; and
- CS5 PS, approx. land area 65 x 40m.

#### 2.3.4 Option C Section 4 – River Test to Yew Hill WSR

As per option B.

This section is approximately 24.1km in length.

6no. Pipe jack crossings will be required along this section including A303, River Dever, A30, A272, B3049, and A3090.

The route includes a connection to the existing Crabwood WSR.

The route ends with a connection to the existing Yew Hill WSR.

There are no above ground assets proposed for this section.

#### 2.3.5 Option C summary

Table 2.1 summarises the proposed works for Option C.

Table 2.2: Option C scheme description summary

Section	Pipe length	New assets	Trenchless crossings of natural features
Section 1 – Water Treatment Works to CS3	18.0km	CS1 WTW and PS CS2 BPT CS3 PS and BPT	None
Section 2 – CS3 to River Enbourne	19.6km	None	River Lambourn Wick Wood River Kennet
Section 3 – River Enbourne, east of the A34 to River Test	32.5km	CS4 PS and BPT CS5 PS	River Enbourne Woodland and Hopping Common Woodland (west of Burghclere) River Test (two crossings required)
Section 4 – River Test to Yew Hill WSR	24.1km	None	River Dever

### 2.4 Asset description

The below sections describe the new assets to be installed as part of the SRO and list the equipment expected to be associated with them.

#### 2.4.1 BS1/CS1 WTW and PS

The WTW is to be located at the north end of both corridor options B and C. Raw water will enter the screening and treatment processing before entering the option pipelines. The waste

water by-product of the treatment process will be sent for treatment to a local sewage treatment works. The WTW has approximately a 45,000m<sup>2</sup> area and will contain the following equipment

- Waste and sludge handling
- Ozone contact tanks
- Granular Activated Carbon (GAC) Plant
- UV plant
- Rapid Gravity Filter (RGF) plant
- Chlorine contact tank
- Dissolved Air Flotation (DAF) plant
- Flocculation tank
- Welfare
- Chemical storage
- Treated water storage
- Pumping station

It should be noted that at the time of writing no formal plans of the WTW has been issued. It is unknown at this point where equipment will be located on the site. An area has been identified with an approximate boundary for the location of the WTW and will be assessed against flood risk and other environmental impacts.

### 2.4.2 BS2/CS2 BPT, BS5 BPT

The area size of the BPT is approximately 4,125m<sup>2</sup> and only includes a 5MI storage tank and access roads.

# 2.4.3 BS3/CS3 PS and BPT, BS4 PS and BPT and CS4 PS and BPT

For each of the PS and BPT assets, the PS and BPT are located on one site with area size approximately 6,400m<sup>2</sup> and includes the following equipment:

- HV/LV transformer x2
- Surge tanks
- Standby generator
- Pumping station
- 5MI Storage tanks

# 2.4.4 BS6/CS5 PS

The PS area size is approximately 2,600m<sup>2</sup> and includes the following equipment.

- HV/LV transformer
- Surge tanks
- Standby generator
- Pumping station

#### 2.5 Programme assumptions

The draft Water Resources South East (WRSE) regional plan sets out the overall need for T2ST and this feeds into the relevant Water Resource Management Plans (WRMPs) from both Thames Water and Southern Water. The draft WRSE regional plan has determined a need for a T2ST scheme of up to 120Ml/d by 2040-2053 depending on the scenario in the adaptive plan. Therefore, at this stage, it is envisaged the project will not be operational until at least 2040.

# 3 Methodology

# 3.1 Approach

The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 is the UK legislation that imposes legal requirements to protect and improve the water environment (including rivers, coasts, estuaries, lakes, ground waters and canals).

The WFD requires all waterbodies (both surface and groundwater) to achieve 'good status'. The Directive also requires that waterbodies experience no deterioration in status. Good status is a function of good ecological status (biological, physico-chemical and hydromorphological elements and specific pollutants) and good chemical status (Priority Substances and Priority Hazardous Substances).

The All Company Working Group (ACWG) developed a consistent framework for undertaking WFD assessments for SROs to demonstrate that options would not cause deterioration in status of any WFD waterbodies. The assessment considers mitigation that would need to be put in place to protect waterbody status. The assessment also considers any potential for impediment or improvement relating to WFD future objectives.

Two stages of assessment are completed under the ACWG WFD approach, an initial Level 1 basic screening and a Level 2 detailed impact screening. These are conducted/reported using a spreadsheet assessment tool which is automated based on option information for Level 1 and expert judgment for Level 2, with reference to baseline WFD classification and measures data as outlined in the RBMP.

#### 3.2 Level 1

The Level 1 WFD assessment is used as an initial high-level assessment of the impacts associated with various option activities. Each waterbody identified as potentially affected by the project option is assessed against a list of possible activities, each with a predetermined impacts on the water environment. This allows the assessor to identify each of the activities that occur within a particular waterbody and evaluate the high level risk which could potentially occur in each. The impact scoring used is set out below:

Table 3.1: WFD assessment impact scoring

Level 1 assessment	Impact	Impact Score	Description
	Very beneficial		Impacts that, taken on their own, have the potential to lead to the improvement in the ecological status or potential of a WFD quality element for the entire waterbody
Waterbody passes Level 1	Beneficial		Impacts that, when taken on their own, have the potential to lead to a minor localised or temporary improvement that does not affect the overall WFD status of the waterbody or any quality elements
, , , , , , , , , , , , , , , , , , ,	No/minimal		No measurable change in the quality of the water environment or the ability for target WFD objectives to be achieved.
	Low	1	Impacts that, when taken on their own, have the potential to lead to a minor localised, short-term and fully reversible effects on one or more of the quality elements but would not result in the lowering of WFD status. Impacts would be very unlikely to prevent any target WFD objectives from being achieved.
Waterbody requires level 2	Medium	2	Impacts that, when taken on their own, have the potential to lead to a widespread or prolonged effect on the quality of the water environment that may result in the temporary reduction in WFD status. Impacts have the potential to prevent target WFD objectives from being achieved.
WFD assessment	High	3	Impacts when taken on their own have the potential to lead to a significant effect and permanent deterioration of WFD status. Potential for high impact on preventing target WFD objectives from being achieved.

At the end of the Level 1 assessment, any waterbodies where adverse impacts at a waterbody scale could potentially occur (i.e. any waterbody where a score of either 2 or 3 has been assigned) are put forward for a more detailed Level 2 assessment.

#### 3.3 Level 2

The second stage of WFD assessment has been completed for T2ST SRO options that were screened in at Level 1, following the steps:

- Waterbody scale detailed assessment of impacts to each WFD quality element for each activity proposed as part of an SRO option;
- Assessment of data confidence level and design certainty confidence levels are assigned
  for each assessment, based on professional judgement of the quality and availability of both
  physical data and design information about the option at the time of assessment (note,
  confidence/certainty are expected to be low/medium at Gate 2 assessment and will increase
  over time). Where the confidence levels are medium or low, the requirements for further data
  or design information in order to raise this confidence level for future gates will be listed;
- Identification of further mitigation needs;
- Assessment of impacts after mitigation (scoring on a 6-point scale); and
- Identification of activities to improve certainty of assessment outcomes.

#### 3.4 Consultation

Engagement during Gate 2 has focused on development of the pipeline route corridor and location of above ground infrastructure.

Regular engagement has been undertaken with the National Appraisal Unit (NAU) during Gate 2. Key areas of engagement include NAU feedback on risks of options that involved raw water transfers. NAU provided some data on environmental constraints to inform the route and site selection process, as well as providing feedback on the shortlisted options, recognising there remained challenges with all options. NAU did not indicate that the preferred routes were not feasible and provided information on the expected mitigation, for example, for crossing watercourses.

Engagement with the NAU has helped refine the options to potable transfers. Information and feedback provided by NAU has informed route and site selection, helping to avoid sensitive areas. Mitigation suggestions provided by NAU have been included in the design and environmental assessments. Constraints and location-specific challenges flagged by NAU have been identified as areas for further work.

Stakeholder engagement activity with other stakeholders is described in the Gate 2 Report.

# 3.5 Assumptions and limitations

This assessment has been undertaken assuming the maximum transfer capacity of 120MI/d.

Information provided by third parties, including publicly available information and databases, is considered correct at the time of assessment (June 2022). Due to the dynamic nature of the environment, conditions may change in the period between the preparation of this report, and the undertaking of the proposed works. Changes since the date of assessment, such as additional designated sites, will be taken into account in future assessments.

The limitations and assumptions in Table 3.2 have been applied to the WFD assessment at Gate 2 to apply a consistent proportionate approach for the level of design development and supporting technical data and analysis. As the project continues through the stages of design development, a precautionary approach has been exercised because of residual uncertainty.

Table 3.2: Limitations and assumptions applied to Gate 2 WFD assessment

Topic	Description of assumption
Abstraction location	Abstraction to supply water for the scheme will be via SESRO, which will abstract water from the River Thames or STT which will supply additional flow to the River Thames.  This assessment has considered the impact of the additional abstraction required to feed SESRO in order to support the T2ST scheme on flow in the River Thames. It has also considered the potential impacts of the T2ST scheme on water quality in the reservoir and therefore any change to the impact of SESRO discharges to the River Thames. However, this
	assessment does not consider the impact of the main SESRO scheme. This will be reported in the SESRO WFD and EAR reports.
	For the STT option, it is assumed that sufficient flow will be provided by STT such that the abstraction required for T2ST will lead to no net change from baseline flows in the River Thames. Consideration of the changes in water quality in the River Thames from the STT is not assessed and will be reported in the STT WFD and EAR reports. This assessment assumes that STT will not lead to changes in baseline conditions for this waterbody.
Study area	The geographical extent of the WFD assessment has been limited to waterbodies between the start point of the transfer and the existing Yew Hill WSR near Winchester.
Design	The design assumptions are as set out in the Summary scheme description (Section 2).
Pipelines watercourse crossing	Assessment assumes pipelines will be underground (pipejack or micro tunnel crossings beneath any main rivers). At this time it is assumed ordinary watercourse crossings will constructed below the bed of the watercourse and will use temporary culverts or pumps to allow for installation. Due to the temporary nature of these works and the size of the watercourses affected these are not consider to constitute a WFD risk. The works will require permitting through the appropriate authority and it is assumed any site specific mitigation needed will be identified and implemented through that process.
Pipelines	Where pipelines have the potential to be installed below groundwater level, the pipeline bedding material is assumed to be permeable, to promote the movement of groundwater across the pipeline (i.e. the pipeline will not form a substantial barrier to groundwater flow). Clay stanks will also be used to minimise the potential for groundwater to flow along the line of the pipe, and therefore forming a preferential flow path.
WFD baseline data	The ACWG approach uses WFD 2015 baseline data, as the current officially reported baseline for the 2015-2021 Cycle 2 RBMP¹. The RBMPs are in the process of being updated, and it is anticipated that 2019 WFD baseline data will become the 'new' baseline for Cycle 3. To make sure of consistency with the legal baseline, the 2015 data has been used at Gate 2, but it is acknowledged that this is likely to need to be updated once the final RBMPs are published. Changes in baseline data between 2015-2019 have been reviewed and are presented in Appendix Å.
Data confidence	This assessment is based on the design information and baseline WFD data available at the time of writing. Further investigations and data collection are required in some areas to ensure the potential implications of the construction of the scheme are understood and can be mitigated. This assessment should also be reviewed and updated as more design information becomes available.

<sup>&</sup>lt;sup>1</sup> River Basin Management Plan 2015 (Cycle 2): available online at <a href="https://www.gov.uk/government/collections/river-basin-management-plans-2015">https://www.gov.uk/government/collections/river-basin-management-plans-2015</a>

# 4 WFD Assessment

# 4.1 Option B assessment

# 4.1.1 Level 1 findings

A total of 24 WFD river and groundwater bodies were identified as requiring assessment at Level 1. Of these, the Level 1 WFD assessment indicated that 16 of the 24 waterbodies could be screened out as not requiring further assessment. Eight of the 24 waterbodies assessed were identified as requiring Level 2 assessments.

Table 4.1 presents a key to explain colour-coding for whether waterbodies were screened in or out of further assessment. Table 4.2 provides a summary of the Level 1 WFD assessment for the scheme across the 24 WFD river and groundwater bodies that were identified.

The Level 2 WFD Assessment is presented in Section 4.2 of this report.

# Table 4.1: Level 1 WFD screening colour coding summary

Green – Passes Level 1 WFD, no further assessment

Amber – Level 1 WFD score >1, screened in for Level 2

# Table 4.2: Option B Level 1 results

WFD waterbody	Screening outcome	Comment
GB106039030334 (Thames, Evenlode to Thame)		Abstraction from the River Thames in high flow events as part of SESRO. T2ST scheme to abstract additional volume as part of transfer.  Or Abstraction from the River Thames will be balanced by a discharge into the River Thames upstream from STT.
GB106039023360 (Cow Common Brook and Portobello Ditch)		BS1 WTW and PS and main transfer pipeline route
GB106039023660 (Ginge Brook and Mill Brook)		Main transfer pipeline route
GB106039023600 (Mill Brook and Bradfords Brook system, Wallingford)		Main transfer pipeline route
GB106039023300 (Pang)		BS2 BPT and BS3 PS and BPT, main transfer pipeline route
GB106039023210 (Winterbourne)		Main transfer pipeline route
GB106039023220 (Lambourn, Source to Newbury)		Main transfer pipeline route. River crossing 440m from Lambourn and Kennet Floodplain SSSI
GB106039023174 (Middle Kennet, Hungerford to Newbury)		Main transfer pipeline route, river crossing of River Kennet, Kennet & Avon Canal and railway line
GB106039017280 (Enborne, Source to downstream A34)		BS4 PS and BPT, main transfer pipeline route
GB106039017210 (Penwood Stream)		Main transfer pipeline route
GB107042022710 (Test Upper)		BS5 BPT and main transfer pipeline route
GB107042022720 (Bourne Rivulet)		Main transfer pipeline route
GB107042022700 (Test – Bourne Rivulet to conf Dever)		BS6 PS and main transfer pipeline route River crossing in River Test and East Aston Common SSSI's (0m). Road crossing within 500m of River Test SSSI (350m)

WFD waterbody	Screening outcome	Comment
GB107042022810 (Anton – Upper)		Existing Micheldever WSR and new BS6 PS and main transfer pipeline route.
GB107042022770 (Dever)		Main transfer pipeline route. River crossing in River Test SSSI (0m)
GB107042022740 (Sombourne Stream)		Main transfer pipeline route
GB107042022730 (Nun's Walk Stream)		Existing Crabwood WSR and main transfer pipeline route
GB107042016310 (Monk's Brook)		Main transfer pipeline route
GB107042022580 (Itchen)		Existing Yew Hill WSR, and main transfer pipeline route
GB40601G601000 (Vale of White Horse Chalk, GW)		Main transfer pipeline route
GB40601G600900 (Berkshire Downs Chalk, GW)		BS2 BPT and BS3 PS and BPT and main transfer pipeline route. River Lambourn and River Kennet crossings within 500m of SSSI's / sensitive GW features
GB40602G601600 (Thatcham Tertiaries, GW)		Main transfer pipeline route
GB40701G501200 (River Test Chalk, GW)		BS5 BPT, BS6 PS and main transfer pipeline route. River Test, River Dever and B3048 crossings within 500m of SSSI's / sensitive GW features
GB40701G505000 (River Itchen Chalk, GW)		Main transfer pipeline route and existing Yew Hill WSR.

# 4.1.1.1 Thames (Evenlode to Thame) waterbody

The Thames (Evenlode to Thame) waterbody has been included in this assessment as it is the source of water for this transfer option. For this assessment it is assumed that the water will be supplied to the new WTW at the intake location either as part of the SESRO scheme, or a connection from the STT scheme prior to discharge to the River Thames.

For the SESRO option, it is recognised that water quality modelling, hydraulic modelling and WFD assessments have been undertaken for the proposed SESRO which detail exact abstraction volumes, conditions and water quality changes. From these assessments it has been clarified that water will be abstracted from the Thames during high flow events and stored in SESRO reservoir for later discharge to the Thames in low flow events as well as to supply other SRO's such as T2ST. The inclusion of the T2ST scheme will lead to the requirement to abstract water from the Thames for a few additional days a year over and above that for the SESRO scheme only.

This T2ST WFD assessment has considered the additional implications of the T2ST scheme on the volume of water abstracted from the River Thames to support this scheme. It has also considered the implications of the additional water abstraction and discharged for T2ST on the overall water quality in the reservoir and therefore, any possible additional changes in water quality when SESRO is discharging into the River Thames.

It is important to note that this assessment deals only with the additional changes caused by the T2ST scheme. Since the T2ST option can not be operated without a corresponding option to support flow in the River Thames, this assessment on the Thames (Evenlode to Thame) waterbody is based on the baseline of SESRO in operation, rather than current baseline conditions. For impacts of SESRO against current baseline this assessment should be read in conjunction with the SESRO WFD assessment.

For the STT option, water for T2ST would be taken from a direct connection to the STT pipeline before STT discharge to the River Thames at Culham. Therefore, the STT connection to T2ST

would have no impact on flows within the River Thames and hence is not considered in this WFD assessment.

### 4.1.1.2 Impacts of river and road crossings

As summarised in Table 4.2, the seven other waterbodies to be assessed at Level 2 include SSSI sites within 500m of proposed river crossings. These sites are also identified as Groundwater Dependent Terrestrial Ecosystems (GWDTE) which are likely to be supported by groundwater flow. These sites are therefore sensitive to impacts on groundwater flow and quality as a result of below ground structures and associated dewatering processes which come as a result of shafts, pipejacking and micro tunnelling activities involved in rail, road and river crossings. The extent of the impacts was discussed in the Level 2 assessment.

All other waterbodies have been scoped out based on the assumptions:

- All major river crossings will be carried out using pipejacking or microtunnelling and impacts of construction on these watercourses will be minimised;
- Pipeline bedding material will be such that it facilitates the movement of groundwater around the pipeline. If required, Land drainage will be provided on the upgradient side of the scheme such that they will not cause an increase in groundwater flooding risk.

# 4.1.2 Level 2 findings

The Level 2 WFD assessment continued the evaluation of the eight waterbodies identified in the Level 1 assessment. A high level summary of the results are provided in Table 4.3. The full details of the assessment can be found in Appendix B.

### 4.1.2.1 Thames (Evenlode to Thame)

This assessment assumes water will be sourced from SESRO to supply the T2ST transfer (as mentioned in Section 4.1.1.1). Hydraulic modelling has been carried out under the SESRO SRO project which shows that a few days of additional abstraction from the River Thames into SESRO are required to support the T2ST scheme. This abstraction will take place during high flows in the River Thames and is assessed to have a negligible impact over the abstraction for the SESRO scheme.

Initially, concerns were raised over the potential impacts taking water from SESRO could have on water quality within the reservoir, something which could lead to further downstream consequences when water is discharged back into the Thames by SESRO in low flow periods. Water quality and flow modelling carried out as part of the SESRO project, suggests that there would be negligible impact on water quality in the reservoir and in the River Thames as a result of the support of the T2ST scheme. Therefore, the Level 2 assessment has shown negligible water quality impacts over those of the SESRO scheme. Please see the SESRO option WFD assessment for the impact of the remainder of the SESRO scheme on the Thames (Evenlode to Thame) waterbody. Main findings of the Level 2 assessment are summarised below:

- Negligible additional impact on flow and velocity due to additional abstraction for supporting the T2ST scheme.
- Negligible impact on water quality in the water body due to the changes in water quality in SESRO caused by the additional T2ST scheme support.

# 4.1.2.2 Surface water impacts of river and road crossings

Four waterbodies, Lambourn (Source to Newbury), Middle Kennet (Hungerford to Newbury), Test (Bourne Rivulet to conf Dever) and Dever; were carried forward to Level 2 to assess the surface water impacts of several river and road crossings which occur close to or within

designated sites which are directly linked to the watercourse channel (such as floodplains etc). The sites identified are the Kennet and Lambourn Floodplains SSSI & GWDTE, Kennet Valley Alderwoods SSSI & GWDTE, River Test SSSI & GWDTE and East Aston Common SSSI & GWDTE. The main findings are summarised below:

- Discharge of water collected as part of dewatering activity could temporarily influence groundwater levels, and therefore river flows into the rivers (Lambourn, Kennet, Test and Dever). This could result in temporary and localised changes in flow velocity and volume. While these are assumed to have temporary impact on the rivers, the implications of these changes on the SSSI sites, and associated biology, needs further investigation. A hydroecology study is recommended to identify likely influence of dewatering on groundwater levels and river flow, and a review of potential ecological impacts of these changes.
- If dewatering is discharged to surface watercourses to help maintain flow, there is the
  potential for short term impacts on water quality. Further work needed to understand the
  relative quality of groundwater and surface water in these areas, to ensure groundwater
  discharge does not have an adverse impact on water quality and therefore biology in the
  watercourses.

# 4.1.2.3 Groundwater impacts of river and road crossings

Two groundwater bodies, Berkshire Downs Chalk and River Test Chalk are located beneath the three SSSI sites set out in Section 4.1.2.2. These sites are classified as GWDTE by the EA and are likely to depend on groundwater levels/flow. These two groundwater bodies were carried forward to the Level 2 assessment due to potential impacts on the GWDTE as a result of the construction of the proposed river and road crossings. These groundwater bodies were assessed to determine the impacts changes in groundwater levels, flow and quality will have on the sensitive features and their WFD status. The main findings are summarised below:

- Dewatering during construction could leading to a reduction in groundwater levels beneath the SSSI sites. These temporary changes to flow and level of groundwater could impact GWDTE's.
- The permanent presence of the pipeline will only lead to minor localised changes in water levels due to embedded mitigation (permeable pipeline bedding material to allow groundwater to pass around the pipeline, use of clay stanks to ensure pipeline does not provide a longitudinal preferential flow path). Further investigation is needed to identify where groundwater levels are likely to be intersect with the pipeline, calculate whether the pipeline could form a barrier to groundwater flow (and potential to increase flood risk), and identify additional mitigation if required.
- Several chalk rivers cross these waterbodies and flow could be reduced temporarily in these watercourses due to construction of the scheme.

In addition, a third groundwater body, Thatcham Tertiaries, was included in the Level 2 assessments due to the potential for impacts on drinking water protected areas, as the scheme crosses several source protection zones (SPZ) for public water supply.

Table 4.3: WFD Level 2 assessment summary

No.	Waterbody ID	Waterbody Name	Confidence in WFD data	Confidence in option design	Requirements to improve confidence	Deterioration between status classes	Compromises waterbody objectives	Pre mitigation impact score	Suggested mitigation	Potential post mitigation impact score
1	GB106039030334	Thames, Evenlode to Thame	Medium	Medium	Detailed review of all additional baseline ecological WFD data, including results of any surveys already undertaken for this scheme Further information about how much additional abstraction will be required for the T2ST scheme.	No	No	0	Fish and eel screening at new intake Minimisation of changes to hydrological regime through adjustment of abstraction conditions. Provision for dechlorination of pipeline water when draining down pipeline before discharge to watercourse.	0
2	GB106039023220	Lambourn, Source to Newbury	Low	Medium	Detailed review of all additional baseline ecological WFD data, including results of any surveys already undertaken for this scheme  Detailed hydrological assessment of the impacts of dewatering on flow in the watercourse  Further information about option crossing	No	No	1	Any dewatering needed for the construction will be discharged to the river to help maintain flow	1

No.	Waterbody ID	Waterbody Name	Confidence in WFD data	Confidence in option design	Requirements to improve confidence	Deterioration between status classes	Compromises waterbody objectives		Suggested mitigation	Potential post mitigation impact score
					of the River Lambourn.					
3	GB106039023174	(Middle Kennet, Hungerford to Newbury)	Low	Medium	Detailed review of all additional baseline ecological WFD data, including results of any surveys already undertaken for this scheme  Detailed hydroecological assessment of the impacts of temporary abstraction for dewatering on flow in the watercourses  Further information about option crossing of the River Lambourn.	No	No	1	Any dewatering needed for the construction will be discharged to the river to help maintain flow. If shafts needed for river crossing these should be located outside of the SSSI/SAC boundary, where possible. Provision for dechlorination of pipeline water when draining down pipeline before discharge to watercourse.	1
4	GB107042022700	Test – Bourne Rivulet to conf Dever	Low	Medium	Detailed review of all additional baseline ecological WFD data, including results of any surveys already undertaken for this scheme Detailed hydrological assessment of the impacts of abstraction on flow in the watercourses	No	No	1	If shafts for river crossing, these should be located outside of the SSSI boundary, where possible.	1

No.	Waterbody ID	Waterbody Name	Confidence in WFD data	Confidence in option design	Requirements to improve confidence	Deterioration between status classes	Compromises waterbody objectives		Suggested mitigation	Potential post mitigation impact score
					Further information about option crossing of the River Test and potential implications on SSSIs.					
5	GB107042022770	Dever	Low	Medium	Detailed review of all additional baseline ecological WFD data, including results of any surveys already undertaken for this scheme Detailed hydrological assessment of the impacts of abstraction on flow in the watercourses Further information about option crossing of the River Dever and potential implications on SSSI.	No	No	1	If shafts are required for river crossing, these should be located outside of the SSSI boundary, where possible.	1
6	GB40601G600900	Berkshire Downs Chalk	Low	Medium	Additional groundwater monitoring to understand groundwater levels and how they interact with the scheme Detailed hydrological assessment of the impacts of dewatering on flow in the watercourses	No	No	1	Dewatering discharge to surface water courses to maintain flow. Use of Clay stanks (clay bunds constructed within the pipeline trench) to be used in pipeline route where	

No.	Waterbody ID	Waterbody Name	Confidence in WFD data	Confidence in option design	Requirements to improve confidence	Deterioration between status classes	Compromises waterbody objectives	Pre mitigation impact score	Suggested mitigation	Potential post mitigation impact score
					Further information about option impacts on SSSI sites.				groundwater potentially encountered, to ensure pipeline route does not become a preferential flow path for groundwater. If shafts are required, they are to be sealed to ensure minimal groundwater egress after construction, where possible. Dewatering to be discharged to local watercourse to help maintain flow.	
7	GB40602G601600	Thatcham Tertiaries	Low	Medium	Additional groundwater monitoring to understand groundwater levels and how they interact with the scheme	No	No	1	Dewatering discharge to surface water courses to maintain flow. Use of Clay stanks (clay bunds constructed within the pipeline trench) to be used in pipeline route where groundwater	1

No.	Waterbody ID	Waterbody Name	Confidence in WFD data	Confidence in option design	Requirements to improve confidence	Deterioration between status classes	Compromises waterbody objectives		Suggested mitigation	Potential post mitigation impact score
									potentially encountered, to ensure pipeline route does not become a preferential flow path for groundwater.	
8	GB40701G501200	River Test Chalk	Low	Medium	Additional groundwater monitoring to understand groundwater levels and how they interact with the scheme  A hydroecology study is recommended to identify likely influence of dewatering on groundwater levels and river flow, and a review of potential ecological impacts of these changes.  Consideration of where additional mitigation is required including potential use recharge trenches to return water to the ground and minimise the impact of construction.	Uncertain	Uncertain	2	Use of Clay stanks (clay bunds constructed within the pipeline trench) to be used in pipeline route where groundwater potentially encountered, to ensure pipeline route does not become a preferential flow path for groundwater. If shafts are required for river crossings these should be located outside of the SSSI boundary, where possible. Shafts to be sealed to ensure minimal	1

No. Waterbody ID	Waterbody Name	Confidence in WFD data	Confidence in option design	Requirements to improve confidence	Deterioration between status classes	Compromises waterbody objectives	Suggested mitigation	Potential post mitigation impact score
				Detailed hydrological assessment of the impacts of abstraction on flow in the watercourses Further information about option impacts on SSSI sites.			groundwater egress after construction, where possible.	

# 4.2 Option C assessment

# 4.2.1 Level 1 findings

A total of 24 WFD river and groundwater bodies were identified as requiring assessment at Level 1. Of these, the Level 1 WFD assessment indicated that 16 of the 24 waterbodies could be screened out as not requiring further assessment. Eight of the 24 waterbodies assessed were identified as requiring Level 2 assessments.

Table 4.4 presents a key to explain colour-coding for whether waterbodies were screened in or out of further assessment. Table 4.5 provides a summary of the Level 1 WFD assessment for the scheme across the 24 WFD river and groundwater bodies that were identified.

The Level 2 WFD Assessment is presented in Section 4.2 of this report.

Table 4.4: Level 1 WFD screening colour coding summary

Green – Passes Level 1 WFD, no further assessment

Amber – Level 1 WFD score >1, screened in for Level 2

Table 4.5: Option C Level 1 results

WFD waterbody	Screening outcome	Comment
GB106039030334 (Thames, Evenlode to Thame)		Abstraction from the Thames in high flow events as part of SESRO – T2ST scheme to abstract additional volume as part of transfer.  Or Abstraction from the River Thames will be balanced by a discharge into the River Thames upstream from STT.
GB106039023360 (Cow Common Brook and Portobello Ditch)		CS1 WTW and PS and main transfer pipeline route
GB106039023660 (Ginge Brook and Mill Brook)		Main transfer pipeline route
GB106039023600 (Mill Brook and Bradfords Brook system, Wallingford)		Main transfer pipeline route
GB106039023300 (Pang)		CS2 BPT and CS3 PS and BPT, main transfer pipeline route
GB106039023210 (Winterbourne)		Main transfer pipeline route
GB106039023220 (Lambourn, Source to Newbury)		River crossing within 500m of Lambourn and Kennet Floodplain SSSI (440m)
GB106039023174 (Middle Kennet, Hungerford to Newbury)		Main transfer pipeline route, river crossing of River Kennet, Kennet & Avon Canal and railway line
GB106039017280 (Enborne, Source to downstream A34)		BS4 PS and BPT, main transfer pipeline route
GB106039017210 (Penwood Stream)		Main transfer pipeline route
GB106039017310 (Enborne, downstream A34 to Burghclere Brook)		Main transfer pipeline route
GB106039017230 (Earlstone Stream and Burghclere Brook, source to Enborne)		Main transfer pipeline route
GB107042022710 (Test, Upper)		CS4 PS and BPT. Main transfer pipeline route. River crossing in River Test SSSI (0m)
GB107042022700 (Test – Bourne Rivulet to conf Dever)		CS5 PS and existing Micheldever WSR. Transfer pipeline route. River crossing in River Test and East Aston Common SSSI's (0m)

WFD waterbody	Screening outcome	Comment
		Road crossing within 500m of River Test SSSI (350m)
GB107042022770 (Dever)		Main transfer pipeline route. River crossing in River Test SSSI (0m)
GB107042022740 (Sombourne Stream)		Main transfer pipeline route
GB107042022730 (Nun's Walk Stream)		Existing Crabwood WSR. Main transfer pipeline route
GB107042016310 (Monk's Brook)		Main transfer pipeline route
GB107042022580 (Itchen)		Existing Yew Hill WSR, and main transfer pipeline route
GB40601G601000 (Vale of White Horse Chalk)		Main transfer pipeline route
GB40601G600900 (Berkshire Downs Chalk)		Main transfer pipeline route. River Lambourn and River Kennet crossings within 500m of SSSI's / sensitive GW features
GB40602G601600 (Thatcham Tertiaries)		Main transfer pipeline route
GB40701G501200 (River Test Chalk)		Main transfer pipeline route. River Test, River Dever and B3048 crossings within 500m of SSSI's / sensitive GW features
GB40701G505000 (River Itchen Chalk)		Main transfer pipeline route

### 4.2.1.1 Thames (Evenlode to Thame) waterbody

As for Option B, the Thames (Evenlode to Thame) waterbody has been included in this assessment as it is the source of water for this transfer option. For this assessment it is assumed that the water will be supplied to the new WTW at the intake location either as part of the SESRO scheme, or a connection from the STT scheme prior to discharge to the River Thames. The implications on this waterbody are the same as for Option B (see Section 4.1.1.1).

