# 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)

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### THAMES TO SOUTHERN TRANSFER (T2ST)

### Annex B3 Water Framework Directive (WFD) Assessment

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

November 2022

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# 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 50MI/d, 80MI/d and 120MI/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 50MI/d, 80MI/d and 120MI/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) 120MI/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 5Ml/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.

Section	Pipe length	New assets	Trenchless crossings of natural features None		
Section 1 – Water Treatment Works to BS3	18.0km	BS1 WTW and PS BS2 BPT BS3 PS and BPT			
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		

#### Table 2.1: Option B scheme description summary

# 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 120MI/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 120MI/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:

Level 1 assessment	Impact	Impact Score	Description
	Very beneficial	-2	Impacts that, taken on their own, have the potential to lead to the improvement in the ecological status or potential of a WFD quality element for the entire waterbody
Waterbody passes Lovel 1	Beneficial	-1	Impacts that, when taken on their own, have the potential to lead to a minor localised or temporary improvement that does not affect the overall WFD status of the waterbody or any quality elements
WFD assessment	No/minimal	0	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.

#### Table 3.1: WFD assessment impact scoring

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

Торіс	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 RBMP <sup>1</sup> . 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 <b>A</b> .				
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 <u>https://www.gov.uk/government/collections/river-basin-management-plans-2015</u>

### 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

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 de- chlorination 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	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 de- chlorination 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	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.					
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	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 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	Pre mitigation impact score	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	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
				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 de- chlorination 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	Νο	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	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 de- chlorination 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 de- chlorination 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	Pre mitigation impact score	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.	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 mitigatior impact score	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 120MI/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.

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	<ul> <li>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.</li> <li>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.</li> </ul>	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 or assessment due to the nature of cons development and the planning condition which are anticipated to minimise impart	considered in the WFD cumulative truction activities associated with ons that would need to be met; both of act on water environment.
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 cons development and the planning condition which are anticipated to minimise imposed	nsidered in the WFD cumulative truction activities associated with ons that would need to be met; both of act on water environment.
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.