# 4.2.1.2 Impacts of river and road crossings

As summarised in Table 4.5, the seven other waterbodies to be assessed at Level 2 include SSSI sites within 500m of proposed river crossings. These sites which are also identified as GWDTE which are likely to be supported by groundwater flow. These sites are therefore sensitive to impacts on groundwater flow and quality as a result of below ground structures and associated dewatering processes which come as a result of shafts, pipejacking and micro tunnelling activities involved in road and river crossings. The extent of the impacts was discussed in the Level 2 assessment.

All other waterbodies have been scoped out based on the assumptions:

- All major river crossings will be carried out using pipejacking or microtunnelling and impacts
  of construction on these watercourses will be minimised;
- Pipeline bedding material will be such that it facilitates the movement of groundwater around the pipeline. If required, Land drainage will be provided on the upgradient side of the scheme such that they will not cause an increase in groundwater flooding risk.

# 4.2.2 Level 2 findings

The Level 2 WFD assessment continued the evaluation of the eight waterbodies identified in the Level 1 assessment. A summary of the results are provided in Table 4.6. The full details of the assessment can be found in Appendix B.

### 4.2.2.1 Thames (Evenlode to Thame)

Impacts associated with the new proposed intake and abstraction from the Thames, have been assessed as part of the investigations for SESRO. As it has been proposed that water will be sourced from SESRO to supply the T2ST transfer (as mentioned in Section 4.1.1.1) evaluating the impacts of sourcing water via the reservoir for this reason was required. The impacts on this waterbody are the same as those for the Option B route (see Section 4.1.2.1). Main findings of the Level 2 assessment are summarised as:

- Negligible additional impact on flow and velocity due to additional abstraction for supporting the T2ST scheme.
- Negligible impact on water quality in the water body due to the changes in water quality in SESRO caused by the additional T2ST scheme support.

# 4.2.2.2 Surface water impacts of river and road crossings

Five waterbodies, Lambourn (Source to Newbury), Middle Kennet (Hungerford to Newbury), Test (Upper), Test (Bourne Rivulet to conf Dever) and Dever were carried forward to Level 2 to assess the surface water impacts of several river, rail and road crossings which occur close to or within designated sites which are directly linked to the watercourse channel (such as floodplains etc). The sites identified are the Kennet and Lambourn Floodplains SSSI & GWDTE, Kennet Valley Alderwoods SSSI & GWDTE, River Test SSSI & GWDTE, Bere Mill Meadows SSSI & GWDTE and East Aston Common SSSI & GWDTE. The main findings are summarised below:

- Discharge of water collected as part of dewatering activity could temporarily influence groundwater levels, and therefore river flows into the rivers (Lambourn, Kennet, Test and Dever). This could result in temporary and localised changes in flow velocity and volume. While these are assumed to have temporary impact on the rivers, the implications of these changes on the SSSI sites, and associated biology, needs further investigation. A hydroecology study is recommended to identify likely influence of dewatering on groundwater levels and river flow, and a review of potential ecological impacts of these changes.
- If dewatering is discharged to surface water courses to help maintain flow, there is the
  potential for short term impacts on water quality. Further work needed to understand the
  relative quality of groundwater and surface water in these areas to ensure groundwater
  discharge does not have an adverse impact on water quality and therefore biology in the
  watercourses.

# 4.2.2.3 Ground water impacts of river and road crossings

Two groundwater bodies, Berkshire Downs Chalk and River Test Chalk are located beneath the three SSSI sites set out in Section 4.2.2.2. These sites are classified as GWDTE by the EA and are likely to depend on groundwater levels/flow. These two groundwater bodies were carried forward to the Level 2 assessment due to potential impacts on the GWDTE as a result of the construction of the proposed river and road crossings. These groundwater bodies were assessed to determine the impacts changes in groundwater levels, flow and quality will have on the sensitive features and their WFD status. The main findings are summarised below:

- Dewatering during construction could leading to a reduction in groundwater levels beneath the SSSI sites. These temporary changes to flow and level of groundwater could impact GWDTE's.
- The permanent presence of the pipeline will only lead to minor localised changes in water levels due to embedded mitigation (permeable pipeline bedding material to allow groundwater to pass around the pipeline, use of clay stanks to ensure pipeline does not

provide a longitudinal preferential flow path). Further investigation is needed to identify where groundwater levels are likely to be intersect with the pipeline, calculate whether the pipeline could form a barrier to groundwater flow (and potential to increase flood risk), and identify additional mitigation if required.

 Several chalk rivers cross these waterbodies and flow could be reduced temporarily in these watercourses due to construction of the scheme.

Table 4.6: WFD Level 2 assessment summary

No	Waterbody ID	Waterbody Name	Confidence in WFD data	Confidence in option design	Requirements to improve confidence	Deterioration between status classes	Compromises waterbody objectives	Pre mitigation impact score	Suggested mitigation	Potential post mitigation impact score
1	GB106039030334	Thames, Evenlode to Thame	Medium	Medium	Detailed review of all additional baseline ecological WFD data, including results of any surveys already undertaken for this scheme Further information about how the option will be operated	No	No	0	Fish and eel screening at new intake Minimisation of changes to hydrological regime through adjustment of abstraction conditions. Provision for dechlorination of pipeline water when draining down pipeline before discharge to watercourse.	0
2	GB106039023220	Lambourn, Source to Newbury	Low	Medium	Detailed review of all additional baseline ecological WFD data, including results of any surveys already undertaken for this scheme  Detailed hydrological assessment of the impacts of dewatering on flow in the watercourses, and potential influence on SSSIs  Further information about option crossing	No	No		Any dewatering needed for the construction will be discharged to the river to help maintain flow.	1

No	Waterbody ID	Waterbody Name	Confidence in WFD data	Confidence in option design	Requirements to improve confidence	Deterioration between status classes	Compromises waterbody objectives	Pre mitigation impact score	Suggested mitigation	Potential post mitigation impact score
					of the River Lambourn.					
3	GB106039023174	Middle Kennet, Hungerford to Newbury	Low	Medium	Detailed review of all additional baseline ecological WFD data, including results of any surveys already undertaken for this scheme Detailed hydroecological assessment of the impacts of temporary abstraction for dewatering on flow in the watercourses Further information about option crossing of the River Lambourn.	No	No	1	Any dewatering needed for the construction will be discharged to the river to help maintain flow If shafts needed for river crossing these should be located outside of the SSSI/SAC boundary, where possible.  Provision for dechlorination of pipeline water when draining down pipeline before discharge to watercourse.	1
4	GB107042022710	Test, Upper	Low	Medium	Detailed review of all additional baseline ecological WFD data, including results of any surveys already undertaken for this scheme Detailed hydrological assessment of the impacts of abstraction on flow in the watercourses	No	No	1	If shafts needed for river crossing these should be located outside of the SSSI boundary, where possible. Assumes crossing of river will be by pipejack or micro tunnel crossings. Provision for dechlorination of pipeline water when draining down	1

No	Waterbody ID	Waterbody Name	Confidence in WFD data	Confidence in option design	Requirements to improve confidence	Deterioration between status classes	Compromises waterbody objectives	Pre mitigation impact score	Suggested mitigation	Potential post mitigation impact score
					Further information about option crossing of the River Test and potential implications on SSSIs.				pipeline before discharge to watercourse.	
5	GB107042022700	Test – Bourne Rivulet to conf Dever	Low	Medium	Detailed review of all additional baseline ecological WFD data, including results of any surveys already undertaken for this scheme Detailed hydrological assessment of the impacts of dewatering on flow in the watercourses, and potential influence on SSSIs Further information about option crossing of the River Test and potential implications on SSSIs.	No	No	1	If shafts are required for river crossing, these should be located outside of the SSSI boundary, where possible.	1
6	GB107042022770	Dever	Low	Medium	Detailed review of all additional baseline ecological WFD data, including results of any surveys already undertaken for this scheme Detailed hydrological assessment of the impacts of	No	No	1	If shafts are required for river crossing, these should be located outside of the SSSI boundary, where possible.	1

No	Waterbody ID	Waterbody Name	Confidence in WFD data	Confidence in option design	Requirements to improve confidence	Deterioration between status classes	Compromises waterbody objectives		Suggested mitigation	Potential post mitigation impact score
					dewatering on flow in the watercourses, and potential influence on SSSIs Further information about option crossing of the River Dever and potential implications on SSSI.					
7	GB40601G600900	Berkshire Downs Chalk	Low	Medium	Additional groundwater monitoring to understand groundwater levels and how they interact with the scheme Detailed hydrological assessment of the impacts of dewatering on flow in the watercourses Further information about option impacts on SSSI sites.	No	No	1	Dewatering discharge to surface water courses to maintain flow. Use of Clay stanks (clay bunds constructed within the pipeline trench) to be used in pipeline route where groundwater potentially encountered, to ensure pipeline route does not become a preferential flow path for groundwater. If shafts are required for river or road crossings these should be sealed to ensure minimal groundwater egress	1

No	Waterbody ID	Waterbody Name	Confidence in WFD data	Confidence in option design	Requirements to improve confidence	Deterioration between status classes	Compromises waterbody objectives	Pre mitigation impact score	Suggested mitigation	Potential post mitigation impact score
									after construction, where possible. Dewatering to be discharged to local watercourse to help maintain flow.	
8	GB40701G501200	River Test Chalk	Low	Medium	Additional groundwater monitoring to understand groundwater levels and how they interact with the scheme A hydroecology study is recommended to identify likely influence of dewatering on groundwater levels and river flow, and a review of potential ecological impacts of these changes. Consideration of where additional mitigation is required including potential use recharge trenches to return water to the ground and minimise the impact of construction.	Uncertain	Uncertain	2	Use of Clay stanks (clay bunds constructed within the pipeline trench) to be used in pipeline route where groundwater potentially encountered, to ensure pipeline route does not become a preferential flow path for groundwater. If shafts required for river crossings these should be located outside of the SSSI boundary, where possible. Shafts to be sealed to ensure minimal groundwater egress after construction, where possible.	

No Waterbody ID	Waterbody Name	Confidence in WFD data	Confidence in option design	Requirements to improve confidence	Deterioration between status classes	Compromises waterbody objectives	Suggested mitigation	Potential post mitigation impact score
				Further information				
				about option impacts on SSSI sites.				

#### 4.3 Cumulative effects

The following plans, programmes and projects have been considered within the cumulative effects assessment:

- Other Strategic Resource Options (SROs);
- Other water company schemes;
- Local Development Frameworks;
- Relevant planning applications; and
- NSIP/DCOs (none identified as relevant within the study area).

As such, the following projects or plans have been considered for T2ST WFD cumulative effects assessment:

- SESRO;
- STT;
- Southampton Link Main and Andover Link Main schemes (Southern Water);
- Winchester District Local Plan Part 1 Joint Core Strategy Policy WT2 Strategic Housing Allocation – North Winchester;
- Winchester District Local Plan Part 1 Joint Core Strategy Policy WT3 Bushfield Camp Employment Site;
- Vale of White Horse District Local Plan 2031 Part 2 Core Policy 15b: Harwell Campus -Harwell Campus Comprehensive Development Framework;
- Test Valley Borough The land is not currently allocated in the Local Plan but is being promoted for residential development; and
- Vale of White Horse District Council (planning application: P22/V0599/O).

Due to uncertainties in design, planning and operation of the schemes reported in this cumulative assessment, an in-combination assessment of all identified plans, programmes and projects is not appropriate for this stage of assessment and will need to be addressed at future gates and for which additional mitigation may be required. It is expected that a in-combination assessment of SROs will be undertaken at a regional scale by WRSE.

As per the programme assumptions in Section 2.5, the draft WRSE regional plan has determined a need for a T2ST scheme of up to 120Ml/d by 2040-2053 depending on the scenario in the adaptive plan. Therefore, at this stage, it is envisaged the project will not be operational until at least 2040.

It should be noted that the WFD cumulative effects assessment applies to both route corridors B and C and effects are anticipated to be similar. Therefore, the assessment below covers both routes.

Table 4.7 details the likely WFD cumulative effects that may occur for Options B and C.

Examples of cumulative construction effects that were considered include:

- Construction of multiple below ground structures in the same waterbody;
- Construction of river intakes and outfalls in the same waterbody; and Construction of new storage reservoir in line with a watercourse.

Examples of cumulative operation effects that were considered include:

- Operation of multiple surface water abstractions in the same waterbody:
- Operation of multiple discharges in the same waterbody; and

• Conveyance of water via a watercourse.

Table 4.7: WFD cumulative effects assessment for Options B and C

Project or plan	Cumulative construction effects	Cumulative operation effects
SESRO	No cumulative construction impacts are anticipated from the combination of SESRO, STT and T2ST.	SESRO or STT is required in order to support flow in the River Thames. Therefore, this assessment on the
STT	SESRO and T2ST are likely to be constructed on a similar programme, therefore construction could take place in the River Thames waterbodies, Cow Common Brook and Portobello Ditch (GB106039023360) and Construction of new below ground structures for T2ST (pipeline installation) and the reservoir construction, watercourse realignments and the new intake installation) associated with SESRO, within the River Thames waterbodies, Cow Common Brook and Portobello Ditch (GB106039023360) and Ginge Brook and Mill Brook (GB106039023660) waterbodies could occur at the same time. The T2ST works within these water bodies are minor and are not expected to lead to an increased risk of deterioration over that already identified in the SESRO WFD assessment.	River Thames waterbody has included potential cumulative impacts of the three schemes as an integral part of the assessment. T2ST relies upon SESRO or STT and thus the River Thames for the source water that is to be transferred. Sourcing water from the Thames is reliant upon available flow volumes and velocities, which are planned to be maintained by either the STT or SESRO option in periods of drought. Therefore, any operational effects are as highlighted in the STT or SERSO assessment. This T2ST WFD assessment assesses the additional operational impact on the River Thames as an intrinsic part of the scheme. No additional cumulative operational effects have been identified.
Southampton Link Main and Andover Link Main schemes (Southern Water)	No cumulative effects arising from construction are anticipated since the timeline for construction of this Southern Water option is prior to the start of construction for T2ST.	To be considered and assessed within the Southern Water WRMP24.
Winchester District Local Plan Part 1  – Joint Core Strategy Policy WT2 - Strategic Housing Allocation – North Winchester	This housing allocation has not been of assessment due to the nature of considevelopment and the planning condition which are anticipated to minimise imparts.	truction activities associated with ons that would need to be met; both of
Winchester District Local Plan Part 1  – Joint Core Strategy Policy WT3 - Bushfield Camp Employment Site	This employment site has not been co assessment due to the nature of considevelopment and the planning condition which are anticipated to minimise imparts.	truction activities associated with ons that would need to be met; both of
Vale of White Horse District Local Plan 2031 Part 2 Core Policy 15b: Harwell Campus - Harwell Campus Comprehensive Development Framework	Land has been made available at Harwell Campus for research, innovation and economic development to accommodate at least 3,500 net additional jobs. This land is approximately 1km to the east of the proposed route corridors for B and C and within the boundary of the existing campus site. Plans for Harwell expect it to be completed by 2031, therefore, there is a potential overlap if T2ST is constructed in the early 2030s. No cumulative effects are anticipated as the proposed development	No operational cumulative effects are anticipated, as activities associated with development that could impact water environment are anticipated to be construction related only.

Project or plan	Cumulative construction effects	Cumulative operation effects			
	framework's assumed below ground construction activity is not anticipated to have an adverse effect on the water environment.				
Test Valley Borough - The land is not currently allocated in the Local Plan but is being promoted for residential development	Land has been allocated for up to 1100 houses, the Strategic Housing and Economic Land Availability Assessment (SHELAA) indicates that if development takes place, it could extend over 15 years. No cumulative effects are anticipated due to the nature of construction activities associated with development and the planning conditions that would need to be met; both of which are anticipated to minimise impact on water environment.	No operational cumulative effects are anticipated, as activities associated with development that could impact water environment are anticipated to be construction related only.			
Vale of White Horse District Council (planning application: P22/V0599/O)	No cumulative effects arising from construction are anticipated since the timeline for construction of this planning application is prior to the start of construction for T2ST.	No operational cumulative effects are anticipated, as activities associated with development that could impact water environment are anticipated to be construction related only.			

In summary, it has been identified that T2ST has the potential to result in WFD cumulative effects during operation of other SROs (South East Strategic Reservoir Option (SESRO) and Severn to Thames Transfer (STT)), but cumulative effects during construction were unlikely. These effects were identified given the potential for changes in flow and water quality in the River Thames, from SESRO, STT and T2ST. Since T2ST cannot be considered as an option without the use of either SESRO or STT, the in-combination assessment in the River Thames water body is integrated into this assessment. No construction cumulative effects were identified.

T2ST is not identified to have any construction or operational related cumulative effects with other water company schemes, or other projects under Local Development Frameworks and Planning Applications.

#### 5 Summary and next steps

For Option B the Gate 2 Level 1 WFD assessment indicated that 16 out of 24 waterbodies could be screened out as not requiring further assessment.

The Option B Gate 2 Level 2 WFD assessment has been completed for the remaining eight waterbodies that were screened in. The Level 2 assessment considers that the scheme will have a direct impact on WFD supporting conditions as part of the scheme in one waterbody (River Test Chalk). The findings indicate that there are potential WFD compliance risks associated with the operation of the scheme, due to the works taking place adjacent to and potentially within the River Test SSSI & GWDTE and East Aston Common SSSI & GWDTE. Further design detail and mitigation is required to ensure that there is no risk of deterioration to the sites due to the construction of the scheme, and by mitigation such as returning groundwater abstracted during temporary construction dewatering back into the ground to help maintain groundwater levels.

For Option C the Gate 2 Level 1 WFD assessment indicated that 16 out of 24 waterbodies could be screened out as not requiring further assessment.

The Option C Gate 2 Level 2 WFD assessment has been completed for the remaining eight waterbodies that were screened in. The Level 2 assessment considers that the scheme will have a direct impact on WFD supporting conditions as part of the scheme in one waterbody (River Test Chalk). The findings indicate that there are potential WFD compliance risks associated with the operation of the scheme, due to the works taking place adjacent to and potentially within the River Test SSSI & GWDTE, East Aston Common SSSI & GWDTE and Bere Mill Meadows SSSI & GWDTE. Further design detail and mitigation is required to ensure that there is no risk of deterioration to the sites due to the construction of the scheme, and by mitigation such as returning groundwater abstracted during temporary construction dewatering back into the ground to help maintain groundwater levels.

This Water Framework Directive Assessment, undertaken at plan level, finds that if mitigation measures suggested are followed that no adverse, permanent impacts on the water environment will occur as a result of the implementation of Option B and Option C. A distinguishing factor between the two options is the number of crossings of rivers and roads within 500m of sensitive groundwater features (Option C has an additional crossing of the River Test and is located close to an additional GWDTE, Bere Mill Meadows SSSI).

A WFD cumulative effects assessment was undertaken on both route options B and C. The assessment found that cumulative WFD effects were likely during operation from other SROs (South East Strategic Reservoir Option (SESRO) and Severn to Thames Transfer (STT)), but cumulative effects during construction were unlikely. These effects were identified given the potential for changes in flow and water quality in the River Thames, from SESRO, STT and T2ST. Since T2ST cannot be considered as an option without the use of either SESRO or STT, the in-combination assessment in the River Thames water body is integrated into this assessment. No construction cumulative effects were identified. T2ST is not identified to have any construction or operational related cumulative effects with other water company schemes, or other projects under Local Development Frameworks and Planning Applications.

Further WFD assessment will be required beyond Gate 2 and for future planning/consent applications, to improve the confidence and certainty of WFD risks outlined in the Gate 2 WFD Level 2 assessments and to update the assessment as design progresses.

Areas for further assessment include:

- Hydroecological risk assessments into the impact of construction dewatering on groundwater levels, and potential implications on watercourses and GWDTE of Kennet and Lambourn Floodplains SSSI, Kennet Valley Alderwoods SSSI, River Test SSSI, East Aston Common SSSI and Bere Mill Meadows SSSI;
- If dewatering is discharged to surface watercourses to help maintain flow, there is the
  potential for short term impacts on water quality. Water quality analysis is required to
  understand the relative quality of groundwater and surface water in these areas and identify
  the significance of any changes in water quality in the watercourses;
- Detailed hydrological assessment of the impacts of changes in groundwater levels due to construction dewatering on flow in the Chalk streams and GWDTE which it supports;
- Additional groundwater investigation to understand groundwater levels across the route and how they interact with the pipeline during operation of the scheme. Further investigation should consider where groundwater levels are likely to be intersect with the pipeline, calculation of whether the pipeline could form a barrier to groundwater flow (and potential to increase flood risk), and identification of additional mitigation if required; and
- Consideration of pipejack or micro tunnel crossings for the more sensitive ordinary watercourses.

Proposed mitigation measures for reducing option impact have also been included as part of the WFD assessment (as set out in Table 4.3 and Table 4.6) and the implementation of this mitigation will determine the overall WFD assessment result. Mitigation measures should also include standard best practice dewatering methods and standard best practice water pollution control measures. Consideration of mitigation measures will be subject to further developments in the optioneering for the routes.

# A. Level 1 output sheets

Table A.2: Option B Level 1 Summary

Impacted Waterbody ID	Impacted Waterbody Name	Waterbody type	Overall waterbody Classification	Overall waterbody Objective	Number of activities assessed	Count of activities scoring major benefit score (-2)	Count of activities scoring minor benefit score (-1)	Count of activities scoring minimal impact score (0)	Count of activities scoring minor local impact score (1)	Count of activities scoring medium impact score (2)	Count of activities scoring high impact score (3)	Level 1 max score	Level 1 mean score	Carry through to level 2 assessment?
GB106039030334	Thames (Evenlode to Thame)	River	Moderate in 2015	Moderate by 2015	10	0	0	3	6	0	1	3	0.90	YES
GB106039023360	Cow Common Brook and Portobello Ditch	River	Poor in 2015	Good by 2027	8	0	0	3	5	0	0	1	0.63	NO
GB106039023660	Ginge Brook and Mill Brook	River	Moderate in 2015	Moderate by 2015	6	0	0	1	5	0	0	1	0.83	NO
GB106039023600	Mill Brook and Bradfords Brook system, Wallingford	River	Poor in 2015	Good by 2027	4	0	0	2	2	0	0	1	0.50	NO
GB106039023300	Pang	River	Good in 2015	Good by 2015	8	0	0	4	4	0	0	1	0.50	NO
GB106039023210	Winterbourne	River	Moderate in 2015	Good by 2027	6	0	0	2	4	0	0	1	0.67	NO
GB106039023220	Lambourn (Source to Newbury)	River	Moderate in 2015	Good by 2027	8	0	0	1	5	2	0	2	1.13	YES
GB106039023174	Middle Kennet (Hungerford to Newbury)	River	Moderate in 2015	Good by 2021	8	0	0	1	5	2	0	2	1.13	YES
GB106039017280	Enborne (Source to downstream A34)	River	Moderate in 2015	Good by 2027	8	0	0	3	5	0	0	1	0.63	NO
GB106039017210	Penwood Stream	River	Moderate in 2015	Good by 2027	6	0	0	2	4	0	0	1	0.67	NO
GB107042022710	Test (Upper)	River	Good in 2015	Good by 2015	8	0	0	4	4	0	0	1	0.50	NO
GB107042022720	Bourne Rivulet	River	Moderate in 2015	Good by 2027	6	0	0	1	5	0	0	1	0.83	NO
GB107042022700	Test - Bourne Rivulet to conf Dever	River	Good in 2015	Good by 2015	10	0	0	3	5	2	0	2	0.90	YES
GB107042022810	Anton - Upper	River	Good in 2015	Good by 2015	6	0	0	4	2	0	0	1	0.33	NO
GB107042022770	Dever	River	Good in 2015	Good by 2015	8	0	0	1	5	2	0	2	1.13	YES
GB107042022740	Sombourne Stream	River	Good in 2015	Good by 2015	6	0	0	2	4	0	0	1	0.67	NO
GB107042022730	Nun's Walk Stream	River	Moderate in 2015	Good by 2021	8	0	0	4	4	0	0	1	0.50	NO
GB107042016310	Monks Brook	River	Moderate in 2015	Good by 2027	6	0	0	2	4	0	0	1	0.67	NO
GB107042022580	Itchen	River	Good in 2015	Good by 2015	7	0	0	4	3	0	0	1	0.43	NO
GB40601G601000	Vale of White Horse Chalk	GroundWater	Poor in 2015	Poor in 2015	8	0	0	4	4	0	0	1	0.50	NO
GB40601G600900	Berkshire Downs Chalk	GroundWater	Poor in 2015	Poor in 2015	11	0	0	4	5	2	0	2	0.82	YES
GB40602G601600	Thatcham Tertiaries	GroundWater	Good in 2015	Good in 2015	8	0	0	2	4	2	0	2	1.00	YES
GB40701G501200	River Test Chalk	GroundWater	Poor in 2015	Poor in 2015	11	0	0	4	5	2	0	2	0.82	YES
GB40701G505000	River Itchen Chalk	GroundWater	Poor in 2015	Poor in 2015	8	0	0	4	4	0	0	1	0.50	NO

Table A.1: Option B Level 1	assessment				Thames (Evenlode to Thame)	Cow Common Brook and Portobello Ditch	Ginge Brook and Millimok	MII Brook and Bradfords Brook system, Wallingford	Pang	Winterbourne	Lambourn (Source to Newbury)	Middle Kennet ( (Hungerland to Newbury)	inborne (Source to downstream A34)	Penwood Stream	Fest (Upper) Source	Test - Bourn dvulet Rivulet to co Dever	f Anton - Upper	Dever	Somboume Stream	Nun's Walk Stream	Manks Brook	itchen	Vale of White Horse Chalk	Berkshire Downs Chalk	Thatcham Tertiories	River Test Chalk	River itchen Chalk
Component	Activity	Construction, Operation or Decommissionin	g Assumptions / Mitigations assumed to be in place	Comments	Score GB100239030	Portobello Ditch 234 G8:256039022360	G910603902366	Wallingford GB106029022600	G8:06039022300 G1	1106039023210	Newbury) 68106039023220	Newbury) G0106039023174 G	A34) (8106029017280 (	G8106039017230 G8	907042022710 G81070	Daver 022720 GB107043022	00 GB10784202281	G8107042022770	GB107042022740	G8107042022730	G0107042095310	GB107042022580	G840601G601000 G	5849601G69900	5949602G601606	G840701G501200	GB40701GS05000
Belowground	Construction/regain of new turnels and conduits	Construction	Tunnels and conduits will be constructed such that they will not form a preferential conhess for the flow of accordance.	NA.	1 1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Construction of below record structures (shallbestein) and said; suppristed		Risk assessments will be undertaken for excavation works and deviatering to	Assumed new BS1 WTW and PS, and other BPT and PS's require below ground structures to be constructed. Assumed below ground structures for all marked TSST Crossings: Railway	1 NA		,						,		,	1	N/A		1	1		N/A				,	
Below ground	Construction of below ground structures (shathletsining wall) with associated devastering, with no sensitive groundwater feature within 500m	Construction	Pisk assessments will be undertaken for excavation works and dewatering to ensure no advense impact on watercourses, welland habitats or abstractions. Devatering discharge will be treated before discharge.	below ground structures for all marked T2ST Crossings: Railway south of Stevenico, A4T7, B4494, M4, Wheehoums Rased, (600m from Sciences Common), B4900, A4, Poer Shortes, A540, Bourne Roulet, Andow Railway Line, B3400, A300 (Price), A30, A272, B3046, A3009.	1 NA	1	,	N/A	1	'	1	1	1	,	'	,	N/A	1	1	1	1	NIN	,	1	1	'	'
	Presence of new underground structure furner inhabiteraining walk, with no sensitive		Pipeline bedding material will be such that it facilitates the movement of groundwater around the pipeline. It required, Land drainage will be provided on the upgradient tide of the scheme such that they will not cause an increase in groundwater flooding risk. This drainage will be discharged into local watercourse to maintain flood.	A272, 83049, A3040	1 NA	1		N/A	1	1	1	1	1	,	1	1	N/A		1	1	1	N/A			1	1	1
seeve ground	Presence of new underground structure (furnel/inhalt-hobining wall), with <u>no</u> sensitive groundwater feature within 500m.	Operation	approximate toda or the screene such that they are not cause as increase in groundwater flooding risk. This drainage will be discharged into local watercourse to maintain flow.	NA .	1 NA	,		N/A	'		,	,	'	,	'	,	N/A	,	,	,	,	N/A	,	'	'		
				River Lambourn (Kennet and Lambourn Floodplain = 440m), Wick Wood (Kennet and Lambourn Floodplain = 400m), River																							
			Risk assessments will be undertaken for excavation works and dewatering to	works Wood glusiness and Lambodium Hoodpass = ducing, lover Kennere (Renner 14 Valley Adderwood = 1 10 Valley, Baccon Hill WSS (Barghclare Beacon S/dm - SR already exists so not scored here I assumed no below ground inspect! If modifications required), Backel (River Test SSSI and East Auton Common = 150m), Biver Test (River Test SSSI and East Auton Common = 0 Vall, River Dever (River Test SSSI = 0 fm)																							
Below ground	Construction of below ground structures (shatthetaining wall) with associated deveatering, within 500m of a sensitive groundwater feature	Construction	Plak assessments will be undertaken for excavation works and dewatering to ensure no adverse impact on watercourses, wetland habitats or abstractions. If impact likely appropriate militages to the put in place. Deveatering discharge will be treated before discharge.	B 304B (River Test SSS) and East Aston Common = 350m), River Test (River Test SSS) and East Aston Common = 0m), River Dever (River Test SSS) = 0m)	2 NA	NA.	NA	NA	NA.	NA	2	2	N/A	N/A	N/A N	2	N/A	2	N/A	N/A	N/A	N/A	N/A	2	2	2	NA.
				Number power rest sout in centy Also Berkshire down passes through SP23, 2 and 3 Thatchard Tertiaries passes through SP23 and 3 River Test Chalk passes through SP21, 2 and 3																							
			Disaline hardfore material all he such that it facilitates the mousement of	Noer Lest Chaix passes through 9/22, 2 and 8																							
Below ground	Presence of new underground structure (tunnel/shaft/retaining wall) within 500m of a sensitive groundwater feature	Operation	Pipeline bedding material will be such that it facilitates the movement of groundwater around the pipeline. It required, I and drainage will be provided on the upgradeast side of the acheme such that they will not cause an increase in groundwater flooding risk. This drainage will be discharged into local veaterocurse.	N/A	2 NA	NA	NA	NA	NA.	NA	2	2	N/A	N/A	N/A N	2	N/A	2	N/A	N/A	N/A	N/A	N/A	2	2	2	NA.
Below around	Construction of new cutting with external deveatering with no sensitive groundwater feature within 500m	Construction	government mounting risk. This contrage district discharged the book scale distriction flow.	N/A	1 NA	NA.	NA	NA	NA.	NA.	NA.	NA NA	N/A	N/A	N/A N	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Bains secund	Construction of new cutting with external dewatering within 500m of a sensitive groundwater feature	Construction	Risk assessments will be undertaken for excavation works and dewatering to ensure no adverse impact on watercourses, welfand habitats or abstractions. If impact likely appropriate midigation to be put in an order to be Dewatering discharge will be treated before discharge.	N/A	2 NA	NA	NA	NA	NA.	NA.	NA .	NA NA	N/A	N/A	N/A N	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	groundwater feature		Impact likely appropriate mitigation to be put in place. Devatering discharge will be trained before discharge. Accessoriate onecasions will be taken when working in the channels of or adjacent.																								
			Appropriate precaution will be taken when working in the channels of or adjacent to watercourse, providing new culvets and or extending culvent. If required no appropriately amange flood risk and the posteroid for deposition of all or release or other forms of asspended material or politicion within the school column. All reseasces sall the is line with the requirements and out within the Environment.		1 NA	NA.	NA	N/A	NA.	NA.	NA.	NA.	N/A	N/A	N/A N	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
seeve ground	Construction of new caves	Constitution	measures will be in line with the requirements set out within the Enulscoment Agency's PPGS (PPGT: General Guide to Prevention of Pollution; PPGS: Works and maintenance in or near water, and PPGS2 Maintenance of structures over	Nen .	1 80	no.	- An	nn	**	nun.	an.	nun.	~~	nin.	nyo n		-	ny.	nja.	N/N	10,0	100	~~	nte	n/n	A)A	100
Cat/Iment management	Encoledos suchanos or education organismos	Geration	water).	NA.	n/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A N	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Catchment management	Changes to land management practices to reduce pesticides, nutrients, sediment or flooding relating to a groundwater source	Operation	NAME.  The part of the solvers will be the the buy term. The solvens will be found to come for \$6.720 and \$7.000 and \$7.0	NA	-1 N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A N	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Catchment management	Changes to land management practices to reduce pesticides, nutrients, sediment or flooding relating to a surface water source	Operation	An immediate change may be seen in the water quality downstream of the change to land management. It is assumed there is a high level of engagement from those selevant for reducing the parameter of interest.	NA	-2 N/A		N/A	N/A	N/A	N/A	N/A	N,O.	N/A	N/A	N/A N		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Catchment management Catchment management	Fiver restoration - construction phase  Fiver restoration - after construction	Construction Operation	There may be minor short term impacts during the construction phase.  Fiver restorations will be selected in line with WNEP criteria. The restorations are to immove hydrological flows in the local area.	NA NA	1 N/A	N/A	N/A	N/A	N/A N/A	N/A N/A	N/A N/A	N,O.	N/A N/A	N/A N/A	N/A N	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A
Catchment management Catchment management	Flow ausmentation and licensino Terrestrial habitat creation/management - creation Terrestrial habitat creation/management - management	Operation Construction	NO.	N/A N/A	1 N/A 1 N/A	N/A N/A N/A	N/A N/A	N/A N/A N/A	N/A N/A N/A	N/A N/A	N/A N/A	N,O. N,O.	N/A N/A	N/A N/A N/A	N/A N N/A N	N/A N/A	N/A N/A	N/A N/A N/A	N/A N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A N/A	N/A N/A	N/A N/A	N/A N/A
Catchment management	Natural water retention measures (including NFM and welland creation) - construction Natural water retention measures (including NFM and welland creation)	Construction	NA.	NA NA	s N/A	N/A	N/A	N/A	N/A	N/A	N/A	N,OL	N/A	N/A	N/A N	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Catchment management Catchment management		Operation	NA.  Assumed to be in place due to WNEP driver or similar criteria to improve ecological stone of the river.	NA NA	-1 N/A	N/A	N/A N/A	N/A	N/A N/A	N/A N/A	N/A	N/A	N/A N/A	N/A	N/A N	N/A N/A	N/A	N/A	N/A N/A	N/A	N/A	N/A N/A	N/A	N/A	N/A N/A	N/A	N/A N/A
Catchment management Catchment management	Sustainable Urban Drainage Systems (SUDS) - construction Sustainable Urban Drainage Systems (SUDS) - after construction	Construction Constition	N/A. Assumed to presented as an option at local scale.	NA NA		M,CA M,CA		N/A N/A	N/A N/A	N/A N/A		N,O.	N/A N/A	N/A N/A	N/A N N/A N	N/A	N/A N/A	N/A N/A		N/A N/A	N/A N/A	N/A N/A		N/A N/A		N/A N/A	N/A N/A
Calchment management	blegrated calchment management	Operation	This assumes a short term benefit to WFD as imposed usage reduction should allow for recovery in the river or aquifer which may improve WFD status from pre- sestriction status.	NA	-2 N/A	N/A	N/A	N/A	N/A	N/A	N/A	N,OL	N/A	N/A	N/A N	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			restriction stands.  Appropriate processions will be taken when working in the charvest of or adjacent to westroomers, providing new colvents and or extending culvents. If required, to westroomers, providing new colvents and or extending culvents. If required to weight the control of the co																								
Cultert	Construction of new invented siphon or drop inlet culvert	Construction	were writte of suspended malerial or pollution within the water column. All measures will be in line with the requirements set out within the Environment Agency's PPGs (PPG1: General Guide to Prevention of Pollution; PPG5: Works	NA	1 N/A	N,OL	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A N	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cubert	Presence of new cubert, in headuraters or on-drainage disthes	Constion	was meliterance in or near water and PPG23 Maintenance of structures over water). Accessfulse improvements to local habites to offset the presence of the CV <sup>A-ext</sup>	NA .	1 N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A N	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cubert Cubert	Presence of new cubert in handwriters or on drainage disches Presence of new cubert mid or lower catchment Presence of new inverted sinhon or doo lolet cubert	Coeration Coeration	No assumed milications No assumed milications	NA NA	2 N/A N/A 2 N/A	N.CA.	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N,O.	N/A N/A	N/A N/A	N/A N N/A N N/A N	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A
Culvert	Removal of significant in charmel watercourse structure (such as impassable weir)  Removal of existing culvets or other in charmel watercourse structure  High volume discharge of water with a quality element of higher WFD status than the	Decommissioning Decommissioning	No assumed mitigations  No assumed mitigations	NA NA	N/A	N/A N/A	N/A	N/A N/A N/A	N/A	N/A	N/A	N,O.	N/X	N/A	N/A N	N/A	N/X	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Discharge Discharge	High volume discharge of water with a quality element of higher WFD status than the seculing water body.  High volume discharge of water with a quality element of a lower WFD status than the	Operation	No assumed mitigations  No assumed mitigations	NA NA	a NA		NA NA		NA NA	NA NA	NA NA	NA NA	N/A N/A	N/A N/A	N/A N	N/A N/A		N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A		N/A N/A		N/A
Discharge	Low volume discharge of water with a quality element of the same or higher WFD	Operation	No assumed mitigations	NA	-1 NA	NA	NA	NA	NA.	NA	NA	NA	N/A	N/A	N/A N	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Discharge	Stocks that the accessors waster body.  Low volume discharge of earlier with a quality element of a lower WFD status than the receiving waster body.  Low volume discharge of water with a quality element of the same WFD status as the receiving water body.	Operation	No assumed mitigations  No assumed mitigations	N/A N/A	2 NA		NA NA		NA NA	NA	NA NA	NA	N/A N/A	N/A	N/A N	N/A	N/A	N/A	N/A	N/A	N/A	N/A N/A	N/A	N/A	N/A N/A	N/A N/A	N/A
Discharge Discharge		Operation	No assumed mitigations No assumed mitigations	NA NA	g NA 1 NA		NA NA	N/A N/A	NA NA	NA NA	NA.	NA	N/A	N/A	N/A N	N/A	N/A	N/A	N/A N/A	N/A	N/A N/A	- 1	N/A N/A	N/S	N/A N/A	N/A	N/A
Discharge Discharge	sacialino water body  New WYW discharge to watercourse  Toursfar of water via a river, canal or assector:  New discharge of highly saline water to a coastal or transitional waterbody	Operation Operation Operation	No assumed mitigations	NA NA	1 1 2 NA	NIA NIA NIA NIA	NA NA	N/A N/A	NA NA NA	NA NA	NA NA	NA NA	N/A N/A	N/A N/A	N/A N N/A N N/A N	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A N/A
Discharge	New discharge of highly saline water to a surface waterbody or groundwater.	Operation Control of the Control of	No assumed nationalons No assumed nationalons No assumed nationalons Appropriate precusions will be taken when working in the channels of	NA NA	3 NA	NA NA	N/A	N/A	NA NA	NA NA	NA NA	NA NA	N/A N/A	N/A N/A	N/A N	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A	N/A	N/A N/A	N/A N/A	N/A N/A	N/A	N/A	N/A
Discharge	Construction of a new outfall structure to a watercourse, coastal waters, transitional waters or resemble	Construction	Appropriate precautions will be taken when working in the channels of watercourses, to appropriately manage food risk and the potential for deposition all or relaces of other forms of suppended material or polision within the water column. All measures will be in line with the requirements set out within the	NA NA	1 1	NA.	NA	NA	NA.	NA	NA	NA	N/A	N/A	N/A N	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dischere		Constantine	column. All measures will be in line with the requirements set out within the Environment Agency's PPGs: General Guide to Presention of Pollution; PPGS: Works and ministerance in or near water).  No assumed militations	NA.	2 NA		100						N/A	N/A	N/A	N/2	Mrs	16/2	N/A	N/A	N/A	N/A	N/A	N/A	N/A.	N/A	N/A
urmirálitás	Cessarion of existing discharge to a watercourse	- Johnson	No assumed militations will be taken when working in the channels of Appropriate processions will be taken when working in the channels of neutrocurses, to appropriately manage food risk and the potential for deposition sit or inkness of other forms of supported restricted problems within the water column. All researches will be to the with the replanement set out which the Environment Agency of PPOSE. General Cade to Preservice of Positions PPOSE Visited and interleasement for term without.		NA.	NA.	reA	NA	NA.	NA	NA	NA	-40		N N	NUK	7/4	mpA	N/A	nun.	N/A	n/n	- 40	-tm	Arn	30	.04
Discharge	Maintenance and use of river, coastal or transitional water outbill	Operation	all or release of other forms of supperided material or politicion within the water column. All measures will be in line with the requirements set out within the Environment Agency's PPGs (PPG1: General Guide to Presention of Poliution;	NA	0 0	NA	NA	NA	NA.	NA	NA	NA	N/A	N/A	N/A N	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Groundwater	Construction of a new abstraction-borehole headworks and associated infrastructure	Construction	No assumed mitigations	NA	g N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A N	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Groundwater Groundwater	Refutbishment of existing boneholes Orifing new abstraction boreholes	Construction Construction	Work will be cartied out under appropriate consent from the EA Work will be cartied out under appropriate consent from the EA	NA NA	g N/A	N,G.	M/A M/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N,O.	N/A N/A	N/A N/A	N/A N	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A
Groundwater	Meintenance and use of abstraction borehole infrastructure	Operation	No assumed mitioations  Appropriate precautions will be taken when working in the channels of or adjacent	NA .	g N/A	ALX.	N/A	N/A	N/A	N/A	NA	N,X	N/A	N/A	N/A N	N/A	N/A	N/A	N/A	N/A	N/A	NA	N/A	N/A	N/A	N/A	N/A
Habitat	Creation of significant areas of riperian habitats	Construction	Appropriate precautions will be taken when working in the channels of or adjacent to waitstowness, to appropriately manage food risk and the posterial to deposition of all or releases of other forms of a superior intended or produce which the wast column. All measures will be in from which the waster column. All measures will be in from with the requirements set out within the Environment Approach PPOR (PPOC Centered Guide to Prevention of Pollution; PPOS Works and maintenance is not near waster).	NA	-2 N/A	N,O.	N/A	N/A	N/A	N/A	N/A	N,IA	N/A	N/A	N/A N	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			Environment Agency's PPGs (PPG1: General Guide to Presention of Pollution; PPGS: Works and maintenance in or near setted.																								
			Appropriate processions will be taken when working in the channels of or adjacent to variestowers, in appropriately manage food nix and the posterial to deposition of all or releases of other forms of any appropriate procession of all or releases of other forms of any appropriate procession. All measures will be in the wint the requirements set out within the Environment Appropriate Proc. (PPOC. Teamer Guide to Prevention of Polistics; PPOG. Works and maintenance is not near sense.)		. N/A	N/A	N/A	N/A	N/A	N/A	N/A	N.CA.	N/A	N/A	N/A N	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Habitat	Minor habitat creation	Construction	column. All measures will be in line with the requirements set out within the Environment Agency's PPGs (PIGS) General Guide to Presention of Pollution; BDGS: Whole and maintenance in one wanted.	NA	-1 N/A	N,IA	N/A	N/A	N/A	N/A	N/A	N,IX	N/A	N/A	N/A N	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	NA	N/A	N/A	N/A
			Accomplists concustoes will be taken when working in the channels of or a facunt																								
Habitat	Daylighting of existing culverts	Construction	to extensionness, to appropriately manage food risk and the potential for deposition of till or release of other forms of suspected material or policion-within the water column. All measures will be in line with the requirements as out within the Envisionment Agency's PPCis (PGS): General Guide to Prosention of Polision; PPCS: United and managements or or man water).	N/A	-1 N/A	N/A	N/A	N/A	N/A	N/A	N/A	N,IA	N/A	N/A	N/A N	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			Environment Agency's PPGs (PPG1: General Guide to Prevention of Pollution; PPGS: Works and maintenance in or near satisty.																								
			Appropriate precautions will be taken when working in the channels of eatercourses, to appropriately manage flood risk and the potential for deposition will or release of other forms of supported materials replication within the water		-t N/A	N.CA.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A N	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Habitat	Channel realignment with resural bed substrate and good riparian-connections	Operation	Appropriate processions will be taken after variously in the charverist of meteorocases, a supportunity-manage flood in such the potential for deposition still or trainess of client form for a superiod or relativistic projection within the sales of the first form of the control of the co	NA	-1 N/A	N,IA	N/A	N/A	N/A	N/A	N/A	N,IX	N/A	N/A	N/A N	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	NA	N/A	N/A	N/A
			Appropriate preclusions will be taken when working in the channels of watercourses, to appropriately manage food risk and the potential for deposition or the property of the property of th																								
Habitat	Channel realignment with artificial banks/base	Operation	all or release of other forms of suspended material or pollution within the water column. All measures will be in line with the requirements set out within the Envisorment Agency's PPCs (PPG): General Guide to Presention of Pollution;	NIA	1 N/A	N,O.	N/A	N/A	N/A	N/A	N/A	N,IA	N/A	N/A	N/A N	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			all or releases of other forms of enganetical metabolist projection within the votest column. All researches will be a link with the repolarments and or within the Contractives Agentry is PPCs (PPCs). Convent Guide to Protection of Production (PPCs) and PPCs (PPCs). The research Guide to Protection of Production (PPCs) and (PPCs) and (																								
htske	Construction or modification of a new pumping station and/or intake from raw water (fiver or coastal waters)	Construction	watercourses, to appropriately manage food risk and the potential for deposition silt or reliance of other forms of superinder materials or polition within the water column. All measures will be in line with the requirements set out within the	Assumed new intake location near Drayton. As this option GIS begins at a new WTW and PG, assessment for this WB is an assumption-based on previous assessments at Gate 1	1	N/A	N/A	N/A	N/A	N/A	N/A	N,O.	N/A	N/A	N/A N	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			Environment Agency's PPCs (PPCs): General Guide to Presention of Pollution; PPGG: Works and maintenance in or near setter. Appropriate precautions will be taken when working in the channels of																								
Intake	Maintenance and use of river intakes	Operation	Schöllichter Agency in PT-III great under Mann in Protection of P reference PPDGS. Which are dimensionable to train wheth. Appropriate procuration will be taken refer morbing in the Channels of melecrocates, to appropriately manage flood risk and the potential for deposition till or riskness of other forms of augumented maneral or polition with the water column. All measures will be in low with the registerness and out which the column. All measures will be in low on with the registerness and out which the	NA.		NA	NA	NA	NA.	NA	NA	NA	N/A	N/A	N/A N	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			PPGS: Works and maintenance in or near water).																								
house	Maintenance and use of coastal intakes	Operation	Appropriate precoudors will be taken when working in the chemels of watercourses, to appropriately manage flood risk and the speciated for deposition. Will or wiskness of other farms of impropriede material or publish within the water column. All measures will be in time with the requirements set out within the production. All measures will be in time with the requirements set out within the Constitution.	NA.	s NA	NA	NA	NA	NA.	NA	NA	NA	N/A	N/A	N/A N	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		Coperation 1	column. All measures will be in line with the requirements set out within the Environment Agency's PPGs (PPGs) General Guide to Presention of Pollution; IPPGS: Works and maintenance is or near series.																								
Licence	Use of existing ground and surface water abstraction Toences, within Toence providings and report shattantion network. The providing surface water and consorted and the providing surface under and consorted shattantion ficences, within existing	Operation	No assumed mitigations	NA	0 NA 2 NA			N/A N/A		NA NA		NA NA	N/A N/A		N/A N				N/A N/A		N/A N/A		N/A N/A		N/A	N/A N/A	
Licence	Use of existing surbour water and proundwater abstraction licences, within existing ficance conditions but outside of the succest actual rates. Envergency or drought use of existing surface water or groundwater abstraction auxiliate of licence conditions.	Operation Operation Operation	No assumed mitigations  No assumed mitigations	NA NA	a MA	100	N/A	N/A	No.	MA	MA	N/A	M/A	N/A	N/A N	N/A	MA	N/A	N/A	N/A	N/A	M/A	N/A	N/A	N/A	N/A	M/A
Licence	New or increased surface water abstraction New or increased organization abstraction	Operation Operation	No assumed militations No assumed militations No assumed militations	NA NA	3 3 NA	N/A N/A	N/A N/A	N/A N/A	NA.	NA NA	NA NA	N/A N/A	N/A N/A	N/A N/A	N/A N N/A N	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A
Licence Licence	New coastel or transitional unstarboth abstraction france Feduction of coastel or transitional waterbody abstraction france because of coastel or transitional unstarbody abstraction france	Operation Operation	No assumed militations No assumed militations No assumed militations	NA NA	NA NA NA NA	NA NA NA	N/A N/A	N/A N/A	NA NA NA	NA NA	NA NA	NA NA	N/A N/A	N/A N/A	N/A N N/A N N/A N N/A N N/A N	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A
Pipelines	Trenching and bying of pipe lines within the interflues of a cast/ment (no watercourse crossinos)	Construction	Assumed that bedding material for pipelines will be constructed such that they do not form preferential pathways for counstrates flow.	NA	0 0	0	NA	0	0	0	NA	NA	N/A	0	0 N	N/A	0	N/A	0	0	0	0	0	0	0	0	0
Pipelines	Trenching and bying of pipe lines involving watercourse crossings	Construction	Assumed that bedding material for pipelines will be constructed such that they do not form preferential pathways for groundwater flow.  Assumed that watercourse crossings will be carried out using directional drilling or	Ginge Brook, River Lamboum, River Kennet, River Enborne, Bourne Rivulet, River Teat, River Dever	1 NA	NA	,	N/A	NA.	NA	1	1	,	N/A	N/A	1	N/A		N/A	N/A	N/A	N/A	N/A	1	N/A	1	N/A
	Trendring and bying of pipe lines involving large watercourse crossings with in		If the watercourse needs to be temporarily diverted, appropriate measures will be place to protect ecology and watercourse will be returned back to its natural state.	The second course with the second																							
Pipelines Pipelines	Harmel my filtrations Maintenance of sine lines	Construction  Construction	Flood risk assessment will be carried out to ensure that new in channel features we not schemate immer on flood risk. No assumed nationalons.	NA NA	2 NA	٥	0	N/A O	NA 0	0	ů.	NA 0	0	0	N/A N	۰	0	0	0	0	N/A 0	٥	0	N/A 0	N/A 0	N/A O	N/A ©
Pipelires Pipelires	Draining of pipelines for maintenance tempost/ decommissioning of existing pipeline (no watercourse crossings)	Operation  Decorrentesioning	No assumed nationalises  Fixeder is desired to local watercourse, this will be shot term and temporary impacts only  No assumed natigations	NA NA	1 1 g N/A	1 N/A	1 N/A	1 N/A	1 N/A	1 N/A	1 N/A	1 N/A	1 N/A	t N/A		1	1 N/A	1 N/A	1 N/A	1 N/A	1 N/A	1 N/A	1 N/A	1 N/A	1 N/A	1 N/A	1 N/A
			Appropriate procusions will be taken when working in the chemies of electromases, to appropriately manage food risk and the posterior of deposition fill or reliaises of other terms of caupended masked or politicion within the water column. All measures will be a to be with the requirements and outlies the Environment Appropriate Prior (PPC). Cleaned Calde to Presention of Pfliditory.					N/A	N/A	N/A	N/A	N/A						N/A				N/A		N/A		N/A	
Pipelines	removal/decommissioning of existing pipeline (metring watercourse crossings)	Decorrelationing	all or release of other forms of supervised masked or pollution within the water column. All measures will be in line with the requirements set out within the Endstorment Agency's PPCs (PPCs' General Guide to Presention of Pollution; PPCs. Works and maintenance in or near water).	ren	g N/A		N/A						N/A	N/A			N/A		N/A	N/A	N/A		N/A		N/A	N/A	N/A
Finelines Finelines	New above ground pipelines (crossing watercourse) New above ground pipelines (not crossing watercourse)	Construction Construction	N/A N/A	NA NA	2 N/A 0 N/A 1 N/A 0 N/A	N.CA.	N/A N/A	N/A N/A N/A N/A	N/A N/A N/A N/A	N/A N/A N/A	N/A N/A	NLIA NLIA NLIA NLIA	NA/A NA/A NA/A	N/A N/A	N/A N N/A N N/A N	N/A N/A	N/A N/A N/A	N/A N/A N/A N/A	N/A N/A	N/A N/A N/A	N/A N/A N/A	N/A N/A	N/A N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A
Pipelines	Temperary sizelines to support network spenales or changes Construction of reservoir (set back from swiencourse)	Constation Constants	N/A  No secured milications Appropriate precautions will be taken when working in the channels of externouses. to accomplately response food risk and the operated for description	NA NA	g N/A	N/A N/A	N/A N/A	N/A N/A	N/A	N/A N/A	N/A	N,O.	N/A N/A	N/A N/A	N/A N	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A	N/A N/A	N/A N/A	N/A	N/A N/A	N/A N/A	N/A N/A	N/A
reservoir	Construction of new storage reservoir (in line/hext to watercourse - within 500m)	Construction	Appropriate precautions will be seen reter working in the Channel of materioruses, in appropriately invanigh and risk and the potential for deposition sit or inkness of other forms of supervised materials a polition within the water column. All measures will be in the with the requirements and out within the Envisionment Agency in PIPCs (PIPCs). Clement Colade to Presention of Polition; POSCs: White and materiaenses in or man waters.  Appropriate procussions will be taken when vorking in the channels of	NA NA	a N/A	N,O.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A N	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			Environment Agency's PPGs (PPG1: General Guide to Prevention of Pollution; PPGS: Works and maintenance is or near water.																								
reservoir	Modification of an existing storage reservoir	Construction	Appropriate precautions will be taken when working in the channels of watercourses, to appropriately manage flood risk and the potential for deposition all or release of other toms of suspended material or pollution within the water	NA.	a N/A	N,CA.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A N	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			Environment Agency's PPCs (PPCs: General Guide to Prevention of Pollution; PPGS: Works and maintenance in or near water).																								
	Danasco el seu ce podfado	Oscalico	after reference of other forms of invasion between the other special and the second of	A NA	a N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A N	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
neserviir	Presence of new or modified existing storage reservoir	Aperillion	column. All measures will be in line with the requirements set out within the Environment Agency's PPGs (PPG1: General Guide to Prevention of Pollution; PPGS: Works and maintenance is or new works.	ren	N/A	N/A	N/A	N/A	A/A	H/A	N/A	40	A/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	AVA	H/A	A/A	N/A	HUA
	Multivatora et an aviation sur		Appropriate precautions will be taken when working close to channels of watercourses, to appropriately manage flood risk and the potential for discharge or																								
reservoir	Modification of an existing service reservoir adjacent in close proximity to watercourse	Convituation	representations are the state of the state o	NA NA	1 N/A	N,IA	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A N	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			Appropriate precautions will be taken when working close to channels of waternowses. In appropriate																								
reservoir	Presence of new reservoir or modified existing service reservoir in close proximity to watercourse	Operation	Appropriate precautions will be taken when working close to channels of watercourses, to appropriately manage food risk and the potential for discharge or channels and the result of the submounts. All resources will be infar with the sequinments set out within the Environment Agency's EPGs (EPGC). General Cold to Plearwholm Child Child Child PGS. Works and maintenances in or cast waters.	NA .	5 N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A N	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
reservoir	Modification of an existing service reservoir not in close proximity to watercourse	Construction	to Prevention of Pollution; PPGG: Works and maintenance in or near water).  No assumed mitigations	NA	g N/A	N.O.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A N		N/A	N/A		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
neservoir	Presence of new reservoir or modified existing service reservoir not in close proximit to watermouse.	Operation	No assumed mitigations	NA	O N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A N	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
reservoir	Flusting or constructed shade for the reservoir to technic executation. Flusting or constructed shade for the reservoir to technic evaporation. New or continuation of contractual agreement between companies to continue	Operation Construction	NA NA	NA		N,CA N,CA									N/A N				N/A N/A	N/A	N/A N/A	N/A	N/A N/A	N/A	N/A	N/A	N/A
Transfer agreement Transfer agreement		Operation Operation	N/A	NA NA	0 N/A		N/A N/A		N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A		N/A N/A	N/A N/A	N/A N/A		N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A
Transfer agreement	Contractual agreement between companies to continue providing transfer with decrease is abstraction licence, associated Contractual agreement between companies to continue providing transfer with propaga in abstraction licence, associated	Operation	N/A	NA	2 N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A N		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Usage changes and abstraction management	Impose water usage restriction under emergency drought orders to business and/or household	Operation	This assumes a short term benefit to WFD as imposed usage reduction should allow for recovery in the river or squifer which may improve WFD status from pre- section or status.	NA	-1 N/A	N,CA.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A N	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Usage changes and abstraction management	Communication with business or households to reduce water use in times of drought		NA.	NA	g N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A N	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Usage changes and abstraction management		Operation	For treated water transfer, there is likely to be no WFD impact. For new water transfer his may trave a short term impact changing local habities at either end of the transfer should be new water be transferred from niver to triser. Any changes to transfers are assumed to be in place in the short term.	NA	s N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A N	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Perceus transfer of water between water companies  Abstraction management. This could include limiting abstractions of valverable sources in times of drought and using more resilient sources more frequently. This	Constitut	reneers are assumed to be in place in the short term.  This assumes a single abstraction management event is a short term priority with	N/A	s N/A	N/A	4/7	N/A	N/A	N/A	N/A	P/4	N/4	N/A	N/A N			N/A	N/A	114	N/A	4/4	N/A	N/A	pote	N/A	11/4
Usage changes and abstraction management	Jeculus transact or seasor retrievant vision of conjugates. Arbestedion nanapapement. This could include limiting abstractions of valverable sources in times of drought and using more realized sources more frequently. This could include substring from OVID is surface aware or asseruir sources. This could include season of the country of supply.	Aperation	This assumes a single abstraction management event is a short term activity, with abstraction changes occurring regularly to allow for recovery.				N/A					N/A	N/A				N/A			N/A		N/A			N/A		N/A
Usage changes and abstraction management	Tankering treated water between WRZ	Operation	This assumes water being tenkered is treated and will be input into the network at either treatment works or into a main. This should not have any WFD impact. Assumes use of water would not be for direking unless seen to WTW for full.	NA	o N/A		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A N		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
abetraction management	Tankering raw water or treated effuers  Modification of an existing WTW or owngring station relating to breated water	Operation Construction	Assumes use of water would not be for drinking unless sent to WTW for full tensioners.  No assumed nationalisms	NA NA	1 N/A Q N/A		N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N,CA N,CA	N/A N/A	N/A N/A	N/A N	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A
				BS1 WTW and PS (Cow Common Brook and Portobello Ditch), BS2 BPT and BS3 PS and BPT (Pang), BS4 BPT and PS																							
ww	Construction of a new WTW or pumping station-relating to treated water	Construction	No assumed mitigations	BS2 BPT and BS3 PS and BPT (Pang), BS4 BPT and PS (Enhorre (Source to downstream AJ4)), BS5 BPT (Test Upper), BS6 PS (Test - Bourne RhAdet to conf Deser), existing Micheldever WSR (Antor Upper), existing Crathwood WSR (Maria	o NA	NA	NA	NA	0	NA	NA	NA	0	N/A	0 N		0	N/A	N/A	0	N/A	۰	0	0	N/A	0	0
				Micheldewer WSR (Anton Upper), existing Crathwood WSR (Nuris Walk Stream), existing Yew Hill WSR (Schen)																							
WTW.	Construction of a new WTW or pursoing station relation to new water Maintenance and use of pursoing stations and WTW	Operation	No assumed natioations No assumed natioations Appropriate precautions will be taken when working in the channels of	NA NA	g NA	0	N/A N/A	N/A N/A	0	NA.	N/A N/A	NA NA	o o	N/A	0 N	N/A	N/A	N/A N/A	N/A N/A	N/A 0	N/A	N/A 0	O O	0	N/A	N/A 0	A/A
WTW	Removal of existing WTW and associated discharge	Decommissioning	Age becames reconstructive.  Appropriate processions will be taken when working in the channels of watercourses, to appropriately manage food risk and he potential for deposition and or instead or fairly for former or inspection of the channels and the potential for deposition will not instead on the former of the process of the fairly of the channel can be considered to the channel can be con	NA	.s N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A N	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
w/tw	Foul developing in property	Country	Environment Agency's PPGs (PPGs: General Guide to Prevention of Pollution; PPGS: Works and maintenance in or near water).  Assumes no construction is required below ground. Unit would be temperature with	N/A	g N/A	457		N/A	N/A	N/A	N/A	N,CA	N/A		N/A N			wir	N/A			N/A	N/A	P.15	pus	***	
WTW WTW	Small desafration temporary unit Communicon or modification of a desafration stars Maintenance and use of desafration plant	Contraction Construction	no impact on WFD  No assumed militations  No assumed militations	N/A N/A	9 N/A 9 N/A										N/A N N/A N			N/A N/A	N/A N/A	N/A N/A	N/A N/A					N/A N/A	
THE THE		Operation  ivity has been predefined an impact score.  sterbody determines if the waterbody requires further assess	yes assumed integations	J ren	N/A	N/A	- N/A	nys.	Ayra	m/ft	NA	404	400	regint.	nyn N	NJA	N/A	n/A	nya.	RJA	N/A	N/A	A)A	400	Ayra	NJA	-UA
	NACT SETS	and the second section is a second section in the second section in the second section is a second section in the section in the second section is a section section in the section in the section is a section section in the section in the section is a section section in the section in the section is a section section in the section in the section is a section in the section in the section in the section in the section is a section in the																									

Each strikly has been predicted as inguistic con-The maximum impact scene for each waterbody determined in waterbody requires further assessment or red.
Any waterbodies containing activation that scene 3 2 or 3 will require a level 2 assessment whem miligation must be deministrated and INA, MAMOA and the data will be considered.

Any waterbodies containing activation that scene 3 2 or 3 will require a level 2 assessment whem miligation must be deministrated and INA, MAMOA and the data will be considered.