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

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 Summa
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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 & Level 1:	ssasument				Thames (Evenicide to	Cow Common Brook and	Ginge Brook and Mil Brook	Mill Brook and Bradfords Brook	Pang	Winterbourne	Lambourn (Source to	Middle Kennet (Hungerford to	Enborne (Source to downstream Penwoo	d Stream Test	st (Upper) Bourne Rivulet	Test - Bourne Rivulet to conf	Anton - Upper	Dever	Sombourne Stream	Nuri's Walk Stream	Monks Brook	itchen	Vale of White Horse Chalk	Berkshine Downs Chalk	Thatcham Tertiaries	River Test Chalk	River itchen Chalk
Component	Activity	Construction, Operation or Decommissioning	Assumptions / Mitigations assumed to be in place	Comments S	core G110012001010	Portobello Ditch 68:036039023360	68106039023660	Wallingford G0106033023600	68 20 60 3 90 2 3 3 0 3	G8106039023210	Newbury) G0105039023220	Newbury) G8105039323174	A34) G8106039017280 G81060	19017230 G8337	17042022710 G810704202272	Dever	68107042022810	68107042022770	68107342022740	68107042022730	68107042015310 68	1107042022580	68406016601000	G843601G603900	69436036601600	68407016501200	68407016505000
Below ground	Construction/repair of new turnels and conduits	Construction	Tamels and conduits will be constructed such that they will not form a preferential pathetex for the flow of anoundeater	NA Assumed new DS1 W7M and DS and other DDT and DS1	1 1	1	5	5	1	1	1	1			1 1	1	1	1	1	1	1	1	1	1	1	1	-
Below ground	Construction of below ground structures (shathhetaining wall) with associated developing, with no sensitive groundwater leature within 500m	Construction	Risk assessments will be undertaken for excevation works and dewatering to ensure no adverse impact on watercourses, welfand habitats or abstractions.	require below ground structures to be constructed. Assumed below ground structures for all marked T2ST Crossings: Railway south of Steventor, A417, B4494, M4, Writeshoume Road, (600m)	1 NA	4		NA		4		1					N/A		4		4	N/A			4	4	
			Devatering discharge will be treated before discharge.	Iron Snelsmore Common), B4000, A4, River Erborne, A343, Bourne Roulet, Andover Railway Line, B3400, A303 (Mrice), A30, A272, B3049, A3090																							
Below ground	Presence of new underground structure (turnelistat/hoteining wall), with <u>no</u> sensitive groundwater feature within 500m	Operation	groundwater around the pipeline. It required, Land draining will be provided on the upgradient side of the scheme such that they will not cause an increase in groundwater flooding risk. This drainage will be discharged into local-watercourses.	NA	1 NA	4	4	NA	1.1	1	1	4	10 C		a	4	N/A	4	1.0	1.0	4	N/A	1.0	1.0	4	4	1.1
			to mantain tow.	River Lambourn (Kennet and Lambourn Floodplain + 440m), Wick Wood (Kennet and Lambourn Floodplain + 400m), River																							
			Risk assessments will be undertaken for excavation works and deviatering to	Kennet (Kennet Valley Alderwoods = 110m), Beacon Hil WSR (Burghclere Beacon S0m - SR already exists so not scored here / assumed no below ground impact if modifications required),																							
Below ground	Construction of below ground structures (shafthetaining wall) with associated deviatering, within 500m of a sensitive groundwater feature	Construction	ensure no advense impact on watercourses, welfand habitats or abstractions. If impact likely appropriate mitigation to be put in place Dewatering discharge will be treated before discharge.	B304B (River Test SSSI and East Acton Common = 250m), River Test (River Test SSSI and East Acton Common = 0m), River Dever (River Test SSSI = 0m)	2 NA	NIA	NA	NA	NA	NA	2	2	N/A P	/A	N/A N/A	2	N/A	2	N/A	N/A	N/A	N/A	N/A	2	2	2	NA
				Akolerishiv down passes through SP21, 2 and 3 Thatcham Tertiaries passes through SP22 and 3 River Test Chalk passes through SP21, 2 and 3																							
Bainsmand	Presence of new underground structure (turnelistrat/heteining wall) within 500m of a		Pipeline bedding material will be such that it facilitates the movement of groundwater around the pipeline. It required, Land drainings will be provided on the movement of the second			NA	NA			NA			NA		N/A N/A		N/A		N/A	N /A	N/A	N/A					
Below ground	sensitive groundwater feature	Operation	upgradient side of the scheme such that they will not cause an increase in groundwater flooding risk. This drainage will be discharged into local-watercourses to maintain flow.	R/A	2 NA	NA	NA	NA	NA	NA	2		N/A P	/A	N/A N/A	-	N/A	2	N/A	N/A	N/A	N/A	N/A	-	2	2	NA
Below ground	leature within 500m. Construction of new cutting with external deveatering within 500m of a sensitive	Construction	NA Risk assessments will be undertaken for excevation works and dewatering to ensure no adverse impact on watercourses, welland habitats or abstractions. If	NA	1 NA	NA	NA	NA	NA	NA	NA	NA	N/A P	/A	N/A N/A	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	Canadam	Impact likely appropriate mitigation to be put in place Deveatering discharge will be treased before discharge. Appropriate precautions will be taken when working in the channels of or adjacent																								
Below ground	Construction of new culvest	Construction	to watercounter, providing new curvets and or extending curvets, in required, to appropriately manage flood risk and the potential for deposition of sit 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 Environment	NA	1 NA	NA	NA	NA	NA	NA	NA	NA	N/A. P	/A	N/A N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			Agency's PPGs (PPG1: General Guide to Prevention of Pollution; PPG5: Works and maintenance in or near water, and PPG23 Maintenance of structures over water).																								
Catchment management	Knowledge suthange or education programme Changes to land management practices to reduce pesticides, nutrients, sediment or flooding relating to a groundwater source	Operation Operation	NA The impact of the acheme will be feit in the long term. The acheme will be focused around the SP21 and 2 areas of the groundwater source of interest. These	NA NA	-1 N/A	N,G.	N/A N/A	N/A N/A	N/A N/A	N/A	N/A N/A	N,CA N,CA	N/A P	/A /A	N/A N/A N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	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	Charges to land management practices to soluce pesticides, nutrients, aediment or flooding relating to a surface water source	Operation	An immediate change may be seen in the water quality downstream of the changes to land management. It is assumed there is a high level of engagement from those relevant for reducing the parameter of imment.	NA	-2 N/A	N,GA	N/A	N/A	N/A	N/A	N/A	N,OK	N/A P	/A	N/A N/A	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 Calchment management	River reationation - construction phase River reationation - after construction	Construction Operation	There may be minor short term impacts during the construction phase River restorations will be selected in line with WNEP criteria. The restorations are to improve hydrological fores in the local area	NEA	1 N/A -2 N/A	N,CR N,CR	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	NGK NGK	N/A P N/A P	/A /A	N/A N/A N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	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 Catchment management	Flow automentation and licensing Terrestrial habitat creation/inanagement - creation Terrestrial habitat creation/inanagement - management	Operation Construction Operation	NA NA NA	NA NA NA	N/A N/A N/A	N,OK N,OK N,OK	N/A N/A N/A	N/A N/A N/A	N/A N/A N/A	N/A N/A N/A	N/A N/A N/A	N,OA N,OA N,OA	N/A P N/A P N/A P	/A /A /A	N/A N/A N/A N/A N/A N/A	N/A N/A N/A	N/A N/A N/A	N/A N/A N/A	N/A N/A N/A	N/A N/A N/A	N/A N/A N/A	N/A N/A N/A	N/A N/A N/A	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	Natural water relention-measures (including NFM and wetland creation) - construction Natural water relention-measures (including NFM and wetland creation)	Construction Doeration	NA NA	NA NA	s N/A	N,GA N,GA	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N,OA N,OA	N/A P N/A P	/A /A	N/A N/A N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	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 Catchment management	Fasteries management Sustainable Urban Drainage Systems (SUDS) - construction Sustainable Urban Drainage Systems (SUDS) - other construction	Operation Construction	Addumed to be in piece due to WNEP driver of Emission Chiefs to Improve acceleral status of the river. N/A Addument to researched as an option at local scale.	NA NA	-2 N/A 1 N/A N/A	N,GA N,GA N,GA	N/A N/A N/A	N/A N/A N/A	N/A N/A	N/A N/A	N/A N/A	N,OA N,OA N.OA	N/A P N/A P N/A P	/A /A	N/A N/A N/A N/A	N/A N/A	N/A N/A N/A	N/A N/A N/A	N/A N/A	N/A N/A N/A	N/A N/A	N/A N/A N/A	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	biograted calchment management	Operation	This assumes a short term benefit to WFD as imposed usage reduction should allow for recovery in the river or aquiter which may improve WFD status from pre- restriction status.	NEA	-2 N/A	N,GA	N/A	N/A	N/A	N/A	N/A	N,0.	N/A P	/A	N/A N/A	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 in the channels of or adjacent to watercourses, providing new culvents and or extending culvents, if required, to appropriately manage flood risk and the potential for deposition of all or release of when here an ensure data working and the potential for deposition of all or release of the potential or an ensure of the second seco																								
Culvert	Construction of new inverted siphon or drop inlet culvert	Construction	measures will be in time with the requirements set out within the Environment Agency's PPGs (PPG1: General Guide to Prevention of Pollution; PPG5: Works and maintenance in or near water, and PPG22 Maintenance of structures over	NPA .	1 N/A	N,GK	M/A	N/A	N/A	N/A	N/A	N,OK	N/A P	/A	N/A N/A	N/A	M/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Culet	Presence of new calvert, in head-uniers or on-dmirace distres Presence of new calvert mid or lower catchment	Deration Operation	water). Accessitate inconventents to local habitat to offset the preserves of the culent No assumed milications	NA	1 N/A 2 N/A	N,OL N,OL	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N,OA N,OA	N/A P N/A P	(A (A	N/A N/A N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A
Culet Culet	Presence of new invested sights or doo interculent Removal of significant in channel watercourse structure (such as impassable weir) Removal of existing calends or common intercontents	Operation Decommissioning Decommissioning	No assumed militations No assumed militations No assumed militations	NA NA	-2 N/A	N,OK N,OK	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	NGA NGA	NA P NA P	/A	N/A N/A N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	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	High volume discharge of water with a quality element of higher WFD status than the necession water body.	Operation	No assumed mitigations	YEA	-2 NA	NA	NA	NA	NA NA	NA	NA	NA	N/A P	(A	N/A N/A	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	serval-loss unter hody Low volume discharge of series with a quality element of the same or higher WFD status than the sociation series body	Operation	No assumed mitigations	NA .	1 NA	NA	NA	NA	NA NA	NA	NA	NA	N/A P	/A	N/A N/A	N/A	N/A N/A	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	Low votume discharge of water with a quality element of a lower WFD status than the inclusion water body. Low votume discharge of water with a quality element of the same WFD status as the inclusion water body.	Operation	No assumed mitigations	NEA	2 NA 0 NA	NA NA	NA	N/A N/A	NA NA	NA	NA	NA	N/A P	/A /A	N/A N/A N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	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	High volume discharge of water with a quality element of the same WFD status as the includion water body. New W7W discharge to watercourse.	Operation	No assumed mitigations No assumed mitigations	NEA	1 NA	NA NA	NA	N/A N/A	NA NA	NA	NA NA	NA	N/A P N/A P	/A /A	N/A N/A N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A 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
Discharge Discharge	Tourables of water via a stuer, cancel or assurchest. New discharge of highly ualine water to a coastal or transitional waterbody. New discharge of highly saline water to a surface waterbody or essurdantian	Oscalion Oscalios Oscalios	No assumed mitoations No assumed mitoations No assumed mitigations	NEA NEA	2 NA 3 NA 3 NA	NA NA NA	NA NA	NA NA NA	NA NA NA	NA NA NA	NA NA NA	NIA NIA NIA	N/A P N/A P N/A P	/A /A /A	N/A N/A N/A N/A N/A N/A	N/A N/A	N/A N/A N/A	N/A N/A N/A	N/A N/A N/A	N/A N/A N/A	N/A N/A N/A	N/A N/A N/A	N/A N/A N/A	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 outfail structure to a watercourse, coastal waters, transitional	Construction	Appropriate precautions will be taken when working in the channels of watercourses, to appropriately manage food risk and the potential for deposition of sit or release of other forms of suspended material or poliution within the water	NA		NA	NA	NA	NA	NA	NA	NA	N/A	/A	N/A N/A	N/+	N/A	N/A	N/A	N/A	N/A	NA	NA	N/A	N/A	N/A	N/A
Discharge	nemes or resented. Cessarios of existing discharge to a watercourse	Construction	convers. At measures set be in line with the requirements set out within the Environment Agency's PPGs (PPG: Convent Guide to Presention of Pollution; PPGS: Works and maintenance in or near water). No assumed mitications	NA	2 14	NA	NA	NA	NA	NA	NA	NA	N/A	(A	N/A N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Distance	New York and the second s		Appropriate precautions will be taken when working in the channels of watercourses, to appropriately manage food risk and the potential for deposition of still or release of other terms of suspended material or pollution within the water			NA	NA			NA		NA			N/A N/A	N/A	N/A	N/A	N/A	N/A		N/A		11.54	N/A	N/4	N/A
Discharge	Maintenance and use of mer, coasts or transitional water outsit	Operation	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 in or near water).	hen	° ř	hin		nn.	~	-	-	nin.		~	nya nya	10.0	-	ate	ny n	n)n	100	100	-	nin.	10	n)n	N/A
Groundwater Groundwater	Construction of a new abstraction borehole headworks and associated infrastructure Relativityment of exteriors boreholes	Construction Construction	No assumed miligations Work will be carried out under accrossriate consent from the EA	NA NA	0 N/A 0 N/A	N,GA N,GA	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N,OA N,OA	N/A P N/A P	/A /A	N/A N/A N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	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	Maintenance and use of abstraction borshole infrastructure	Operation	No assumed mitications Appropriate precautions will be taken when working in the channels of or adjacent	NA	Q N/A	N,OK	N/A	N/A	N/A	N/A	N/A	N,OK	N/A P	(A	N/A N/A	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	Creation of significant areas of ripartan habitats	Construction	to watercourses, to appropriately manage flood risk and the potential for deposition of 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 Environment Acanon's PPGs (PPG) - General Guide to Provention of Pollution:	NA	-2 N/A	N,05.	N/A	N/A	N/A	N/A	N/A	N,0A	N/A P	/A	N/A N/A	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). Appropriate precautions will be taken when working in the channels of or adjacent		_									_													_
Habitat	Minor habitat creation	Construction	to watercourses, to appropriately manage food risk and the potential for deposition of silt or release of other forms of suspended material or pollution within the water column. All measures will be in fine with the requirements set out within the	NA	-s N/A	N,O.	N/A	N/A	N/A	N/A	N/A	N,OA	N/A P	/A	N/A N/A	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). Accessing on a dimensional statement of the statement of a statement of a statement of a statement.											_													
Habitat	Daylighting of existing culverts	Construction	to watercountest, to appropriately manage flood risk and the potential for deposition of all or release of other forms of suspended material or pollution within the column. All measures will be in line with the requirements set out within the	NA	-s N/A	N,GA	N/A	N/A	N/A	N/A	N/A	N,0A	N/A P	/A	N/A N/A	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 Poliution; PPG6: Works and maintenance in or near varied; Appropriate precautions will be taken when working in the channels of																								
Habitat	Channel realignment with natural bed substrate and good riparian connections	Operation	watercourses, to appropriately manage flood risk and the potential for deposition of silt or release of other torms of suspended material or pollution within the water column. All measures will be in line with the requirements set out within the pollution.	NA	-s N/A	N,O.	N/A	N/A	N/A	N/A	N/A	N,0A	N/A P	/A	N/A N/A	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). Appropriate precadions will be taken when working in the channels of watercourses, to appropriate manage food risk and the optimital for descellation of											_													
Habitat	Channel realignment with artificial bankabase	Operation	silt 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 Environment Agency's PPGs (PPG1: General Guide to Prevention of Pollution;	NA .	t N/A	N,(A	N/A	N/A	N/A	N/A	N/A	N,0A	N/A P	/A	N/A N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			PPGC: Works and maintenance in criser underf. Appropriate precautions will be taken when working in the channels of wetercourses, to appropriately manage flood risks and the potential for deposition of	Assumed new intake location near Drayton. As this option GIS																							
Intako	Construction of modification of a new pumping station and/or intexe tron new voter (fiver or coastal waters)	Construction	Int or release of other toring of subjected material or potation within the noter column. All measures will be in the with the requirements set out within the Environment Agency's PPGs (Denses) Guide to Prevention of Pollution; PPGS: Works and maintenance in or near water).	begins at a new WTW and PS, assessment for this WB is an assumption based on previous assessments at Gate 1	1	N,CK	N/A	N/A	N/A	N/A	N/A	N,CK	M(A P	/A	N/A N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	ħ,/A
Itake	Maintenance and use of river intakes	Operation	Appropriate precautions will be taken when working in the channels of watercourses, to appropriately manage flood risk and the potential for deposition of sill or release of other terms of supported material or pollution within the water	NA		NA	NA	NA	NA	NA	NA	NA	N/A 9	/A	N/A N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			country, Air heads the last in the level with the regardments and converting the Environment Agency's PPGs (PPG1: General Guide to Prevention of Pollution; PPGS: Works and maintenance is on near version).																								
Intake	Maintenance and use of coastal intakes	Operation	repopulate precatation we as as when when when when young in the creations of watercourses, to appropriately manage food risk and the potential for deposition of still or release of other terms of suspended material or pollution within the water column. All measures will be in line with the requirements set out within the	NEA	1 NA	NA	NA	NA	NA	NA	NA	NA	N/A P	/A	N/A N/A	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	Use of mixing ground and surface water abstraction Toences, within Toence	Operation	Environment Agency's PPGs (PPG1: General Guide to Prevention of Pollution; PPGG: Works and maintenance in or near sected. No assumed mitigations	NA	0 NA	NA	NA	NA	NA	NA	NA	NA	N/A P	/A	N/A N/A	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	Use of existing surface water and groundwater abstraction licences, within existing licences contributes for unside of the secent actual rates. Emergency or drought use of existing surface water or groundwater abstraction	Operation	No assumed mitigations	NA	2 NA	NA	NA	NA	NA.	NA	NA	NA	N/A P	/A	N/A N/A	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	outside of licence conditions New at increased surface water abstraction New at increased repurchaster abstraction	Operation Operation	No assumed mitoations No assumed mitoations	NA NA	a a NA	NA NA	NA	N/A N/A	NA NA	NA NA	NA NA	NA	N/A P N/A P	/A /A	N/A N/A N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	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 course or constitional underbody abstraction france. Reduction of counted or transitional waterbody abstraction licence Increase of counted or transitional waterbody abstraction licence	Oscation Oscation Oscation	No assumed mitoastons No assumed mitoastons No assumed mitoastons	NA. NA. NA.	NA NA 2 NA	NA NA NA	NA NA	N/A N/A N/A	NA NA NA	NA NA NA	NA NA	NA NA NA	N/A P N/A P	/A /A	N/A N/A N/A N/A	N/A N/A	N/A N/A	N/A N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A 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	nalarcourse constitution	Construction	not form and partial calibration for organization fore. Assumed that bedding material for pipelines will be constructed such that they do	NA	0 0	•	NA	0	0	0	NA	NA	N/A	,	0 N/A	N/A	0	N/A	0	0	0	•	0	0	0	0	•
Pipelines	Trenching and loying of pipe lines involving watercourse crossings	Construction	Assumed that watercourse crossings will be carried out using directional drilling or if the watercourse needs to be temporarily diverted, appropriate measures will be in place to protect ecology and watercourse will be returned back to its returnal state.	Cange Bistok, River Lantbours, River Kennet, River Entorne, Bourne Rivulet, River Test, River Dever	1 NA	NA	1	NA	NA	NA	1	1		/A	N/A 1	1	N/A	1	N/A	N/A	N/A	N/A	N/A	1	N/A	1	N/A
Pipelines	Tenching and bying of pipe lines involving large watercourse crossings with in channel excellentions.	Construction	Flood risk assessment will be carried out to ensure that new in channel leatures will not externals instant on finish this assumed milliontion.	NA NA	2 NA	NA	NA	N/A Q	NA.	NA	NA	NA Ø	N/A P	/A	N/A N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A 0	N/A 0	N/A	N/A	N/A
Pipelines Pipelines	Draining of pipalines for maintenance removal/deconversationing of existing pipaline (no watercourse crossings)	Operation Decommissioning	Evalue is desired to local watercourse, this will be short term and temporary impacts only. No assumed mitigations	NA NA	1 1 0 N/A	1 NJA	t N/A	s N/A	1 N/A	1 N/A	1 N/A	1 NJCA	s AUA P	/4	1 1 N/A N/A	1 N/A	1 N/A	1 N/A	1 N/A	1 N/A	1 N/A	1 M/A	1 N/A	1 N/A	1 N/A	1 N/A	1 N/A
Pipaires	sensival/decommissioning of existing pipeline (involving watercourse crossings)	Decommissioning	Appropriate precautions will be taken when working in the channels of watercourses, to appropriately manage food risk and the potential for deposition of sit or release of other forms of supported material or pollution within the water outputs. At measures will be interesting to main the moder of the support of the s	NA	0 N/A	N,(A	N/A	N/A	N/A	N/A	N/A	N,O.	N/A P	/A	N/A N/A	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	New about eround platines (crossing watercourse)	Contractan	Environment Agency's PPGs (PPG1: General Guide to Presention of Pollution; PPG5: Works and maintenance is or near assist). N/A	NA	2 N/A	N,OL	N/A	N/A	N/A	N/A	N/A	N,O.	N/A P	(A	N/A N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Forlan Forlan markir	New above around elections lost cossion autorrounal Temporary electrons to support network uprades or changes Construction of reservoir (set back from settercourse)	Contraction Deration Contraction	N/A N/A No assumed millioadore	NA NA	G N/A 1 N/A N/A	N,CA N,CA 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	N,OK N,OK N,OK	N/A P N/A P N/A P	/A /A	N/A N/A N/A N/A	N/A N/A N/A	N/A N/A N/A	N/A N/A N/A	N/A N/A N/A	N/A N/A N/A	K/A K/A K/A	N/A N/A N/A	N/A N/A N/A	N/A N/A N/A	N/A N/A N/A	N/A N/A N/A	N/A N/A N/A
reservair	Construction of new storage reservoir (in line/next to watercourse - within \$00m)	Construction	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 forms of supported material or pollution within the water otherm. All measures will be to be with the material or pollution within the water otherm.	NA	3 N/A	N,(A	N/A	N/A	N/A	N/A	N/A	N,O.	N/A P	/A	N/A N/A	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 Poliution; PPG5: Works and maintenance is or near wated, Appropriate precautions will be taken when working in the channels of																								
haservair	Modification of an existing storage reservoir	Construction	intercourses, to appropriately manage food risk and the potential for deposition of sits or release of other torms of exepanded material or poliution within the water column. All measures will be in from with the measurements and out within the Development Automatic (PDD): (Intercourse Code)	NA	a N/A	N,0.	N/A	N/A	N/A	N/A	N/A	N.(A	N/A P	/A	N/A N/A	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 assist. Appropriate precautions will be taken when working in the channels of watercourses, to appropriate meanage food risk and the nearest of the description of																								
haservsir	Preserve of new or modified subsing storage reserve?	Operation	sill or release of other torns of suspended material or polation within the water column. All measures will be is loss with the requirements and out within the Environment Agency's PPGs (PPG I: General Guide to Presention of Polation; month).	NA	3 N/A	N,GA	N/A	N/A	N/A	N/A	N/A	N,OA	N/A P	/A	N/A N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Mudification of an addition payors was adde addressed in the		Pro-se: Works and mantenance is or near weller. Appropriate precautions will be taken when working close to channels of wetercourses, to appropriately manage flood risk and the potential for discharge at																								
menervoir	Modelcadon or an execting service reservoir educant in class provinty to whiercourse	Construction	chlorinated water into the watercourse. All measures will be in line with the requirements set out within the Environment Agency's PPGs (PPGs): General Guide to Prevention of Pollution; PPGS: Works and maintenance in or near value).	NPA .	1 N/A	N,OK	N/A	N/A	N/A	N/A	N/A	N,OA	N/A P	/A	N/A N/A	N/A	M/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Inserviir	Preservos of new reservoir or modified existing service reservoir in close proximity to	Operation	Appropriate precautions will be taken when working close to channels of extensionanes, to appropriately manage flood risk and the potential for discharge of chicrinated water into the watercourse. All measures will be in fine with the	NA	1 N/A	N,O.	N/A	N/A	N/A	N/A	N/A	N,CA	N/A .	/A	N/A N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Name and the second sec	Construction	requirements set cut within the Ensironment Agency's PPGs (PPGs). General Guide to Prevention of Pollution; PPGG: Works and maintenance in or near water). No assumed policipations	NA I					8/4				N/2	14	N/A MA			*/*	214		1/4	N/A		-	Pile	N.A.	
manerysir manerysir	Modification of an existing service reservoir not in dose proximity to watercourse. Preservos of new reservoir or modified existing service reservoir not in close proximity to watercourse.	Operation	No assumed mitigations	NA NA	0 N/A	N,IA N,IA	N/A N/A	N/A N/A	N/A N/A	N/A	N/A	N,OA N,OA	N/A P	/A /A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A	N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A
manerysir manerysir Townsfar annerstand	Floating or constructed shade for the reservoir to reduce evaporation Floating or constructed shade for the reservoir to reduce evaporation New or continuation of contractual agreement between companies to continue	Operation Construction	NA NA	NA NA	2 N/A 1 N/A	N,OK N,OK N,OK	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N,OA N,OA N.OA	N/A P N/A P	/A /A	N/A N/A N/A N/A	N/A N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	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	providine transfer with no chanse to abstraction licence associated Contractual agreement between companies to continue providing transfer with decrease in abstraction licence associated	Operation	N/A	NA	A N/A	N,(A	N/A	N/A	N/A	N/A	N/A	N,OA	N/A P	/A	N/A N/A	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 Usage changes and	Contractual agreement between companies to continue providing transfer with increase in abstraction licence associated	Operation	N/A This assumes a short term benefit to WFD as imposed usage reduction should allow for recreary in the shart or	NA .	2 N/A	N/A	N/A	N/A	N/A	N/A	N/A	N,OA	N/A P	/A	N/A N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
abetraction management Usage changes and abetraction management	In our same ways reasonable the energies of endings of details to business and/or household.	Operation	NA	NA	0 N/A	N,GA	N/A	N/A	N/A	N/A	N/A	N,OA	N/A P	/A	N/A N/A	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	a construction of the second second	Operation	For treated water transfer, there is likely to be no WFD impact. For tax water toorete this may have a short term impact changing local tabilities at either end of the tometer should the new water be transferred from river to riser. Any changes to	NA	5 N/A	N,(A	N/A	N/A	N/A	N/A	N/A	N,0.	N/A P	/A	N/A N/A	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	Percover standar of water between water companies Abstraction management. This could include limiting abstractions of valnerable sources in times of drought and using more malliest sources more hequirity. This most lividia auth this hear of the sources areas	Operation	revenuers are assumed to be in place in the short term. This assumes a single abstraction management event is a short term activity, with shattartice, changes provide model and a short term activity.	NA	1 N/A	N,OA	N/A	N/A	N/A	N/A	N/A	N,OA	N/A P	/A	N/A N/A	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	include mentions and over to surface water or issuences. This could include meting some sources to all for recovery of supply.	Operation	This assumes water being tarkened is treated and will be input into the network at	NA I	o N/A	N,GA	N/A	N/A	N/A	N/A	N/A	N,OA	N/A P	/A	N/A N/A	N/A	N/A	N/A	N/A	N/A	R(A	N/A	N/A	N/A	N/A	N/A	N/A
Aberscrich hanagement Usage changes and abstraction management	Tankaring treated water between WBZ Tankaring treated water or treated offward	Operation	Assume waterment works or eno a main. This should not have any WFD impact. Assumes use of water would not be for drinking unless sent to WTW for full beatment.	NA .	s N/A	N,(A	N/A	N/A	N/A	N/A	N/A	N,OA	N/A P	/A	N/A N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
wtii	Modification of an existing WTW or purreing station relation to treated water	Construction	to assumed mitoations	INA B51 WTW and P5 (Cow Common Brook and Postobello Ditch), D52 RPT and R53 RF	g N/A	N(A	N/A	N/A	N/λ	N/A	N/A	N(A	N/A P	·	N/A N/A	N/A	N/A	N/A	Ν/À	N/A	N/A	N/A	N/A	N/A	N/A	NJA	ΝUΆ
10700	Construction of a new WTW or pumping station-relating to treated water	Construction	No assumed mitigations	www.wrl.smb.mcs.P.b.and.BPT (Pang), DS4 BPT and P.S. (Enhome (Source to downsmann Adv)(), BS5 BPT (Test Upper), BS6 PS (Test - Bourne Rhulet to cort Dewe), asking Michaidaver WSR (Anton Upper), existing Crabecod WSR (Naria	0 NA	NA	NA	NA	0	NA	NA	NIA	• •	/A	0 N/A	٥	0	N/A	N/A	0	N/A	٥	0	0	N/A	0	•
3670	Construction of a new WTW or sumaina station-relation to new water	Constantion	No assumed milications	Waik Stream), existing Yew Hill WSR (Itcher)	s N/A	1	N/A	N/A	NA	N/A	N/A	N,OA	N/A P	(A	N/A N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
W7W	Maintenance and use of purnoing stations and WTW	Deration	No assumed millications Appropriate precautions will be taken when working in the channels of instercourses, to appropriately manage flood risk and the potential for deposition of	NA	0 NA	•	NA	NA	0	NA	NA	NA		(A.	0 N/A	0	0	N/A	N/A	0	N/A	•	0	0	N/A	0	•
w7w	Removal of existing WTW and associated discharge	Decommissioning	where we have or over terms of suspended material or pollution within the water column. All measures will be in time with the requirements and out within the Environment Agency's PPDE ("POD's General Calds to Prevention of Pollution; PPDE: Works and maintenance is or near water).	NA	N/A	N,OA	N/A	N/A	N/A	N/A	N/A	N,OA	N/A P	/A	N/A N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
WTH WTH	Small desailsation temporary unit Construction as modification of a desailsation stant	Operation Construction	Assumes no construction is required below ground. Unit would be temporary with no impact on WFD No assumed mitications	NA NA	0 N/A	N,OA N,OA	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A	N,OA N,OA	N/A P N/A P	/A /A	N/A N/A N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A
WTH	Malainance and two of devaluation sheet	Bernetter.	No. on a second address of the second	tere .	O N/A	NO	ALC A	N/A	N/A	84.64	11/4	24.02	ALCA P	-	N/A N/A	NIA	N/A	10.00	2014	14.64	11/4	11/4	10.00	10.00	1000	10.04	N/A

The maximum impact score for each waterbody determines if the waterbody requires further assessment or not. terbodies containing activities that score a 2 or 3 will require a level 2 assessment where mitigation must be demonstrated and PoM, RNAGs and th

Level 1 assessment		P326136678	Description
	Verybeneticial		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	а	Impacts that, when taken on their own, have the potential to lead to a minor localised or temporary improvement that does not affect the ownall WFD status of the waterfood or any ownary elements.
WFD assessment	Nominimal	0	No measurable change in the quality of the water environment or the ability for ternal WED objections in he schlauert
	Low	1	Impacts that, when taken on their own, have the potential to lead to a minor localised, abort-term and fully seventiale effects on one or more of the quality elements but would not reach in the lowering of WPD status. Impacts would be very withink to ownent any tareat WPD colorcitives from being activitied.
Waterbook remaines level 2	Medium	2	Impacts that, when taken on their own, have the potential to lead to a widespread or polonged effect on the quality of the water environment that may result in the temporary reduction is WFD status. Impacts have the potentialito prevent target WFD objectives from being advived.
WFD assessment	нар		Impacts when taken on their own have the potential to lead to a significant effect and permanent deterioration of WID status. 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 as	as corport				Thames (Evenlod	Cow Common Brook and	Ginge Brook and	Mill Brook and Bradfords Brook	in a	Wittehourse	ambourn (Source	Midde Kennet E	nborne (Source	ananod Graam	Enborne Early (downstream A34 and	tone Stream Burghciere	Test - Bourne Rivelet to conf	Denser	Sombourne	Nun's Walk	Marin Brook	itchen	Vale of White	Berkshire Downs	Thatcham	River Test Chalk	Roor Inches Challe
Component	Artivity	Construction, Operation or	Assumptions / Mitigations assumed to be in	Comments	to Thamej	Portobello Ditch	MI Brook	system, Wallingford	GR106039023300	68106039023210	to Newbury)	Newbury)	A34)	58 206039017210	to Burghclere Brook)	k (source to inborne) G810704202271	Dever	68107042322770	Stream	Stream	68107042016210	68107042022580	Horse Chalk	Chalk	Tertiaries	60407016501200	69407016505000
Below ground	Construction/hepsir of newturnels and conduits	Decommissioning	place Tunnels and conduits will be constructed such that they will not form a preferential pathway for the flow of groundeater	NA	1 1	1	1	1	1	1	1	1	1	1	1		1		1	1	1	1	1	1	1	1	1
			Risk assessments will be undertaken for excavation works and	Assumed new CS1 WTW and PS, and other BPT and PS's require below ground structures to be constructed. Assumed below ground structures for all marked T2ST Crossings:																							
Below ground	Construction of below ground structures (shafthetisining valit) with associated devatering, with <u>no</u> sensitive groundwater feature within 500m	Construction	devatering to ensure no adverse impact on watercourses, wetland habitats or abstractions. Devatering discharge will be treated before discharge.	Railway acuth of Satewartor, A417, B4494, MA, Winterbourne Road, (600m from Snelamore Common), B4000, A4, River Enforme, A34 (twice), A343, Penvecod Road, Hoping Common / B4640, Woodland area near A34, Whitchurch	1 NA	1	1	NA	1	1	1	1	1	1	1	N/A 1	1	1	1	1	1	N/A	4	1	1	1	1.1
			Piceire beddro material will be such that it facilitates the	Rallway Line, 83400, A303 (thrice), A30, A272, 83049, A3090																							
Below ground	Presence of new underground structure (tunnel/ahalthebaining well), with pp sensitive groundwater 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 concentrative flootion tick. This drainers will be discharged	NA	1 NA	4	4	NA	4		- e -	1.0	1.0	а. 1		N/A 1	1.0	1.1		1.0		N/A	4	- 10 C			1.0
			into local watercourses to maintain flow.	Ever Lambourn Kennet and Lambourn Floodolain * 440ml																							
Balay mound	Construction of below ground structures (shaft/setaining vall) with associated	Frankrije	Risk assessments will be undertaken for excavation works and devatering to ensure no adverse impact on watercourses, wetter hydrotron or storactions. If senant likely encourses,	Wick Wood (Kennet and Lambourn Floodplain = 400m), River Kennet (Kennet Valley Alderwoodk = 110m), Beacon Hill WSR (Burghclere Beacon S0m - SR already exists so not scored	2 NA	NA	NA	NA	NA	NA	2	2	N/A	N/A	N/A	N/A Z	2	2	NA	NA	N/A	NG	N/A	2	NA	2	NA
and g care	devatering, within 500m of a sensitive groundwater feature	Construction	miligation to be put in a subscription in the part where a property of the part of the par	here / assumed no below ground impact if modifications required], 83048 (River Test SSS and East Auton Common = 350m), River Test twice (River Test SSS and East Auton																							
			Pipeline bedding material will be such that it facilitates the movement of groundwater around the pipeline. If required,	Common = Gm), River Dever (River Text SSSI = Gm)																							
Below ground	Presence of new underground structure (tunnel/statitretaining wall) within 500m of a sensitive groundwater feature	Operation	Land drainage will be provided on the upgradient side of the acheme such that they will not cause an increase in groundwater flooding risk. This drainage will be discharged into 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 develoring with <u>no</u> sensitive groundwater feature within 500m	Construction	N/A Risk assessments will be undertaken for excavation works and	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
Below ground	Construction of new cutting with external deviatoring within 500m of a sensitive groundwater feature	Construction	wetland habitatis or abstractions. If impact the warmoodness, willing tablets or abstractions. If impact likely appropriate miligation to be put in place Devalating 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
			Appropriate precautions will be taken when working in the channels of or adjacent to watercourses, providing new culverts and or extending culverts, if required, to appropriately																								
Below ground	Construction of new culvert	Construction	manage flood risk and the potential for deposition of sit or release of other forms of suspended material or pollution within the vater column. All measures will be in line with the requirements act out within the Environment Agency's PPGs	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
			(PPG1: General Guide to Prevention of Polizion; PPG2: Works and maintenance in or near water: and PPG23 Maintenance of structures over water).																								
Calchment management	Knowledge suchange or education programme Changes to land management practices to reduce peakicides, nutrients, sediment or ficciling satisfies to a proceedinger source.	Coeration	NA The impact of the achieve will be felt in the long term. The achieve will be locused around the SP21 and 2 areas of the excended researce of interest. These archieves are smaller	NA NA	d 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
Calchment management	Changes to land management practices to reduce pesticides, nutrients, sediment or	Operation	scale than surface value. An immediate change may be seen in the value quality downstream of the changes to land management. It is	NA	-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
Calchment management	Roang heating to a sumace valuer acurce River restoration - construction phase	Construction	assumed there is a top sole of engagement from trose relevant for reducing the parameter of interest. There may be mixed abort term impacts during the construction phase	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
Calchment management	River restantion - after construction	Operation Operation	Rowr reakcrations will be selected in line with WINEP criteria. The reastorations are to improve hydrological flows in the local area NA	NA NA	-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
Calchment management Calchment management Calchment management	Terrestrial habitat creation/management - creation Terrestrial habitat creation/management - management	Construction Construction	NA NA NA	NA NA	1 NA 1 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	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
Calchment management Calchment management	Natural water extension measures (including NFM and wetland creation) - construction Natural water retention measures (including NFM and wetland creation) Flabories management	Overation Operation	NA Assumed to be in place due to WINEP driver or similar criteria to increase ecological status of the river.	NA	-1 NA -2 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 NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA
Calchmert management Calchmert management	Sustainable Urban Drainage Systems (SLDS) - construction Sustainable Urban Drainage Systems (SLDS) - after construction	Construction Operation	NA Assumed to presented as an option at local scale. This assumes a short term benefit to 1//ITI == incomed	NA NA	1 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	NA NA	NA NA	N/A N/A	N/A N/A	NA NA	NA NA	NA NA	NA NA	NA NA
Calchment management	Integrated catchment management	Operation	reduction should allow for recovery in the river or signifier which may improve WIPD status from pre-restriction status.	NA	-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
			Appropriate precautions will be taken when working in the channels of or adjacent to watercourses, providing new culturits and or estending culturits, if required, to appropriately manage flood risk and the potential for deposition of sit or																								
Cultert	Construction of new inverted siphon or drop inlet culvert	Construction	resease of other forms of auspended material or policion within the water column. Al measures will be in line with the requirements as do within the Environment Agency's PPGs (PPG1: General Guide to Prevention of Policion: PPG2:	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
Culari	Presence of new cubert. In New Analysis or designed	Cognition	works and maintenarios in or near valer: and PPG23 Maintenance of structures over water). Appropriate improvements to local habitat to offsat the	NA	1 14	AND.	NA	N <sup>r</sup> A	N <sup>4</sup>	NA	NA	NA	NA	Nž	NA	NA		NA	NA	NA	N <sup>ra</sup>	N <sup>ra</sup>	N4	NA	NA	Nt	N <sup>2</sup>
Cuteri Cuteri	Dreasece of new cubert mid or lower cutchment Presence of new cubert mid or lower cutchment Presence of new inverted sighton or drop inlet cubert	Operation Operation	preserve of the cubert No assumed militations No assumed militations	NA NA	2 NA 3 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	NA NA NA NA	N/A N/A	NA NA	NA NA	N/A N/A	N/A N/A	N/A N/A	NA NA	NA NA	NA NA	NA NA	NA NA
Culleri Culleri Discharge	nemove of significant in channel welercourse structure (such as impassable weir) Removel of existing culturits or other in channel welercourse structure High solume discharge of weler with a quality element of higher WIPD status than the	Decommissioning Decommissioning Operation	No assumed mitigationa No assumed mitigationa No assumed mitigationa	NA NA	A NA	NA 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	N/A N/A	N/A N/A	NA NA N/A	N/A N/A	N/A N/A	N/A N/A	NA NA	NA NA N/A	NA NA N/A	NA NA	NA NA
Discharge	Increases unknown discharge of seller with a quality element of a lower WFD status than the increasion water hords. Low volume discharge of weller with a quality element of the same or holes within	Operation	No assumed miligations No was used miligation	NA NA	3 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
Discharge	status than the receiving water body. Low volume discharge of water with a quality element of a lower WFD status than the necesition stater body.	Operation	No assumed miligations	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
Discharge Discharge	Converse automage or water with a quality element of the same WPD status as the neophine water body. High volume discharge of water with a quality element of the same WPD status as the neophine water body.	Operation Operation	No assumed miligations No assumed miligations	NA NA	0 0 1 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 1	N/A N/A	N/A N/A	N/A	NA	NA
Discharge Discharge Discharge	New WYW discrarios to week-course Tourder of water via a river, canal or nexeduct New discharge of highly saline water to a coastal or transitional waterbody New discharge of highly saline water to a coastal or transitional waterbody.	Operation Operation Operation	No assumed mitasiona No assumed mitasiona No assumed mitasiona No assumed mitasiona	NA NA NA	2 N/A 2 N/A 3 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	N/A N/A N/A	N/A N/A N/A	N/A N/A N/A	N/A N/A N/A N/A N/A N/A	N/A N/A N/A	N/A N/A N/A	N/A N/A N/A	N/A N/A N/A	N/A N/A N/A	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
			Appropriate precautions will be taken when working in the channels of wetercourses, to appropriately manage flood risk and the potential for deposition of sit or release of other																								
Discharge	Construction of a new outfail structure to a watercourse, coastal waters, transitional waters or reservoir	Construction	forms of auspended material or polition within the value colume. All measures will be in line with the requirements set out within the Environment Agency's PPGs (PPG1: General Guide to Prevention of Poliution; PPG5: Works and	NA	10 C	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
Discharge	Cessation of existing discharge to a uniercourse	Construction	maintenance in or near water). No assumed mitications Appropriate precautions will be taken when working in the	NA	2 NA	NA	NA	NA	NĂ	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
Discharge	Maintenance and use of river, coastal or transitional valer outfall	Operation	and the potential for deposition of site release of other forms of suspended material or pollution within the water column. All measures will be in line with the requirements set	NA	0 0	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
			out within the Environment Agency's PPGs (PPG1: General Guide to Prevention of Polution; PPGS: Works and maintenance in or near water).																								
Groundwater Groundwater	Construction of a new abstraction borehole headworks and associated infrastructure Refurblahment of existing boneholes	Construction	No assumed miligations Work will be carried out under appropriate consent from the EA	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
Groundwater Groundwater	Drilling new abstraction boreholes Meintenance and use of abstraction borehole infrastructure	Construction Operation	W on will be carried out under appropriate consent from the EA No assumed militations Accountate creaculations will be taken when working in the	NA NA	0 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	N/A N/A	N/A N/A	NA NA	N/A N/A	N/A N/A	N/A N/A	NA NA	NA NA	NA NA	NA NA	NA NA
Habitat	Creation of significant areas of riparian habitate	Construction	channels of or adjacent to watercourses, to appropriately manage flood risk and the potential for deposition of all or release of other forms of auspended material or pollution within the water column. All measures will be in line with the	NA	-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
			requirements set out within the Environment Agency's PPGs (PPG1: General Guide to Prevention of Poliution; PPG2: Works and maintenance in or near weter).																								
			Appropriate precautions will be taken when working in the channels of or adjacent to welencourses, to appropriately manage flood risk and the potential for deposition of sit or release of other torms or suspended material or pollution			N/A	NA	N/A	MA	MA						N/2 N/2			NA			N/A	MA	144			
Paura	ANTER FRAME	Lorenzation	within the voter column. All measures will be in line with the requirements ast out within the Environment Agency's PPGs (PPG1: General Guide to Prevention of Polution; PPG2: Works and maintenance in or near water).	no.																							
			Appropriate precautions will be taken when working in the channels of or adjacent to wetencourses, to appropriately manage flood risk and the potential for deposition of silt or																								
Fabilat	Daylighting of existing culterits	Construction	release of other forms of suspended material or pollution within the valer column. All measures will be in line with the requirements set out within the Environment Agency's PPGs (PPG1: Commal Guide to Prevention of Pollution; PPGS)	NA	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
			Works and maintenance in or near satier). Appropriate precautions will be taken when working in the channels of watercourses, to appropriately manage flood nisk																								
Habitat	Channel realignment with natural bed substrate and good riparian connections	Operation	Forms of auspended method or pollutions within the water column. All measures will be in line with the neg/interests set out within the Environment Agency's PPGs (PPG1: General	NA	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
			Salar to Prevention or Policity, Phase Water maintenance in or near water). Appropriate precautions will be taken when working in the channels of indercourses, to appropriately manage flood risk.																								_
Habitat	Chernel realignment with artificial banks/base	Operation	and the potential for deposition of sit or release of other forms of suspended material or pollution within the value column. All measures will be in line with the requirements set out within the Environment Asservoir a PMGs (PPG51 Convent	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 Pollution; PPGE: Works and maintenance in or near wells). Appropriate precautions will be taken when working in the																								
Intake	Construction or modification of a new pumping station and/or intake from new weier (mar or coastal waters)	Construction	channels of wetercourses, to appropriately manage flood nisk and the potential for deposition of sill or release of other forms of auspended material or pollution within the water column. All measures will be in line with the negulamments set	Assumed new intells near Drayton. As this option GIS begins from proposed SEISPIC WTW assessment for this WB is an assumption based on previous assessments at Gate 1.	1. A.		NA	NA		NA	NA	NA		N/A	NA	NA 1		N/A	N/A	N/A	N/A	N/A			N/A		NA
			out within the Environment Agency's PPGs (PPG1: General Guide to Prevention of Polution; PPG2: Works and maintenance in or near water).	Various PS along roote																							
hinke	Multishermore and can of their lobker	Presention	Appropriate preclamation was on source varies working in the channels of wetercourses, to appropriately manage Rood nik and the potential for departion of all of or release of other forms of suspended material or pollution within the water	hra.		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
			coursel, no researces will be in the with the negl/sements set out within the Environment Agency's PPGs (PPG1: General Guide to Prevention of Publicitor; PPG5: Works and maintenance in or near water).																								
			Appropriate precautions will be taken when working in the charmels of watercourses, to appropriately manage flood risk and the potential for deposition of silt or release of other forms of suppended systemical or includes within the and													-											
- 1994	was as a for the last of control PENES		column. All measures will be in line with the regularization out within the Environment Agency's PPGs (PPG1: General Guide to Prevention of Pollution; PPG5: Works and maintenance in or near water.		NA NA	TeA .	THA .	nn.	The second se	HA.	-en			-tin		N/A	nyA.		-	-	ala.	N/A	nin.	N/A	AJA.	an.	
Licence Licence	Use of existing ground and surface value abstraction licences, within licence conditions and recent abstraction optierra. Use of existing surface water and groundwater abstraction licences, within existing	Operation	No assumed miligations No assumed miligations	NA NA	0 NA	N/A N/A	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	NA NA	NA NA
Licence Licence	Emergency or drough use of existing surface velocities of groundwater abstraction unided of Leona conditions. New or increased surface water abstraction.	Operation Operation	No assured religations No assured religations	NA NA	2 NA	N/A N/A	N/A N/A	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	NA NA	NA NA
Licence Licence	rene or increased oroundwater alleling for New constal or transitional waterback abstraction licence Reduction of coastal or transitional waterback abstraction licence Increases of oraxial for transitional manufack abstraction licence	Deration Operation Operation	reo senarent reitzationa No anarent reitzationa No anarent reitzationa No anarent reitzation	NA NA	NA NA 1 NA	N/A 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	N/A N/A N/A	N/A N/A N/A	N/A N/A N/A	N/A N/A N/A N/A N/A N/A	N/A N/A N/A	N/A N/A N/A	N/A N/A N/A	N/A N/A N/A	N/A N/A N/A	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
Pipelres	Therebing and laying of pipe lines within the interflowes of a calchment (no watercourse crossings)	Construction	Assumed that bedding material for pipelmes will be constructed such that hey do not form preferential pathways for oroundwater flow.	NA	0 0	0	NA	0	0	0	NA	NA	N/A	0	0	0 0	N/A	N/A	0	0	0	0	0	0	0	0	0
			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 winner	Ginge Brook, River Lambourn, River Kernet, River Endorme											N	NA											
- period	www.weig and mying or pipe lines insching watercourse crossings	und MERON	directional drilling or if the watercourse needs to be temporarily diverted, appropriate measures will be in place to protect ecology and watercourse will be returned back to its return take.	Pover Test Indos, River Dever	, AA	Ann.			-44					-10.1								-07					-
Pipelines	Therefore and laying of pipe lines insolving large varianceurse crossings with in channel modifications	Construction	Flood risk assessment will be carried out to ensure that new in channel teatures will not adversely impact on flood risk.	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
Pipelnes Pipelnes Pinelnes	Maintenance of size lines Draining of pipelines for maintenance nervoul / decommissioning of existing sizednes (no autenzourse pressions)	Operation Operation Decommissioning	No assumed millionizes If write is drained to local watercourse, this will be short term and temporary impacts only. No assumed millionizes	NA NA	0 0 1 1 0 NA	0 1 N/A	0 1 NA	0 1 NA	0 1 NA	0 1 NA	1 NA	1 NA	1 NA	0 1 NA	1 NA	0 0 1 1 NA NA	0 1 NA	0 1 NA	0 1 NA	0 1 NA	0 1 NA	0 1 NA	0 1 NA	0 1 NA	0 1 NA	0 1 NA	1 NA
			Appropriate precautions will be taken when working in the channels of watercourses, to appropriately manage fitoid risk and the potential for deposition of sill or release of other forem of watermented medical or cohoico satisfue has eater.																								
Pipelines	nerrovet / decommissioning of existing pipeline (involving watercourse crossings)	Decommissioning	column. All measures will be in fine with the negularments set out within the Environment Agency's PPGs (PPG1: Canaral Guide to Prevention of Pollution; PPG2: Works and metalements in or nor	NA.	0 NA	NÁ	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA NA	NA	NA	NA	NA	N/A	N/A	NA	NA	NA	NA	NA
Foelan Foelan Foelan	New about attuind pipelines (crowing watercourse) New about attuing pipelines (not crowing watercourse) Temporary significes to support network upgrades or changes	Centractien Centractien Operation	N/A N/A N/A	NA NA	2 NA 0 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	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	NA NA NA	NA NA NA	NA NA NA	NA NA NA	NA NA NA
meervair	Construction of mannoir (and back from watercourse)	Construction	No assumed militations Appropriate precautions will be taken when working in the channels of wetercourses, to appropriately manage flood nisk	NA	o NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA NA	N/A	NA	NA	NA	N/A	N/A	NA	NA	NA	NA	NA
reservair	Construction of new storage reservoir (in line/next to watercourse - within 500m)	Construction	and the potential for deposition of sill or release of other forms of suspended material or pollution within the water column. All measures will be in fine with the negutements set out within the Environment Agency's PPGs (PPG1: General	NA	s 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; PPOS: Works and maintenance in or near water). Appropriate precaduons will be taken when working in the channels of watercoar-																								
reservoir	Modification of an existing storage reservoir	Construction	charmes of wearcourses, to appropriately manage food has and the potential for deposition of site release of other forms of suspended material or pollution within the wear column. All measures will be in line with the requirements set	NA	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
L			Guide to Prevention of Pollution; PPG2 (PPG1: General Guide to Prevention of Pollution; PPG2: Works and maintenance in or near weak?. Appropriate precautions will be taken when weaking in the																								
reservair	Presence of new or modified existing storage reservoir	Operation	channels of welercourses, to appropriately manage fixed risk and the potential for deposition of sitt or release of other forms of suspended material or pollution within the weler column. All measures will be in the site	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
			out within the Environment Agency's PPCB (PPCI): General Guide to Prevention of Pollution; PPCB: Works and maintenance in or near water).																								
	Modification of an existing service reservoir advanced in store monimum in	Combustion	Appropriate precautions will be taken when working close to channels of wetercourses, to appropriately manage flood risk and the potential for discharge of chlorizated weter into the maintename. After	N/A												NA											
reservair	watercourse	Londituction	wentcourse. All measures will be in line with the requirements and out within the Environment Agency's PPCa (PPC3): General Guide to Prevention of Polution; PPCG: Works and maintenance in or near water).	R0	1 NA	NA	NA	NA	NA	NA	NA	NA	NA	NÁ	NA	NA NA	NA	NA	NA	NA	NA	NA	NA	NĂ	NA	NA	NA
			Appropriate precautions will be taken when working close to channels of wetercourses, to appropriately manage flood nak and the networks for all more an all the second																								
reservair	reserves of new reserveir or modified existing service reserveir in close prosimity to watercourse	Operation	watercourse. All measures will be in line with the requirements act out within the Environment Agency's PPGs (PPG): General Guide to Prevention of Pollution; PPGS: Works and maintenance in or exercise	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
reservair	Modification of an existing senice reservoir not in close proximity to watercourse	Construction	No assumed miligations	NA	0 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
reservár teservár teservár	Incorrection to anterpretarian Electrical or construction shade for the reservoir to reduce evenoration Electrical or constructed shade for the reservoir to reduce evenoration Electrical or constructed shade for the reservoir to reduce evenoration	upenilion Deration Construction	no sissumed mitgations NA NA	NA NA	0 NA 2 NA 1 NA	N/A 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	N/A N/A 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 NA	NA NA NA	NA NA NA
Transfer agreement	new or continuation of contractual agreement between companies to continue appointer transfer with no charaes to abstraction licence associated Contractual agreement between companies to continue providing transfer with discrease in abstraction [inwew associated]	Operation	N/A N/A	NA	0 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	N/A N/A	N/A N/A	NA	NA NA	NA	NA NA	NA NA
Transfer agreement	Contractual agreement between companies to continue providing transfer with increase in abstraction licence associated	Operation	N/A	NA	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
usage changes and abstraction management Usage changes and	Impose water usage reatriction under emergency drought orders to business and/or household	Operation	reduction should allow for recovery in the river or againer which may improve WIFD status from pre-restriction status. NA	NA .	d NA	NA	NA.	N/A	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
abstraction management	warmwinderson with business of households to reduce water use in times of drought		For treated water transfer, there is likely to be no WFD impact. For new water transfer this may have a short term																								