Level Lassessment	Impact	Impact Score	Description
	Verybereficial		Impacts that, taken on their own, have the potential to lead to the improvement in the ecological status or potential of a WFD quality element for the entire waterbody.
Waterbody gasses Level 1	Servificial	न	Impacts that, when taken on their own, have the potential to lead to a minor localised or temporary improvement that does not affect the overall WFD attent of the selected or any earlier element.
WFD assessment	Nohrininal	0	No measurable change in the quality of the water environment or the ability for tenset 1950 objections to be achieved.
	Low	1	Impacts that, when taken on their own, have the potential to lead to a minor localised, short-term and fully severable effects on one or more of the quality elements but would not result in the lowering of VMTD status. Impacts would be very unlikely to greyent any tenest WTD objectives from being achieved.
Waterbody requires level 2	Medium	2	Impacts that, when taken on their own, have the potential to lead to a sidespread or prolonged effect on the quality of the vasive environment that may result in the temporary reduction in WFD status. Impacts have the potential to prevent target WFD objectives from being achieved.
WFD assessment			Impacts when taken on their own have the potential to lead to a significant effect and permanent deterioration of WFD states. Potential for high impact on preventing

Table A.2: Option C Level 1 summary

Option	Impacted Waterbody ID	Impacted Waterbody Name	Waterbody type	Overall waterbody Classification	Overall waterbody Objective	Number of activities assessed	Count of activities scoring major benefit score (-2)	Count of activities scoring minor benefit score (-1)	Count of activities scoring minimal impact score (0)	Count of activities scoring minor local impact score (1)	Count of activities scoring medium impact score (2)	Count of activities scoring high impact score (3)	Level 1 max score	Level 1 mean score	Carry through to level 2 assessment?
	GB106039030334	Thames (Evenlode to Thame)	River	Moderate in 2015	Moderate by 2015	11	0	0	4	6	0	1	3	0.82	YES
	GB106039023360	Cow Common Brook and Portobello Ditch	River	Poor in 2015	Good by 2027	9	0	0	3	6	0	0	1	0.67	NO
	GB106039023660	Ginge Brook and Mill Brook	River	Moderate in 2015	Moderate by 2015	6	0	0	1	5	0	0	1	0.83	NO
	GB106039023600	Mill Brook and Bradfords Brook system, Wallingford	River	Poor in 2015	Good by 2027	4	0	0	2	2	0	0	1	0.50	NO
	GB106039023300	Pang	River	Good in 2015	Good by 2015	9	0	0	4	5	0	0	1	0.56	NO
	GB106039023210	Winterbourne	River	Moderate in 2015	Good by 2027	6	0	0	2	4	0	0	1	0.67	NO
	GB106039023220	Lambourn (Source to Newbury)	River	Moderate in 2015	Good by 2027	8	0	0	1	5	2	0	2	1.13	YES
	GB106039023174	Middle Kennet (Hungerford to Newbury)	River	Moderate in 2015	Good by 2021	8	0	0	1	5	2	0	2	1.13	YES
	GB106039017280	Enborne (Source to downstream A34)	River	Moderate in 2015	Good by 2027	9	0	0	3	6	0	0	1	0.67	NO
	GB106039017210	Penwood Stream	River	Moderate in 2015	Good by 2027	6	0	0	2	4	0	0	1	0.67	NO
	GB106039017310	Enborne (downstream A34 to Burghclere Brook)	River	Moderate in 2015	Moderate by 2015	6	0	0	2	4	0	0	1	0.67	NO
	GB106039017230	Earlstone Stream and Burghclere Brook (source to Enborne)	River	Poor in 2015	Good by 2027	4	0	0	2	2	0	0	1	0.50	NO
	GB107042022710	Test (Upper)	River	Good in 2015	Good by 2015	12	0	0	4	6	2	0	2	0.83	YES
	GB107042022700	Test - Bourne Rivulet to conf Dever	River	Good in 2015	Good by 2015	11	0	0	3	6	2	0	2	0.91	YES
	GB107042022770	Dever	River	Good in 2015	Good by 2015	8	0	0	1	5	2	0	2	1.13	YES
	GB107042022740	Sombourne Stream	River	Good in 2015	Good by 2015	6	0	0	2	4	0	0	1	0.67	NO
	GB107042022730	Nun's Walk Stream	River	Moderate in 2015	Good by 2021	8	0	0	4	4	0	0	1	0.50	NO
	GB107042016310	Monks Brook	River	Moderate in 2015	Good by 2027	6	0	0	2	4	0	0	1	0.67	NO
	GB107042022580	Itchen	River	Good in 2015	Good by 2015	7	0	0	4	3	0	0	1	0.43	NO
	GB40601G601000	Vale of White Horse Chalk	GroundWaterBody	Poor in 2015	Poor in 2015	9	0	0	4	5	0	0	1	0.56	NO
	GB40601G600900	Berkshire Downs Chalk	GroundWaterBody	Poor in 2015	Poor in 2015	12	0	0	4	6	2	0	2	0.83	YES
	GB40602G601600	Thatcham Tertiaries	GroundWaterBody	Good in 2015	Good in 2015	6	0	0	2	4	0	0	1	0.67	NO
	GB40701G501200	River Test Chalk	GroundWaterBody	Poor in 2015	Poor in 2015	12	0	0	4	6	2	0	2	0.83	YES
	GB40701G505000	River Itchen Chalk	GroundWaterBody	Poor in 2015	Poor in 2015	8	0	0	4	4	0	0	1	0.50	NO

Table A.1: Option C Level 1 a	macureot				Thames (Evenio	de Cow Common Brook and Portobello Ditch	Ginge Brook and	Mill Brook and Bradfords Brook	Pang	Winterbourne	Lambourn (Source-	Middle Kennet En (Hungerford to to Newbury)	borne (Source downstream Pr	Penwood Stream	Enborne Earls lownstream A34 and to Bursholara Servi	tone Stream Burghdere & Innere to	Test - Bourne Rivulet to conf Dever	Dever	Sombourne Stream	Nun's Walk Stream	Marks Brook	itchen	Vale of White Horse Chalk	Berkshire Downs Chalk	Thatcham Tertivies	River Test Chalk	River Ischen Chalk
Component	Activity	Construction, Operation or Decommissioning	Assumptions / Mitigations assumed to be in place	Comments		04 G0106039023360		Wallingford	GB106039023300	G9106039023210	GB106039023220	G8:06039022174 G8	A34) 206039017280 G		to Burgholere Brook Brook) GBS		710 GB107042022700	GB107042022770	GB107042022740		G9107042016310		G840661G661800	CB+000156000000 0		G040701G501200	CD-90701G505000
Below ground	Construction/hypair of new tunnels and conduits	Construction	Tunnels and condults will be constructed such that they will not form a preferential pathway for the flow of groundwater	N/A  Assumed new CS1 WTW and PS, and other BPT and PS's require below ground structures to be constructed. Assumed	1 1	1	1	1	1	1	1	1	1	1	1		1	1	1	1	1	1	1	1	1	1	1
Below ground	Construction of below ground structures (shefshelsining wall) with associated dewatering, with no sensitive groundwater feature within 500m	Construction	Plok assessments will be undertaken for excavation works and desetted to be a deserted to be a deserted on watercourses, wetland habitation abstractions. Desetted discharge will be treated before discharge.	Assumed New Con V III vital Inc.), and order little Inc. III vital	1 NA	1	4	NA	1	1	•	1	1	1	1	N/A 1	1	1	•	1	1	N/A	1	1	1	1	1
			Pipeline bedding material will be such that it facilitates the movement of croundeater around the citetine. If required.	Rallesy Line, 83400, A303 (thrice), A30, A272, B3049, A3030																							
Below ground	Presence of new underground structure (tunnel/shafthretaining well), with po sensitive groundester feature within 500m.	Operation	movement of groundwater around the pipeline. If required, Land drainage will be provided on the upgradient side of the achieves such that they will not cause an increase in groundwater flooting risk. This drainage will be discharged into local watercourses to maintain flow.	NA	1 NA	1	1	NA	1	1		1	1	1	1	N/A 1	1	1	1	1	1	N/A	1	1	1	1	1
			Risk assessments will be undertaken for excavation works and dewatering to ensure no adverse impact on watercourses,	River Lambourn (Kennet and Lambourn Floodplain + 460m), Wick Wood (Kennet and Lambourn Floodplain + 400m), River Kennet (Kennet Valley Adderwoods + 110m), Beacon Hill WSR (Bungbicine Beacon SOm - SR already exists so not scored here / assumed no below ground impact if modifications																							
Below ground	Construction of below ground structures (shafthelskining wall) with associated deveatering, within 500m of a sensitive groundwater feature.	Construction	devalering to ensure no adverse impact on watercourses, wetland habitato or abstractions. If impact likely appropriate mitigation to be put in place. Devalering discharge will be treated before discharge.	being assumed no below ground impact if modifications negured, 82048 (New Test SSS) and East Auton Common = 350m), River Test twice (New Test SSS) and East Auton Common = Gm), River Dever (New Test SSS) = 0 (m)	2 NA	NA	NA	NA	NA	NA	2	2	N/A	N/A	N/A	N/A 2	2	2	N/A	N/A	N/A	N/A	N/A	2	N/A	2	NA
Below ground	Presence of new underground structure (tunnel/shaft/retaining wall) within 500m of a sensitive groundwater feature	Operation	Pipeline bedding material will be such that it facilitates the movement of groundester around the pipeline. If required, Land drainage will be provided on the upgradient side of the scheme such that they will not cause an increase in groundester flooding risk. This drainage will be discharged anto local watercourses to maintain flow.	N/A	2 NA	NA	NA	NA	NA	NA.	2	2	N/A	N/A	N/A	N/A 2	2	2	N/A	N/A	N/A	N/A	N/A	2	N/A	2	NA .
Below ground	Construction of new cutting with external devalening with pg sensitive groundwater feature within 500m	Construction	groundwater flooding risk. This drainings will be dischanged into local water courses to maintain flow.  NIA  Plais assessments will be undertaken for excavation works and decalating to ensure no adverse impact on watercourses,	NA	1 NA	NA	NA	NA	NA NA	NA.	NA.	NA NA	N/A	N/A	N/A	N/A N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	NA	NA
Below ground	Construction of new cutting with external deveatering within 500m of a sensitive groundwater feature	Construction	welland habitats or abstractions. If impact likely appropriate mitigation to be put in place Descripting discharge will be treated before discharge.	NA	2 NA	NA	NA	NA	NA .	NA.	NA	NA	N/A	N/A	N/A	N/A N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	NA	NA
Below ground	Construction of new culsest	Constituction	Appropriate precautions will be taken when working in the channels of or adjacent to watercourses, providing new cuberts and or extending culvers, if required, to appropriately manage flood risk and the potential for deposition of all or release of other forms of auspended material or pollution.	N/A	1 NA	NA.	NA.	NA.	NA.	NA.	NA.	NA	N/A	N/A	N/A	N/A N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	NA.	NA.
			channels of or algioset to widercourses, providing new cultures and or searching quietes, it required, to appropriately many foot mis and up patient for required to appropriately senting foot mis and up patient for the patient or pulsation within the water column. All measures will be in the with the requirements set out within the Environment Agency's PPGE (PPGE): General Caulate to Prevention of Publishors, PPGE; Works and mentionation in or near sense; and PPGE2 Minimum Call of Inductions con maker;																								
Calchment management Calchment management	Kinosladas auchanos or adacation procramme  Changes to land management practices to reduce pesticides, nutrients, sediment or flooding relating to a groundwater source	Operation Operation	NA. The impact of the scheme will be felt in the long term. The scheme will be focused around the SP21 and 2 areas of the groundwater source of interest. These schemes are smaller.	NA NA	-1 NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	N/A N/A	NA NA	N/A N/A	N/A N/A	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA
Calchment management	Changes to land management practices to reduce pesticides, nutrients, sediment or flooding relating to a surface valer source	Operation	An immediate change may be seen in the vaster quality downstream of the changes to land management. It is assumed these is a high level of engagement from those relevant for reducing the parameter of interest.	NA	-2 NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		NA NA	N/A	NA	NΑ	NA	NA	NA	NA	NA	NA	NA	NA
Calchment management Calchment management	Power restoration - construction phase Power restoration - after construction	Construction Operation	There may be misor abort term impacts cluring the constituction phase. Flour restorations will be selected in line with WIMEP criteria. The restorations are to improve hydrological flows in the local area.	NA NA	1 NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA		NA NA	N/A N/A	NA NA	N/A N/A	N/A N/A	NA NA	N/A N/A	NA NA	NA NA	NA NA	NA NA	NA NA
Calchment management Calchment management	Flow augmentation and Genning Terrestrial habitat creation/management - creation Terrestrial habitat creation/management - management Management - management - management Management - creation - management - management	Operation Construction Construction Construction	NA NA NA	NEA NEA NEA	1 NA 1 NA 1 NA 1 NA	NA NA	NA NA NA	NA NA NA	NA NA NA NA	NA NA NA	NA NA NA	NA NA NA	NA NA NA	NA NA NA	NA NA NA	NA NA NA NA NA NA	N/A N/A N/A	NA NA NA	NA NA NA	NA NA NA	NA NA NA	NA NA NA	NA NA NA	NA NA NA	NA NA NA	NA NA NA	NA NA NA
Calchment management	Natural water retrotion masuress (includes IMM and watered constant - construction Natural water retrotion masuress (includes IMM and watered constant). Fishedes management Subinability United Desirage Systems (SUDG) - construction Subinability Desirage Systems (SUDG) - after construction.	Control Con	NIA.  Assumed to be in place due to WINEP driver or similar criteria to improse ecological status of the river.  NIA.	NA NA	2 NA 1 NA 1 NA	NA	NA NA NA	NA NA NA	NA NA NA	NA NA NA NA	NA NA NA	NA	NA	NA NA NA	NA	NA NA NA NA NA NA NA NA	NA	NA NA NA	NA NA NA	NA NA NA	NA NA NA	NA NA NA	NA NA NA	NA NA NA	NA NA NA	NA NA NA NA	NA NA NA
Calchment management  Calchment management	Sustainable Urban Drainage Systems (SUDS) - after construction  Unlacytaled calchment management	Operation Operation	Assumed to presented as an option at local scale.  This assumes a short term benefit to WFD as imposed usage reduction should allow for recovery in the inver or aquifer which may improve WFD status from pre-restriction status.	NEA.	.2 NA	NA NA	NA NA	NA NA	NA NA	NA.	NA NA	NA NA	NA NA	NA NA		NA NA		NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA
Cultert	Construction of new inverted alphon or drop inlef culvert	Construction	Approprise precautions will be listen when working in the channels of a subject to welencourses, providing new valuations and or electrical qualities. If persient, to appropriate manage fixed risk and the potential for disposition still or invalid provided to the subsect of positions with the subsect column. All measures of the subsect or position with the subsect column. All measures will be in the width the transverse will be in the width the subsect or plantical provided and within the furthermore Appropriate Provided (POSI). (Secretal Caulies to Provided Appropriate Provided (POSI). (Secretal Caulies to Provided Appropriate Provided (POSI).)	NA	1 NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA .	NA NA	N/A	NA	NA	NA	NA	NA	NA	NA	NA.	NA	N/A
Cultert Cultert Cultert	Presence of new cubest, in headwalers or on drainings disches Presence of new cubest risk are linear catchment Presence of new cubest risk are linear catchment	Operation  Considers	Appropriate improvements to local habital to offset the presence of the culient	NA NA	1 NA	NA NA NA	N/A N/A	NA NA NA	NA NA NA	NA NA	NA NA	NA NA NA	NA NA	NA NA NA		NIA NIA NIA NIA NIA NIA	N/A N/A	NA NA	NA NA NA	NA NA NA	N/A N/A	NA NA NA	NA NA	NA NA NA	NA NA NA	NA NA NA	NA NA NA
Culteri Culteri Culteri Discharge	Removal of significant in channel watercourse structure (such as impassable weir)  Removal of existing culterts or other in channel watercourse structure.  High volume discharge of water with a quality element of higher WFD status than the	Operation Decommissioning Decommissioning Operation	No assured retraption	NA NA NA	2 NA NA NA NA NA	N/A N/A	N/A	NA NA NA	NA NA NA	NA NA NA	NA	NA	NA	NA NA NA	NA NA	NA NA NA NA NA NA	N/A N/A	NA	NA NA NA	NA NA NA	NA NA NA	NA NA NA	NA	NA NA NA	NA NA NA	NA NA NA	NA NA NA
			No assumed miligations  No assumed miligations	NA NA	a NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	NA NA	NA NA
Discharge Discharge	High distinct absorbing of sears with a quality element of a source most order and considered absorbing or deserved the quality element of the searce or higher INTO solidar than the recording solidar both a quality element of a lower WTD solidar. Bhas the recording solidar both or solidar with a quality element of a lower WTD solidar. Bhas the recording the solidary of solidar with a quality element of a fine some WTD solidar as a fine considered solidary of solidar with a quality element of the some WTD solidar as a fine solidary of solidary of solidar with a quality element of the some WTD solidar as a fine contribution with the solidary of solidar with a quality element of the some WTD solidar as a fine contribution with the solidary of solidary solidary element of the some WTD solidar as a fine contribution with the solidary of solidary solidary.	Operation Operation Operation	No assumed mitigations  No assumed mitigations  No assumed mitigations	NA NA	2 NA 0 0	NA	NA NA NA	NA NA NA	NA NA NA	NA NA NA	NA NA NA	NA .	N/A N/A	N/A N/A N/A	N/A N/A	N/A N/A N/A N/A N/A N/A	N/A	N/A N/A N/A	N/A N/A N/A	N/A N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	NA NA NA	NIA NIA NIA
Discharge Discharge	New WYW discretion to voluntecuries  Thereshor of water via a river, cannot or assuedand.  New discretions of highly valine water to a coastal or transitional waterhods.	Coeration Coeration Operation	No assured militations No assured militations No assured militations No assured militations	NA NA NA NA	1 1 2 NA	N/A N/A N/A N/A	NA NA	NA NA	NA NA NA NA	NA NA	NA NA	NA NA NA NA	N/A N/A	N/A N/A	N/A N/A	N/A N/A N/A N/A	N/A N/A N/A N/A					N/A N/A	N/A N/A		N/A N/A N/A N/A	NA NA NA NA	NA NA
Discharge Discharge	New discharge of highly saline water to a surface waterbody or governdwater  Construction of a new outfall structure to a watercourse, coastal waters, transitional waters or reservoir	Operation  Construction	No sourced mitigations. Appropriate procession of the characteristic of selectrocarterist be tested when working in the characterist of selectrocarterist, to appropriately manage fitted risk and the potential of the or releases of other feature of suspended material or poliution within the water feature. All remanages will be in the with the negativement and and within the Characteristic of poliution within the Characteristic of the Cha	N/A	NA .	N/A N/A	N/A N/A	N/A N/A	NA NA	NA NA	NA NA	NA NA	N/A	N/A	N/A	N/A N/A	N/A	N/A N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	NA NA	NA NA
Discharge	volers or reservoir  Cessation of existing dachages to a unincourse	Construction	No consensed activations	WA	2 NA	N/A	NA.	NA.	NA NA	NA.	NA.	NA.	N/A	N/A	N/A	N/A N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	NA NA	NA.
Discharge	Cessation or acciting discrizate to a wavecourse  Maintenance and use of river, coastel or transitional water outful	Operation	No suscept indistation.  Appropriate procultions will be bisken when working in the channels of welencourses, to appropriately manage flood final and the potential file of production of all or releases of deep forms of a uniquented material or policition within the wester southers. All reseases will be in the with the regulatorists and sud-with the file interviews will be in the with the regulatorists and sud-with the file interviews Agency's PFGC (PROT). Claimeral Sauda to Provincian of Production.	NA .	0 0	NA NA	NA NA	NA NA	NA NA	NA.	NA NA	NA NA	N/A	N/A	N/A	N/A N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	NA NA	NA NA
Groundwater	Construction of a new abstraction borehole headworks and associated infrastructure	Construction	No assumed mitigations	NA	0 NA		NA	NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA		NA NA		NA	NA	NA	NA.	NA	NA	NA NA	NA NA	NA NA	NA .
Groundwater Groundwater	Refurbishment of existing boreholes  Drilling new abstraction boreholes	Construction Construction Construction	re: secureur respective. Work will be carried out under appropriate consent from the EA. Work will be carried out under appropriate consent from the EA.	NA NA	0 NA 0 NA	N/A N/A	N/A N/A	N/A N/A N/A	NA NA NA	NA NA NA	NA NA		NA NA	NA NA NA	NA NA	NA NA NA NA	N/A N/A	NA NA NA	N/A N/A	NA NA NA	NA NA	NA NA NA	NA NA	NA NA	NA NA	NA NA NA	NA NA NA
Groundwater	Meintenance and use of abeliraction borehole infrastructure		No seasured missistories Approprises procedures will be taken when working in the channels of or adjacent to adentocurrens, to appropriately emorge filter of the and the potential of the operation of sit or relation of other forms of assignated instativity or politicis which has not course. All measures that his in loss with his requirements sat out within the functionment Agency's PPCs (VPCsC) Cannel oldes to Provisition of Politicis; PPCSC Works and maniferancies in or near water).	No.	g NA	N/A	N/A	NA NA	NA NA	NA.	NA NA	NA NA	NA NA	NA NA		NA NA	N/A	N/A	N/A	NA NA	NA NA	NA NA	NA NA	NA.	NA NA	NA NA	NA NA
Habital	Creation of significant areas of riporten habitate	Construction	within the voter column. All measures will be in line with the requirements set out within the Innivorment Approx's PPGs (PPGS: General Guide to Prevention of Pollution; PPGS: Works and maintenance in or near water).	NA	3 111	- An	**	- m	- MA	ren.	nen.	**	mn.	m^	**	~ ~		77.	ren.	nen.	**	mn.	m^	**	mn.	ren	- PA
Habited	Minor habital creation	Construction	channels of or adjacent to watercourses, to appropriately manage flood risk and the placential for deposition of all or release of other forms of suspended material or poliution within the voter column. All measures will be in line with the	NA	-1 NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Habited	Coylighting of existing cuherts	Construction	Appropries precadions will be taken when working in the channels of or alloces to welecourses, to appropriesly enough flood risk and the potential for edupations of set or release of other forms of asspected material or polision which the water column. All measures will be in his with the requirements and out with the first-converse Agency 2 PPCs and the polision of the process of Photology PPCs Which is desired and the Prevention of Photology PPCs Which is defined the Prevention of Photology PPCs Which is defined the Prevention of Photology PPCs which is the process of PPCs which is the process of PPCs process of PPCs which is the process of PPCs process of PPCs process of PPCs process of PPCs process proc	NA	-1 NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ligation .	Constitution of the Consti	Potroleo	Appropriate precautions will be taken when working in the channels of watercourses, to appropriately manage food risk and the potential for deposition of all or release of other	N/A	NA NA	NA	NA	N/A	NA.	NA.	NA.	NA NA	NA	NA NA	NA NA	NA NA	N/A	NA	NA	NA	N/A	NA	NA NA	NA.	NA.	NA.	142
Political	Consecute meaggreener with realized baild substitute and good inperior connections	h.ger/d801	column. All reasones will be in line with the requirements set out within the Environment Agency's PPGs (PPG1: General Guide to Prevention of Pollution; PPGS: Works and	ren	NA NA	NA	-MA	HA	ren.	WA	reA	- Man			-60	NA NA	N/A	HA	reA	HA	reA.	mA.	m/	Tr.A	Test.	N/A	
Habited	Channel realignment with artificial banks/base	Operation	Appropriate preculions will be tilsen when working in the characteristic street, in appropriately manage fixed finite and the potential for deposition of all or relations of deposition of all or relations of their forms of assignment of maintain or politicis within the water forms of assignment of maintain or politicis within the water forms of assignment of the politicistic street, and within the first information of politicistic street, and within the first-incomment agency or PROSE, Works and Guide to Provention of Publicisty, PPOSE, Works and maintainment on or maintained.	NA	1 NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA.	NA NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Guide to Prevention of Policing PPGS Works and maintenance in or near water). Appropriate precautions will be taken when working in the channels of watercoornes, to appropriately manager food risk.																								
Antoko	Construction or modification of a new pumping station and/or intake from new water (nex or coastal waters)	Construction	over an analysis of the deposition of all or release of other forms of supported material or publish within the voter column. All measures will be in few with the negativements set out within the Environment Agency's PEGG (PRGT) Gameral Galde to Prevention of Publish; PPGG: Works and materials are in the second of Publish; PPGG: Works and	Assumed new intake near Drayton. As this option GIS begins toors proposed SESRO WTW assessment for this WB is an assumption based on previous assessments at Gate 5. Various PS along roote	1 1	1	NA	NA	1	NA	NA	NA .	'	N/A	NA	NIA S	1	N/A	N/A	N/A	N/A	N/A	1	1	N/A	1	NA
byteke	Maintenance and use of river inteless	Operation	Cade in Proceedings of Publisher, 1970'S Virtues and Information on the Conference of the Section of the Conference of the Section of the Conference of the Section of the Conference of Conference of the Conference of Conference of the Conference of Conferenc	N/A	, ,	NA	NA	NA	NA.	NA.	NA.	NA.	N/A	N/A	N/A	N/A N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	NA	NA.
			cohem. All measures will be in fire with the regularization and within the Environment Agency in PICEs (PICIA) Cleared Guide to Presention of Polishior; PPGS: Works and environment in or mean values).  Appropriate precusions will be taken when working in the schematic of undercourses, to appropriately message Bood risk and the potential for deposition of all or releases of other																								
Intoke	Maintenance and use of coastal intakes	Operation	column. All measures will be in line with the requirements set	NA	1 NA	NA	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	NA	NA
Licence	Use of existing ground and surface water abstraction ficences, within Scence conditions and recent abstraction nations Use of existing surface water and poundanter abstraction Scences, within existing	Operation Operation	Guide to Prevention of Poliution; PPGE: Works and resintenance in or near water).  No assumed mitigations	NA NA	0 NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	N/A N/A	N/A N/A		N/A N/A N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	NA NA	NA NA
Licence Licence Licence	Scence conditions but outside of the recent actual rates.  Emergency or drought use of existing surface water or groundwater abstraction pusheds of licence conditions.  New or increased surface water abstraction.	Operation Operation Operation	No assumed mitigations  No assumed mitigations  No assumed mitigations  No assumed mitigations	NA NA NA	2 NA	NA	N/A N/A	NA NA NA	NA NA	NA NA NA	NA NA	NA	N/A N/A N/A	N/A N/A N/A	N/A N/A	N/A N/A N/A N/A	N/A	N/A	N/A N/A N/A	N/A N/A N/A	N/A N/A N/A	N/A N/A	N/A N/A N/A	N/A N/A N/A	N/A N/A	NA NA NA	NA NA NA
Licence Licence Licence	New or increased orcondester abstraction.  New constain experiment sustained sustaination licence.  Reduction of coastal or transitional wavefoodly abstraction licence  Increase of coastal or transitional wavefoodly abstraction licence.  Therefore or coastal or transitional wavefoodly abstraction licence  Therefore and liquing of pipe less within the interfaces of a celebrate (no	Operation Operation Description	No seasured militarions No seasured militarions No seasured militarions No seasured militarions Assured that bedding material for pipelines will be	NA NA	3 NA 3 NA 4 NA 2 NA	N/A N/A N/A	N/A N/A	N/A N/A N/A	NA NA NA NA	NA.	NA NA NA NA		N/A N/A	N/A N/A N/A N/A	N/A N/A	N/A N/A N/A N/A N/A N/A N/A N/A	N/A	N/A N/A N/A	N/A N/A N/A	N/A N/A N/A	N/A N/A N/A	N/A N/A N/A	N/A	N/A N/A	N/A N/A N/A	NA NA NA NA	NA NA NA
Pipelines	watercourse crossings)	Construction	Assumed has bredding material for pipelines will be Assumed has bredding material for pipelines will be for considerate flow. Assumed that bedding material for pipelines will be constructed such that they do not turn preferential portways for groundwater flow. Assumed that watercourse crossings will be confied out using detectional difficient or the watercourse needs to be detectional difficient or the watercourse needs to be	ren	0 0	0	NA	0	0	•	NA	NA	N/A	0	0	•	N/A	N/A	0		0	0	0	0	0	0	0
Pipelines	Trenching and leying of pipe lines insolving wetercourse crossings	Construction	Assumed that witercourse crossings will be carried out using discisonal didling or if the watercourse needs to be temporarily diserted, appropriate measures will be in place to protect ecology and watercourse will be returned back to its notural state.	Ginge Brook, River Lambourn, River Kennel, River Enbonna, River Teet telca, River Dever	1 NA	NA	1	NA	NA	NA	1	1	1	N/A	NA	N/A S	1	1	N/A	N/A	N/A	N/A	N/A	1	N/A	1	NA
Pipelnes Pipelnes	Thresching and bying of pipe lines insolving large wetercourse crossings with in channel modifications.  Melotecance of sine lines.	Construction  Decration	Picod risk assessment will be carried out to ensure that new in channel features will not advantally impact on flood risk.  No assumed militaritions.  If waite is dished to local wetercourse, this will be abort items and immorate impacts and	NA NA	2 NA	N/A 0	N/A 0	N/A 0	NA 0	NA 0	NA 0	NA 0	N/A 0	N/A 0	0	N/A N/A	N/A O	N/A O	N/A 0	N/A 0	N/A O	N/A O	N/A O	N/A O	N/A O	NA 0	NA 0
Pipelines Pipelines	Onaining of pipelines for maintenance nervoel / decommissionine of solutine biseline (no sedencourse crossines)	Operation Decormisationing	If water is dissined to local watercourse, this will be short term and temporary-imports note.  No seasured missations.  Appropriate precautions will be taken when working in the channels of watercourses, to appropriately manage flood risk and the potential for disposition of all or releases of other come of asspected material or publics within the water	MA .	1 1		1 N/A	1 NA	NA.	NA.	NA.	1 NA	NA.	1 NA		NA NA		1 NA	1 NA	1 NA	NA.	1 NA	NA.	NA.	NA.	1 NA	NA NA
Pipelines	nemoval / decommissioning of existing pipeline (involving watercourse crossings)	Decorresissioning	and the potential for deposition of all or release of other forms of supported material or pollution within the votes column. All measures will be in line with the negativements set out within the Environment Agency's PPGs (PPGs) General Gallet to Prevention of Pollution; PPGS: Works and reletionsmotion in or man votes).	NA	0 NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		NA NA	N/A	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pioelines Pioelines Pioelines reservoir	New above record closelines (organize watercourse) New above record closelines (not crossine watercourse) Ferrodrate planning to account referrod watercourse) Construction of parametr less thank from patercourse)	Contractor Contractor Contractor Contractor	N/A N/A N/A	NA NA NA	2 NA 0 NA 1 NA 0 NA	N/A N/A N/A	N/A N/A N/A	N/A N/A N/A	NA NA NA	NA NA NA NA	NA NA NA	NA NA NA	NA NA NA	NA NA NA	NA NA NA NA	N/A N/A N/A N/A N/A N/A N/A	N/A N/A N/A	NA NA NA	NA NA NA	NA NA NA	NA NA NA NA	NA NA NA	NA NA NA	NA NA NA	NA NA NA	NA NA NA NA	NA NA NA
reservár	Construction or new storage reservoir (in line/next to watercourse - within 500m)	Construction	No manerous mossesce.  Apoproprise processions will be taken when working in the channels of welercourses, to approprisely manage food not and the potential for deposition of all or relations of other former of auspended material or politics within the water column. All reasons will be in the with the regulatories and adult to the control of the column. All reasons will be in the with the regulatories and an adult the Tever of the Column Agency & PFOC (PSC). Claimeral Guide to Provision of Pfoliator & PFOC (PSC).	NA .	3 NA	NA NA	NA.	NA.	NA.	NA NA	NA NA	NA NA	NA NA	NA.	NA NA	NA NA	N/A	NA NA	NA.	NA NA	NA NA	NA NA	NA.	NA NA	NA.	NA NA	NA .
			column. All measures will be in fine with the requirements set out within the Environment Agency's PDSG (PDSG): Cleareral Galde to Prevention of Pollution; PPGS: Works and meliterances in or near wellow. Appropriate precautions will be taken when working in the Appropriate precautions will be taken when working in the de-																								
reservoir	Modification of an existing storage reservoir	Construction	Appropriate precusations will be taken when working in the channels of watercourses, to appropriately menage food risk, and the potential for deposition of all or release of other forms of auspended material or polition within the water column. All measures will be in in with the regularisments set and within the Environment Agency's PPCE (PPCE). Censeral Quide to Prevention of Politions PPCE. Works and Quide to Prevention of Politions PPCE. Works and prevention of PPCE.	NA.	3 NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA.	NA NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Guide to Prevention of Pollution, PPGE: Works and resistances in or near water). Appropriate Control of the baken when working in the channels of watercourses, to appropriately manage flood risk and the potential for deposition of sit or release of other.																								
reservoir	Presence of new or modified existing storage reservoir	Operation	maintenance in or near ready.  Apoproprise preculture will be labeled when working in the characteria of watercourses, is approprisely manage fixed risk, and the polemic of all or relates of client formation of authorities of policion within the water formation of auspended maintening or policion within the water formation of authorities of policion within the water formation of policion within the water formation of policion within the water formation of policion of the po	NEA	a NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA NA	N/A	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
reservoir	Modification of an existing senice reservoir adjacent in close proximity to watercourse	Construction	Appropriate precautions will be taken when working close to channels of seleccourses, to appropriately manage fixed risk and the potential for discharge of chlorinated select risks the water course. All measures will be in line with the requirements	NA .	1 NA	NA	NA	NA	NA	NA	NA.	NA	NA	NA.	NA.	NA NA	NA	NA	NA	NA	NA.	NA	NA.	NA	NA.	NA	NA.
			General Guide to Prevention of Pollution; PPGS: Works and maintenance in or near water).																								
reservoir	Presence of new reservoir or modified existing service reservoir in close proximity to welencourse	Operation	Appropriate precadions will be taken when working close to channies of welercourses, to appropriately manage fitted risk and the potential for elizations of characteristic manages from the west of the potential selection of the magnitude and out with the Technorrest Approx \$1950.0000.  General Guide to Prevention of Publishor, \$PSCO Vioria and maintaination of or main valley.	N/A	1 NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
reservair reservair	Modification of an existing service reservoir not in close proximity to vetercourse.  Preservoir of new reservoir or modified existing service reservoir not in close construit to season or continued to the contraction of the close construits or the contraction of the contraction	Construction  Construction	Lemmas Guida to Prevention of Poliutory PP-Lic. Victoria and malniferance in or near water).  No assumed miligations  No assumed miligations	NA NA	0 NA		NA NA	NA NA	NA NA	NA NA	NA NA		NA NA	NA NA		NA NA		NA NA	NA NA	NA NA	NA NA	N/A N/A	NA NA	NA NA	NA NA	NA NA	NA NA
reservoir reservoir reservoir Transfer agreement	Floriting or constructed shade for the reservoir to reduce evenomation.  Floriting or constructed shade for the reservoir to reduce evenomation.  New or continuation of contractual agreement between or spanies to continue.	Operation  Construction  Operation	NA NA N/A	NA NA	0 NA 2 NA 1 NA 0 NA	N/A N/A	N/A	N/A N/A N/A	NA NA NA	NA NA NA	NA NA NA	NA	NA NA NA	NA NA NA	NA NA	NIA NIA NIA NIA NIA NIA	N/A N/A	NA NA NA	N/A N/A N/A	NA NA NA	NA NA NA	NA NA NA	NA NA NA	NA NA NA	NA NA NA	NA NA NA	NA NA NA NA
Transfer agreement Transfer agreement	acouldes transfer with an chance to abstraction isconce associated. Contractual agreement between companies to continue growling transfer with decrease in abstraction isconce associated. Contractual agreement between companies to continue growling transfer with servesses in abstraction isconce associated.	Operation Operation	N/A	NA NA	-1 NA	N/A N/A	N/A N/A	N/A N/A	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA	NA NA		N/A N/A	N/A N/A	N/A N/A	NA NA	N/A N/A	NA NA	NA NA	NA NA	NA NA	NA NA
Usage changes and abstraction management	Impose water usage restriction under emergency drought orders to business and/or household	Operation	This assumes a short term benefit to WFD as imposed usage reduction should allow for recovery in the river or aquifer which may improve WFD status from pre-restriction status.	NA NA	-1 NA	N/A N/A	N/A N/A	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA		NIA NIA	N/A N/A	N/A N/A	N/A N/A	N/A N/A	NA NA	N/A N/A	NA NA	NA NA	NA NA	NA NA	NA NA
Usage changes and abelraction rearesement Usage changes and abelraction rearesement	Communication with business or households to reduce water use in times of drought	Operation Operation	NIA  For treated water transfer, there is likely to be no WPD trepact. For one water handler this may have a short form trepact changing local habitats at either end of the transfer should be now value be brankered for miner to her. Any changes to brankers are assured to be in place in the short	NA NA	0 NA	NA NA	NA NA	N/A N/A	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA		NA NA	N/A N/A	NA NA	NA NA	NA NA	NA NA	N/A N/A	NA NA	NA NA	NA NA	NA NA	NA NA
abstraction management Usage changes and abstraction management	Brakes transfer of saler believen valer companies.  Abtraction resupement. This could include limiting abstractions of valenmble sources in times of drought and using more realised sources more frequently. This could include switching from ORV to surface water or reservoir sources. This could reclude resting ones sources to the Tources of display.	Operation	This assumes a single abstraction management event is a ahort term activity, with abstraction changes occurring	NA.	1 NA	N/A	NA.	N/A	NA NA	NA.	NA NA	NA NA	NA NA	NA NA		NA NA	N/A	N/A	NA NA	N/A	NA NA	NA	NA NA	NA NA	NA.	NA NA	NA NA
Usage changes and shatrartion resonances	could include switching from GN to surface water or reservoir sources. This could include resting some sources to all for recovery of supply.  Tankening treated water between VFRZ.	Operation	short norn actively, was assertant changes occurring regularly to allow for eccount of the second and will be input this manumes water being tankened is treated and will be input into the restorck at either treatment suchs or into a main. This should not have any WFD immost. Assumes use of water would not be for diriking unless sent to	NA .	0 NA	NA	NA	NA	NA.	NA.	NA	NA	NA	NA	NA	NA NA	N/A	NA NA	NA	NA	NA	N/A	NA	NA	NA.	NA	NA NA
Usage changes and shalter-time resources with WTW	Tankering raw water or treated efficient Modification of an existing WTW or ourselves station relating to treated water	Operation Construction	Assumes use of water would not be for drinking unless sent to MTM for his transmust. No assumed militations.	NA  NA  SYA  SYA  SYA  SYA  SYA  SYA  SY	1 NA 0 NA	N/A	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA	NA NA		NA NA	NA NA	NA NA	NA NA	N/A N/A	NA NA	NA NA	NA NA	NA NA	NA NA
WTW	Construction of a new WTW or pumping station relating to breated water  Construction of a new WTW or pumping station relating to prevent water.	Construction  Construction	No sessured mitigations  No sessured mitigations	BPT (Test Upper), BSS PS (Test - Bourne Riskel to corf Dever), existing Micheldever WSR (Anton Upper), existing Crabwood WSR (Nun's Walk Stream), existing Yee HII WSR (Incher) NA	0 NA	N/A	N/A N/A	N/A N/A	0 NA	NA NA	NA NA	NA NA	0 NA	NA NA	NA NA	NA NA	0	N/A N/A	N/A N/A	O NA	N/A N/A	0 NA	0 NA	0 NA	N/A N/A	0 NA	0 NA
WTW WTW	Meintenance and use of suspcino stations and WTM	Operation	you succeed indications.  Appropriate precautions will be below when working in the Appropriate precautions will be below when working in the Appropriate precautions will be progressed manage fixed onle and the polemical for deposition of all or releases of either ferrors of ausprecided meterical or politicion within the water column. All reasons will be in in evil then requirements and out within the Environment Agency's FPGC (PDC): Clement Guide to Prevention of Publishor (PDC). Works and	NA .	O NA	0	NA	NA	0	NA	NA	N/A	0	NA	NA .	NA 0	0	N/A	N/A	0	N,/A	0	0	•	N/A	0	0
WTW	Removal of existing WTW and associated discharge	Decommissioning		NA	-J NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		NA NA	N/A	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
WIW	Maintenance and use of desalination plant	Operation Contraction Contraction	Assumes no construction is required below ground. Unit would be temporary with no impact on WFD No assumed militarions.  No assumed militarions.	NEA NEA	0 NA 1 NA 0 NA	N/A N/A	N/A N/A	N/A N/A	NA NA NA	NA NA NA	NA NA NA	NA NA NA	NA NA NA	NA NA NA	NA NA NA	NA NA NA NA NA NA	N/A N/A N/A	N/A N/A	N/A N/A	N/A N/A	NA NA NA	N/A N/A	NA NA NA	NA NA NA	NA NA NA	NA NA NA	NA NA NA
	Each activity has be The maximum impact score for each waterbody & Any waterbodies containing activities that score a 2 or 3 will nequine a level 2 assess	en predefined an impact score.	e.																								