	Reduce transfer of water between water companies		terr.																										
Usage changes and abstraction management	Abstraction management. This could include limiting abstractions of vulnerable sources in times of drought and using more realisent sources more frequently. This could include wellching from GW to surface water or reservoir sources. This could include realing some sources to all for recovery of supply.	Operation	This assumes a single obtraction management event is a short term scivity, with abstraction changes occurring regularly to allow for necovery.	NA	- 4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Usage changes and abstraction management	Tankering treated water between WIRZ	Operation	This assumes water being tankened is treated and will be inpu into the network at either treatment works or into a main. This should not have any WFD impact.	at 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
Usage changes and shalraction meromenant	Tanketing raw water or invaled effluent	Operation	Assumes use of water would not be for drinking unless sent to WTW for hill invalignment	<sup>D</sup> NA	4	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
WTW .	Modification of an existing WTW or pumping station relating to treated water	Construction	No assured mitigations	NA	0	NA	NA	NA	N/A.	NA	NA.	NA	NA	NA	NA	NA	NA:	NA	NA	NA	N/A	N/A	NA	NA	NA	NA.	NA	NA	NA
ww	Construction of a new WTW or pumping station relating to treated water	Construction	No assumed mitgations	CS1 WTW and PS (Cox Common Brook and Portobello Disch), CS2 BPT and CS3 PS and BPT (Pang), CS4 PS and BPT (Test Upper), BS5 PS (Test - Bourse Related to cort Driver), existing Micheldever WSR (Anton Upper), existing Crabevod WSR (Nan's Wark Steam), existing Yew Hil WSR (Incher)	o	NA	NA	NA	NA	٥	NA	NA	NA	o	NA	NA	NA	0	٥	N/A	N/A	۰	N/A	۰	۰	۰	N/A	٥	o
WIW	Construction of a new WTW or pumping station relating to raw water	Construction	No assumed mitigations	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
WTW	Maintenance and use of pumping stations and WTW	Operation	No assumed mitigations	NA	0	NA	0	NA	NA	0	NA	NA	NA	0	NA	NA	NA	0	0	N/A	N/A	0	N/A	0	0	0	N/A	0	0
WTW	Remoel of mining WTW and associated decharge	Decommissioning	Appropriate precedures will be taken when working in the channels of watercorruns, to appropriately manage flood ratis and the potential for deposition of all or release of other forms of supported material or potation values the water column. All measures will be in free with the negaterrestra as out within the Environment Agency PEGE (PEGE: General Guide to Prevention of Poularium, PPGE: Works and materialization) on many values.	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
w7w	Small desailnation temporary unit	Operation	Assumes no construction is required below ground. Unit would be temporary with no impact on WFD	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
WIW	Construction or modification of a desailnation plant	Construction	No assumed mitigations	NG	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	NA
WTW	Maintenance and use of desailnation plant	Operation	No assumed mitigations	NA	0	NA	NA	NA	N/A.	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

(TW)	Construction or modification of a desailration plant	Construction	No assured militations
TW	Maintenance and use of desailnation plant	Operation	No assumed mitigations
	Each activity has be The maximum impact score for each waterbody de Any waterbodies containing activities that score a 2 or 3 will require a level 2 assessm	in predefined an impact score. termines if the waterbody requires further assessment or not. ent where mitigation must be demonstrated and PoM, RNAGs.	and the data will be considered.
Level 1 assessment	Impact	Impact Score	Description
	Very beneficial	-2	Impacts that, taken on their own, have the potential to lead to the improvement in the ecological status or potential of a WFD quality element for the entire weterbody
	Beneficial	đ	Impacts that, when taken on their own, have the potential to lead to a minor localised or temporary improvement that does not attect the overall VIFD status of the waterbody or any quality elements.
rbody passes Level 1 WFD assessment	Nahrinimal	0	No measurable change in the quality of the water environmen or the ability for target WFD objectives to be achieved.
	Law	4	Impacts that, when taken on their own, have the potential to lead to a minor localized, whori-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 united to pervent any target WFD objectives from being achieved.
sterbody requires level 2	Medium	2	Impacts that, when taken on their own, have the potential to lead to a videoprased or prolonged effect on the quality of the water environment that may make it the temporary reduction in WTD atabas. Impacts have the potential to prevent target WTD objectives from being achieved.
nd steamer	High		Impacts when taken on their own have the potential to lead to a significant effect and permanent deterioration of WFD abdus. Potential for high impact on preventing terget WFD objectives from being achieved.

# **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-chlosination of pipeline water when draining down pipeline before disknare to waterourse.	0	No	No	No	No	Assumed major river crossings will be carried out using HDD or pipejacking Assumes day stanks will be used in pipeline route where potential for interaction with groundwater Assumes dewatering discharge to groundwater or surface water to help maintin 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 hydrocological assessment of the inpacts of temporary dewatering abstraction on flow in the watercourses, and potential influence on SSSs, with focus on impacts on biology Further information about option.	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 SSS/S4C Provision for de-thorination of pipeline water when draining down pipeline befree datuge to waterounde.	1	No	No	No	No	Assumed major river crossings will be carried out using HDD or puppings and the second secon
GB106039023174	TRUE	Middle Kennet (Hungerford to Newbury)	1	Low	Medium	Detailed review of all additional baseline ecological WFD data, including results of any survey already undertaken for this scheme Detailed hydroecological assessment of the impacts of temporary additation for devatiening 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 high maintain flow if distants needed for river crossing these should be located outside of the SSI/SAC. Provision 64 choliniation 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 pipepacing. Use of Cay strains (day bands constructed within the pipeline trench) to be used in pipeline route where groundwater potentially encountered, to ence pipeline route does not become a preferential flow path for groundwater. Assumes dewatering dicharge to groundwater or surface water to high maintain flow.
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 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 SSI 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 pipepacing Assumes days 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 drewatering on flow in the watercourses, and potential influence on SSSs Further information about option.	If shafts needed for river crossing these should be located outside of the SSI 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 popplacing Assumes day 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	Berlishire Downs Chalk	1	Low	Medium	Additional groundwater monitoring to understand groundwater level and how they interact with the scheme Detailed hydroezological assessment of the impacts of temporary abstraction for dewatening on flow in the watercoarses Further information about option.	Dewatering discharge to surface water courses to maintain flow. Use of Cay stands (cay bunds constructed within the pipeline tends) is be used in pipeline route where groundwater potentially encountered, to ensure pipeline route does not become a preferential flow path for groundwater. Shafts to be scaled to ensure minimal groundwater egress after Dewatering to be discharged to local watercourse to help maintain flow	1	No	No	No	No	Assumed major nice cossings will be carried out using HDD or properchang Assume day stanks will be used in pipeline roate where potential for interaction will proundwater 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. Detailed hydroecological assessment of the impacts of temporary abstraction for dewatening on flow in the watercourses Further information about option.	Further investigation into impact on groundwater levels of dewatering for constructions of rearrangement to network water to the provide through neshage transhes; to help minimize the impact of constructions, if required.	1	Uncertain	No	Uncertain	No	Assumed major river crossings will be carried out using HDD or poppading Assume day starks will be used in pipeline roate where potential for interaction will groundwater Assumes dewatering discharge to groundwater or surface water to help maintain flows
GB40602G601600	TRUE	Thatcham Tertiaries	1	Low	Medium	Additional groundwater monitoring to understand groundwater level 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 erroundwater	1	No	No	No	No	Assumed major river crossings will be carried out using HDD or pipejacking Assume: clay stanks will be used in pipeline route where potential for interaction with groundwater Assumes dewatering discharge to groundwater or surface water to helm nanisin 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	

Option	T2ST Option B - SESRO	Go to RNAG/PoM table at bottom of the	page											New surface w	ater abstraction	
Vaterbody ID	GB106039030334										Activity		New or increased surface	New or increased surface	New or increased surface	New or increased surface
Vaterbody name	Thames (Evenlode to Thame)										Construction, Operation or Decommissioning act	tivity	Operation	Operation	Operation	Operation
Vaterbody type	River										Potential Impacts of asset (following considerat embedded mitigation)	ion 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 changes in river processes and habitats upstream and downstream
lydromorphological designation	not designated artificial or heavily modified										Biological Effects		1	~	1	1
Overall status	Moderate in 2015										Hydromorphological supporting elements		√	~	~	~
Overall status objective	Moderate by 2015										Physicochemical Effects		√	~	~	~
							Do	oes the com	ponent comply with WFD ( (post mitigation)	objectives	Chemical effects		x	x	x	x
VFD status Component	WFD quality element	Method of checking compliance	Classification	Objective	Impact score	Data confidence	Design certainty Deterioration between	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 Me	dium	No	No	No	Fish / eels screens included on intake structure to ensure that fish are not drawn into the intake.	0	Source of water for this t will need to increase in o abstraction or discharges abstraction of discharges abstraction from the Tha and therefore changes in The full WPD assessment. Additional abstraction frr required to support the I sufficient to support the Inspacts on biology.	ransfer option is SESRO. T rder to supply the water for from and to the Thames mes to support T2ST, and water quality discharged to the SESRO scheme of the SESRO scheme. This abstraction. The decrease	Ital abstracted volume to r T2ST. This assessment d ut will consider the implic any implications to water rom SESRO to the Thames ne Thames waterbody car ther periods of the order c tion will only occur when f in flow in watercourse exp	supply SESRO reservoir oes not consider the full ations of the additional quality in the reservoir due to the T2ST scheme. be found in the SESRO or fa few additional days is ows in the Thames are ected to have negligible
	Invertebrates	Guidance document available	Moderate in 2015	No Objective	0	Medium Me	dium	No	No	No		0				
Hydromorphological Supporting Elements	Morphology		Supports Good in 2015	No Objective	0	Medium Me	edium 🛛	No	No	No		0	No mea	asurable impact expected	o the morphology of River	Thames
	Ammonia (total as N)		High in 2015	Good by 2015	0	Medium Me	dium I	No	No	No		0				
	Biochemical oxygen demand	Numerical limits for classes	High in 2015	Good by 2015	0	Medium Me	dium 🛛	No	No	No		0	Water quality modelling	has been carried out in co	junction with the SESRO (	ption (see SESRO WFD
Physico-chemical quality elements	Dissolved oxygen	Numerical limits for classes	High in 2015	No Objective	0	Medium Me	edium 🛛	No	No	No	None needed	0	assessment for implication abstraction into and disc	ons on water quality from the harge from SESRO could le	ESRO scheme). It is possib ad to a change in the wate	le that the additional r quality in the reservoir
	рН		High in 2015	No Objective	0	Medium Me	edium 🛛	No	No	No		0	Water quality modelling minor changes in water q	carried out shows that wit Juality in the SESRO reserv	the addition of the T2ST bir and therefore the addi	scheme there are only ion of the T2ST scheme
	Temperature	Numerical limits for classes	High in 2015	No Objective	0	Medium Me	edium 🛛	No	No	No		0	will not change the concl Thames.	usions of the SESRO WFD a	ssessment on water qualit	ty impacts on the River
Priority bazardous substances	Di(2-ethylhexyl)phthalate	EQS directive	Good in 2015	Good by 2015	0	Medium Me	edium 🛛	No	No	No	None needed	0				
Thoney hazar uous substallees	Tributyltin Compounds	EOS directive	Fail in 2015	No Objective	0	Medium Me	dium	No	No	No	None needed	0				

Return to top of the page									Does the c	component comply with WFD	objectives	]		
RNAG/PoM/HHWMM	ы	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	Design certainty	Assists attainment of water body objectives	Impediment to GES/GEP	Compromises water body objectives	Mitigation applied	Post mitigatior impact score (- 2 to 3)	New or increased surface water abstraction
Reasons for Not Achieving Good (RM	52793	5 Invertebrates	No sector responsible		No									
Reasons for Not Achieving Good (RM	51083	8 Invertebrates	No sector responsible	Non-native invasive species	No									No change to
Reasons for Not Achieving Good (RM	51091	4 Phosphate	Water Industry	Pollution from waste water	No									assessment carried out
Reasons for Not Achieving Good (RM	51091	5 Phosphate	Agriculture and rural land management	Pollution from rural areas	No									in SESRO WFD
Reasons for Not Achieving Good (RM	52889	8 Tributyltin Compounds	Water Industry	Pollution from waste water	No									assessment.
Reasons for Not Achieving Good (RM	51387	4 Tributyltin Compounds	Water Industry	Pollution from waste water	No									

-			Citck to go level2assignedimpacts sneet	_																	
c	Dption	T2ST Option B	Go to RNAG/PoM table at bottom of the page																		
	Waterbody ID	GB106039023220									Activity		Below ground structur	es (shaft/retaining wall) with associated dewatering		Maintenance	of pipe lines (including dra	ining pipeline)		New pipe lines involving watercos	rse crossings with no in channel modifications
N	Waterbody name	Lambourn (Source to Newbury)									Construction, Operation or Decommissioning activity			Construction		1	Operation			Constru	ction and operation
`	Waterbody type	River									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 flow velocity and volume (increase or decrease)	Changes in sedimentation	Noire 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	Changes in sedimentation deposition	Changes to water body hydromorphology leading to changes in river processes and habitistu uniteram and downstream
	Hydromorphological designation	Not Designated A/HMWB		-							Biological Effects		~	J	√	√		√ v		1	
c	Dverall status	Moderate		-							Hydromorphological supporting elements		x	J	~	~	×	×	×	1	~
c	Dverall status objective	Good by 2027		_							Physicochemical Effects		4	×	x	×	x	1	x	x	×
							[	Does the com	ponent comply with WF (nost mitigation)	D objective	es Chemical effects		1	×	x	x	x	1	x	x	×
1	WFD status Component	WFD quality element	Method of checking compliance	Classification	Objective	Impact score	Data confidence Design certainty	Deterioration between status dasses	Impediments to	Compromises water body objectives	Mitigation applied	score e si D	omment of the impact of 'Change water quality due to discharge of oundwater to a surface water ody' 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 quality of 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 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
		Fish		Moderate in 2015	Good by 2021	1	Low Medium	No	No	No	Any dewatering needed for the construction		hort term variations in emperature possible, however, is is short term and will be small Jumes compared to river flow,	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 5551 and 5Aci in its own right) crossing occurs within 500m downstream (440m) of the Kenne	et.				Possibility of INNS transfer	Localised changes to sediment deposition patterns expected to have minimal effect on biology at waterbod 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 potentia for localised short term variations in morphology as a result of localised changes to sedimentation. Minimal effect on biology New biolenes and associated below ground
	Biological quality elements	Invertebrates	Guidance document available	High in 2015	Good by 2015	1	Low Medium	No	No	No	will be discharged to the river to help maintain flow 1 If shafts needed for river crossing these should be located outside of the SSSI	L n	erefore impact expected to be egligible	and Limbourne Hoodplain SSS which is also classified as a GWDTE. As this forms part of the riparian zone of the river, an dewatering during construction of the below ground structures (shafts) for the crossing of the river, could impact o the flow and velocity in the river, and the morphology, between the site and the shafts (downstream). This could lease	<sup>9</sup> Draining of pipelines for main infrequent and short term na s	itenance reasons is likely to l iture	ead to no measurable impa	cts to biology, due to its	during draining operation, but this is a potable water pipeline and it is assumed that INNS would be removed during the treatment process	Localised changes to sediment deposition patterns expected to have minimal effect on biology at waterbod scale as a result of new watercourse crossings	structures unlikely to have significant risk on the hydromorphology of the river / WB but potentia for localised short term variations in morphology as a result of localised changes to sedimentation. Minimal effect on biology Draw biodiment and exception biology and the second the second terms of the second second the second terms of the second terms of the second second terms of the second terms of the second second terms of the second terms of the second terms of the second second terms of the second terms of terms of the second terms of terms of the second terms of t
		Macrophytes and Phytobenthos Combined	Calculator available	Moderate in 2015	Good by 2027	1	Low Medium	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	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 waterbod scale as a result of new watercourse crossings	New ppeintes and associated below ground structures unkledy to have significant risk on the hydromorphology of the river / WB but potentia for localised short term variations in morphology as a result of localised changes to sedimentation Minimal effect on biology
	Multismershalenical Comparties	Hydrological Regime		Supports Good in 2015	High by 2027	1	Low Medium	No	No	No	1	L		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 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 potentia 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 Medium	No	No	No	1	L		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 potentia 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 Medium	No	No	No	1										
	Physico-chemical quality elements	Dissolved oxygen	Numerical limits for classes	Good in 2015	High by 2015	1	Low Medium	No	No	No	1										
		pH		High in 2015	Good by 2015	1	Low Medium	No	No	No	1										
		Phosphate	Calculator available	Good in 2015	High by 2027	1	Low Medium	No	No	No	1	ı s	hort term changes to water quality					Pipeline maintenance			
		Temperature	Numerical limits for classes	High in 2015	Good by 2015	1	Low Medium	No	No	No	1	L P	ossible which may lead to imporary changes in water quality arameters. Further assessment ic					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 Medium	No	No	No	1	L re	quired to determine the impact.					standard			
	Priority substances	Lead and Its Compounds	EQS directive	Good in 2015	Good	1	Low Medium	No	No	No	1										
		Nickel and Its Compounds	EQS directive	Good in 2015	Good	1	Low Medium	No	No	No	1	L .									
	Specific pollutants	Copper		High in 2015	High	1	Low Medium	No	No	No	1	L									
ſ	Other chemicals	Zinc		High in 2015	High	1	Low Medium	No	No	No	1										

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Option	T2ST Option B	Go to RNAG/PoM table at bottom of the page																			
Waterbody ID	GB106039023174										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 line (including draining pipeline)	<ul> <li>New pipe lines involving watercourse crossings with no in channel modifications</li> </ul>	New pipe lines involving watercourse crossings with no in channel modifications
Waterbody name	Middle Kennet (Hungerford to Newbury)										Construction, Operation or Decommissioning act	tivity	Construction	Construction	Operation	Operation	Operation	Operation	Operation	Construction and operation	Construction and operation
Waterbody type	River		-								Potential Impacts of asset (following considerat embedded mitigation)	tion of	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)	(including draining pipeline)	crossings with no in channel modifications	New pipe lines involving watercourse crossings with no in channel modifications
Hydromorphological designation	Not Designated A/HMWB										Biological Effects		1	4	V	V	1	1	1	1	4
Overall status	Moderate		]								Hydromorphological supporting elements		1	1	x	x	x	×	x	1	1
Overall status objective	Good by 2021										Physicochemical Effects		1	1	1	1	~	1	~	x	x
							D	oes the compor	nent comply with WF (post mitigation)	FD objectives	Chemical effects		×	x	~	~	~	1	~	x	x
WFD status Component	WFD quality element	Method of checking compliance	Classification	Objective	Impact score	Data confidence	Design certainty	D eterioration 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 '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	Comment of the impact 'Maintenance of pipe lin (including draining pipeline)' on each eleme	f Comment of the impact of 'New pipe s lines involving watercourse crossings with no in channel modifications' on t each element	Comment of the impact of 'New pipe lines involving watercourse crossings with no in channel modifications' on each element
	Fuh		Moderate in 2015	Good by 2021	1	Lov	w Medium	No	No	No		1	Short term variations in temperature possible, however, this is short term and will be reall valuemer proposed to ricer.	Dewatering is assumed to be discharged into River Kennet be quantities to help maintain flow in the river. However, the River Kennet (which is a 5550 in its own right) crossing more within Style discussions.	in					Localised changes to sediment deposition patterns expected to have minimal effect on biology at waterbod 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 elements	invertebrates	Guidance document available	High in 2015	Good by 2015	1	Lov	w Medium	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 559 and a section of the Kennet and Lambourn Roodplan 555 which are also classified as OWDTE. Any devotering during construction of the below ground structures (such as shafts) for the crossing of the twore, could impact on groundwater levels and the flow and velocity in the riser, and the morphology, between the site and the cAsh's (formativant) This rood lised to temporano	Draining of pipelines for main short term nature	itenance reasons is likely to lead	l to no measurable impacts to bi	ology, due to its infrequent and	Possibility of INNS transf during draining operatio but this is a potable wath pipeline and it is assume that INNS would be removed during the treatment process	rr V. Localised changes to sediment " deposition patterns expected to have minimal effect on biology at waterbod 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
	Macrophytes and Phytobenthos Combined	Calculator available	Moderate in 2014	No data available	1	Lov	w Medium	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 flah and biology associated with river and associated floodplain.						Localised changes to sediment deposition patterns expected to have minimal effect on biology at waterbod 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 / W8 but potential for localised short term variations in morphology as a result of localised changes to sedimentation. Minimal effect on biology
Hydromorphological Supporting Elements	Hydrological Regime		Does Not Support Good in 2015	Supports Good by 2021	1	Lov	w Medium	No	No	No		1		Minor changes in Row due to dewatering for the crossing of the river. Any dewatering will be discharged into the waterscurse to be downtain four, but there cauld be mini- builted temporary impacts on Row 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 no significant at a waterbody scale.	Ŕ				Localised changes to sediment deposition patterns expected to have minimal effect at waterbody scale as 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	Lov	w Medium	No	No	No		1									
	Dissolved axygen	Numerical limits for classes	Good in 2015	High by 2015	1	Lov	w Medium	No	No	No		1									
Physico-chemical quality element	s pH		High in 2015	Good by 2015	1	Lov	w Medium	No	No	No		1	Short term changes to water quality					Pipeline maintenance kiehk			
	Phosphate	Calculator available	Good in 2015	High by 2027	1	Lov	w Medium	No	No	No		1	possible which may lead to temporary changes in water quality parameters. Further assessment is required to					unlikely to impact on chemics status as water will be potabl	al le		
	Temperature	Numerical limits for classes	High in 2015	Good by 2015	1	Lov	w Medium	No	No	No		1	determine the impact.					standard			
familia milato i	Iron		High in 2015	High	1	Lov	w Medium	No	No	No		1									
specific pollutants	Triclosan		High in 2015	High	1	Lov	w Medium	No	No	No		1									
			-								•										

Return to top of the page									Does the c	component comply with WFD	objectives		
RNAG/PoM/HHWMM	ы	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	Design certainty	Assists attainmen t of water body objectives	Impediment to GES/GEP	Comprom ises water body objectives	Mitigation applied	Post mitigation impact score (- 2 to 3)
Reasons for Not Achieving Good		521450 Marrophyter and Phytohenthor Combined	Water Industry	Pollution from warts water	No								
Reasons for Not Achieving Good (RNAG)		531451 Macrophytes and Phytobenthos Combined	Agriculture and rural land management	Pollution from rural areas	No								

			Click to go level2assignedimpacts sheet																						
Option		T2ST Option B	Go to RNAG/PoM table at bottom of the page																						
Waterbo		GB107042022700									Activity	Belov	ground structures (shaft/retaining wall) with associated dewatering		Mainter	ance of pipe lines (including drainin	ng pipeline)		New pipe lines involving watercourse	crossings with no in channel modifications		N	New or modified pumping station and/or river	intake	
Waterbo	name	Test - Bourne Rivulet to conf Dever									Construction, Operation or Decommissioning activity		Construction			Operation			Construct	on and operation			Construction		
Waterbo	type	Roer									Potential Impacts of asset (following consideration of embedded mitigation)	Change in water quality discharge of groundwat surface water bod	Let to to a Changes in flow velocity and volume (increase or de	ease) Changes in flow velocity and volume increase or decrease	Changes in sedimentation decosition	Noise and vibration	Change in water quality due new or changes to existing discharge of surface water is surface water body.	e to rto Change in INNS present in surface wither body	Changes in sedimentation deposition	Changes to water body hydromorphology leading to changes in river processes and habitatis contrivers and downstream	Chanses to channel footorist	Changes in flow velocity and volume (increase or decrease)	Overses in sedimentation deposition	Noise and vibration	Changes to water body hydromorphology leading to changes in river processes and habitats upstream and downstream
Hydromo	phological designation	Not Designated A/HMWB									Biological Effects	-	4	1	-	-	1	1	1	~	1	~	1	1	1
Overall s	tus	Good		1							Hydromorphological supporting elements	×	4	4	-	×	x	x	3	4	4	4	4	J	4
Overall s	tus objective	Good by 2015									Physicochemical Effects	-	x	×	×	x	1	×	x	×	x	×	×	×	x
			•						loes the component (post	t comply with WFD object st mitigation)	Oversical effects	1	×	×	×	×	1	x	×	×	x	×	×	×	x
WFD sta	s Component	W/D quality element	Method of checking compliance	Classification	Objective		Impact score	Data confidence Deign containty	Deterioration between status dasses	impediments to ossylate compromises weber	S To 5. Mitigation applied	Comment of the impact of in water quality due to disc groundwater to a surface w body' on each element	Dange gange of Comment of the impact of 'Changes in flow velocity and volum for decrease(' on each element	Comment of the impact of (Increase or "Changes in flow velocity and volume (Increase or decrease each element	Comment of the impact of 'Changes in sudimentation deposition' on each elemen	Comment of the impact of 'Noise and vibration' on each t element	Comment of the impact of 'Change in water quality due to new or changes to existin discharge of surface water in surface water body' on each element	e Comment of the impact of "Change in INNS present in tro surface water body" on each h element	Comment of the impact of 'Changes in sedimentation deposition' on each eleme	Comment of the impact of 'Changes to water body hydromorphology leading to changes in river processes and habitats ti upstream and downstream' on each element	Comment of the impact of 'Changes to channel footprint' on each element	Comment of the impact of 'Changes in flo velocity and volume (increase or decrease on each element	Comment of the impact of 'Changes in sedimentation deposition' on each elemen	Comment of the impact of 'Noise and it 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
Biol	jcal quality elements	mersbote	Guidance document available	High in 2015	Good by 2015		1	Low Medium	No	No 9	If shalls needed for new consing three should be blocked outside the SSS boundary Assume counting of new will be by MCD or proposing	Short term veriations in temperature possible, how is short term and will be or volumes compared to their therefore impact expected negligible	Security a security to the discharged with the Tot in the metical file with the disc . Hypercell disc and the Tot in the rest of the disc of security and the disc of the tot and the file of the tot and the disc and the control SSD which are total of 2010. The disc and the control security and the disc of the disc and the control security and the disc of the disc and the disc and the disc and the disc and the experimental barry control security and the disc and the disc and the disc and the disc and the disc the experimental plants and the disc and the disc and the experimental plants and the disc and the disc and and the disc and the disc and the disc and the disc and the experimental disc and the disc and the disc and the disc and the disc and the disc and the disc and the disc and advances of examples. In the disc and the disc and the disc and the disc and the disc and the disc and the disc and advances of examples. In the disc and the disc and the disc and advances of examples are disc and the disc and the disc and the disc and the disc and the disc and the disc and the disc and advances of examples are disc and the disc and the disc and advances of examples are disc and the dis and the disc	and/one to help designated as exp of anteend exp of anteend to end held The could held could held a a small harges in flow	ipelines for maintenance reasons	s likely to lead to no measurable in	rpacts to biology	Possibility of RNS transfer during draining operation, but this is a potable water popular and it is assumed that RNS would be removed during the treatment process	t Watercourse crossing will be beneath th river (HDD or pipe)adding) therefore no change in audientration expected	New positions and associated below grouns structures unlikely to have significant risk on the hydromology of the how / VMB as they will pass beneath the row and bubbs likely to see shock from the	The BSS Micheldever PS will be construct at the top of the Trat catchment (approximately 4.5km from the main watercourte) Therefore new PS will have to	d The BSE Micheldever PS will be construct at the top of the Trat catchinest (approximately 4.5km from the main matericarus) benefice, no impact on Roo	ef The BS6 Michieldowr PS will be constructs at the bug of the Test catalonest (approximately 4.5km from the main water-course) therefore, no impact on	The BSG Michelsever PS will be const at the top of the Test catchment (approximate) 4.5km from the main waterocourse) therefore, minimal nois whereion impacts expected. No mea	tered at the ESS Michaldower PS will be constructed at the top of the Test caterbanet and papersimetry 4.5 km from the main addeed the main case of the test of the main case of the test of the test of the test of the main case of the test of the test of the test of the test of the test of the test of the test of the test of the test of the test of the test of the test of the test of the test of the test of the test of test of
Hydror	rphological Supporting Elements	Hydrological Regime		Supports Good in 2015	Supports Good by 2015		1	Low Medium	No	No	60	1	Minor charges in flow due to dewatering for the crowing of th dewatering will be discharged into the watercourse to help an their could be minor localised temporary impacts on flow and the construction period	tiver. Any tain flow, but shocky during shock the minor and shock them, and not significan a waterbody scale.						watercourse.	en chantele toorprint	and widolity aspected	Addimentation expected	impact anticipated	пуатопогрязовду кариссия
		Morphology		Supports Good in 2015	No data available		1	Low Medium	No	No 3	60	1													
		Ammonia (total is N)		High in 2025	High by 2015		1	Low Medium	No	No S		1													
		Dissolved oxygen	Numerical limits for classes	High in 2015	High by 2015		1	Low Medium	No	No 3	ia	1 Short term chanses to wait	quitr												
Physico	semical quality element	pH		High in 2015	Good by 2015		1	Low Medium	No	No 3	ie i	2 possible which may lead to in water quality parameter	changes Further	Draining of pipelines for mair no measurable impacts as wi	tenance reasons is likely to lead t ter will be treated to potable	•	Pipeline maintenance highly unlikely to impact on chemi status as water will be treat	Y Ical							
		Phosphate	Calculator available	High in 2015	High by 2015		1	Low Medium	No	No 3	ie i	2 this change	bernsoe	standards			to potable standards								
		Temperature	Numerical limits for classes	High in 2015	Good by 2015		1	Low Medium	No	No 3	ie i	1													
	pecific pollutants	Copper		High in 2015	High		1	Low Medium	No	No 3	ia	1													
Return	o top of the page								lass the component	t comply with WFD placed	tina -				_				1	1		1			
RNAG/P	a/Herwinim	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 Design cartainty (9: 09 ci 19: 19: 19: 19: 19: 19: 19: 19: 19: 19: 19: 19:	sists taismen of water ody sjectives	ent to GES/GEP Comp sets w body objec	romi atter Mitigation applied impa tives	nitigation Delow ground structs at score (- (shaft/setaining wall) associated dewateri	45 68 8	New or increased surface w abstraction	ther										
None						-										-			1				+	-	
																							1		
_															1	1	1		1	1		1			