	Very beneficial	-2	Impacts that, taken on their own, have the potential to lead to the improvement in the ecological abelus or potential of a WFD quality element for the entire waterbody.
	Sereficial	a	Impacts that, when taken on their own, have the potential to lead to a minor localised or temporary improvement that does not affect the overall WFD status of the waterbody or any quality elements.
Waterbody passes Level 1 WFD assessment	Noimintel	0	No measurable change in the quality of the water environment or the ability for target WFD objectives to be achieved.
	Low		Impacts that, when taken on their own, have the potential to lead to a minor localised, short-term and fully reversible effects on one or mone of the quality elements but would not result in the breening of WFD status. Impacts would be very unlikely to prevent any target WFD objectives from being achieved.
Waterbody requires level 2	Medium	2	Impacts that, when taken on their own, have the potential to lead to a widespread or prolonged effect on the quality of the water environment that may result in the temporary reduction in WFD stakes. Impacts have the potential to present target

## **B.** Level 2 output sheets

Waterbody ID	Level 2 sheet created?	Waterbody Name	Maximum Level 2 Impact score	Confidence in WFD data	Confidence in option design	Requirements to improve confidence	Mitigation measures	Post mitigation impact score	Deterioration between status classes	Impediments to Good Ecological Status (GES) or Good Ecological Potential (GEP)	Compromises water body objectives	Assists attainment of water body objectives	Further comments
GB106039030334	TRUE	Thames (Evenlode to Thame)	0	Medium	Medium	Detailed review of all additional baseline ecological WFD data, including results of any surveys already undertaken for this scheme Further information about how the option will be operated	Fish and eel screening at new intake  Minimisation of changes to hydrological regime through adjustment of abstraction conditions.  Provision for de-chloritation of pipeline water when draining down pipeline before discharge to watercourse.	0	No	No	No	No	Assumed major river crossings will be carried out using HDD or pipejacking. Assumes clay stanks will be used in pipeline route where potential for interaction with groundwater Assumes dewatering discharge to groundwater or surface water to help maintain flows
GB106039023220	TRUE	Lambourn (Source to Newbury)	1	Low	Medium	Detailed review of all additional baseline ecological WFD data, including results of any surveys already undertaken for this scheme Detailed hydroccingical assessment of the impacts of temporary devotering abstraction on flow in the watercourses, and potential influence on SSSIs, with focus on impacts on biology further information about option.	Any dewatering needed for the construction will be discharged to the invert to help maintain flow if it shafts needed for river crossing these should be located outside of the SSS/SAC.  Provision for de-chlorination of pipeline water when draining down pipeline before discharge to watercourse.	· 1	No	No	No	No	Assumed major river crossings will be carried out using HDD or paga- paga- paga paga paga paga paga paga paga paga
GB106039023174	TRUE	Middle Kennet (Hungerford to Newbury)	1	Low	Medium	Detailed review of all additional baseline ecological WFD data, including results of any surveys already undertaken for this scheme Detailed hydroecological assessment of the impacts of temporary adstraction for deveatering on flow in the watercountes further information about option crossing of the River Lambourn.	Any dewatering needed for the construction will be discharged to the inter to help maintain flow if shall be a seen as the state of the fishalfs needed for river crossing these should be located outside of the SSS/NAC.  Provision for de-chlorinastion of pipeline water when draining down pipeline before discharge to watercourse.	<sup>*</sup> 1	No	No	No	No	Assumed major river crossings will be carried out using HDD or population properties of the properties
GB107042022700	TRUE	Test - Bourne Rivulet to conf Dever	1	Low	Medium	Detailed review of all additional baseline ecological WFG data, including results only surveys already undertaken for this scheme Detailed hydroecological assessment of the impacts of temporary abstraction for dewatering on flow in the watercourses, and potential influence on SSSSs.  Further information about option.	If shafts needed for river crossing these should be located outside of the SSSI  Provision for de-chlorination of pipeline water when draining down pipeline before discharge to watercourse.	1	No	No	No	No	Assumed major river crossings will be carried out using HDD or pipejacking Assumes clay stanks will be used in pipeline route where potential for interaction with groundwater Assumes dewatering discharge to groundwater or surface water to help maintain flows
GB107042022770	TRUE	Dever	1	Low	Medium	Detailed review of all additional baseline ecological WFD data, including results of any surveys already undertaken for this scheme Detailed hydroecological assessment of the impacts of temporary abstraction for dewatering on flow in the watercourses, and potential influence on SSSIs Further information about option.	If shafts needed for river crossing these should be located outside of the SSSI  Provision for de-chlorination of pipeline water when draining down pipeline before discharge to watercourse.	1	No	No	No	No	Assumed major river rossings will be carried out using HDD or pipejacking.  Assumes clay stanks will be used in pipeline route where potential for interaction with groundwater or Assumes dewarding discharge to groundwater or surface water to help maintain flows.
G840601G600900	TRUE	Berkshire Downs Chalk	1	Low	Medium	·	Dewatering discharge to surface water courses to maintain flow.  Use of Oxy stanks (oxy bunds constructed within the pipeline trend) it be used in pipeline route where groundwater potentially encountered, to ensure pipeline route does not become a preferential flow path for groundwater.  Staffs to be sealed to ensure minimal groundwater egress after construction.  Dewatering to be discharged to local watercourse to help maintain flow	1	No	No	No	No	Assumed major river crossings will be carried out using HDD or pleepiching programmers and the state of the programmer o
G840701G501200	TRUE	River Test Chalk	2	Low	Medium	Additional groundwater monitoring to understand groundwater levels and how they interact with the scheme. Detailed hydroecological assessment of the impacts of temporary abstraction for dewatering on flow in the watercourses Further information about option.	Further investigation into impact on groundwater levels of desautiers for construction and consideration of requirement to retinu wastering for construction, if required.  Use of Clay stanks (day bunds constructed within the pipeline trench) to be used in pipeline route where groundwater potentially encountered, to ensure pepeline route where groundwater potentially encountered, to ensure pepeline route does not become a preferential flow path for groundwater.  If shafts needed for river crossing these should be located outside of the SSB.  SSBFs to be sealed to ensure minimal groundwater egress after construction.	1	Uncertain	No	Uncertain	No	Assumed major river crossings will be carried out using HDD or pipe-gacing. Assumes day stanks will be used in jugine route where potential Assumes devastering global proundwater. Assumes devastering discharge to groundwater or surface water to help maintain flows.
GB40602G601600	TRUE	Thatcham Tertiaries	1	Low	Medium	Additional groundwater monitoring to understand groundwater levels and how they interact with the scheme Further information about option.	Dewatering discharge to surface water courses to maintain flow.  Use of Clay stanks (clay bunds constructed within the pipeline trench) to be used in pipeline route where groundwater potentially encountered, to ensure pipeline route does not become a preferential flow path for groundwater.	1	No	No	No	No	Assumed major river crossings will be carried out using HDD or picpicking. Assumes clay stanks will be used in pipeline route where potential for interaction with groundwater Assumes dewatering discharge to groundwater or surface water to help maintain flows

Option	T2ST Option B - SESRO	Go to RNAG/PoM table at bottom of the pa
Waterbody ID	GB106039030334	
Waterbody name	Thames (Evenlode to Thame)	
Waterbody type	River	
Hydromorphological designation	not designated artificial or heavily modified	
Overall status	Moderate in 2015	
Overall status objective	Moderate by 2015	

			New surface wa	ater abstraction	
ctivity		New or increased surface water abstraction	New or increased surface water abstraction	New or increased surface water abstraction	New or increased surface water abstraction
onstruction, Operation or Decommissioning ac	tivity	Operation	Operation	Operation	Operation
otential Impacts of asset (following consideral mbedded mitigation)	tion of	Changes to channel footprint	Changes in flow velocity and volume (increase or decrease)	Changes in sedimentation	Changes to water body hydromorphology leading to changes in river processes and habitats upstream and downstream
ological Effects		<b>√</b>	<b>~</b>	<b>~</b>	✓
ydromorphological supporting elements		✓	✓	✓	✓
nysicochemical Effects		<b>√</b>	<b>√</b>	1	✓
nemical effects		х	х	х	х
	ion impact re	Comment of the impact of 'Changes to channel	Comment of the impact of 'Changes in flow	Comment of the impact	Comment of the impact of 'Changes to water body hydromorphology leading to changes in

			I				Г									
								Does the o	omponent comply with WFD (post mitigation)	objectives	Chemical effects		х	х	х	×
WFD status Component	WFD quality element	Method of checking compliance	Classification	Objective	Impact score	Data confidence	Design certainty	Deterioration between status classes	Impediments to GES/GEP	Compromises water body objectives	Mitigation applied	Post mitigation impact score	Comment of the impact of 'Changes to channel footprint' on each element	Comment of the impact of 'Changes in flow velocity and volume (increase or decrease)' on each element	Comment of the impact of 'Changes in sedimentation deposition' on each element	Comment of the impact of 'Changes to water body hydromorphology leading to changes in river processes and habitats upstream and downstream' on each element
Biological quality elements	Fish		Moderate in 2015	No Objective	0	Medium	Medium	No	No	No	Fish / eels screens included on intake structure to ensure that fish are not drawn into the intake.		will need to increase in o abstraction or discharges abstraction from the Tha and therefore changes in The full WFD assessment SRO WFD assessment. Additional abstraction for required to support the 1	rder to supply the water for from and to the Thames imes to support T2ST, and water quality discharged of the SESRO scheme on the Thames, during we cast scheme. This abstraction is a support to the support that the support to the support that t	but will consider the impli- any implications to water from SESRO to the Thame the Thames waterbody can etter periods of the order of tion will only occur when the	does not consider the full cations of the additional quality in the reservoir is due to the T2ST scheme. In be found in the SESRO of a few additional days is flows in the Thames are
	Invertebrates	Guidance document available	Moderate in 2015	No Objective	0	Medium	Medium	No	No	No		0	sufficient to support the impacts on biology.	abstraction. The decrease	in flow in watercourse exp	pected to have negligible
Hydromorphological Supporting Elements	Morphology		Supports Good in 2015	No Objective	0	Medium	Medium	No	No	No		0	No me	surable impact expected	to the morphology of Rive	er Thames
	Ammonia (total as N)		High in 2015	Good by 2015	0	Medium	Medium	No	No	No		0				
	Biochemical oxygen demand	Numerical limits for classes	High in 2015	Good by 2015	0	Medium	Medium	No	No	No		0	Water quality modelling	has been carried out in co	njunction with the SESRO	option (see SESRO WFD
Physico-chemical quality elements	Dissolved oxygen	Numerical limits for classes	High in 2015	No Objective	0	Medium	Medium	No	No	No	None needed	0	assessment for implication abstraction into and disc	ons on water quality from harge from SESRO could le	SESRO scheme). It is possile ad to a change in the wat	ble that the additional er quality in the reservoir
	рН		High in 2015	No Objective	0	Medium	Medium	No	No	No		0	Water quality modelling	carried out shows that wit	ames when SESRO discha h the addition of the T2ST oir and therefore the addi	scheme there are only
	Temperature	Numerical limits for classes	High in 2015	No Objective	0	Medium	Medium	No	No	No		0	will not change the concl Thames.	usions of the SESRO WFD	assessment on water qual	ity impacts on the River
Priority hazardous substances	Di(2-ethylhexyl)phthalate	EQS directive	Good in 2015	Good by 2015	0	Medium	Medium	No	No	No	None needed	0				
	Tributyltin Compounds	EQS directive	Fail in 2015	No Objective	0	Medium	Medium	No	No	No	None needed	0				

Return to top of the page								De	oes the c	component comply with WFD	objectives		
RNAG/PoM/HHWMM	Id	Relevant WFD Quality Element (RNAG) / Measure category 1 (PoM)	Category (RNAG)/Lead organisation (PoM)	National Swmi Header (RNAG) / Title (PoM)	Is this measure potential impacted by the scheme? (Yes/No)	Impact score assessment	Data confidence	Assists attainment	of water body objectives	Impediment to GES/GEP	Compromises water body objectives	Mitigation applied	
Reasons for Not Achieving Good (RI	N. 52793	35 Invertebrates	No sector responsible		No								
Reasons for Not Achieving Good (RI	N. 51083	88 Invertebrates	No sector responsible	Non-native invasive species	No								No change to
Reasons for Not Achieving Good (RI	N. 51091	14 Phosphate	Water Industry	Pollution from waste water	No								assessment carried out
Reasons for Not Achieving Good (RI	N. 51091	15 Phosphate	Agriculture and rural land management	Pollution from rural areas	No								in SESRO WFD
Reasons for Not Achieving Good (RI	N. 52889	98 Tributyltin Compounds	Water Industry	Pollution from waste water	No								assessment.
Reasons for Not Achieving Good (RI	N 51387	74 Tributyltin Compounds	Water Industry	Pollution from waste water	No								1 !

		Click to go level2assignedimpacts sheet
Option	T2ST Option B	Go to RNAG/PoM table at bottom of the page
Waterbody ID	GB106039023220	
Waterbody name	Lambourn (Source to Newbury)	
Waterbody type	River	
Hydromorphological designation	Not Designated A/HMWB	
Overall status	Moderate	
Overall status objective	Good by 2027	

Activity	Below ground structure	es (shaft/retaining wall) with associated dewatering		Maintenance	of pipe lines (including drain	ing pipeline)		New pipe lines involving watercour	se crossings with no in channel modifications
Construction, Operation or Decommissioning activity		Construction			Operation			Construc	tion and operation
Potential impacts of asset (following consideration of embedded mitigation)	Change in water quality due to discharge of groundwater to a surface water body	Changes in flow velocity and volume (increase or decrease)		Changes in sedimentation deposition		Change in water quality due to new or changes to existing discharge of surface water into surface water body	Change in INNS present in surface water body		Changes to water body hydromorphology leading to changes in river processes and habitats upstream and downstream
Biological Effects	✓	✓	✓	√	√	✓	√	✓	✓
Hydromorphological supporting elements	×	✓	√	√	x	x	х	<b>√</b>	✓
Physicochemical Effects	✓	x	х	х	х	1	х	x	x
Chemical effects	✓	x	х	х	х	1	х	x	x
-									

							Does the	ne component com (post mit		ojectives	Chemical effects		✓	×	×	×	×	7	×	×	×
WFD status Component	WFD quality element	Method of checking compliance	Classification	Objective	Impact score	Data confidence	Design certainty Deterioration between status dasses	Impediments to	GES/GEP	Compromises water body objectives	Mitigation applied	Post mbigation impact score		Comment of the impact of 'Changes in flow velocity and volume (increase or decrease)' on each element	Comment of the impact of 'Changes in flow velocity and volume (increase or decrease)' on each element	Comment of the impact of 'Changes in sedimentation deposition' on each element		Comment of the impact of 'Change in water quality due to new or changes to existing discharge of surface water into surface water body' on each element	change in INNS present in	Comment of the impact of 'Changes in sedimentation deposition' on each element	Comment of the impact of 'Changes to water body hydromorphology leading to changes in river processes and habitats upstream and downstream' on each element
	Fish		Moderate in 2015	Good by 2021	1	Low Med	dium No	N	la	No		1	Short term variations in temperature possible, however, this is short term and will be small	Dewatering is assumed to be discharged into River Lambourne in low quantities to help maintain flow in the river. However, the River Lambourne (which is a SSSI and SAC in its own right)						Localised changes to sediment deposition patterns expected to have minimal effect on biology at waterbody scale as a result of new watercourse crossings	
Biological quality elements	Invertebrates	Guidance document available	High in 2015	Good by 2015	1	Low Med	dium No	N	lo	No	Any dewatering needed for the construction will be discharged to the river to help maintain flow  If shafts needed for river crossing these should be located outside of the SSSI		volumes compared to river flow, therefore impact expected to be negligible	and Lambourne Hoodplan 3551 which is also classified as a GWDTE. As this forms part of the riparian zone of the river, any dewatering during construction of the below ground structures (shafts) for the crossing of the river, could impact or the flow and velocity in the river, and the morphology, between the site and the shafts (downstream). This could lead between the site and the shafts (downstream). This could lead	Draining of pipelines for main infrequent and short term na	tenance reasons is likely to le ture	ead to no measurable impact	s to biology, due to its	but this is a potable water	Localised changes to sediment deposition patterns expected to have minimal effect on biology at waterbody	y for localised short term variations in morphology as a result of localised changes to sedimentation. Minimal effect on biology
	Macrophytes and Phytobenthos Combined	Calculator available	Moderate in 2015	Good by 2027	1	Low Med	dium No	N	io	No		1		to temporary localised changes in flow velocity and volume that could have a minor temporary impact on fish and biology associated with river and associated floodplain.						Localised changes to sediment deposition patterns expected to have minimal effect on biology at waterbody scale as a result of new watercourse crossings	New pipelines and associated below ground structures unlikely to have significant risk on the hydromorphology of the river / WB but potential for localised short term variations in morphology as a result of localised changes to sedimentation. Minimal effect on biology
Hydromorphological Supporting	Hydrological Regime		Supports Good in 2015	High by 2027	1	Low Med	dium No	N	io	No		1		Minor changes in flow due to dewatering for the crossing of the river. Any dewatering will be discharged into the watercourse to help maintain flow, but there could be minor localised temporary impacts on flow and velocity during the construction period	Minor changes in flow due to discharge of water from pipelines for draining will be minor and short term, and not significant at a waterbod scale.					Localised changes to sediment deposition patterns expected to have minimal effect at waterbody scale as a result of new watercourse crossings	New pipelines and associated below ground structures unlikely to have significant risk on the hydromorphology of the river / VMB but potential for localised short term variations in morphology as a result of localised changes to sedimentation
Elements	Morphology		Supports Good in 2015	No data avallable	1	Law Med	edium No	N	la	No		1		Changes in flow and velocity as a result of new crossing assumed to have minimal impact on river morphology		Draining of pipelines for maintenance reasons is likely to lead to no measurable impacts to sedimentation, due to its infrequent and short term nature				Localised changes to sediment deposition patterns expected to have minimal effect at waterbody scale as a result of new watercourse crossings	New pipelines and associated below ground structures unlikely to have significant risk on the hydromorphology of the river / WB but potential for localised short term variations in morphology as a result of localised changes to sedimentation
	Ammonia (total as N)		High in 2015	High by 2015	1	Low Med	edium No	N	io	No		1									
	Dissolved oxygen	Numerical limits for classes	Good in 2015	High by 2015	1	Low Med	dium No	N	io	No		1									
Physico-chemical quality elements	рН		High in 2015	Good by 2015	1	Low Med	dium No	N	lo	No		1									
	Phosphate	Calculator available	Good in 2015	High by 2027	1	Low Med	dium No	N	lo	No		1	Short term changes to water quality					Pipeline maintenance			
	Temperature	Numerical limits for classes	High in 2015	Good by 2015	1	Low Med	dium No	N	lo	No		1	possible which may lead to temporary changes in water quality					highly unlikely to impact on chemical status as			
Priority hazardous substances	Cadmium and Its Compounds	EQS directive	Good in 2015	Good	1	Low Med	dium No	N	lo	No			parameters. Further assessment is required to determine the impact.					water will be potable standard			
Priority substances	Lead and its Compounds	EQS directive	Good in 2015	Good	1	Low Med	dium No	N	lo	No		1									
	Nickel and Its Compounds	EQS directive	Good in 2015	Good	1	Low Med	dium No	N	lo	No		1									
Specific pollutants	Copper		High in 2015	High	1	Low Med	dium No	N	lo	No		1									
Other chemicals	Zinc		High in 2015	High	1	Low Med	dium No	N	la	No		1									

Return to top of the page								Does the component comply with WF	FD objectives		Note: Merge columns if activity appears multiple times				
RNAG/PoM/HHWMM	ld	Relevant WFD Quality Element (RNAG) / Measure category 1 (PoM	Category (RNAG)/Lead organisation (PoM)	N	Is this measure potential impacted by the scheme? (Yes/No)	Impact score assessment	Data confidence Design certainty	Assists attainmen t of water Impediment to GES/GEP body objectives	Comprom	itigation ipact score (- to 3)	Below ground structures (shaft/retaining wall) with associated dewatering	New or increased surface water abstraction			
Reasons for Not Achieving Good (RN	N 4864	491 Phosphate	Agriculture and rural land management	Pollution from rural areas	No										
Reasons for Not Achieving Good (RN Reasons for Not Achieving Good (RN	1 4864		Agriculture and rural land management	Pollution from rural areas	No								1		
Reasons for Not Achieving Good (RN	N 4864	492 Phosphate	Water Industry	Pollution from waste water	No								1		
Reasons for Not Achieving Good (RN	N 4789	976 Mitigation Measures Assessment	Local and Central Government	Physical modifications	No										
Reasons for Not Achieving Good (RN		064 Total Phosphorus	No sector responsible		No										
Reasons for Not Achieving Good (RN	5200	072 Phytoplankton	No sector responsible		No										

Option	T2ST Option B	Go to RNAG/PoM table at bottom of the page
Waterbody ID	GB106039023174	
Waterbody name	Middle Kennet (Hungerford to Newbury)	
Waterbody type	River	
Hydromorphological designation	Not Designated A/HMWB	
Overall status	Moderate	
Overall status objective	Good by 2021	

I	Activity	Below ground structures (shaft/retaining wall) with associated dewatering	Below ground structures (shaft/retaining wall) with associated dewatering	Maintenance of pipe lines (including draining pipeline)	Maintenance of pipe lines (including draining pipeline)	Maintenance of pipe lines (including draining pipeline)	Maintenance of pipe lines (including draining pipeline)	Maintenance of pipe lines (including draining pipeline)	New pipe lines involving watercourse crossings with no in channel modifications	New pipe lines involving watercourse crossings with no in channel modifications
ĺ	Construction, Operation or Decommissioning activity	Construction	Construction	Operation	Operation	Operation	Operation	Operation	Construction and operation	Construction and operation
	Potential Impacts of asset (following consideration of embedded mitigation)	Below ground structures (shaft/retaining wall) with associated dewatering	Below ground structures (shaft/retaining wall) with associated dewatering	Maintenance of pipe lines (including draining pipeline)	Maintenance of pipe lines (including draining pipeline)	Maintenance of pipe lines (including draining pipeline)	Maintenance of pipe lines (including draining pipeline)	maintenance or pipe lines (including draining pipeline)	rew pipe lines involving watercourse crossings with no in channel modifications	New pipe lines involving watercourse crossings with no in channel modifications
I	Biological Effects	1	✓	4	4	✓	✓	✓	✓	1
I	Hydromorphological supporting elements	4	<b>v</b>	х	х	х	х	х	<b>4</b>	1
I	Physicochemical Effects	1	✓	✓	✓	1	<b>4</b>	1	х	х
	Chemical effects	х	х	1	1	1	<b>4</b>	1	х	х
	the distribution applied the distribution appl	Comment of the impact of 'Below ground structures (shaft/retaining wall) with associated dewatering' on each element		Comment of the impact of 'Maintenance of pipe lines (including draining pipeline)' on each element	Comment of the impact of 'Maintenance of pipe lines (including draining pipeline)' on each element	Comment of the impact of 'Maintenance of pipe lines (including draining pipeline)' on each element	'Maintenance of pipe lines (including draining pipeline)'		with no in channel modifications' on	Comment of the impact of 'New pipe lines involving watercourse crossings with no in channel modifications' on each element

								boes the co	(post mitigation	i wro objectivi	Chemical effects		×	, x	1	1	· ·	1	· ·	×	×
WFD status Component	WFD quality element	Method of checking compliance	Classification	Objective		Impact score	Data confidence Design certainty	Deterioration between status classes	Impediments to GES/GEP	Compromises water body objectives	Mitigation applied	Post mitigation impact score		Comment of the impact of 'Below ground structures (shaft/retaining wall) with associated dewatering' on each element	Comment of the impact of 'Maintenance of pipe lines (including draining pipeline)' on each element	Comment of the impact of 'Maintenance of pipe lines (including draining pipeline)' on each element	Comment of the impact of 'Maintenance of pipe lines (including draining pipeline)' on each element	Comment of the impact of 'Maintenance of pipe lines (including draining pipeline)' on each element	'Maintenance of pipe lines	Comment of the impact of 'New pipe lines involving watercourse crossings with no in channel modifications' on each element	Comment of the impact of 'New pipe lines involving watercourse crossings with no in channel modifications' on each element
	Fish		Moderate in 2015	Good by 2021		1	Low Mediur	n No	No	No		1	possible, however, this is short term and	Dewatering is assumed to be discharged into River Kennet: low quantities to help maintain flow in the river. However, the River Kennet (which is a \$550 in its own right) crossing occurs within \$500 modewaterant Addition of the Kennet.	in					Localised changes to sediment deposition patterns expected to have minimal effect on biology at waterbody scale as a result of new watercourse crossings	New pipelines and associated below ground structures unlikely to have significant risk on the hydromorphology of the river /WB but potential for localised short term variations in morphology as a result of localised changes to sedimentation. Minimal effect on biology
Biological quality element	Invertebrates	Guidance document available	High in 2015	Good by 2015		1	Low Mediur	n No	No	No	Any dewatering needed for the construction will be discharged to the river to help maintain flow  If shafts needed for river crossing these should be located outside of the SSSI.	1	flow, therefore impact expected to be negligible	valley Alderwoods 550 and a section of the Kennet and Lambourn floodplain 550 which are also desirtled as CWOTE. Any desirtling during construction of the below ground structures (such as shafts) for the crossing of the river, could impact on groundwater levels and the flow and velocity in the river, and the morphology, between the site and the shafts (downstream). This could lead to temporary and the shafts (downstream). This could lead to temporary	Draining of pipelines for main short term nature	tenance reasons is likely to lead	to no measurable impacts to bio	logy, due to its infrequent and	but this is a potable water	Localised changes to sediment deposition patterns expected to have minimal effect on biology at waterbody scale as a result of new watercourse crossings	
	Macrophytes and Phytobenthos Combined	Calculator available	Moderate in 2014	No data available		1	Low Mediur	n No	No	No		1	Short term variations in temperature possible, however, this is short term and will be small volumes compared to river flow, therefore impact expected to be negligible	localised changes in flow velocity and volume that could have a minor temporary impact on fish and biology				_		Localised changes to sediment deposition patterns expected to have minimal effect on biology at waterbody scale as a result of new watercourse crossings	
Hydromorphological Support Elements	<sup>76</sup> Hydrological Regime		Does Not Support Good in 2015	Supports Good by 2021		1	Low Mediur	n No	No	No		1		Minor changes in flow due to devatering for the crossing of the rise. Any devatering will be discharged into the watercoarse to be plausable flow, but because the could be minor watercoarse to be marked to the country of the construction period.	pipelines for draining will be						New pipelines and associated below ground structures unlikely to have significant risk on the hydromorphology of the river, VMB but potential for localised short term variations in morphology as a result of localised changes to sedimentation
	Ammonia (total as N)		High in 2015	High by 2015		1	Low Mediur	n No	No	No		1									
	Dissolved oxygen	Numerical limits for classes	Good in 2015	High by 2015		1	Low Medium	n No	No	No		1									
Physico-chemical quality elem	pH pH		High in 2015	Good by 2015	_	1	Low Medium	n No	No	No		1	Short term changes to water quality possible which may lead to temporary					Pipeline maintenance highly			
	Phosphate	Calculator available	Good in 2015	High by 2027		_	Low Mediur		No	No		1	changes in water quality parameters. Further assessment is required to determine the impact.					unlikely to impact on chemica status as water will be potable standard			
	Temperature	Numerical limits for classes	High in 2015	Good by 2015	_	_	Low Mediur		No	No		1									
Specific pollutants	Tridesea		High in 2015	High		_	Low Medium		No	No		1	-								
	Triclosan		High in 2015	High		1	Mediun	nio nio	No	No		-1									

Return to top of the page													
									Does the	component comply with WFD	objectives		
RNAG/PoM/HHWMM	ld	Relevant WFD Quality Element (RNAG) / Measure category 1 (PoM)	Category (RNAG)/Lead organisation (PoM)	National Swmi Header (RNAG) / Title (PoM)	Is this measure potential impacted by the scheme? (Yes/No)	Impact score assessment	Data confidence	ign certali	Assists attainmen t of water body objectives		Comprom ises water body objectives	Mitigation applied	Post mitigation impact score (- 2 to 3)
Reasons for Not Achieving Good (RNAG)	53145	0 Macrophytes and Phytobenthos Combined	Water Industry	Pollution from waste water	No								
Reasons for Not Achieving Good (RNAG)				Pollution from rural areas	No								

		Click to go level2assignedimpacts sheet	1									1												T
Option	T2ST Option B	So to RNAS/PoM table at bottom of the page																						
Waterbody ID	GB107042022700								Activity		Below ground:	structures (shaft/retaining wall) with associated dewatering		Maintenan	nce of pipe lines (including drain)	ing pipeline)		New pipe lines involving watercourse	rossines with no in channel modifications		N	ew or modified pumping station and/or river in	intake	
Waterbody name	Test - Bourne Rivulet to conf Dever								Construction, Operation or Decommissioning	activity		Construction			Operation			1	and operation			Construction		
Waterbody type	fiver								Potential Impacts of asset (following conside embedded mitigation)	ration of	Change in water quality due to discharge of groundwater to a surface water body	Changes in flow velocity and volume (increase or decrease)	Changes in flow velocity and volume (increase or decrease)	Changes in sedimentation	Noise and sibration	Change in water quality due to new or changes to existing discharge of surface water into surface water body		Changes in sedimentation deposition	Changes to water body hydromorphology, leading to change in river processes and habitats uptrivem and downstream	Changes to channel footprint	Changes in flow velocity and volume (Increase or docusase)	Changes in sedimentation disposition	Noise and silvation	Changes to water body hydromorphology leading to changes in river processes and habitats upstream and downstream
Hydromorphological designation	Not Designated A/HMWB								Biological Effects			,	1	1	4	1	4		1	4	4	4	1	4
Overall status	Good								Hydromorphological supporting elements		х	,	1		×	х	×		1	4	4	4	4	4
Overall status objective	Good by 2015								Physicochemical Effects		4	х	×	×	×	1	×	x	x	×	x	x	x	х
			•				Does the	component comply with WFD (post mitigation)	objectives Chemical effects		4	х	×	×	×	1	×	x	x	×	x	x	x	х
WFD status Component	WFD quality element	Method of checking compliance	Classification	Objective		Impact score	Design certainty Design certainty Desinorition between	impedments to GES/GEP	COTIT OTHER WISH  Palidan unitability  Palidan unitability	8.3	Comment of the impact of 'Change in water quality due to discharge of groundwater to a surface water body' on each element	Comment of the impact of 'Changes in flow velocity and volume (increase or decrease)' on each element	Comment of the impact of 'Changes in flow velocity and volume (increase or decrease)' o each element			to new or changes to existing	Comment of the impact of 'Change in INRS present in surface water body' on each element	Comment of the impact of 'Changes in sedimentation deposition' on each elemen	Comment of the impact of 'Changes to water body hydromorphology leading to changes in new processes and habitats upstream and downstream' on each element.	Comment of the impact of 'Changes to channel flootprint' on each element	Comment of the impact of 'Changes in flow velocity and volume (increase or decrease) on each element	Comment of the impact of 'Changes in sedimentation deposition' on each element	Comment of the impact of 'Noise and t vibration' on each element	Comment of the impact of 'Changes to water body hydromorphology leading to changes in rother processes and habitats upstream and downstream' on each element
tiological quality elements	leverschades	Guidance document available	Migh in 2015	Good by 2015		1	Low Medium No	No	of shalls assed of far new consists these should be located exactly the SSS boundary.  No an expension coming of river will be by HOD or projecting.	1	Short term variations in temperature possible, however, this is short term and will be small volumes compared to river flow, therefore impact expected to be negligible	Description, a seasonal to be discharged on the first in the quantities to be indicated fine to the first Names, this first Names greater, with the filter Text State of Earl Autor Common Stall which we both the descriptated as (CASTEL Laser Allerands and the considered in the Names Autor Common State of CASTEL Laser Allerands and the considered in the Names Autor Common State Online of the Names and Names and Autor Common State Online of the Names and Names and Autor Common State Online of the Names and Names and Autor Common State Online of the Names and Names and Autor Common State Online of the Names and Names and Autor Common State Online of the Names and Name	p Draining of pipe	elines for maintenance reasons is l	likely to lead to no measurable in	impacts to biology	Possibility of INNS transfer during draining operation, but this is a potable water pipeline and it is assumed thiNNS would be removed during the treatment process		New pipelines and associated below groun structures unlikely to have significant risk on the hydromorphology of the new / WE as they will pass beneath the river and shafts likely to be set back from the watercourse.		d The BSS Michildevor PS will be constructed the top of the Text catchment (papeamentely 4.5 hm from the main ownercounts) letters on a watercounts) letters on, no impact on flow	(approximately 4.5km from the main watercourse) therefore, no impact on	watercourse) therefore, minimal noise and vibration impacts expected. No measurable	
Hydromorphological Supporting Elements	Hydrological Regime I		Supports Good in 2015	Supports Good by 2015		1	Low Medium No	No	No	1		Minor changes in flow due to dewatering for the crossing of the river. Any dewatering will be discharged into the watercourse to help maintain flow, but there could be minor localised temporary impacts on flow and velocity during the construction period.	Minor changes in flow due to discharge of water from pipeline for draining will be minor and short term, and not significant at a waterbody scale.	es.					watercourse.		and vending experied	administrative expectati	impact anticipated	принини ромину вироски
	Morphology		Supports Good in 2015	No data available		1	Low Medium No	No	No	1														
	Ammonia (total as N)		High in 2015	High by 2015		1	Low Medium No	No	No	1														
	Dissolved oxygen	Numerical limits for classes	High in 2015	High by 2015			Low Medium No		No	1	Short term changes to water quality													
Physico-chemical quality element	ts pH		High in 2015	Good by 2015		1	Low Medium No	No	No	-	possible which may lead to changes in water quality parameters. Further		Draining of pipelines for mainter no measurable impacts as water	nance reasons is likely to lead to r will be treated to potable		Pipeline maintenance highly unlikely to impact on chemica status as water will be treated								
	Phosphate	Calculator available	High in 2015	High by 2015		1	Low Medium No	No	No	1	assessment is required to determine this change		standards			to potable standards								
	Temperature	Numerical limits for classes	High in 2015	Good by 2015		1	Low Medium No	No	No	1														
Specific pollutants	Copper		High in 2015	Ніф		1	Low Medium No	No	No	1														
Return to top of the page							Opes the	component comply with WFD	objectives															
RNAG/PoM/HHWMM	M	Relevant WFD Quality Element (RNAG) / Measure category 1 (PoM)	Category (RNAG)/Lead organisation (POM	() National Swemi Header (RNAG) / Title (PoM)	is this measure potential impacted by the scheme? (Yes/No)	impact sone as a seme of	& body objectives	Impediment to GES/GEP	Compromi ses water body objectives	Post mitigation impact score (- 2 to 3)			New or increased surface wate abstraction											
None															1									

			=											1		T	1		T		
Option	T2ST Option B	Go to RNAG/PoM table at bottom of t	the page								Activity Selow										
Waterbody ID	GB107042022770										Activity		Below ground structures (shaft/retainin	ig wall) with associated dewatering		Maintenance	of pipe lines (including draining	pipeline)		New pipe lines involving v	ratercourse crossings with no in modifications
Waterbody name	Dever										Construction, Operation or Decommissioning ac	tivity		Construction			Operation				n and operation
Waterbody type	River										Potential Impacts of asset (following considerat embedded mitigation)	tion of	Change in water quality due to discharge of groundwater to a surface water body	Changes in flow velocity and volume (increase or decrease)	Changes in flow velocity and volume fincrease or decrease)	Changes in sedimentation deposition	Noise and vibration	Change in water quality due to new or changes to existing discharge of surface water into surface water body		Changes in sedimentation deposition	Changes to water body hydromorphology leading to changes in river processes and habitats upstream and downstream
Hydromorphological designation	Not Designated A/HMWB										Biological Effects		1	<b>√</b>	1	1	✓	✓	√	1	✓
Overall status	Good		-								Hydromorphological supporting elements		×		1	√	х	х	х	1	<b>√</b>
Overall status objective	Good by 2015		-								Physicochemical Effects		× ×		х	х	х	1	х	х	x
			J						omponent comply w		Chemical effects		1	×	х	х	x	<b>√</b>	х	х	×
WFD status Component	WFD quality element	Method of checking compliance	Classification	Objective	Impact score		Data confidence	Deterioration between status classes	Impediments to GES/GEP GES/GEP	Compromises water body objectives	Mitigation applied	Post mitigation impact score	Comment of the impact of 'Change in water quality due to discharge of groundwater to a surface water body' on each element	Comment of the impact of 'Changes in flow velocity and volume (increase or decrease)' on each element	Comment of the impact of 'Changes in flow velocity and volume (increase or decrease)' on each element	Comment of the impact of 'Changes in sedimentation deposition' on each element	Comment of the impact of 'Noise and vibration' on each element	new or changes to existing	surface water body' on each	Comment of the impact of 'Changes in sedimentation deposition' on each element	Comment of the impact of 'Changes to water body hydromorphology leading to changes in river processes and habitats upstream and downstream' on each element
Biological quality elements	Invertebrates	Guidance document available	High in 2015	Good by 2015	1	L	ow Medium	No	No	No	If shafts needed for river crossing these should be located outside of the SSSI	1	Short term variations in temperature possible, however, this is short term and will be small volumes compared to	considered in the HRA assessment, if relevant. Any dewatering during construction of the below ground structures (shafts) for the crossing of the	thin be  Draining of pipelines for maintenance reasons is likely to lead to no measurable impacts to biology, as pipeline contains potable water				Possibility of INNS transfer during draining operation, bu this is a potable water pipelin		New pipelines and associated
	Macrophytes and Phytobenthos Combined	Calculator available	Good in 2015	Good by 2015	1	L	ow Medium	No	No		If shafts needed for river crossing these should be located outside of the SSSI	1	river flow, therefore impact expected to be negligible	river, could impact on the flow and velocity in the river, and the morphology, between the site and the shafts (downsteam). This could lead to temporary localised changes in flow velocity and volume that could have a minor temporary impact on fish and biology associated with river and associated floodplain. Further investigation needed to understand potential impacts		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			and it is assumed that INNS would be removed during the treatment process	Watercourse crossing will be beneath the river (HDD or pipejacking) therefore no change in sedimentation expected	new pipenies and associated below ground structures unlikely to have significant risk on the hydromorphology of the river / WB as they will pass beneath the river and shafts likely to be set back from the watercourse.
Hydromorphological Supporting Elements	Hydrological Regime		Supports Good in 2015	Supports Good by 2015	1	L	ow Medium	No	No	No		1		Short term temporary impacts on flow and velocity from dewatering for the construction of below ground works for the river crossing. Assumed dewatering discharged to fiver to help imantian flow but a temporary localised reduction in flow and velocity possible upstream of the discharge point.	of water from pipelines for draining will be minor and short term, and not						
	Morphology		Supports Good in 2015	No data available	1	L	ow Medium	No	No	No		1		No impact anticipated on morphology							
	Ammonia (total as N)		High in 2015	High by 2015	1	L	ow Medium	No	No	No		1									
	Dissolved oxygen	Numerical limits for classes	High in 2015	High by 2015	1	L	ow Medium	No	No	No			Short term changes to water quality possible which may lead to changes in								
Physico-chemical quality elements	рН		High in 2015	Good by 2015	1	L	ow Medium	No	No	No			water quality parameters. Further assessment is required to determine								
	Phosphate	Calculator available	High in 2015	High by 2015	1	L	ow Medium	No	No	No		1	this change								
	Temperature	Numerical limits for classes	High in 2015	Good by 2015	1	L	ow Medium	No	No	No		1						Pipeline maintenance highly			
	Benzene	EQS directive	Good in 2015	Good	0	L	ow Medium	No	No	No		0						unlikely to impact on chemica status as water will be treated to potable standards			
Priority substances	Lead and Its Compounds	EQS directive	Good in 2015	Good	0	L	ow Medium	No	No	No		0									
	Nickel and Its Compounds	EQS directive	Good in 2015	Good	0	L	ow Medium	No	No	No		0	0 No impact anticipated on priority								
	Copper		High in 2015	High	0	L	ow Medium	No	No	No		0	substances or specific pollutants								
Specific pollutants	Iron		High in 2015	High	0	L	ow Medium	No	No	No		0									
	Toluene		High in 2015	High	0	ı	ow Medium	No	No	No		0									

RNAG/PoM/HWMMM Id RNAG/ Measure category (RNAG)/Lead (RNAG) / Measure category (RNAG)/Lead (RNAG) organisation (PoM) organisati

Option	T2ST Option B		]												
Waterbody ID	GB40601G600900														
Waterbody name	Berkshire Downs Chalk (GW)									Activity			Below ground structures (shaft/retaining w	rall) with associated dewatering	
Waterbody type	Groundwater body									Construction, Operation or Decomm	missionin	3	Construction		Operation
Overall status	Poor									Potential impacts of asset (followin consideration of embedded mitigat		Change in groundwater levels by temporary dewatering	Disturbing or mobilising existing poor quality groundwater by temporary dewatering	Creating or altering of pathways along which existing poor quality groundwater can migrate	Changes in groundwater levels due to presence of shafts and pipeline
Overall status objective	Good by 2027		]							Quantitative effects		✓	Х	Х	✓
										Chemical effects		Х	√	√	Х
WFD status Component	WFD quality element	Method of checking compliance	WFD Classification	WFD Objective	Data confidence	Design certainty	Deterioration betweer status classes	Impediments to GES/GEP	Compromises water body objectives	Mitigation applied	Post mitigation impact	Comment of the impact of 'Change in groundwater levels by temporary dewatering' on each element	Comment of the impact of 'Disturbing or mobilising existing poor quality groundwater by temporary dewatering' on each element	Comment of the impact of 'Creating or altering of pathways along which existing poor quality groundwater can migrate' on each element	Comment of the impact of 'Changes in groundwater levels due to presence of shafts and pipeline' on each element
	Quantitative Dependent surface water body status	guidance document available	Poor	Poor by 2015	Low	Mediur	n No	No	No		1	Pipeline will cross the River Lambourn and River Kennet which are both fed by the Chalk aquifer. Likely that temporary dewatering will be required for construction of shafts and pipelines beneath the river. Dewatering will lead to reduced groundwater level and in turn reduced river flows. Potential for temporary short term changes to flow in River Lambourn and River Kennet. Dewatering discharge to the rivers to help maintain flow but minor localised change in flow likely upstream of discharge location.			Pipeline crossing the River Lambourn and Kennet will be installed by pipejacking or HDD so no long term impact on groundwater levels expected.
	Quantitative GWDTE test	guidance document available	Good	Good by 2015	Low	Mediur	n No	No	No	Dewatering discharge to surface water courses to maintain flow. Use of Clay Stanks in pipeline route where groundwater potentially encountered.	1	Kennet & Lambourn Floodplain SSSI located 440m upstream of the River Lambourn crossing. The Kennet & Lambourn floodplain is primarily marsh and grassland and an environment for a species of whorl snail. As the site is within 500m of the crossing it is assumed there will be localised and temporary changes in groundwater that could impact on the GWDTE. The Kennet Valley Alderwoods SAC is located approximately 100m from crossing of River Kennet. Short term temporary impacts on groundwater levels are possible due to dewatering, but are unlikely to impact in the integrity of the site.			Pipeline crossing the River Lambourn and Kennet will be installed by pipejacking or HDD so no long term impact on groundwater levels expected. Where pipeline cross near to the Kennet Valley Alderwoods SAC, if groundwater levels are found to be above the pipe level then pipeline bedding material will ensure no groundwater mounding upgradient of the pipeline and the use of clay stanks within the trench will ensure that the pipeline does not form a preferential pathway for groundwater flow and therefore only minor localised impact on groundwater levels expected.
	Quantitative saline intrusion	guidance document available	Good	Good by 2015	Low	Mediur	n No	No	No		0	No measurable change from saline intrusions assumed.			No measurable change from saline intrusions assumed.
	Quantitative water balance	guidance document available	Poor	Poor by 2015	Low	Mediur	n No	No	No		1	Minimal change in water balance assumed, due to short term temporary nature of the works			If groundwater levels are found to be above the pipe level then pipeline bedding material will ensure no groundwater mounding upgradient of the pipeline and the use of clay stanks within the trench will ensure that the pipeline does not form a preferential pathway for groundwater flow and therefore only minor localised impact on water balance expected.
Chemical Status elements	Chemical dependent surface water body status	guidance document available	Good	Good by 2027	Low	Mediur	n No	No	No	Any shafts to be sealed to ensure minimal groundwater egress after	1		Potential for dewatering activities to mobilise existing contaminated groundwater. Risk expected to be minor as dewatering short term and therefore likely to have small radius of influence. Contractors will be expected to investigate potential water quality risks and monitor water quality if required.	new pathways likely to be created. Where HDD or pipejacking required, shafts may be required.	
	Chemical Drinking Water Protected Area		Poor	Good by 2027	Low			No	No	construction	1				
	Chemical GWDTEs test Chemical Saline Intrusion	guidance document available guidance document available	Good Good	Good by 2015 Good by 2027	Low Low		n No	No.	No No		0		No change anticipated	No change anticipated	
	General Chemical Test	guidance document available	Poor	Good by 2015	Low	Mediur		No	No		1		Potential for dewatering activities to mobilise existing contaminated groundwater. Risk expected to be minor as dewatering short term and therefore likely to have small radius of influence. Contractors will be expected	Pipeline will be installed in shallow trench and no new pathways likely to be created. Where HDD or pipejacking required, shafts may be required.	
	Prevent and Limit Objective	guidance document available		Cood by 2015	)	NA . di	No	Ne	No		0		Works unlikely to lead to a change in ir	nput of pollution to the groundwater	
Supporting elements				Good by 2015	Low	Mediur	II NO	NU	NO			Works unlikely to lead to a long term change in the trend			Works unlikely to lead to a long term change in
	Trend Assessment	guidance document available	Upward trend	Good by 2027	Low	Mediur	No No	No	No	Note: Merge columns if activity ann	0	in this waterbody			the trend in this waterbody

Relevant WFD Quality Element (RNAG) / Measure category 1 (PoM)

Chemical Drinking Water Protected Agriculture and rural land management Agriculture and rural land management Pollution from rural areas

No

Does the component comply

Assists

attainme
to fo water body objective soll on impact score (-2 to 3)

Esthis measure potential impacted by the scheme? (Yes/No)

Relevant WFD Quality Element (RNAG) / Title (PoM)

Separation (PoM)

Note: 1

Assists

Water potential impacted by the scheme? (Yes/No)

Relevant WFD Quality Element to objective soll on impact score (-2 to 3)

Post mitigatio n impact score (-2 to 3)

No

Trend Assessment Agriculture and rural land management Pollution from rural areas

No

Pollution from rural areas

Note: Merge columns if activity appears multiple times

Option	T2ST Option B														
Vaterbody ID	GB40701G501200														
/aterbody name	River Test Chalk (GW)									Activity			Below ground structures (shaft/retaining wall) wi	th associated dewatering	
Naterbody type	Ground Waterbody									Construction, Operation or Decommissioning	g activity		Construction		Operation
Overall status	Poor									Potential Impacts of asset (following considerable embedded mitigation)	eration of	Change in groundwater levels by temporary dewatering	Disturbing or mobilising existing poor quality groundwater by temporary dewatering	Creating or altering of pathways along which existing poor quality groundwater can migrate	Changes in groundwater levels due to presence of shaft
Overall status objective	Poor by 2015		1							Quantitative effects		✓	X	X	and pipeline  ✓
			_							Chemical effects		X	<b>√</b>	√	Х
WFD status Component	WFD quality element	Method of checking compliance	WFD Classification	WFD Objective	Impact score	Data confidence	Design certainty Deterioration between	status classes impediments to GES/GEP	Compromises water body objectives	Mitigation applied	Post mitigation impact score	Comment of the impact of 'Change in groundwater levels by temporary dewatering' on each element	Comment of the impact of 'Disturbing or mobilising existing poor quality groundwater by temporary dewatering' on each element	Comment of the impact of 'Creating or altering of pathways along which existing poor quality groundwater can migrate' on each element	Comment of the impact of 'Changes in groundwater level due to presence of shafts and pipeline' on each element
	Quantitative Dependent surface water body status	guidance document available	Poor	Poor by 2015		1 low	Wedium No	No.	No			Crossing of the Bourne Rivulet, River Test and River Dever occur in this waterbody. Potential for dewatering to lead to short term temporarily reduce groundwater levels and therefore flow in the watercourses. Dewatering discharge to the rivers to help maintain flow but minor localised change in flow likely upstream of discharge location.			Pipeline crossing the River Test and Dever will be installed by pipejacking or HDD so no long term impact on groundwater levels expected.
Quantitative Status elements	Quantitative GWDTE test	guidance document available	Good	Good by 2015		2 Low M	Medium Unce	rtain No	Uncertain	Further investigation into impact on groundwater levels of dewatering for construction and consideration of requirement to return water to the ground (through recharge trenches) to help minimise the impact of construction, if required.  Use of Clay Stanks in pipeline route where groundwater potentially encountered.  If shafts needed for river crossing these		Two new river crossings of the River Test and River Dever and a road crossing of the B3048 within 500m of GWDTE's. River Test and River Dever crossing locations are beneath the River Test SSSI GWDTE (and could be partially with the site) and the River Test Crossing also within the East Aston Common SSSI. Dewatering for construction could lead to a reduction in groundwater levels at these sites, and although short term and temporary this could lead to significant temporary effects. There would also be a direct loss of habitat for both crossings as they are within SSSI sites, but this is not considered in this assessment. Drainage from the trench and from the shafts is assumed to be discharged into the river to help maintain flows. The timing of the recharge may be different to the timing of natural groundwater discharge. However, the additional discharge from the extended area of the trenches/shafts. Impacts are currently 1 unclear and further investigation required.			Pipeline crossing the River Test and Dever assumed to be installed by pipejacking or HDD so no long term impact on groundwater levels expected. Where pipeline cross River Test SSS and East Ashton Common, if groundwater levels are found to be above the pipe level then pipeline beddin material will ensure no groundwater mounding upgradien of the pipeline and the use of clay stanks within the trenc will ensure that the pipeline does not form a preferential pathway for groundwater flow and therefore only minor localised impact on groundwater levels expected.
	Quantitative saline intrusion	guidance document available	Good	Good by 2015		D Low N	Medium No	No	No	should be located outside of the SSSI		No measurable change from saline intrusions anticipated.			No measurable change from saline intrusions anticipated.
	Quantitative water balance	guidance document available	Poor	Poor by 2015		1 Low N	Medium No	No	No			Overall impact on water balance likely to be minor and temporary with no long term reduction in groundwater flows expected from this works.			if groundwater levels are found to be above the pipe level then pipeline bedding material will ensure no groundwate mounding upgradient of the pipeline and the use of clay stanks within the trench will ensure that the pipeline does not form a preferential pathway for groundwater flow and therefore only minor localised impact on water balance expected.
	Chemical dependent surface water body status	guidance document available	Good	Good by 2027		1 Low N	Medium No	No	No			1	Potential for dewatering activities to mobilise existing contaminated groundwater. Risk expected	Pipeline will be installed in shallow trench and no new pathways likely to be created. Where HDD or	
	Chemical Drinking Water Protected Area	guidance document available	Poor	Good by 2027		1 Low N	Medium No	No	No			1	to be minor as dewatering short term and therefore likely to have small radius of influence. Contractors will be expected to investigate	pipejacking required, shafts may be required. There shafts will be constructed and sealed to ensure they do not form a pathway for surface	
Chemical Status elements	Chemical GWDTEs test	guidance document available	Good	Good by 2015		1 Low N	Medium No	No	No	Shafts to be sealed to ensure minimal		1	potential water quality risks and monitor water quality if required.	water flow into the aquifer.	
	Chemical Saline Intrusion	guidance document available	Good	Good by 2027		D Low	Medium No	No	No	groundwater egress after construction		0	No change anticipated	No change anticipated	
	General Chemical Test	guidance document available	Poor	Good by 2015		1 Low N	Medium No	No	No	groundwater egress after construction	1	Potential for dewatering activities to mobilise existing contaminated groundwater. Risk expected to be minor as dewatering short term and therefore likely to have small radius of influence. Contractors will be expected to investigate potential water quality risks and monitor water quality if required.	Pipeline will be installed in shallow trench and no new pathways likely to be created. Where HDD or pipejacking required, shafts may be required. There shafts will be constructed and sealed to ensure they do not form a pathway for surface water flow into the aquifer.		
Supporting elements	Prevent and Limit Objective	guidance document available	-	Good by 2015	(	0 Low N	Medium No	No	No		(	0	Works unlikely to lead to a change in	input of pollution to the groundwater	Detectial changes to showing status assured to eller
Supporting elements	Trend Assessment	guidance document available	Upward trend	Good by 2027		D Low N	Medium No	No	No		(	O Potential changes to chemical status assumed localised and low risk			Potential changes to chemical status assumed localised ar low risk
										=					
Relevant WFD Quality Element (RNAG) / Measure category 1 (PoM)	Category (RNAG)/Lead organisation (PoM)	National Swmi Header (RNAG) / Title (PoM)	Is this measure potential impacted by the scheme? (Yes/No)	i	npact score	a confidence	Assisi attair nt of wate body	Impediment to GES/GEP	Compromise water body objectives	25 Mitigation applied	Post mitigation impact score (-2	n Change in groundwater levels by temporary dewatering			

							compone					
Relevant WFD Quality Element (RNAG) / Measure category 1 (PoM)	Category (RNAG)/Lead organisation (PoM)	National Swmi Header (RNAG) / Title (PoM)	Is this measure potential impacted by the scheme? (Yes/No)	Impact score assessment	Data confidence	esign certaint	Assists attainme nt of water body objectives	Impediment to GES/GEP	Compromises water body objectives	Mitigation applied	Post mitigation impact score (-2 to 3)	Change in groundwater levels by temporary dewatering
Trend Assessment	Domestic General Public	Pollution from towns, cities and transport	No									
Trend Assessment	Agriculture and rural land management	Pollution from rural areas	No									
Chemical Drinking Water Protected	Agriculture and rural land management	Pollution from rural areas	No									
General Chemical Test	Agriculture and rural land management	Pollution from rural areas	No									
Quantitative Dependent Surface W	la Water Industry	Changes to the natural flow and levels of water	Yes	0	Low	Medium	No	No		Assumed mitigation associated with below ground structures (i.e Managing aquifer	0	Temporary dewatering for construction could lead to temporary reductions in flow.  However with appropriate mitigation this is not likely to impede measures to improve
					Low	Medium	No	No		recharge and GW discharge to SW etc. will be in place) Subject to further assessment		However with appropriate mitigation this is not likely to impede measures to improve flow/ water balance
Quantitative Water Balance	Water Industry	Changes to the natural flow and levels of water	Yes	0							0	