		1	-										1	1			1	1	1	1
Option	T2ST Option B	Go to RNAG/PoM table at bottom of t	the page																	
Waterbody ID	GB107042022770									Activity		Below ground structures (shaft/retaining	ng wall) with associated dewatering		Maintenance	of pipe lines (including draining	pipeline)		New pipe lines involving wa	tercourse crossings with no in noifications
Waterbody name	Dever		1							Construction, Operation or Decommissioning a	ctivity		Construction			Operation	rr		Construction	and operation
Waterbody type	Rver									Potential Impacts of asset (following considera 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 (increase or decrease)	Changes in sedimentation deposition	Noise and vibration	Change in water quality due t new or changes to existing discharge of surface water int surface water body	o 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
Hydromorphological designation	Not Designated A/HMWB									Biological Effects		1	1	J	1	1	~	~	1	1
Overall status	Good									Hydromorphological supporting elements		×	4	J.	1	×	x	×	1	~
Overall status objective	Good by 2015									Physicochemical Effects		1	×	×	x	×	1	x	x	×
			-				Does th	e component comp bjectives (post miti	ply with WFD gation)	Chemical effects		√	x	×	×	x	~	x	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	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 quality due new or changes to existing discharge of surface water int surface water body' on each element	o Comment of the impact of 'Change in INNS present in o 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
Biological quality elements	Invertebrates	Guidance document available	High in 2015	Good by 2015	1	Low Medi	um 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	Dewatering is assumed to be discharged into River Dever in low quantities to help maintain flow in the river. However, the River Dever crossing occurs with the River Tets SS which is also designed as a SWTEL Los of habitat will be considered in the HIA assessment, if relevant. Any devatering during construction of the belong ground structures (shafts) for the crossing of the	n Praining of pipelines for maintenance re	asons is likely to lead to no mea	surable impacts to biology, as p	iceline contains potable water	Possibility of INNS transfer during draining operation, but this is a potable water pipelini		
	Macrophytes and Phytobenthos Combined	Calculator available	Good in 2015	Good by 2015	1	Low Medi	um No	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	nec, could impact on the flow and velocity in the nec, and the morphology, between the site and the shafts (downteam). This could lead to temporary locatiset changes in flow velocity and volume that could have a minor temporary impact on file and bology associated with new 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 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 Medi	um 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 maintinfin flow to a temporary localized reduction in flow and velocity possible upstream of the discharge point.	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.						
	Morphology		Supports Good in 2015	No data available	1	Low Medi	um No	No	No		1		No impact anticipated on morphology							
	Ammonia (total as N)		High in 2015	High by 2015	1	Low Medi	um No	No	No		1									
	Dissolved oxygen	Numerical limits for classes	High in 2015	High by 2015	1	Low Medi	um No	No	No		1	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	Low Medi	um No	No	No		1	water quality parameters. Further assessment is required to determine this change								
	Phosphate	Calculator available	High in 2015	High by 2015	1	Low Medi	um No	No	No		1	end endinge								
	Temperature	Numerical limits for classes	High in 2015	Good by 2015	1	Low Medi	um No	No	No		1						Pipeline maintenance highly			
	Benzene	EQS directive	Good in 2015	Good	o	Low Medi	um No	No	No		o						status as water will be treated to potable standards			
Priority substances	Lead and Its Compounds	EQS directive	Good in 2015	Good	0	Low Medi	um No	No	No		o									
	Nickel and Its Compounds	EQS directive	Good in 2015	Good	0	Low Medi	um No	No	No		0	No impact anticipated on priority								
	Copper		High in 2015	High	0	Low Medi	um No	No	No		0	substances or specific pollutants								
Specific pollutants	Iron		High in 2015	High	o	Low Medi	um No	No	No		0									
	Toluene		High in 2015	High	0	Low Medi	um No	No	No		0									

Return to top of the page									Does the	component comply v objectives	with WFD			Note: Merge columns if activity appears multiple times
RNAG/PoM/HHWMM	rd	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?	Impact score assessment	Data confidence	Design cert ainty	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			1											

Option	T2ST Option B															
Waterbody ID	GB40601G600900															
Waterbody name	Berkshire Downs Chalk (GW)										Activity			Below ground structures (shaft/retaining v	vall) with associated dewatering	
Waterbody type	Groundwater body										Construction, Operation or Decomm	nissioning		Construction		Operation
Overall status	Poor										Potential impacts of asset (followin consideration of embedded mitigat	ng tion)	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		1								Quantitative effects		√	X	X	√
					 						Chemical effects		X	√	√	X
WFD status Component	WFD quality element	Method of checking compliance	WFD Classificatior	n 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	ow M	ledium N	io I	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.
uantitative Status elements	Quantitative GWDTE test	guidance document available	Good	Good by 2015	1	ow M	ledium N	10 1	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	0	ow M	ledium N	10 1	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	ow M	ledium N	lo	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	1	ow M	ledium N	lo 1	No	No	Any shafts to be sealed to ensure	1		Potential for dewatering activities to mobilise existing contaminated groundwater. Risk expected to be mino as dewatering short term and therefore likely to have small radius of influence. Contractors will be expecte 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.	
status ciencita	Chemical Drinking Water Protected Area	guidance document available	Poor	Good by 2027	1 L	ow M	ledium N	lo I	No	No	construction	1				
	Chemical GWDTEs test	guidance document available	Good	Good by 2015	1 L	ow M	ledium N	lo I	No	No		1				
	Chemical Saline Intrusion General Chemical Test	guidance document available guidance document available	Good	Good by 2027 Good by 2015	0 Li 1	ow M	ledium N	io 1	No	No		0		No change anticipated Potential for dewatering activities to mobilise existing contaminated groundwater. Risk expected to be mino as dewatering short term and therefore likely to have small radius of influence. Contractors will be expecte to investigate potential water quality risks and monitor water quality if required.	No change anticipated 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.	
	Prevent and Limit Objective	guidance document available		Good by 2015	0		ledium N		No	No		0		Works unlikely to lead to a change in i	nput of pollution to the groundwater	
Supporting elements	Trend Assessment	guidance document available		0000 0y 2010	0		Colorn IN					0	Works unlikely to lead to a long term change in the trend			Works unlikely to lead to a long term change in
			Upward trend	Good by 2027		ow M	iedium N	10	NO	NO	1		in this waterbody			the trend in this waterbody
						Does the co	mponent	comply			Note: Merge columns if activity app	ears multi	ple times			

Relevant WFD Quality Element (RNAG) / Measure category (RNAG)/Lead organisation (POM) National Swmi Header (RNAG) / Title (POM) Is this measure (POM) National Swmi Header (RNAG) / Title (POM) Is this measure (PoM) National Swmi Header (RNAG) / Title (POM) Is this measure (PoM) National Swmi Header (RNAG) / Title (POM) Is this measure (PoM) National Swmi Header (RNAG) / Title (POM) Is this measure (PoM) National Swmi Header (RNAG) / Title (POM) Is this measure (PoM) Is this measur								Bocs and	compone	it compiy			
	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	Design certainty	Assists attainme nt of water body objective s	Impedim ent to GES/GEP	Comprom ises water body objective s	Mitigation applied	Post mitigatio n impact score (-2 to 3)	
Chemical Drinking Water Protected Agriculture and rural land management Pollution from rural areas No	Chemical Drinking Water Protecte	d Agriculture and rural land management	Pollution from rural areas	No									
Trend Assessment Agriculture and rural land management Pollution from rural areas No	Trend Assessment	Agriculture and rural land management	Pollution from rural areas	No									
General Chemical Test Agriculture and rural land management Pollution from rural areas No	General Chemical Test	Agriculture and rural land management	Pollution from rural areas	No									

Option	T2ST Option B		-												
Waterbody ID	GB40/01G501200 River Test Chalk (GW)		+								Activity		Below ground structures (shaft/retaining wall) w	th associated dewatering	
Waterbody tune	Ground Waterbedy		-								Construction, Operation or Decommissioning activ	ity .			Operation
Overall status	Poor		-								Potential Impacts of asset (following consideration	n of Chance is accurding to leave by temperature downtoring	Construction Disturbing or mobilising existing poor quality	Creating or altering of pathways along which	Changes in groundwater levels due to presence of shafts
Overall status	Poor by 2015		-								embedded mitigation) Quantitative effects		groundwater by temporary dewatering	existing poor quality groundwater can migrate	and pipeline
overall status objective											Chemical effects	×		· · · · · · · · · · · · · · · · · · ·	×
WFD status Component	WFD quality element	Method of checking compliance	WFD Classification	n WFD Objective	impact score	Data confidence	Design certainty	Deterioration between status classes	Impediments to GES/GEP	Compromises water body objectives	Mitigation applied	E 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 Low	Medium	No N	io N	lo		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 I ow	Medium	Uncertain N	10	Incertain	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.	Two new river crossings of the River Test and River Dever and a road crossing of the B3048 within 500m of GWOTE's. River Test and River Dever crossing locations are beneath the River Test SSI GWDTE (and could be partially with the site) and the River Test Crossing also within the East Aston Common SSI. 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 SSI 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 however, the additional discharge from the extended area of the trenches/shafts. Impacts are currently under and further investigation remained.			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 SSSI and East Asthon Common, 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									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	Good	Foor by 2015		1 Low	Medium	No N	10 N	10		U Overall impact on water balance likely to be minor and temporary with no long term reduction in groundwater flows expected from this works. 1			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 dependent surface water body status	guidance document available	Good	Good by 2027		1 Low	Medium	No N	lo N	lo		1	Potential for dewatering activities to mobilise existing contaminated groundwater. Risk expected	Pipeline will be installed in shallow trench and no	
	Chemical Drinking Water Protected Area	guidance document available	Poor	Good by 2027		1 Low	Medium	No N	lo N	lo		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 nathway for surface	
Chemical Status elements	Chemical GWDTEs test	guidance document available	Good	Good by 2015		1 Low	Medium	No N	lo N	lo	Shafts to be sealed to ensure minimal	1	potential water quality risks and monitor water quality if required.	water flow into the aquifer.	
chemical status elements	Chemical Saline Intrusion	guidance document available	Good	Good by 2027		0 Low	Medium	NO N	NO N	lo	groundwater egress after construction	0	No change anticipated	No change anticipated	
	General Chemical Test	guidance document available	Poor	Good by 2015		1 Low	Medium	No	10 N	10		1	Potential for dewatering activities to mobilise existing contaminated groundwater. Risk expectes 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.	
	Prevent and Limit Objective	guidance document available	-	Good by 2015		0 Low	Medium	No N	NO N	lo		0	Works unlikely to lead to a change in	input of pollution to the groundwater	
Supporting elements	Trend Assessment	guidance document available	Upward trend	Good by 2027		0 Low	Medium	No N	NO N	lo		0 Potential changes to chemical status assumed localised and low risk			Potential changes to chemical status assumed localised and low risk

	inena / bacasinene	8	Upward trend	Good by 2027	0	Low	Medium	No	No	No		0	
								compone			1		
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	Design certainty	Assists attainme nt of water body objectives	Impediment to GES/GEP	Compromises water body objectives	Mitigation applied	Post mitigatior 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	'a Water Industry	Changes to the natural flow and levels of water	Yes		0	Low	Medium	No	No	No	Assumed mitigation associated with below ground structures (i.e Managing aquifer	C	Temporary dewatering for construction could lead to temporary reductions in flow.
Quantitative Water Balance	Water Industry	Changes to the natural flow and levels of water	Vec		0	Low	Medium	No	No	No	recharge and GW discharge to SW etc. will be in place) Subject to further assessment		nowever with appropriate mitigation this is not likely to impede measures to improve flow/ water balance

Option	T2ST Option B															
Waterbody ID	GB40602G601600															
Waterbody name	Thatcham Tertiaries GW										Activity			Below ground structures (shaft/retaining w	all) with associated dewatering	
			-								Construction Opportion of					<b>a</b> <i>i</i> :
Waterbody type	Ground Waterbody		-								Construction, Operation or			Construction		Operation
Overall status	Good										Potential Impacts of asset consideration of embedded mitigation)	(following d	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 2015										Quantitative effects		1	x	x	√
overall status objective	0000 07 2010		_								Chemical effects		×			×
WFD status Component	WFD quality element	Method of checking compliance	WFD Classificatio	on 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 b 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	Good	Good by 2015	1	LLow	Medium	No	No	No			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	c	) Low	Medium	No	No	No	Dewatering discharge to surface water courses to maintain flow. Use of Clay Stanks in		Pipeline will pass within 500m (430m) from the Avery'. 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	s		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 oiseline
	Quantitative saline intrusion	guidance document available	Good	Good by 2015	C	) 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	Good by 2015	1	LLow	Medium	No	No	No			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	C	) Low	Medium	No	No	No			D	No measurable impact anticipated	No measurable impact anticipated	
Chemical Status elements	Chemical Drinking Water Protected Area	guidance document available	Good	Good by 2015	c	Low	Medium	No	No	No			0	No measurable impact anticipated	No measurable impact anticipated	
	Chemical GWDTEs test	guidance document available	Good	Good by 2015	0	Low	Medium	No	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	c	Low	Medium	No	No	No			D	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		C	Low	Medium	No	No	No		(	D	No measurable	impact anticipated	
Supporting ciements	Trend Assessment	guidance document available	No trend		C	Low	Medium	No	No	No		(	No measurable change anticipated			no measurable impact anticipated

							Does the	componei	nt comply	1		Note: N
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	Design certainty	Assists attainme nt of water body objective s	Impedim ent to GES/GEP	Comprom ises water body objective s	Mitigation applied	Post mitigatio n impact score (-2 to 3)	
None	None											1

Note: Merge columns if activity appears multiple times

Strategic Resource Option surface water assessment for: Is a groundwater assessment required? T2ST Option B 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	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	ltchen	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	GroundWaterBodv	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
GB40602G601600	Thatcham Tertiaries	GroundWaterBody	2	1	1	No	No	No	No

Option C - Level 2 Sum	nmary										
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 statu classes	Impediments to Good IS Ecological Status (GES) or Good Ecological Potential (GEP)	Comp objec
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
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
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 SSIs.	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
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 immilications of SSUs	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
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 SSU.	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
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
GB407016501200	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	Unce

mises water body es	Assists attainment of water body objectives	Further comments
	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
	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
	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
	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
	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
	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
		Assumed major river crossings will be carried out using pipejack or micro tunnel crossings

No

Assumed inajor free clossings will be carried out using pipejack or micro funnel 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	

								Does the o	component comply with WFD (post mitigation)	objectives	Chemical effects		×
/FD status Component	WFD quality element	Method of checking compliance	Classification	Objective	Im pact 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 im to channel footprint element
Biological quality elements	Fish		Moderate in 2015	No Objective	0	Medium	Medium	Possible	No	No	Fish / eels screens included on intake structure to ensure that fish are not drawn into the intake.	0	Source of water for for T2ST. This asses additional abstractic discharged from SES in the SESRO SRO W Additional abstracti abstraction will only conficible impacts of
	Invertebrates	Guidance document available	Moderate in 2015	No Objective	0	Medium	Medium	Possible	No	No		0	inegrigible impacts o
Hydromorphological Supporting Elements	Morphology		Supports Good in 2015	No Objective	0	Medium	Medium	No	No	No		0	
	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	
hysico-chemical quality elements	Dissolved oxygen	Numerical limits for classes	High in 2015	No Objective	0	Medium	Medium	No	No	No	None needed	0	Water quality mode SESRO scheme). It is
	рН		High in 2015	No Objective	0	Medium	Medium	No	No	No		0	(leading the change with the addition of
	Temperature	Numerical limits for classes	High in 2015	No Objective	0	Medium	Medium	No	No	No		0	scheme will not cha
Priority bazardous substances	Di(2-ethylhexyl)phthalate	EQS directive	Good in 2015	Good by 2015	0	Medium	Medium	No	No	No	None needed	0	
r noncy nazarodus substances	Tributyltin Compounds	EQS directive	Fail in 2015	No Objective	0	Medium	Medium	No	No	No	None needed	0	

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Priority hazardo

Return to top of the page							ſ	Does the c	component comply with WFI	D 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	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 su abstraction
(RNAG) 5279	35 Invertebrates	No sector responsible		No									
Reasons for Not Achieving Good													1
(RNAG) 5108	38 Invertebrates	No sector responsible	Non-native invasive species	No									
Reasons for Not Achieving Good													
(RNAG) 5109	14 Phosphate	Water Industry	Pollution from waste water	No									No change to access
Reasons for Not Achieving Good													in SESPO WED accor
(RNAG) 5109	15 Phosphate	Agriculture and rural land management	Pollution from rural areas	No									III SESILO WI D 83363
Reasons for Not Achieving Good													
(RNAG) 5288	98 Tributyltin Compounds	Water Industry	Pollution from waste water	No									
Reasons for Not Achieving Good													
(RNAG) 5138	74 Tributyltin Compounds	Water Industry	Pollution from waste water	No									

New or increased surface water	New or increased surface water	New or increased surface water	New or increased surface water
Operation	Operation	Operation	Operation
Changes to channel footprint	Changes in flow velocity and volume (increase or decrease)	Changes in sedimentation deposition	Changes to water body hydromorphology leading to changes in river processes and habitats upstream and downstream
1	1	~	✓
1	1	1	√
1	1	√	~
×	x	x	×
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

is transfer option is SESRO. Total abstracted volume to supply SESRO reservoir will need to increase in order to supply the water ment does not consider the full abstraction or discharges from and to the Thames but will consider the implications of the from the Thames to support TZST, and any implications to water quality in the reservoir and therefore changes in water quality iO to the Thames due to the TZST scheme. The full WFD assessment of the SESRO Scheme on the Thames waterbody can be foun D assessment. from the Thames, during wetter periods of the order of a few additional days is required to support the TZST scheme. This iscur when flows in the Thames are sufficient to support the abstraction. The decrease in flow in watercourse expected to have his/norm.

logy.