Option	T2ST Option B	
Waterbody ID	GB40602G601600	
Waterbody name	Thatcham Tertiaries GW	
Waterbody type	Ground Waterbody	
Overall status	Good	
Overall status objective	Good by 2015	

Activity		Below ground structures (shaft/retaining wa	II) with associated dewatering	
Construction, Operation or		Construction		Operation
consideration of embedded	Change in groundwater levels by temporary dewatering	Disturbing or mobilising existing poor quality groundwater by temporary dewatering	Creating or altering of pathways along which existing poor quality groundwater can migrate	Changes in groundwater levels due to presence of shafts and pipeline
Quantitative effects	✓	X	X	✓

WFD status Component	WFD quality element	Method of checking compliance	WFD Classification	WFD Objective	Impact score	Data confidence	Design certainty	Deterioration between status classes	Impediments to GES/GEP	Compromises water body objectives	Mitigation applied	Post mitigation impact score	Comment of the impact of 'Change in groundwater levels by temporary dewatering' on each element			Comment of the impact of 'Changes in groundwater levels due to presence of shafts and pipeline' on each element
	Quantitative Dependent surface water body status	guidance document available	Good	Good by 2015	1	Low	Medium	No	No	No		1	No major river crossings in the groundwater body. Minor watercourses which are crossed are expected to be constructed using pumps to transfer water while the pipeline is installed on the river bed. Minimal changes in flow expected, and will be temporary and short term and not significant at a waterbody scale.			No major river crossings in the groundwater body. Minor water crossings not expected to lead to changes in groundwater levels
Quantitative Status elements	Quantitative GWDTE test	guidance document available	Good	Good by 2015	0 1	Low	Medium	No	No	No	Dewatering discharge to surface water courses to maintain flow. Use of Clay Stanks in pipeline route where	(	Pipeline will pass within 500m (430m) from the Avery's Pightle SSSI which is a GWDTE. This meadow habitat citation states that the soils are generally poorly drained, seasonally waterlogged loams and clays. No impact is anticipated at this site, from the pipeline construction	5		Pipeline will pass within 500m (430m) from the Avery's Pightle SSI which is a GWDTE. This meadow habitat citation states that the soils are generally poorly drained, seasonally waterlogged loams and clays. No impact is anticipated at this site, from the presence of the pipeline
	Quantitative saline intrusion	guidance document available  Good		Good by 2015	0	Low	Medium	No	No	No	groundwater potentially encountered.	(	No measurable change from saline intrusions given shallow depth of proposed works			No measurable change from saline intrusions given shallow depth of proposed works
	Quantitative water balance	guidance document available		Good by 2015	1	Low	Medium	No	No	No		1	Several SPZs extend across this waterbody. However, no measurable change in water balance assumed given shallow depth and temporary nature of proposed works			If groundwater levels are found to be above the pipe level then pipeline bedding material will ensure no groundwater mounding upgradient of the pipeline and the use of clay stanks within the trench will ensure that the pipeline does not form a preferential pathway for groundwater flow and therefore only minor localised impact on groundwater balance expected.
	Chemical dependent surface water body status	guidance document available	Good	Good by 2015	0 1	Low	Medium	No	No	No		(		No measurable impact anticipated	No measurable impact anticipated	
Chemical Status elements	Chemical Drinking Water Protected Area	guidance document available	Good Good by 2015 0 Low Medium No No No No 0		No measurable impact anticipated	No measurable impact anticipated										
	Chemical GWDTEs test	guidance document available		Good by 2015		Low	Medium		No	No		(		No measurable impact anticipated	No measurable impact anticipated	
	Chemical Saline Intrusion	guidance document available	Good	Good by 2015	0	Low	Medium	No	No	No		(		No measurable impact anticipated	No measurable impact anticipated	
	General Chemical Test	guidance document available	Good	Good by 2015	0 1	Low		No	No	No		(		Several SPZs extend across this waterbody. However, no measurable impact anticipated	No measurable impact anticipated	
Supporting elements	Prevent and Limit Objective	guidance document available	Active		0	Low	Medium		No	No		(		No measurable	impact anticipated	
	Trend Assessment	guidance document available	No trend		0 1	Low	Medium	No	No	No		(	No measurable change anticipated			no measurable impact anticipated

Relevant WFD Quality Element (RNAG) / Measure category 1 (PoM)

None

None

None

Does the component comply

Assists attainme nt of water potential impacted by the scheme? (Yes/No)

None

Note: Merge columns if activity appears multiple times

Waterbody ID	Waterbody name	Waterbody type	Maximum Impact score level 1	Maximum Impact score level 2	Maximum post mitigation impact score level 2	Deterioration between status classes	Impediments to GES/GEP	Compromises water body objectives	Assists attainment of water body objectives
GB106039030334	Thames (Evenlode to Thame)	River	3	0	0	No	No	No	No
GB106039023360	Cow Common Brook and Portobello Ditch	River	1	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required
GB106039023660	Ginge Brook and Mill Brook	River	1	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required
GB106039023600	Mill Brook and Bradfords Brook system, Wallingford	River	1	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required
GB106039023300	Pang	River	1	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required
GB106039023210	Winterbourne	River	1	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required
GB106039023220	Lambourn (Source to Newbury)	River	2	1	1	No	No	No	No
GB106039023174	Middle Kennet (Hungerford to Newbury)	River	2	1	1	No	No	No	No
GB106039017280	Enborne (Source to downstream A34)	River	1	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required
GB106039017210	Penwood Stream	River	1	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required
GB107042022710	Test (Upper)	River	1	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required
GB107042022720	Bourne Rivulet	River	1	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required
GB107042022700	Test - Bourne Rivulet to conf Dever	River	2	1	1	No	No	No	No
GB107042022810	Anton - Upper	River	1	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required
GB107042022770	Dever	River	2	1	1	No	No	No	No
GB107042022740	Sombourne Stream	River	1	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required
GB107042022730	Nun's Walk Stream	River	1	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required
GB107042016310	Monks Brook	River	1	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required
GB107042022580	Itchen	River	1	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required
GB40601G601000	Vale of White Horse Chalk	GroundWaterBody	1	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required
GB40601G600900	Berkshire Downs Chalk	GroundWaterBody	2	1	1	No	No	No	No
GB40602G601600	Thatcham Tertiaries	GroundWaterBody	2	1	1	No	No	No	No
GB40701G501200	River Test Chalk	GroundWaterBody	2	2	1	Uncertain	No	Uncertain	No
GB40701G505000	River Itchen Chalk	GroundWaterBody	1	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required
GB40602G601600	Thatcham Tertiaries	GroundWaterBody	2	1	1	No	No	No	No

#### Option C - Level 2 Summary

Waterbody ID	Level 2 sheet	Waterbody Name	Maximum Level 2 Impact	Confidence in WED data	Confidence in option design	Requirements to improve confidence	Mitigation measures	Post mitigation impact score		Impediments to Good  s Ecological Status (GES) or	Compromises water body	Assists attainment of water	Further comments
Waterbody ib	created?	water body Manife	score	Confidence in Wi D data	Connucince in option design	nequirements to improve confidence	mugaton measures	rost imagation impact score	classes	Good Ecological Potential (GEP)	objectives	body objectives	Tuttiel Comments
GB106039030334	TRUE	Thames (Evenlode to Thame)	0	Low	Medium	Detailed review of all additional baseline ecological WFD data, including results of any surveys already undertaken for this scheme  Further information about how much additional abstraction will be required for the T2ST scheme	Fish and eel screening at new intake  Minimisation of changes to hydrological regime through adjustment of abstraction conditions.  Provision for de-chlorination of pipeline water when draining down pipeline before discharge to watercourse.	0	No	No	No	No	Assumed major river crossings will be carried out using pipejack or micro tunnel crossings Assumes clay stanks will be used in pipeline route where potential for interaction with groundwater Assumes dewatering discharge to groundwater or surface water to help maintain flows
GB106039023220	TRUE	Lambourn (Source to Newbury)	1	Low	Medium	Detailed review of all additional baseline ecological WFD data, including results of any surveys already undertaken for this scheme  Detailed hydrological assessment of the impacts of abstraction on flow in the watercourses  Further information about option crossing of the River Lambourn.	Any dewatering needed for the construction will be discharged to the river to help maintain flow  Provision for de-chlorination of pipeline water when draining down pipeline before discharge to watercourse.	1	No	No	No	No	Assumed major river crossings will be carried out using pipejack or micro tunnel crossings Assumes clay stanks will be used in pipeline route where potential for interaction with groundwater Assumes dewatering discharge to groundwater or surface water to help maintain flows
GB107042022710	TRUE	Test Upper	1	Low	Medium	Detailed review of all additional baseline ecological WFD data, including results of any surveys already undertaken for this scheme Detailed hydrological assessment of the impacts of abstraction on flow in the watercourses Further information about option crossing of the River Test and potential implications on SSSIs.	Ensure below ground shaft for river crossing is outside the SSSI boundary Assumes crossing of river will be by pipejack or micro tunnel crossings Provision for de-chlorination of pipeline water when draining down pipeline before discharge to watercourse.	1	No	No	No	No	Assumed major river crossings will be carried out using pipejack or micro tunnel crossings Assumes clay stanks will be used in pipeline route where potential for interaction with groundwater Assumes dewatering discharge to groundwater or surface water to help maintain flows
GB107042022700	TRUE	Test - Bourne Rivulet to conf Dever	1	Low	Medium	Detailed review of all additional baseline ecological WFD data, including results of any surveys already undertaken for this scheme Detailed hydrological assessment of the impacts of abstraction on flow in the watercourses Further information about option crossing of the River Test and potential implications on SSSIs.	Ensure below ground shaft for river crossing is outside the SSSI boundary  Provision for de-chlorination of pipeline water when draining down pipeline before discharge to watercourse.	1	No	No	No	No	Assumed major river crossings will be carried out using pipejack or micro tunnel crossings Assumes clay stanks will be used in pipeline route where potential for interaction with groundwater Assumes dewatering discharge to groundwater or surface water to help maintain flows
GB107042022770	TRUE	Dever	1	Low	Medium	Detailed review of all additional baseline ecological WFD data, including results of any surveys already undertaken for this scheme  Detailed hydrological assessment of the impacts of abstraction on flow in the watercourses  Further information about option crossing of the River Dever and potential implications on SSSI.	Place shafts for pipejack or micro tunnel crossings outside of the SSSI areas  Provision for de-chlorination of pipeline water when draining down pipeline before discharge to watercourse.	1	No	No	No	No	Assumed major river crossings will be carried out using pipejack or micro tunnel crossings Assumes clay stanks will be used in pipeline route where potential for interaction with groundwater Assumes dewatering discharge to groundwater or surface water to help maintain flows
GB40601G600900	TRUE	Berkshire Downs Chalk	1	Low	Medium	Additional groundwater monitoring to understand groundwater levels and how they interact with the scheme  Detailed hydrological assessment of the impacts of abstraction on flow in the watercourses  Further information about option impacts on SSSI sites.	Dewatering discharge to surface water courses to maintain flow.  Use of Clay Stanks in pipeline route where groundwater potentially encountered.  Shafts to be sealed to ensure minimal groundwater egress after construction Dewatering to be discharged to local watercourse to help maintain flow	1	No	No	No	No	Assumed major river crossings will be carried out using pipejack or micro tunnel crossings Assumes clay stanks will be used in pipeline route where potential for interaction with groundwater Assumes dewatering discharge to groundwater or surface water to help maintain flows
GB40701G501200	TRUE	River Test Chalk	2	Low	Medium	Additional groundwater monitoring to understand groundwater levels and how they interact with the scheme  Investigation in potential contaminated land which could be affected by dewatering for river, road or railway crossings.  Detailed hydrological assessment of the impacts of abstraction on flow in the watercourses  Further information about option impacts on SSSI sites.	Further investigation into impact on groundwater levels of dewatering for construction and consideration of requirement to return water to the ground (through recharge trenches) to help minimise the impact of construction, if required.  Use of Clay Stanks in pipeline route where groundwater potentially encountered.  If possible shafts for river crossings should be moved outside of the SSSI sites  Shafts to be sealed to ensure minimal groundwater egress after construction	1	Uncertain	No	Uncertain	No	Assumed major river crossings will be carried out using pipejack or micro tunnel crossings Assumes clay stanks will be used in pipeline route where potential for interaction with groundwater Assumes dewatering discharge to groundwater or surface water to help maintain flows

Option	T2ST Option C	Go to RNAG/PoM table at bottom of the page
Waterbody ID	GB106039030334	
Waterbody name	Thames (Evenlode to Thame)	
Waterbody type	River	
Hydromorphological designation	not designated artificial or heavily modified	
Overall status	Moderate in 2015	
Overall status objective	Moderate by 2015	

			New surface w	rater abstraction	
Activity		New or increased surface water abstraction	New or increased surface water abstraction	New or increased surface water abstraction	New or increased surface water abstraction
Construction, Operation or Decommissioning a	ctivity	Operation	Operation	Operation	Operation
Potential Impacts of asset (following considera embedded mitigation)	ition of	Changes to channel footprint	Changes in flow velocity and volume (increase or decrease)	Changes in sedimentation deposition	Changes to water body hydromorphology leading to change in river processes and habitats upstream and downstream
Biological Effects		<b>√</b>	✓	✓	1
Hydromorphological supporting elements		✓	✓	<b>√</b>	1
Physicochemical Effects		<b>√</b>	✓	✓	1
Chemical effects		х	х	х	х
Militation applied	tion impact ore	Comment of the impact of 'Changes	Comment of the impact of 'Changes in flow velocity and volume linerage	Comment of the impact of 'Changes	Comment of the impact of 'Changes to water body hydromorphology

								(post mitigation)							
WFD status Component	WFD quality element	Method of checking compliance	Classification	Objective	Impact score	Data confidence	Design certainty Deterioration between status classes	Impediments to GES/GEP	Compromises water body objectives	Mitigation applied	Post mitigation impact score	to channel footprint' on each	Comment of the impact of 'Changes in flow velocity and volume (increase or decrease)' on each element	in sedimentation deposition' on each	
Biological quality elements	Fish		Moderate in 2015	No Objective	0	Medium N	Possibli Medium	No		Fish / eels screens included on intake structure to ensure that fish are not drawn into the intake.	0	for T2ST. This assessment does not o additional abstraction from the Tham discharged from SESRO to the Thame in the SESRO SRO WFD assessment. Additional abstraction from the Tham	on is SESRO. Total abstracted volume to onsider the full abstraction or discharge ses to support TZST, and any implication so due to the TZST scheme. The full WF nes, during wetter periods of the order is in the Thames are sufficient to suppo	is from and to the Thames but will con is to water quality in the reservoir and D assessment of the SESRO scheme on of a few additional days is required to	sider the implications of the therefore changes in water quality the Thames waterbody can be found support the T2ST scheme. This
	Invertebrates	Guidance document available	Moderate in 2015	No Objective	0	Medium N	Possible Medium	No	No		0				
Hydromorphological Supporting Elements	Morphology		Supports Good in 2015	No Objective	0	Medium N	No Medium	No	No		0		No measurable impact expected t	the morphology of River Thames	
	Ammonia (total as N)		High in 2015	Good by 2015	0	Medium N	No Medium	No	No		0				
	Biochemical oxygen demand	Numerical limits for classes	High in 2015	Good by 2015	0	Medium N	No Medium	No	No		0				
Physico-chemical quality elements	Dissolved oxygen	Numerical limits for classes	High in 2015	No Objective	0	Medium N	No Medium	No	No	None needed			rried out in conjunction with the SESRO		
	рН		High in 2015	No Objective	0	Medium N	No Medium	No	No		0	with the addition of the T2ST scheme	in the River Thames when SESRO dischar there are only minor changes in water ins of the SESRO WFD assessment on w	quality in the SESRO reservoir and the	refore the addition of the T2ST
	Temperature	Numerical limits for classes	High in 2015	No Objective	0	Medium N	No Medium	No	No		0	scheme will not change the conclusio	ills of the SESKO WPD assessment on w	ster quanty impacts on the River Tham	es.
Priority hazardous substances	Di(2-ethylhexyl)phthalate	EQS directive	Good in 2015	Good by 2015	0	Medium N	No Medium	No	No	None needed	0				
•	Tributyltin Compounds	EQS directive	Fail in 2015	No Objective	0	Medium N	No Medium	No	No	None needed	0				

Does the component comply with WFD objectives

Return to top of the page									Does the c	omponent comply with WFD o	objectives			
RNAG/PoM/HHWMM	td	Relevant WFD Quality Element (RNAG) / Measure category 1 (PoM)	Category (RNAG)/Lead organisation (PoM)		Is this measure potential impacted by the scheme? (Yes/No)	Impact score assessment	Data confidence	Design certainty	Assists attainment of water body objectives	Impediment to GES/GEP	Compromises water body objectives	Mitigation applied	Post mitigation impact score (- 2 to 3)	New or increased surface water abstraction
(RNAG)	527935	Invertebrates	No sector responsible		No									
Reasons for Not Achieving Good														
(RNAG)	510838	Invertebrates	No sector responsible	Non-native invasive species	No									
Reasons for Not Achieving Good														
(RNAG)	510914	Phosphate	Water Industry	Pollution from waste water	No									No change to assessment carried out
Reasons for Not Achieving Good														in SESRO WFD assessment.
(RNAG)	510915	Phosphate	Agriculture and rural land management	Pollution from rural areas	No		1 1							III SESILO WI D USSESSITETE
Reasons for Not Achieving Good	·													
(RNAG)	528898	Tributyltin Compounds	Water Industry	Pollution from waste water	No									
Reasons for Not Achieving Good	·													
(RNAG)	513874	Tributyltin Compounds	Water Industry	Pollution from waste water	No									

Option	T2ST Option C	Go to RNAG/PoM table at bottom of the page
Waterbody ID	GB106039023220	
Waterbody name	Lambourn (Source to Newbury)	
Waterbody type	River	
Hydromorphological designation	Not Designated A/HMWB	
Overall status	Moderate	
Overall status objective	Good by 2027	

Activity	Below ground structures (shaft/retaining wall) with associated dewatering	Below ground structures (shaft/retaining wall) with associated dewatering	Maintenance of pipe lines (including draining pipeline)	Maintenance of pipe lines (including draining pipeline)	Maintenance of pipe lines (including draining pipeline)	(including draining	Maintenance of pipe lines (including draining pipeline)	New pipe lines involving watercourse crossings with no in channel modifications	New pipe lines involving watercourse crossings with no in channel modifications
Construction, Operation or Decommissioning activity	Construction	Construction	Operation	Operation	Operation	Operation	Operation	Construction and operation	Construction and operation
Potential Impacts of asset (following consideration of embedded mitigation)	Change in water quality due to discharge of groundwater to a surface water body		Changes in flow velocity and volume (increase or decrease)		Noise and vibration	Change in water quality due to new or changes to existing discharge of surface water into surface water body	Change in INNS present in surface water body	Changes in sedimentation deposition	Changes to water body hydromorphology leading to changes in river processes and habitats upstream and downstream
Biological Effects	✓	✓	✓	√	✓	✓	✓	✓	✓
Hydromorphological supporting elements	х	4	✓	✓	х	х	х	✓	✓
Physicochemical Effects	<b>v</b>	х	х	х	х	1	х	х	х
Chemical effects	·	х	х	х	х	1	х	х	х
nimpact	Commant of the impact of Yhanse in water		Comment of the impact of	Comment of the impact of	Comment of the impact of	Comment of the impact of 'Change in water quality	Comment of the impact of		Comment of the impact of 'Changes to water body

							Does the comp	onent comply with WFD o (post mitigation)	objectives Ch	emical effects		✓	х	x	x	x	✓	×	х	x
WFD status Component	WFD quality element	Method of checking compliance	Classification	Objective	Impact score	Data confidence Design certainty	Deterioration between status classes	Impediments to GES/GEP	Compromises water body objectives in	tigation applied	Post mitigation impact score	Comment of the impact of 'Change in water quality due to discharge of groundwater to a surface water body' on each element	Comment of the impact of 'Changes in flow velocity and volume (increase or decrease)' on each element	Comment of the impact of 'Changes in flow velocity and volume (increase or decrease)' on each element	Comment of the impact of 'Changes in sedimentation deposition' on each element	'Noise and vibration' on each element	Comment of the impact of 'Change in water quality due to new or changes to existing discharge of surface water into surface water body' on each element		Comment of the impact of 'Changes in sedimentation deposition' on each element	Comment of the impact of 'Changes to water body hydromorphology leading to changes in river processes and habitats upstream and downstream' on each element
	Felh		Moderate in 2015	Good by 2021	1	Low Medi	um No	No	No An	y dewatering needed for the construction		be small volumes compared to river flow,	Developing is assumed to be discharged into Biver Lambourne in low- quantities to high maintain flow in the new. Noverock, the River Lambourne consign occurs within 500m downsterms (Adm) of the Earnet and Lambourne Floodplain 550 which is also classified as a GMOVE. As this forms part of the rejoins once of the new and			to lead to no measurable imp		Possibility of INNS transfer during draining operation, but this is a potable water	patterns expected to have minimal effect on biology at waterbody scale as a result of new watercourse crossings	New pipelines and associated below ground structures unlikely to have significant risk on the hydromorphology of the river VMB but potential for localised short term variations in morphology as a result of localised changes to sedimentation. Minimal effect on biology
Biological quality elements	Invertebrates	Guidance document available	High in 2015	Good by 2015	1	Low Medi	um No	No	No Wil	ll be discharged to the river to help maintain w	1		dewatering during construction of the below ground structures (shafts) for the crossing of the river, could impact on the flow and velocity in the river, and the morphology, between the site and the shafts (downstream). This could lead to temporary localited changes in flow velocity and volume that could have a minor temporary impact on fish and biology associated with river and associated floodplain.			to lead to no measurable imp	acts to biology, due to its	pipeline and it is assumed that INNS would be removed during the	Localised changes to sediment deposition patterns expected to have minimal effect on biology at waterbody scale as a result of new watercourse crossings	New pipelines and associated below ground structures unlikely to have significant risk on the hydromorphology of the river / 1/80 but potential for localised short term variations in morphology as a result of localised changes to sedimentation. Minimal effect on biology
	Macrophytes and Phytobenthos Combined	Calculator available	Moderate in 2015	Good by 2027	1	Low Medi	um No	No	No		1	Short term variations in temperature possible, however, this is short term and will be small volumes compared to river flow, therefore impact expected to be negligible							Localised changes to sediment deposition patterns expected to have minimal effect on biology at waterbody scale as a result of new	New pipelines and associated below ground structures unlikely to have significant risk on the hydromorphology of the river / WB but potential for localised short term variations in morphology as a result of localised changes to sedimentation. Minimal effect on biology
Hydromorphological Supportin	Hydrological Regime		Supports Good in 2015	High by 2027	1	Low Medi	um No	No	No		1		Any dewatering will be discharged into the watercourse to help maintain flow, but there could be minor localised temporary impacts	Minor changes in flow due to discharge of water from pipelines for draining will be minor and short term, and not significant at a waterbody scale.					Localised changes to sediment deposition patterns expected to have minimal effect at waterbody scale as a result of new watercourse crossings	New pipelines and associated below ground structures unlikely to have significant risk on the hydromorphology of the river / WB but potential for localised short term variations in morphology as a result of localised changes to sedimentation
Elements	Morphology		Supports Good in 2015	No data available	1	Low Medi	um No	No	No		1		Changes in flow and velocity as a result of new crossing assumed to have minimal impact on river morphology		Draining of pipelines for maintenance reasons is likely to lead to no measurable impacts to sedimentation, due to its infrequent and short term nature				Localised changes to sediment deposition patterns expected to have minimal effect at waterbody scale as a result of new watercourse crossings	New pipelines and associated below ground structures unlikely to have significant risk on the hydromorphology of the river / WB but potential for localised short term variations in morphology as a result of localised changes to sedimentation
	Ammonia (total as N)		High in 2015	High by 2015	1	Low Medi	um No	No	No		1									
	Dissolved oxygen	Numerical limits for classes	Good in 2015	High by 2015	1	Low Medi	um No	No	No		1									
Physico-chemical quality element	pH		High in 2015	Good by 2015	1	Low Medi	um No	No	No		1									
	Phosphate	Calculator available	Good in 2015	High by 2027	1	Low Medi	um No	No	No		1	Short term changes to water quality possible					Pipeline maintenance			
	Temperature	Numerical limits for classes	High in 2015	Good by 2015	1	Low Medi	um No	No	No		1	which may lead to temporary changes in water quality parameters. Further assessment is required to determine the					highly unlikely to impact on chemical status as water will be potable			
Priority hazardous substances	Cadmium and Its Compounds	EQS directive	Good in 2015	Good	1	Low Medi	um No	No	No		1	assessment is required to determine the impact.					standard			
Priority substances	Lead and its Compounds	EQS directive	Good in 2015	Good	1	Low Medi	um No	No	No		1									
	Nickel and Its Compounds	EQS directive	Good in 2015	Good	1	Low Medi	um No	No	No		1									
Specific pollutants	Copper		High in 2015	High	1	Low Medi	um No	No	No		1									
Other chemicals	Zinc		High in 2015	High	1	Low Medi	um No	No	No		1									

Return to top of the page								Does the	component comply with WFD	objectives		
RNAG/PoM/HHWMM Id	Relevant WFD Quality Element (RNAG) / Measure category 1 (PoM)	) Category (RNAG)/Lead organisation (PoM)	National Swmi Header (RNAG) / Title (PoM)	Is this measure potential impacted by the scheme? (Yes/No)	Impact score a ssessment	Data confidence	ā	Assists attainmen t of water body objectives		Comprom ises water body objectives	Mitigation applied	Post mitigation impact score (- 2 to 3)
Reasons for Not Achieving Good (RN	486491 Phosphate	Agriculture and rural land management	Pollution from rural areas	No								
Reasons for Not Achieving Good (RN	486493 Phosphate	Agriculture and rural land management	Pollution from rural areas	No								
Reasons for Not Achieving Good (RN	486492 Phosphate	Water Industry	Pollution from waste water	No								
Reasons for Not Achieving Good (RN	478976 Mitigation Measures Assessment	Local and Central Government	Physical modifications	No								
Reasons for Not Achieving Good (RN	520064 Total Phosphorus	No sector responsible		No								
P	FORGER DE LA	M										

Optio		T2ST Option C	Go to RNAG/PoM table at bottom of the page	]																							
Wate	ody ID	GB107042022710									Acth	tivity		Below ground struc	ctures (shaft/retaining wall) with associated dewatering		Maintenance of	pipe lines (including draining pip	eline)			atercourse crossings with no in modifications		New or r	nodified pumping station and/or	river intake	
Water	ody name	Test (Upper)									Cons	nstruction, Operation or Decommissioning act	Switty		Construction			Operation				n and operation			Construction		
Water	ody type	River									Pote	tential Impacts of asset (following considerati shedded mitigation)	ion of	Change in water quality due to discharge of groundwater to a surface water body	Changes in flow velocity and volume (increase or decrease)	Changes in flow velocity and volume (Increase or decrease)	Changes in sedimentation deposition	Noise and vibration	Change in water quality due to new or changes to existing dischange of surface water into surface water body		Changes in sedimentation deposition	Changes to water body hydromorphology leading to changes in river processes and habitats upstream and downstream	Changes to channel footprint	Changes in flow velocity and	Changes in sedimentation	Noise and vibration	Changes to water body hydromorphology leading to changes in river processes and habitats upstream and downstream
Hydro	norphological designation	Not Designated A/HMWB									Biok	ological Effects		1	4	4	4	4	4	1	4	1	4	1	1	4	1
Overa	status	Good									Hydr	dromorphological supporting elements		×	4	4	4	×	×	×	4	1	1	1	1	4	1
Overa	status objective	Good by 2015						_			Phys	ysicochemical Effects		1	x	х	×	×	1	x	×	x	×	х	x	x	х
_								Do		t comply with WFD o st mitigation)	objectives Cher	emical effects		1	x	х	×	×	1	x	×	×	×	х	x	x	х
WFD:	atus Component	WFD quality element	Method of checking compliance	Classification	Objective	a.cos pediuj	Data confidence	Vanistran registral	stabus classes	of SKGBP	Compromises water body objectives	tigation applied	Postmisgation impact score	Comment of the impact of 'Change in water quality due to discharge of groundwater to a surface water body' on each element	Comment of the impact of "Changes in flow velocity and volume (increase or decrease)" on each element	Comment of the impact of "Changes in flow velocity and volume (increase or decrease)" on each element	Comment of the impact of 'Changes in sedimentation deposition' on each element	Comment of the impact of "Noise and vibration" on each element		Comment of the impact of 'Change in INNS present in surface water body' on each element	Comment of the impact of 'Changes in sedimentation deposition' on each element	Comment of the impact of 'Changes to water body hydromorphology leading to changes in river processes and habitats upstream and downstream' on each element	Comment of the impact of 'Changes to channel footprin on each element	Comment of the impact of t' 'Changes in flow velocity and volume (increase or decrease)' on each element	'Changes in sedimentation	Comment of the impact of "Noise and vibration" on each element	Comment of the impact of 'Changes to water body hydromorphology leading to changes in river processes and habitats upstream and downstream' on each element
	ilogical quality elements	invertebrates	Guidance document available	High in 2015	Good by 2015	1	Low	Medium	No	No	is ou	sure below ground shaft for river crossing outside the 555b boundary	1	Short term variations in temperature possible, however, this is short term and will be small	Devalating is assumed to be discharged into filter Test in low quantities to help maintain flow in the river. However, the River Test creating occurs within the River Test SSS and adjacent to the later MR Meadows SSS which have also designed as OWDTE. Loss of habitate will be exceeded the MR Meadows SSS with the WR MR Meadows SSS with his way and the MR Meadows SSS with the WR MR Meadows SSS with the WR MR MEADOW MR MEADOW MR MAN MEADOW MR MAN	n Draining of pipelines for maintenance re	vor it light to look to a soon			Possibility of IMMS transfer during draining operation, bu this is a potable water						The CS4 Lichfield PS and BPT	
		Macrophytes and Phytobenthos Combined	Calculator available	Good in 2015	Good by 2015	1	Low	Medium	No	No	Asso pipe No	sumes crossing of river will be by HDD or sejacking	1	therefore impact expected to be negligible	impact on the flow and visionly in the river, and the morphology, between the size and exhabits (downstrain). This could lead to temporary localised changes in flow velocity and volume that could have a minor temporary impact on fish and biology associated with river and associated floodybilin/meadows. Further investigation needed to understand potential impacts.			****		pipeline and it is assumed tha INNS would be removed during the treatment process	Watercourse crossing will be beneath the river (HDD or pipejacking) therefore no change in sedimentation expected	below ground structures unlikely to have significant risk on the hydromorphology of the river / WB as they will pass beneath the river and	(either options) will be constructed at the top of the Test catchment (approximately 6.5km from the main watercourse) Therefore new PS will have n	(either options) will be constructed at the top of the Test catchment (approximately 6.5km from the main watercourse) o therefore, no impact on flow	The CS4 Lichfield PS and BPT (either options) will be constructed at the top of the	(either options) will be constructed at the top of the Test catchment (approximately 6.5km from the main watercourse) therefore, minimal noise and wibration impacts expected.	The CS4 Lichfield PS and BPT (either options) will be constructed at the top of the Test catchment (approximately 6.5km from the main watercourse) therefore, no impact on
Hyd	emorphological Supporting Elements	Hydrological Regime		Supports Good in 2015	Supports Good by 2015	1	Low	Medium	No	No	No		1		Short term temporary impacts on flow and velocity from dewatering for the construction of below ground works for the river crossing. Assumed dewatering discharged to river to help maintain flow but a temporary localised reduction in flow and velocity possible upstream of the discharge point.	Minor changes in flow due to discharge o water from pipelines for draining will be minor and short term, and not significan at a waterbody scale.	of L									anticipated	
		Morphology		Supports Good in 2015	No data available	1	Low	Medium	No	No	No		1		No impact anticipated on morphology												
		Ammonia (total as N)		High in 2015	Good by 2015	1	Low	Medium	No	No	No		1														
		Dissolved oxygen	Numerical limits for classes	High in 2015	Good by 2015	1	Low	Medium	No	No	No		1	Short term changes to water quality possible which may lead to changes					Pipeline maintenance highly unlikely to impact on chemica								
Physi	o-chemical quality elements	рН		High in 2015	Good by 2015	1	Low	Medium	No	No	No		1	in water quality parameters. Further assessment is required to determine this change					status as water will be treated to potable standards								
		Phosphate	Calculator available	High in 2015	High by 2015	1	Low	Medium	No	No	No		1														
		Temperature	Numerical limits for classes	High in 2015	Good by 2015	1	tow	Medium	No	No	No		1														

Return to top of the page								Does the	component comply with WFD	objectives		
RNAG/PoM/HHWMM	nd Relevant WFD Quality	Element (INAG) / Measure category 1 (PoM)	anisation (PoM) National Swmi Header (RNAG) / Title (PoM)	Is this measure potential impacted by the scheme? (Yes/No)	impact score assessment	Data confidence	Design certainty	Assists attainmen t of water body objectives	Impediment to GES/GEP	Compromi ses water body objectives	Mitigation applied	Post mitigation impact score (- 2 to 3)
None												

			5																				i.	
Option	T2ST Option C	So to RNAG/PoM table at bottom of the page																						
Waterbody ID	GB107042022700								Activity		Selow ground structures (shaft/ret	taining wall) with associated dewatering		Maintenano	of pipe lines (including drain	ning pipeline)		New pipe lines involving watercourse	rossings with no in channel modifications		Ne	or modified pumping station and/or river	intake	
Waterbody name	Test - Bourne Rivulet to conf Dever								Construction, Operation or Decommissioning ad	Sivility		Construction			Operation			Constructio	and operation			Construction		
Waterbody type	Reser								Potential Impacts of asset (following considerati embedded mitigation)	ion of	Change in water quality due to discharge of groundwater to a surface water body	Changes in flow velocity and volume (Increase or decrease)	Changes in flow velocity and volume (Increase or decrease)	Changes in sedimentation deposition		Change in water quality due to new or changes t existing discharge of surface water into surfa water body		Changes in sedimentation deposition	Changes to water body hydromorphology leading to changes in river processes and habitats upstream and downstream		Changes in flow velocity and volume (Increase or decrease)	Changes in sedimentation deposition	Noise and vibration	Changes to water body hydromorphology leading to charges in river processes and habitats upstream and downstream
Hydromorphological designa	Not Designated A/HMWB								Biological Effects		4	4	4	4	1	- 1	4	4	4	4	4	4	✓	4
Overall status	Good		1						Hydromorphological supporting elements		×	4	4	1	×	×	×	1	1	1	1	1	4	1
Overall status objective	Good by 2015								Physicochemical Effects		1	×	×	×	×	-	×	×	×	×	×	×	×	×
			='					nt comply with WFD objective out mitigation)	Chemical effects		1	×	×	×	×	-	×	×	×	×	×	×	×	×
WTD status Component	WTO quality element	Method of checking compliance	Classification	Chjective	Impact score	Data antidence Datan antidety	Detertoration between stables classes	impadiments to GES/GEP Compounts ses water body objectives	Mitigation applied	Post mitigation impact score	Comment of the impact of Thanges to channel footprint' on each element	Comment of the impact of 'Changes in flow velocity and volume (increase or decrease)' on each element	Comment of the impact of 'Changes in flow velocity and volume (Increase or decrease)' on each element	'Changes in sedimentation deposition' on each	Comment of the impact of 'Changes in sedimentation deposition' on each element	Comment of the impact Noise and vibration on each element	of Comment of the impact of Wolse and struction on each element	Comment of the impact of 'Changes to water body hydromorphology leading to changes in river processes and habitats upstream and downstream' on each element	Comment of the impact of 'Change in water quality due to discharge of groundwater to a surface water body' on each eferment	Comment of the impact of 'Change in water quality due to new or changes to existing discharge of surface water into surface water body' on each element.	Comment of the impact of 'Change in INN present in surface water body' on each element	Comment of the impact of 'Changes in addimentation deposition' on each element	Comment of the impact of 'Changes to water body hydromorphology leading to changes in river processes and habitats upstream and downstream' on each element	
Biological quality eleme	to streetsbrotes	Guidance document available	Mgh in 2025	Good by 2015	1	law Medium	No	No No	znure below ground shaft for river crossing is cutside the XSS boundary. Assumes crossing of nier will be by pipejack or micro furned crossings.	1	temperature possible, however, this is short term and will be small volumes compared to river flow,	Descenting is assemed to be discharged and their Feel in the question to their processing country and their intercharges, their bird containing country after their feel counting country which the first to 100 and their Commen 100 which we do this also discharged and posting country of their cou	Draining of pipelines for maint	tenance neasons is likely to l	ead to no measurable impac	ts to biology	Possibility of INNS transfer during draining operation, but this is a patable water pipeline and it is assumed that INNS would be removed during the treatment process.	Watercourse crossing will be beneath the river (MCD or pipe) adving therefore no change in sedementation expected	New pipelines and associated below ground shoutures unlikely to have significant risk on the hydromorphology the riser / Was a they will pass have the riser / Was a they will pass have the chart of the riser / Was a first profit pass of the riser / Was a first pass of the riser of the water pass of the riser of the r	WSR will be constructed at the top of the Test catchment (approximately 4.5km from the main watercourse) Therefore	WSR will be constructed at the top of the Test catchment (approximately 4.5km from the main watercourse) therefore, no	WSR will be constructed at the top of the Test catchment (approximately 4.5km from the main watercourse) therefore, no	Test catchment (approximately 4.5km from the main watercourse) therefore, minimal noise and vibration impacts	The SS Micheldever PS and Micheldever WSW will be constructed at the top of the Test catcheracy (poporainstely 4.5km from the mais waterscure) therefore, or impact on hydronophology asserted
Hydromorphological Supp Elements	thydrological Regime		Supports Good in 2015	Supports Good by 2025	1	Low Medium	No	No No		1		Minor changes in flow due to desistering for the crossing of the river. Any desistering will be discharged into the watercourse to help maintain flow, but there could be minor localised temporary impacts on flow and velocity during the conditionation period.	water from pipelines for draining will be						mom the watercourse.				anticipated	
	Morphology		Supports Good in 2015	No data available	1	Low Medium	No	No No		1														_
	Ammonia (total as N)		19gh in 2015	High by 2015	1	Low Medium	No	No No		1														
	Dissalved axygen	Numerical limits for classes	High in 2015	High by 2015	1	Low Medium	No	No No		1	Short term changes to water					Direline maintenance								
Physico-chemical quality el-	pH pH		High in 2015	Good by 2015	1	Low Medium	No	No No			quality possible which may lead to changes in water quality		Draining of pipelines for maintenance reasons measurable impacts as water will be treated to			highly unlikely to impact on chemical status as	*							
	Phosphate	Calculator available	High in 2015	High by 2015	1	Low Medium	No	No No		1	parameters. Further assessment is required to determine this change					water will be treated to potable standards								
	Temperature	Numerical limits for classes	High in 2015	Good by 2015	1	Low Medium	No	No No		1														
Specific pollutants	Copper		Ngh in 2015	Hgh	1	Low Medium	No	No No		1														

Return to top of the page								Does the o	component comply with WFC	abjectives		
RNAG/PoM/HHWMM	ы	Relevant WFD Quality Element (RNAG) / Measure category 1 (PoM)	Category (FMAG)/Lead organisation (PoM)	Is this measure potential impacted by the scheme? (Yes/No)	impact score assessment	Data confidence	n cert ain	Assists attainmen t of water body objectives	Impediment to GES/GEP	Compromi ses water body objectives	Mitgation applied	Post mitigation impact score (- 2 to 3)
None												

Option	T2ST Option C	Go to RNAG/PoM table at bottom of the page
Waterbody ID	GB107042022770	
Waterbody name	Dever	
Waterbody type	River	
Hydromorphological designation	Not Designated A/HMWB	
Overall status	Good	
Overall status objective	Good by 2015	

Activity		Below ground structures (shaft/retaining wall) with associated dewatering	Below ground structures (shaft/retaining wall) with associated dewatering	Maintenance of pipe lines (including draining pipeline)	Maintenance of pipe lines (including draining pipeline)	Maintenance of pipe lines (including draining pipeline)	Maintenance of pipe lines (including draining pipeline)	Maintenance of pipe lines (including draining pipeline)	New pipe lines involving watercourse crossings with no in channel modifications	New pipe lines involving watercourse crossings with no in channel modifications
Construction, Operation or Decommissioning a	activity	Construction	Construction	Operation	Operation	Operation	Operation	Operation	Construction and operation	Construction and operation
Potential impacts of asset (following considers embedded mitigation)	ation of	Change in water quality due to discharge of groundwater to a surface water body	Changes in flow velocity and volume (increase or decrease)	Changes in flow velocity and volume (increase or decrease)	Changes in sedimentation deposition	Noise and vibration	Change in water quality due to new or changes to existing discharge of surface water into surface water body	Change in INNS present in surface water body	верозноп	Changes to water body hydromorphology leading to changes in river processes and habitats upstream and downstream
Biological Effects		1	<b>✓</b>	✓	1	1	✓	✓	✓	<b>4</b>
Hydromorphological supporting elements		х	·	✓	1	х	х	х	1	<b>1</b>
Physicochemical Effects		1	x	х	х	х	✓	х	х	х
Chemical effects		<b>v</b>	х	х	х	х	<b>4</b>	x	х	х
Mitirative sociled	tion impact ore	Comment of the impact of 'Change in water quality due to discharge of	Comment of the impact of 'Changes in flow velocity and volume (increase or	Comment of the impact of 'Changes in flow	Comment of the impact of	Comment of the impact of		Comment of the impact of 'Change in INNS present in	Comment of the impact of	Comment of the impact of 'Changes to water body hydromorphology leading to change in the property and

								(post mitigation)								1				
WFD status Component	WFD quality element	Method of checking compliance	Classification	Objective	Impact score	Data confidence Design certainty	Deterioration between status clas ses	impediments to GES/GEP	Compromises water body objectives	Mitigation applied	Post mitigation impact score	Comment of the impact of 'Change in water quality due to discharge of groundwater to a surface water body' on each element	Comment of the impact of 'Changes in flow velocity and volume (increase or decrease)' on each element	Comment of the impact of 'Changes in flow velocity and volume (increase or decrease)' on each element	Comment of the impact of 'Changes in sedimentation deposition' on each element	Comment of the impact of 'Noise and vibration' on each element	Comment of the impact of 'Change in water qualify due to new or changes to existing discharge of surface water into surface water body' on each element	'Change in INNS present in	Comment of the impact of 'Changes in sedimentation deposition' on each element	Comment of the impact of 'Changes to water body hydromorphology leading to changes in river processes and habitats upstream and downstream' on each element
Biological quality elements	invertebrates	Guidance document available	High in 2015	Good by 2015	1	Low Mediur	n No	No	No	Remove below ground shaft for river crossing from SSSI	1	Short term variations in temperature possible, however, this is short term and will be small	Desirting is assumed to be discharged into River Dever in low quantities to help maintain flow in the mer. Newwer, the River Dever creasing occurs within the River Test SSS which is also designated as a GWOTE. Less of habitar will be considered in the Rivascement, if relevant, hay developing disposing constructions of the below grand structure (subthal) for the crossing of the river, could impact on the Rivas and volume in the river and the employing, where the size and if the on the Rivas and volume is a second or size of the river.	Draining of pinelines for maintenance reasons in	s likely to lead to no measurable i	impacts to biology, as pipelline co	ontains potable water	Possibility of INNS transfer during draining operation, but this is a potable water pipeline and it is assumed that INNS		
	Macrophytes and Phytobenthos Combined	Calculator available	Good in 2015	Good by 2015	1	Low Mediur	n No	No	No	Remove below ground shaft for river crossing from SSSI	1	therefore impact expected to be negligible	shalts (downstream). This could lead to temporary localized changes in flow velocity and volume that could have a minor temporary impact on fish and bologo sacoulated with trear and associated floodplain. Further investigation needed to understand potential impacts.					would be removed during the treatment process	beneath the river (HDD or pipejacking) therefore no change	New pipelines and associated below ground structures unlikely to have significant risk on the hydromorphology of the river / WB as they will pass beneath the river and shafts likely to be set back from the watercourse.
Hydromorphological Supporting Elements	Hydrological Regime		Supports Good in 2015	Supports Good by 2015	1	Low Mediur	n No	No	No		1		Short term temporary impacts on flow and velocity from dewatering for the construction of below ground works for the river crossing. Assumed dewatering discharged to river to help maintain flow but a temporary localised reduction in flow and velocity possible upstream of the discharge point.							
	Morphology		Supports Good in 2015	No data available	1	Low Mediur	No	No	No		1		No impact anticipated on morphology							
	Ammonia (total as N)		High in 2015	High by 2015	1	Low Mediur	No No	No	No		1									
	Dissolved oxygen	Numerical limits for classes	High in 2015	High by 2015	1	Low Mediur	No	No	No		1	Short term changes to water quality possible which may lead to								
Physico-chemical quality element	pH pH		High in 2015	Good by 2015	1	Low Mediur	No	No	No			changes in water quality parameters. Further assessment is								
	Phosphate	Calculator available	High in 2015	High by 2015	1	Low Mediur	No	No	No		1	required to determine this change								
	Temperature	Numerical limits for classes	High in 2015	Good by 2015	1	Low Mediur	No	No	No		1						Pipeline maintenance highly unlikely to			
	Benzene	EQS directive	Good in 2015	Good	0	Low Mediur	No	No	No		0						impact on chemical status as water will be treated to potable standards			
Priority substances	Lead and its Compounds	EQS directive	Good in 2015	Good	0	Low Mediur	No	No	No		0									
	Nickel and Its Compounds	EQS directive	Good in 2015	Good	0	Low Mediur	No	No	No		0	No impact anticipated on priority								
	Copper		High in 2015	High	0	Low Mediur	No	No	No		0	substances or specific pollutants								
Specific pollutants	Iron		High in 2015	High	0	Low Mediur	No	No	No		0									
	Toluene		High in 2015	High	0	Low Mediur	No	No	No		0									

Return to top of the page									Does the	component comply with WFD	objectives		
RNAG/PoM/HHWMM	Id	Relevant WFD Quality Element (RNAG) / Measure category 1 (PoM)	Category (RNAG)/Lead organisation (PoM)	National Swml Header (RNAG) / Title (PoM)	Is this measure potential impacted by the scheme? (Yes/No)	Impact score as sessment	Data confidence	certair	Assists attainmen t of water body objectives	Impediment to GES/GEP	Compromi ses water body objectives	Mitigation applied	Post mitigation impact score (- 2 to 3)
None													

Option	T2ST Option C	
Waterbody ID	GB40601G600900	
Waterbody name	Berkshire Downs Chalk (GW)	
Waterbody type	Ground Waterbody	
Overall status	Poor	
Overall status objective	Good by 2027	
		_

Below ground structures (shaft/retaining wall) with associated dewatering

Construction

Potential Impacts of asset (following consideration of embedded mitigation)	Change in groundwater levels by temporary dewatering	Disturbing or mobilising existing poor quality groundwater by temporary dewatering	Creating or altering of pathways along which existing poor quality groundwater can migrate	Changes in groundwater levels due to presence of shafts and pipeline
Quantitative effects	√	Х	Х	✓

												Chemical effects		X	✓	✓	Х
	WFD status Component	WFD quality element	Method of checking compliance	WFD Classification	WFD Objective	Impact score	Data confidence	Design certainty	Deterioration between status classes	Impediments to GES/GEP	Compromises water body objectives	Mitigation applied	Post mitigation impact score	Comment of the impact of 'Change in groundwater levels by temporary dewatering' on each element	Comment of the impact of 'Disturbing or mobilising existing poor quality groundwater by temporary dewatering' on each element	Comment of the impact of 'Creating or altering of pathways along which existing poor quality groundwater can migrate' on each element	Comment of the impact of 'Changes in groundwater levels due to presence of shafts and pipeline' on each element
		Quantitative Dependent surface water body status	guidance document available	Poor	Poor by 2015	1	w Me	dium No	) No	·	No	1	1	Pipeline will cross the River Lambourn and River Kennet which are both fed by the Chalk aquifer. Likely that temporary dewatering will be required for construction of shafts and pipelines beneath the river. Dewatering will lead to reduced groundwater level and in turn reduced river flows. Ostential for temporary short term changes to flow in River Lambourn and River Kennet. Dewatering discharge to the rivers to help maintain flow but minor localised change in flow likely upstream of discharge location.			Pipeline crossing the River Lambourn and Kennet will be installed by pipejack or micro tunnel crossings so no long term impact on groundwater levels expected.
	Quantitative Status elements	Quantitative GWDTE test	guidance document available	Good	Good by 2015	1	w Me	dium No	, No		No	Dewatering discharge to surface water courses to maintain flow. Use of Clay Stanks in pipeline route where groundwater potentially encountered.		Kennet & Lambourn Floodplain SSSI located 440m upstream of the River Lambourn crossing. The Kennet & Lambourn floodplain is primarily marsh and grassland and an environment for a species of whorl snail. As the site is within SO0m of the crossing it is assumed there will be localised and temporary changes in groundwater that could impact on the GWDTE. The Kennet Valley Alderwoods SAC is located approximately 100m from crossing of River Kennet. Short term temporary impacts on groundwater levels are possible due to dewatering, but are unlikely to impact in the integrity of the site.			Pipeline crossing the River Lambourn and Kennet will be installed by pipejack or micro tunnel crossings so no long term impact on groundwater levels expected. Where pipeline cross near to the Kennet Valley Alderwoods SAC, if groundwater levels are found to be above the pipe level then pipeline bedding material will ensure no groundwater mounding upgradient of the pipeline and the use of clay stanks within the trench will ensure that the pipeline does not form a preferential pathway for groundwater flow and therefore only minor localised impact on groundwater levels expected.
		Quantitative saline intrusion	guidance document available	Good	Good by 2015	0 Lo	w Me	dium No	No	)	No		0	No measurable change from saline intrusions assumed.			No measurable change from saline intrusions assumed.
		Quantitative water balance	guidance document available	Poor	Poor by 2015	1 Lo	w Me	dium No	No	o	No		1	Minimal change in water balance assumed, due to short term temporary nature of the works			If groundwater levels are found to be above the pipe level then pipeline bedding material will ensure no groundwater mounding upgradient of the pipeline and the use of day stanks within the trench will ensure that the pipeline does not form a preferential pathway for groundwater flow and therefore only minor localised impact on water balance expected.
		Chemical dependent surface water body status	guidance document available	Good	Good by 2027	1 Lo	w Me	dium No	) No	o	No		1		Potential for dewatering activities to mobilise existing contaminated groundwater. Risk	Pipeline will be installed in shallow trench and no new pathways likely to be created. Where	
		Chemical Drinking Water Protected Area	guidance document available	Poor	Good by 2027	1 Lo	w Me	dium No	) No		No		1		expected to be minor as dewatering short term and therefore likely to have small radius of influence. Contractors will be expected to investigate potential water quality risks and	pipejack or micro tunnel crossings required, shafts may be required. There shafts will be constructed and sealed to ensure they do not form a pathway	
	Chemical Status elements	Chemical GWDTEs test	guidance document available	Good	Good by 2015	1 Lo	w Me	dium No	) No	,	No	Shafts to be sealed to ensure minimal groundwater egress after	1		monitor water quality if required.	for surface water flow into the aquifer.	
		Chemical Saline Intrusion	guidance document available	Good	Good by 2027	0 Lo	w Me	dium No	No	)	No	construction	0		No change anticipated	No change anticipated	
	General Chemical Test	guidance document available	Poor	Good by 2015	1 Lo	W INC	dium No	) No	5	No		1		monitor water quality if required.	Pipeline will be installed in shallow trench and no new pathways likely to be created. Where pipejack or micro tunnel crossings required, shafts may be required. There shafts will be constructed and sealed to ensure they do not form a pathway for surface water flow into the aquifer.		
		Prevent and Limit Objective	guidance document available	-	Good by 2015	0 Lo	w Me	dium No	No	)	No		0		Works unlikely to lead to a change in	input of pollution to the groundwater	
	Supporting elements	Trend Assessment	guidance document available	Unward trond	Good by 2027	0	w Mo	dium No	No		No		0	Works unlikely to lead to a long term change in the trend in			Works unlikely to lead to a long term change in the trend in

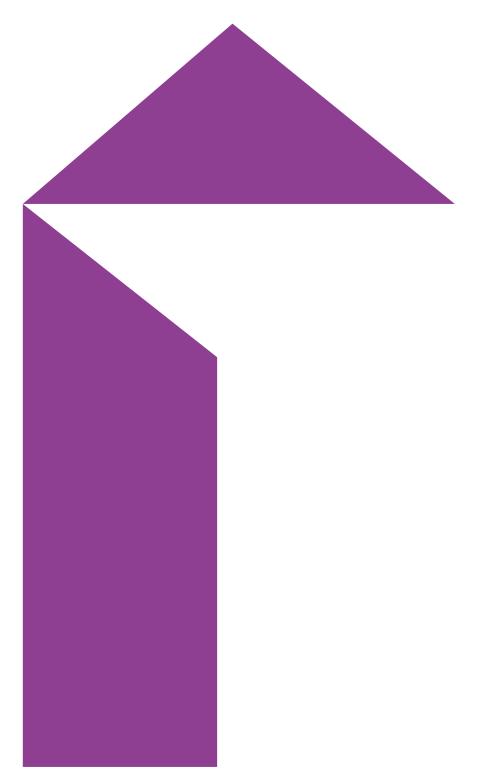
Option	T2ST Option C	I	$\neg$													
Waterbody ID	GB40701G501200		<del> </del>													
Waterbody name	River Test Chalk (GW)		+								Activity			Below ground structures (shaft/retaining wa	II) with associated dewatering	
Waterbody type	Ground Waterbody		+								Construction, Operation or			Construction	,	Operation
Overall status	Poor		7								Potential Impacts of asset	following	Change in groundwater levels by temporary dewatering	Disturbing or mobilising existing poor quality		Changes in groundwater levels due to presence of shafts and
	December 2045		_								consideration of embedded			groundwater by temporary dewatering	existing poor quality groundwater can migrate	pipeline
Overall status objective	Poor by 2015	<u>.</u>									Quantitative effects Chemical effects		√ ×	X	X	√ x
								-	۵.	के			,	·	·	,
WFD status Component	WFD quality element	Method of checking compliance	WFD Classification	WFD Objective	Impact score	Data confidence	Design certainty	Deterioration betweer status classes	Impediments to GES/GE	Compromises water bo objectives	Mitigation applied	Post mitigation impac score	Comment of the impact of 'Change in groundwater levels by temporary dewatering' on each element	Comment of the impact of 'Disturbing or mobilising existing poor quality groundwater by temporary dewatering' on each element	Comment of the impact of 'Creating or altering or pathways along which existing poor quality groundwater can migrate' on each element	Comment of the impact of 'Changes in groundwater levels due to presence of shafts and pipeline' on each element
	Quantitative Dependent surface water body status	guidance document available	Paar	Poor by 2015		1 Low	Medium N	lo No	n	No	Further investigation into impact on groundwater	1	Crossing of the River Test and River Dever occur in this waterbody, Potential for dewatering to lead to short term temporarily reduce groundwater levels and therefore flow in the watercourses. Dewatering discharge to the rivers to help maintain flow but minor localised change in flow likely upstream of discharge location.			Pipeline crossing the River Test (2 off) and Dever will be installed by pipejack or micro tunnel crossings so no long term impact on groundwater levels expected.
Quantitative Status elements	Quantitative GWDTE test	guidance document available	Good	Good by 2015		2 Low	Medium I	Jocertain No.	0	Uncertain	levels of dewatering for construction and consideration of requirement to return water to the ground (through recharge trenches) to help minimise the impact of construction, if required.  Use of Clay Stanks in pipeline route where groundwater potentially encountered.	1	Two new river crossings of the River Test, 1 river crossing of the River Dever and a road crossing of the 8400 within 500m of GWDTE's.  River Test and River Dever crossing locations are beneath the River Test SSSI GWDTE (and could be partially with the site) and the River Test crossings also within the East Aston Common SSSI, and adjacent to Bere Mill Meadows SSSI. Dewatering for construction could lead to a reduction in groundwater levels at these sites, and although short term and temporary this could lead to significant temporary effects. There could also be a direct loss of habitat for both crossings as they are within SSSI sites, but this is not considered in this assessment. Drainage from the trench and from the shafts is assumed to be discharged into the river to help maintain flows. The timing of the recharge may be different to the timing of natural groundwater discharge, Impacts of changes to groundwater levels on SSSIs are currently unclear and further investigation required.			Pipeline crossing the River Test (2 off) and Dever assumed to be installed by pipejack or micro tunnel crossings so no long term impact no groundwater levels expected. Where pipeline cross River Test SSSI, East Ashton Common SSSI and Bere Mill Meadows SSSI, if groundwater levels are found to be above the pipe level then pipeline bedding material will ensure no groundwater mounding upgradient of the pipeline and the use of clay stanks within the trench will ensure that the pipeline does not form a preferential pathway for groundwater flow and therefore only minor localised impact on groundwater levels expected.
	Quantitative saline intrusion	guidance document available	Good	Good by 2015		0 Low				No		0	No measurable change from saline intrusions anticipated.			No measurable change from saline intrusions anticipated.
	Quantitative water balance	guidance document available	Poor	Poor by 2015		1 Low	Medium N	No No	0	No	Where possible ensure shafts for pipejack or micro tunnel crossings launch and reception are located outside of the SSSI	1	Overall impact on water balance likely to be minor and temporary with no long term reduction in groundwater flows expected from this works.			f groundwater levels are found to be above the pipe level then pipeline bedding material will ensure no groundwater mounding upgradient of the pipeline and the use of clay stanks within the trench will ensure that the pipeline does not form a preferential pathway for groundwater flow and therefore only minor localised impact on water balance expected.
	Chemical dependent surface water body status	guidance document available	Good	Good by 2027		1 Low	Medium N	lo No	0	No		1		Potential for dewatering activities to mobilise existing contaminated groundwater. Risk expected to be minor as dewatering short term	Pipeline will be installed in shallow trench and no new pathways likely to be created. Where pipejack or micro tunnel crossings required,	
	Chemical Drinking Water Protected Area	guidance document available	Poor	Good by 2027		1 Low	Medium N	lo No	0	No		1		and therefore likely to have small radius of influence. Contractors will be expected to investigate potential water quality risks and	shafts may be required. There shafts will be constructed and sealed to ensure they do not form a pathway for surface water flow into the	
Chemical Status elements	Chemical GWDTEs test	guidance document available	Good	Good by 2015		1 Low	Medium N	lo No	0	No	Shafts to be sealed to ensure minimal groundwater egress after	1		monitor water quality if required.	aquifer.	
	Chemical Saline Intrusion	guidance document available	Good	Good by 2027		0 Low	Medium N	lo No	0	No	construction	0		No change anticipated	No change anticipated	
	General Chemical Test	guidance document available	Poor	Good by 2015		1 Low	Medium N	ło No	0	No				Potential for dewatering activities to mobilise existing contaminated groundwater. Risk expected to be minor as dewatering short term and therefore likely to have small radius of influence. Contractors will be expected to investigate potential water quality risks and monitor water quality if required.	Pipeline will be installed in shallow trench and no new pathways likely to be created. Where pipejack or micro tunnel crossings required, shafts may be required. There shafts will be constructed and sealed to ensure they do not form a pathway for surface water flow into the aquifer.	
	Prevent and Limit Objective	guidance document available	-	Good by 2015		0 Low	Medium N	lo No	0	No		0		Works unlikely to lead to a change in	n input of pollution to the groundwater	
Supporting elements	Trend Assessment	guidance document available	Upward trend	Good by 2027		0 Low	Medium N	lo No	0	No		0	Potential changes to chemical status assumed localised and low risk			Potential changes to chemical status assumed localised and low risk

					Does the	compone	component comply								
Relevant WFD Quality Element (RNAG) / Measure category 1 (POM)	Category (RNAG)/Lead organisation (PoM)	National Swmi Header (RNAG) / Title (PoM)	scriemer (res/No)		Impact score assessment	a comfidence			Impediment to GES/GEP	Compro mises water body objective s	Mitigation applied	Post mitigatio n impact score (-2 to 3)	Change in groundwater levels by temporary dewatering		
Trend Assessment	Domestic General Public	Pollution from towns, cities and transport	No												
Trend Assessment	Agriculture and rural land management	Pollution from rural areas	No												
Chemical Drinking Water Protecto	ed Agriculture and rural land management	Pollution from rural areas	No												
General Chemical Test	Agriculture and rural land management	Pollution from rural areas	No												
Quantitative Dependent Surface Wa Water Industry		Changes to the natural flow and levels of water	Yes			0	Low	Medium	No	No	No	Assumed mitigation associated with below		Temporary dewatering for construction could lead to temporary reductions in flow. However with appropriate mitigation this is not likely to impede measures to improve flow/ water balance	
Quantitative Water Balance	Water Industry	Changes to the natural flow and levels of water	Yes			0	Low	Medium	No	No	No	ground structures (i.e Managing aquifer recharge			

### Strategic Resource Option surface water assessment for: Is a groundwater assessment required?

T2ST Option C Yes

Waterbody ID	Waterbody name	Waterbody type	Maximum Impact score level 1	Maximum Impact score level 2	Maximum post mitigation impact score level 2	Deterioration between status classes	Impediments to GES/GEP	Compromises water body objectives	Assists attainment of water body objectives
GB106039030334	Thames (Evenlode to Thame)	River	3	0	0	No	No	No	No
GB106039023360	Cow Common Brook and Portobello Ditch	River	1	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required
GB106039023660	Ginge Brook and Mill Brook	River	1	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required
GB106039023600	Mill Brook and Bradfords Brook system, Wallingford	River	1	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required
GB106039023300	Pang	River	1	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required
GB106039023210	Winterbourne	River	1	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required
GB106039023220	Lambourn (Source to Newbury)	River	2	1	1	No	No	No	No
GB106039023174	Middle Kennet (Hungerford to Newbury)	River	1	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required
GB106039017280	Enborne (Source to downstream A34)	River	1	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required
GB106039017210	Penwood Stream	River	1	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required
GB106039017310	Enborne (downstream A34 to Burghclere Brook)	River	1	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required
GB106039017230	Earlstone Stream and Burghclere Brook (source to Enborne)	River	1	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required
GB107042022710	Test (Upper)	River	2	1	1	No	No	No	No
GB107042022700	Test - Bourne Rivulet to conf Dever	River	2	1	1	No	No	No	No
GB107042022770	Dever	River	2	1	1	No	No	No	No
GB107042022740	Sombourne Stream	River	1	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required
GB107042022730	Nun's Walk Stream	River	1	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required
GB107042016310	Monks Brook	River	1	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required
GB107042022580	Itchen	River	1	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required
GB40601G601000	Vale of White Horse Chalk	GroundWaterBody	1	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required
GB40601G600900	Berkshire Downs Chalk	GroundWaterBody	2	1	1	No	No	No	No
GB40602G601600	Thatcham Tertiaries	GroundWaterBody	1	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required
GB40701G501200	River Test Chalk	GroundWaterBody	2	2	1	Uncertain	No	Uncertain	No
GB40701G505000	River Itchen Chalk	GroundWaterBody	1	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required	Level 2 assessment not required



mottmac.com