No measurable impact expected to the morphology of River Thames

ling has been carried out in conjunction with the SESRO option (see SESRO WFD assessment for implications on water quality fro possible that the additional abstraction into and discharge from SESRO could lead to a change in the water quality in the reservoi in the impacts on the River Thames when SESRO discharges into the river). The Water quality modelling carried out shows that the T2ST scheme there are only minor changes in water quality in the SESRO reservoir and therefore the addition of the T2ST age the conclusions of the SESRO WFD assessment on water quality impacts on the River Thames.

rface water

ruction, Operation or Decommissioning activity

ological supporting elements

nical Effects

s of asset (following consideration of

sment carried ou ssment.

Option	T2ST Option C	Go to RNAG/PoM table at bottom of the page																		
Waterbody ID	GB106039023220									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 line (including draining e) 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
Waterbody name	Lambourn (Source to Newbury)									Construction, Operation or Decommissioning a	ctivity	Construction	Construction	Operation	Operation	Operation	Operation	Operation	Construction and operation	Construction and operation
Waterbody type	River									Potential Impacts of asset (following consider 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 surfac 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
Hydromorphological designation	Not Designated A/HMWB									Biological Effects		1	J.	~	~	1	1	~	1	~
Overall status	Moderate									Hydromorphological supporting elements		×	4	~	~	x	x	x	1	~
Overall status objective	Good by 2027		]							Physicochemical Effects		J	x	x	x	x	1	x	×	×
L			-				Does t	the component com (post miti	ply with WFD objectives ization)	Chemical effects		1	X	x	x	x	1	х	x	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	o tesytore if Com promis es wa ter bod y 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 'Charges 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 quality due to new or changes to existing discharge of surface water into surface water body' on each element	f 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
	Ruh		Moderate in 2015	Good by 2021	1	Low	Medium No	o No	o No	Any dewatering needed for the construction	1	Short term variations in temperature possible, however, this is short term and few? be small volume: compared to inter fact, therefore impact expected to be negligible	Developing is assumed to be discharged into Rever Lambourne in low quarties to help maritate flow in the next. However, the Next Lambourne creating accuss within 500 discharationa (1460) of the Kennet and Lambourne Flexdplain 300 which a sito classified as a 0007L. At this flow may of the Ingration acco of the next. any	Draining of pipelines for o	aintenance reasons is likely	n lead to no measurable imm	sarts to biology, due to its	Possibility of INNS transfer during draining operation, but this is a potable water	Localised changes to sediment deposition patterns expected to have minimal effect or 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 new? (Wi but potential for localised short term variations in moyology as a result of localised charges to sedimentation. Minimal effect on biology
Biological quality elements	Invertebrates	Guidance document available	High in 2015	Good by 2015	1	Low	Medium No	o No	o No	will be discharged to the river to help maintain flow	1		dewatering during construction of the below ground structures (shafts for the crossing of the river, could impact on the flow and velocity in th river, and the morphology, between the site and the shafts (downstream). 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.	a) Se	infrequent and sl	hort term nature		pipeline and it is assumed that INNS would be removed during the treatment process	Localised changes to sediment deposition patterns expected to have minimal effect or 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
	Macrophytes and Phytobenthos Combined	Calculator available	Moderate in 2015	Good by 2027	1	Low	Medium No	o No	o 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 or 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 no history
	Hydrological Regime		Supports Good in 2015	High by 2027	1	Low	Medium No	o No	o No		1		Minor changes in flow due to dewatering for the crossing of the river. Any dewatering will be discharged into the watercoarse 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 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
Hydromorphological Supporting Elements	Morphology		Supports Good in 2015	No data available	1	Low	Medium No	o No	o 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	Medium No	o No	o No		1									
	Dissolved oxygen	Numerical limits for classes	Good in 2015	High by 2015	1	Low	Medium No	o No	o No		1									
Physico-chemical quality elemen	pH		High in 2015	Good by 2015	1	Low	Medium No	o No	o No		1									
	Phosphate	Calculator available	Good in 2015	High by 2027	1	Low	Medium No	o No	o No		1	Short term changes to water quality possible					Pipeline maintenance			
	Temperature	Numerical limits for classes	High in 2015	Good by 2015	1	Low	Medium No	o No	o No		1	which may lead to temporary changes in water quality parameters. Further					highly unlikely to impact on chemical status as			
Priority hazardous substances	Cadmium and Its Compounds	EQS directive	Good in 2015	Good	1	Low	Medium No	o No	o No		1	assessment is required to determine the impact.					standard			
Priority substancer	Lead and its Compounds	EQS directive	Good in 2015	Good	1	Low	Medium No	o No	No		1									
	Nickel and Its Compounds	EQS directive	Good in 2015	Good	1	Low	Medium No	o No	No		1									
Specific pollutants	Copper		High in 2015	High	1	Low	Medium No	o No	No No		1									
Other chemicals	Zinc		High in 2015	High	1	Low	Medium No	o No	o No		1									

Return to top of the page				_				Does the o	component comply with WFD	) objectives		
ямла//юм/ничим id	Relevant WFD Quality Element (RNAG) / Measure category 1 (Po	M) 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	Design cer tainty	Assists attainmen t of water body objectives	Impediment to GES/GEP	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								
Reasons for Not Achieving Good (RN	520072 Phytoplankton	No sector responsible		No								

Option		T2ST Option C	Go to RNAG/PoM table at bottom of the page	7																		1					
Waterbody ID		GB107042022710		7							Act	tivity		Below ground stru	ctures (shaft/retaining wall) with associated dewatering				•		New pipe lines involving w	watercourse crossings with no in					
Waterbody name		Test (Upper)		-							Cor	instruction, Operation or Decommissioning activity	v		Construction		Maintenance of	pipe lines (including draining pi Operation	peline)		Constructio	modifications on and operation	+	New or m	odified pumping station and/or Construction	river intake	
Waterbody type	1	River									Pot	tential impacts of asset (following consideration o abedded mitigation)	of Char dict	nge in water quality due to harge of groundwater to a surface water body	Changes in flow velocity and volume (increase or decrease)	Changes in flow velocity and volume	Changes in sedimentation	Noice and vibration	Change in water quality due to new or changes to existing discharge of surface water into ordrare water hofe	Change in INNS present in confare water horiz	Changes in sedimentation deposition	Changes to water body hydromorphology leading to changes in river processes ar habitats upstream and riven of ream	td Chanses to channel footneint	Changes in flow velocity and	Changes in sedimentation	Noice and vibration	Changes to water body hydromorphology leading to changes in river processes an habitats upstream and downstream
Hydromorphological o	Idesignation	Not Designated A/HMWB									Bio	ological Effects		1	4	4	4	4	1	4	1	3	4	~	4	~	1
Overall status		Good									Hyd	dromorphological supporting elements		x	4	4	1	x	x	×	1	3	4	~	4	~	1
Overall status objectiv	ive	Good by 2015									Phy	rysicochemical Effects		1	x	x	x	x	1	x	×	x	x	x	x	×	x
								Do	es the componen (po	t comply with WFD o st mitigation)	objectives Che	remical effects		4	x	×	x	x	1	x	x	x	×	x	x	x	×
WFD status Compone	ent I	WFD quality element	Method of checking compliance	Classification	Objective	Impact score	Data confidence	Design certainly	De borior a bori De fiveren stadus clustes	Impedments to GEVGEP	Compromises water body objectives	ligation applied	Comme in wate ground body' o	ent of the impact of 'Change er quality due to discharge of dwater to a surface water 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 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 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 ar habitats upstream and downstream' on each eleme	Comment of the impact of 'Changes to channel footprint' on each element nt	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 eac element	Comment of the impact of "Changes to water body hydromorphology leading to changes in river processes an habitats upstream and downstream" on each elemen
Rinineiral malify	1 v elements	Invertebrates	Guidance document available	High in 2015	Good by 2015	1	Low	Medium	No	No	No Ens is o	ssure below ground shaft for river crossing outside the SSS boundary	1 Short to temper this is si	erm variations in rature possible, however, short term and will be small	Devatoring is assumed to be discharged into River Test in low quantifies to help maintain flow in the river. However, the Niver Test cossing opcur- within the Niver Test SSS and adjuance to the bare NAB Mandows SSS which are also diregated as GOVET. Loss of helphater all be considered in the HMA assassment, If relevant, Any devatoring during construction of the HMA assassment, If relevant, Any devatoring during construction of the bible ground structures (schilds) for the cossing of the river, could	s n				Possibility of INNS transfer during draining operation, br this is a potable water	ut					The CSI Linked Street B1	
	1	Macrophytes and Phytobenthos Combined	Calculator available	Good in 2015	Good by 2015	1	Low	Medium	No	No	Acc pip	sumes crossing of river will be by HDD or	volume therefo negligib	es compared to river flow, ore impact expected to be ble	impact on the flow and velocity in the rise, and the morphology, between the size and the shifts (dewaream). This could lead to temporary localised changes in flow velocity and velocities that could have a minicr temporary impact on fills and beings associated with their and associated floodplain/meadows. Further investigation needed to understand potential impacts					pipeline and it is assumed th INNS would be removed during the treatment process	at Watercourse crossing will be beneath the river (HDD or pipejacking) therefore no change in sedimentation expected	New pipelines and associated below ground structures on the hydromorphology of the river / WB as they will pass beneath the river and shafts likely to be set back from the watercrurce	The CS4 Lichfield PS and BPT (either options) will be a constructed at the top of the Test catchment (approximately 6.5km from the main watercourse) Therefore new PS will have no in channel forthering	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 flow and valencit emented	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 serimentation experted	(either options) will be constructed at the top of the Test catchment (approximately 6.5km from the main watercourse) therefore, minimal noise an vibration impacts expected. More mocurable impact	The CS4 Lichfield PS and BPT (either options) will be constructed at the top of the Test catchment (approximately 6.5km from d the main watercourse) therefore, no impact on hurdromonic properted
Hydromorphological Elements	al Supporting Its	Hydrological Regime		Supports Good in 2015	Supports Good by 2015	1	Low	Medium	No	No	No		1		Short term temporary impacts on flow and wilocity from dewatering for the construction of below ground works for the river crossing. Assumed dewatering discharged to river to help maintain flow bot a temporary localader deduction in flow and velocity possible upstream of the discharge point.	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.										anticipated	
	-	Morphology		Supports Good in 2015	No data available	1	Low	Medium	No	No	No		1		No impact anticipated on morphology							4 7	4				
		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 to	term changes to water quality le which may lead to changes					Pipeline maintenance highly								
Physico-chemical qua	zality elements	рН		High in 2015	Good by 2015	1	Low	Medium	No	No	No		1 Further	er quality parameters. r assessment is required to					unnely to impact on chemica 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	ne du Change													
		Temperature	Numerical limits for classes	High in 2015	Good by 2015	1	Low	Medium	No	No	No		1														

Name         Name         Name         Category (NMAC)/Nameory Category (NMAC)/Lade organization (PMAC)//Nameory Category (NMAC)/Nameory (NMAC)/Name	Return to top of the pag	<u>e</u>						Does the	component comply with WFD	objectives		
None International	RNAG/PoM/HHWMM	ы	Nelwart WD Quelty Element (INMG) / Massure category 1 (Pol) Category (INMG)/Load organisation (Pol) National Semi Header (INMG) / Titls (Pol)	Is this measure potential impacted by the scheme? (Yes/No)	impa ct score asse sane nt	Data confidence	Design certainly	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										1	

			_																					
Option	T2ST Option C	Go to RNAG/PoM table at bottom of the page.																						
Waterbody ID	GB107042022700								Activity		Below ground structures (shaft/n	staining wall) with associated dewatering		Maintenant	af aire bar fact day for				errien eiten is dered metiketion					
Waterbody name	Test - Bourne Rivulet to conf Dever								Construction, Operation or Decommissioning activit	ty .		Construction			Operation	ini (yytin)		Construction	and operation		15	Construction	111,480	
Waterbody type	Rover		-						Potential Impacts of asset (following consideration embedded mitigation)	đ	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 (increased	e Changes in sedimentation	Noise and shration	Change in water qualit due to new or change existing discharge of surface water into surf water body	Y to Change in INIS present in surface water hody	Changes in sedimentation deposition	Changes to water body hydromorphology leading to changes in inver processes and	Changes to channel footnesist	Changes in flow velocity and volume	Changes in sudimentation denosition	Notes and silvestion	Changes to water body hydromorphology leading to changes in river processes and habitats upstream and downstream
Hydromorphological designation	Not Designated A/HMWB		-						Biological Effects		4	1	4	1	1	1	1	4	4	4	4	1	1	1
Overall status	Good								Hydromorphological supporting elements		×	4	4	1	×	×	×	1	1	1	1	1	1	1
Overall status objective	Good by 2015								Physicochemical Offects			×	x	×	x	1	×	×	×	×	×	×	×	×
			1			Г	Does the component	t comply with WFD objective	Chemical effects			x	x	×	x	1	×	x	×	×	×	×	×	x
WFD status Component	WTD quality element	Method of checking compliance	Classification	Objective	Impact score	Deta confidence Detign containty	Detector all on between status classes	Impediments to casket P casket P Comporties water body obteckess	Mitgation applied	Post mitigetion impact score	Comment of the impact of 'Changes to channel footprint' or each element	Connect of the impact of Changes in flow velocity and volume (nonzae or decrease) <sup>1</sup> on each element	Comment of the inpact of "Changes in flow welcoty and volume (increase or decrease)" on each element	Comment of the impact of 'Changes in sedimentation deposition' on each element	Comment of the impact o 'Changes in sedimentatio deposition' on each element	of Comment of the impa Noise and vibration' o each element	t of Comment of the impact of Wolse and wbratton' on each element	Comment of the impact of 'Changes to water body hydromorphology leading to changes in inver processes and habitats upstream and downstream' on each element	Comment of the impact of 'Charge in water quality due to discharge of groundwater to a surface water body' 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 'Change in IN present in surface water body' on each element	NS Comment of the impact of 'Changes in audimentation 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 'Change in water quality due to discharge of groundwater to a surface water body' on each element
Biological quality elements	ivertebrotes	Gutleren decument andakte	Nye n 2015 Supports Good in 2015	General by 2015	1	Low Medum	No	No No	Druwn below ground sheft for man crossing In outside the XXD boundary Assement consisting of new tills by populat or micro bound crossing	2	Short term variations in temperature possible, however, this is short term and will be vera volumes compared to river flow, therefore impact expected to be negligible	Reserves a summary the for finishing of the "for a long particule to any summary time of the finishing of the "for a long particule to any summary time of the summary time time of the summary response of the summary time of the summary time of the summary." A summary time of the summary time of the summary response of a summary time of the summary time is the summary time of the summary time is the s	Draining of populations for mai Draining of populations for main Minor changes in flow due to discharge of main from populations for discharge all Tar	ntenance reasons is likely to 1	ead to no measurable impa	ects to biology	Psublidity of INCS transfer during draming operation, but this is a patable water papeline and it is assumed that INCS sould be removed during the treatment process.	Watercourse crossing will be beneath the new (MCD or grapping) therefore no change is sedimentation expected	New pipelines and associated below ground structures unlikely to have significant risk on the hydromorphology of the retrer / Via a twy via jipas breach ther retrer and shafts kiely to be set back from the watercourse.	The ISS Multiplicer 75 and Multiplice (ISS will be contracted at the tas of the Test contracted propriority) 4 Sam from the main second (Foreign et new 75 will have no in channel forsprint	The BOI Multividieur 75 and Multividieur 1958 will be constructed at the tage of the Test containent (approximately 45 San forms the nois neutronical) elevation, impact on flow and velocity expected	The EX Michelener PS and Michelener     With will be enservated at the top of     Test catcheres (pagewared) 4 Siles     Som the main sectorized (barriers)     migact on selfimentation sepected	The ESS Backelever /P and Mathematics The ESS Backelever /P and Mathematics That Informatic (approximate) < 55m from the mask recording the reference minimum for inter and velocation impacts expected. Its meanwalks impact antiopated	The ISS Michielener PS and Michielener WSR will be constructed at the top of the Test achiever. Speprosimity's 43ms from the main second produces and impact on hydromorphology appended
Hydromorphological Supportin Elements	t											there could be minor occursed temporary impacts on tow and velocity durin the construction period	wherbody stale.	• 										
	Morphology		Supports Good in 2015	No data available	1	Low Medium	No	No No		1													4	1
	Ammonia (total as N)		High in 2015	High by 2015	1	Low Medium	No	No No		1													1 7	
	Dissolved oxygen	Numerical limits for classes	High in 2015	High by 2015	1	Low Medium	No	No No		1														
Physico-chemical quality element	pH		High in 2015	Good by 2015	1	Low Medium	No	No No		1	Short term changes to water quality possible which may lead t changes in water quality	to literation of the second	Draining of pipelines for maintenance reason	s is likely to lead to no		Pipeline maintenance highly unlikely to impa on chemical status as	a							
	Phosphate	Calculator available	High in 2015	High by 2015	1	Low Medium	No	No No		1	parameters. Further assessment required to determine this chang	• •	measurable impacts as water will be treated	to potable standards		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	Ť													
Specific pollutants	Copper		High in 2015	nab	1	Low Medium	No	No No		1	1													
Return to top of the page	ы	Relevant WED Quality Element (IRMG) / Measure category 1 (PoM)	Category (INAG)/Lasd organisation (Pol	Ng National Servit Header (INAG) / Title (PuN) (res/head servit Header (INAG) / Title (PuN)	a strad charact score of	Du ta confidence Dedipi centainty	Does the component Assists attainment t of water body objectives	t comply with WFD objective ent to GEX/GEP Set was body objectiv	a di Attanta di Attant	t getion act score (- 3)			1					1	1	1	1	1		1

			Г								-								
Option	T2ST Option C	Go to RNAG/PoM table at bottom of the page	_																
Waterbody ID	GB107042022770								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 drainin pipeline)	g Maintenance of pipe lines (including draining pipeline)	New pipe lines involving watercourse crossings with no i channel modifications	New pipe lines involving watercourse crossings with no in channel modifications
Waterbody name	Dever								Construction, Operation or Decommissioning	activity	Construction	Construction	Operation	Operation	Operation	Operation	Operation	Construction and operation	Construction and operation
Waterbody type	River								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 deposition	Noise and vibration	Change in water quality due to new or changes to existing discharge of surface wat into surface water body	er 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
Hydromorphological designation	Not Designated A/HMWB								Biological Effects		1	4	4	1	1	1	J	1	√
Overall status	Good								Hydromorphological supporting elements		x	4	4	~	x	x	x	1	1
Overall status objective	Good by 2015								Physicochemical Effects		4	x	x	x	x	1	x	×	x
L			-			Doe	s the component (	t comply with WFD object mitigation)	ctives Chemical effects		J	x	x	x	x	1	x	×	x
WFD status Component	W/D quality element	Method of checking compliance	Classification	Objective	I mplact score	Data confid ence Des ign certainny Deterioration between	status classes	Impediments to GES/GEP	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)' or 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 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 INNS present in r 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
Biological quality elements	Invertebrates	Guidance document available	Mgh in 2015	Good by 2015	1	Low Medium 1	Na	No	No from SSS	1	Short term variations in temperature possible, however, this is short term and will be small volumes compared to river flow,	Deatarring is assumed to be discharged into River Dever in low quantities to help maintain flow in the river. However, the Never Dever crossing occurs within the Never Text SSD which is also designed as a SURTEL. Eaco of habitst will be considered in the Next Seascement, if relevant Any developing deping constructions of the below ground structures (Juhta) (or the crossing of the river, could impact on the River and volume) in the niever, and the morphology. Between the size and the	Draining of pipelines for maintenance reasons	is likely to lead to no measurable	impacts to biology, as pipeline (	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 Medium 1	No	No	No Remove below ground shaft for river crossin from SSSI	1	therefore impact expected to be negligible	shafts (downstream). This could lead to temporary localized changes in flow velocity and volume that could have a minor temporary impact on fish and bology associated with river and associated floodplan. Further investigation needed to understand potential impacts					would be removed during the treatment process	Watercourse crossing will be beneath the river (HDD or pipejacking) therefore no chang in sedimentation expected	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 Medium I	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 bus a temporary localised reduction in flow and velocity possible upstream of the discharge point.	Minor changes in flow due to discharge of water from pipelines for draining will be mino and short term, and not significant at a waterbody scale.						
	Morphology		Supports Good in 2015	No data available	1	Low Medium I	No	No	No	1		No impact anticipated on morphology							
	Ammonia (total as N)		High in 2015	High by 2015	1	Low Medium I	No	No	No	1									
	Dissolved oxygen	Numerical limits for classes	High in 2015	High by 2015	1	Low Medium	10	No	No	1	Short term changes to water quality possible which may lead to								
Physico-chemical quality element	s pH		High in 2015	Good by 2015	1	Low Medium I	No	No	No	1	changes in water quality parameters. Further assessment is								
	Phosphate	Calculator available	High in 2015	High by 2015	1	Low Medium I	No	No	No	1	required to determine ons change								
	Temperature	Numerical limits for classes	High in 2015	Good by 2015	1	Low Medium I	No	No	No	1	]					Pipeline maintenance highly unlikely to			
	Benzene	EQS directive	Good in 2015	Good	0	Low Medium	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 Medium	No	No	No	0	]								
	Nickel and Its Compounds	EQS directive	Good in 2015	Good	0	Low Medium	No	No	No	0	No impact anticipated on priority								
	Copper		High in 2015	High	0	Low Medium I	No	No	No	0	substances or specific pollutants								
Specific pollutants	Iron		High in 2015	High	0	Low Medium	No	No	No	0									
	Toluene		High in 2015	High	0	Low Medium	No	No	No	0									

Return to top of the page								Does th	e component comply with WFG	D objectives		
RNAG/PoM/HHWMM	м	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 as sessment	Data confidence	Assists attainm t of wat body objectiv	en er Impediment to GES/GEP es	Compromi ses water body objectives	Mitigation applied	Post mitigation impact score (- 2 to 3)
None												

Uption			-													
Waterbody ID	GB40601G600900		_													
Waterbody name	Berkshire Downs Chalk (GW)										Activity					
···· <b>,</b> · ·																
			_											Below ground structures (shaft/retain	ning wall) with associated dewatering	
Waterbody type	Ground Waterbody		-								Construction, Operation or			Construction	1	Operation
											Potential Impacts of asset (f	ollowing		Disturbing or mobilising existing poor quality	Creating or altering of pathways along which	Changes in groundwater levels due to presence of shafts
Overall status	Poor										consideration of embedded		Change in groundwater levels by temporary dewatering	groundwater by temporary dewatering	existing poor quality groundwater can migrate	and pipeline
											mitigation)					
Overall status abjective	Coord by 2027		-								Overstitetive effects			~	v	
Overall status objective	G000 by 2027		_								Quantitative effects		×	× _	X	×
							-	-	۵.	2			<i>r</i>			<i>r</i>
						au		eeu	3D/de	ğ		oact				
					e	suc	i i	ses	GES	s s		<u>.</u>				
WED status Component	WED quality along ont	Mathed of shoeling compliance	WED Classification	A MED Objective	sco	fid	erta	d as	to to	tive t	Mitigation applied	re n	Comment of the impact of 'Change in groundwater levels by	Comment of the impact of 'Disturbing or	Comment of the impact of 'Creating or altering of	Comment of the impact of 'Changes in groundwater levels
WPD status component	wrb quality element	Method of checking compliance	WFD Classification	II WPD Objective	oact	ũ	5	atio true	enti	bjed	wittigation applied	sco	temporary dewatering' on each element	temporary dewatering on each element	groundwater can migrate' on each element	due to presence of shafts and pipeline' on each element
					Ξ	bata	Desi	sta	Ē	0 0		Ē		temporary dewatering of each element	groundwater can migrate on each element	
								Dete	be	Ĕ		Post				
									5	Ŭ						
													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			
	Quantitative Dependent surface water												shafts and pipelines beneath the river. Dewatering will lead			Pipeline crossing the River Lambourn and Kennet will be
	body status	guidance document available			1							1	to reduced groundwater level and in turn reduced river			installed by pipejack or micro tunnel crossings so no long
	body status												flows. Potential for temporary short term changes to flow in			term impact on groundwater levels expected.
													River Lambourn and River Kennet. Dewatering discharge to			
													the rivers to help maintain flow but minor localised change in			
			Poor	Poor by 2015		Low	Medium	No	No	No			flow likely upstream of discharge location.			
				1001092015												
																Pineline crossing the River Lambourn and Kennet will be
											Dewatering discharge to					installed by pipeiack or micro tuppel crossings so polong
											surface water courses to		Kennet & Lambourn Floodplain SSSI located 440m upstream			term impact on groundwater levels expected. Where
											maintain flow.		floodplain is primarily marsh and grassland and an			pipeline cross near to the Kennet Valley Alderwoods SAC, if
Quantitative Status elements											Use of Clay Stanks in		environment for a species of whorl snail. As the site is within			groundwater levels are found to be above the pipe level
	Quantitative GWDTE test	guidance document available			1						pipeline route where	1	500m of the crossing it is assumed there will be localised and			then pipeline bedding material will ensure no groundwater
											encountered		temporary changes in groundwater that could impact on the			mounding upgradient of the pipeline and the use of clay
											chebumereu.		GWDTE. The Kennet Valley Alderwoods SAC is located			stanks within the trench will ensure that the pipeline does
													approximately 100m from crossing of River Kennet. Short			not form a preferential pathway for groundwater flow and
													term temporary impacts on groundwater levels are possible			levels expected
			Const	Condition 2015									due to dewatering, but are unlikely to impact in the integrity			levels expected.
	Quantitative saline intrusion	guidance document available	Good	Good by 2015	0	Low	Medium	No	No	No		0	No measurable change from saline intrusions assumed.			No measurable change from saline intrusions assumed.
											1		8			If groundwater levels are found to be above the pipe level
																then pipeline bedding material will ensure no groundwater
													Minimal change in water balance accumed, due to chart			mounding upgradient of the pipeline and the use of clay
	Quantitative water balance	guidance document available			1							1	term temporary nature of the works			stanks within the trench will ensure that the pipeline does
																not form a preferential pathway for groundwater flow and
			Deer	Deer hu 2015		1.000	Madium	Ne	No	No						therefore only minor localised impact on water balance
			1001	P001 09 2015		LOW	meuidiii	140		NO						capetied.
	Chemical dependent surface water body	guidance document available			1							1		Detection for devictoring and the second		
	status		Cond	Cond by 2025		1.000	Madia	Ne	Ne	Ne				existing contaminated groundwater. Pick	Pipeline will be installed in shallow trench and no	
			Good	Good by 2027		LÓW	Medium	NÖ	NO	NO				expected to be minor as dewatering short term	new pathways likely to be created. Where	
	Chaminal Drinking Water Dretected Area	a video de deserverent e veile ble												and therefore likely to have small radius of	pipejack or micro tunnel crossings required, shaft	
	Chemical Drinking water Protected Area	guiuance uocument available	Deer	Cond by 2025	1	1.000	Madia	Ne	Ne	Ne		1		influence. Contractors will be expected to	may be required. There shafts will be constructed	
			1004	Good by 2027		LOW	weatum	0W	NU	NO	Chaffe to be evided to			investigate potential water quality risks and	and sealed to ensure they do not form a pathway	
	Chamical GWDTEc tact	guidance document available			1						Shafts to be sealed to	1		monitor water quality if required.	for surface water flow into the aquifer.	
Chemical Status elements	Chemical GWDTES lest	Servance of cullent available	Good	Good by 2015	1	Low	Medium	No	No	No	groundwater egress after					
	Chemical Saline Intrusion	guidance document available	Good	Good by 2027	0	Low	Medium	No	No	No	construction	0		No change anticipated	No change anticipated	
											1			Potential for dewatering activities to mobilise		
														existing contaminated groundwater. Risk	Pipeline will be installed in shallow trench and no	
														expected to be minor as dewatering short term	new pathways likely to be created. Where	
	General Chemical Test	guidance document available			1							1		and therefore likely to have small radius of	pipejack or micro tunnel crossings required, shaft	
														influence. Contractors will be expected to	may be required. There shafts will be constructed	
			Poor	Good by 2015		Low	Medium	No	No	No				monitor water quality if required	for surface water flow into the aquifer	
	Prevent and Limit Objective	guidance document available		Good by 2015	0	Low	Medium	No	No	No		0		Works unlikely to lead to a change in	input of pollution to the groundwater	
Supporting elements				5000 By 2015			cuidin						Works unlikely to lead to a long term change in the trend in	trong anny to lead to a change in	pointion to the groundwater	Works unlikely to lead to a long term change in the trend in
	Irend Assessment	guidance document available	Upward trend	Good by 2027	0	Low	Medium I	No	No	No		0	this waterbody			this waterbody

							Does th	e componei	nt comply			Note: Merge columns if acti	vity appears	s multiple tin
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	Design certainty	Assists attainme nt of water body objective s	Impedim ent to GES/GEP	Comprom ises water body objective s	Mitigation applied	Post mitigatio n impact score (-2 to 3)			
Chemical Drinking Water Protected														
Area	Agriculture and rural land management	Pollution from rural areas	No											
Trend Assessment	Agriculture and rural land management	Pollution from rural areas	No											
General Chemical Test	Agriculture and rural land management	Pollution from rural areas	No											

Option	T2ST Option C		]													
Waterbody ID	GB40701G501200															
Waterbody name	River Test Chalk (GW)		1								Activity			Below ground structures (shaft/retaining wal	<ol> <li>with associated dewatering</li> </ol>	
Waterbody type	Ground Waterbody		+								Construction, Operation or			Construction		Operation
Overall status	Roor		1								Potential Impacts of asset	(following	Change in groundwater levels by temperaty deviatoring	Disturbing or mobilising existing poor quality	Creating or altering of pathways along which	Changes in groundwater levels due to presence of shafts and
			4								consideration of embeddee	1	change in groundwater levels by temporary dewatering	groundwater by temporary dewatering	existing poor quality groundwater can migrate	pipeline
Overall status objective	Poor by 2015		1								Quantitative effects		V	X	X	√ ▼
							r r		۵.	≥	chemical effects		^	v	<b>.</b>	^
WFD status Component	WFD quality element	Method of checking compliance	WFD Classification	n WFD Objective	Impact score	Data confidence	Design certainty	Deterioration between status classes	impediments to GES/GE	Compromises water boc 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 o 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 Low	Medium	No N	io	No	Further investigation into impact on groundwater levels of dewatering for	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		21.000	Medium	Uportin		Uscottoia	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.		Two new river crossings of the River Test, 1 river crossing of the River Dever and a road crossing of the B400 within 500m of WOTE's. River Test and River Dever crossing locations are beneath the River Test SSI GWDTE (and could be partially with the site) and the River Test crossings also within the East Aston Common SSI, and adjacent to Bere Mill Meadows SSI. 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 timing of natural groundwater discharge. Impacts of changes to groundwater levels on SSSIs are currently unclear and further investigation neuronical.	t i		Pipeline crossing the River Test (2 off) and Dever assumed to be installed by pipejack or micro tunnel crossings so no long term impact on groundwater levels expected. Where pipeline cross River Test SSI, East Ashton Common SSSI and Bere Mill Meadows SSS, 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.
	Overtitetive esline intrusion	guidanco document available	Good	Good by 2015		2 Low	Medium	Uncertain No		Uncertain		1	required.			No account to a frame of the interview antisiant of
	Quantitative same muusion	guidance document available	Poor	Poor by 2015		1 Low	Medium	No N	10	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.			No mesonable Charge from Same Indusions and page 6. 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	No N	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	No N	lo	No	Shafts to be sealed to	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	No N	lo	No	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	No N	lo	No	construction	(		No change anticipated	No change anticipated	
	General Chemical Test	guidance document available	Poor	Good by 2015		1 Low	Medium	No N	0	No		1		rotenual 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.	repenne 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	No N	lo	No		(		Works unlikely to lead to a change in	input of pollution to the groundwater	
Supporting elements	Trend Assessment	guidance document available	Upward trend	Good by 2027		0 Low	Medium	No N	lo	No		(	Potential changes to chemical status assumed localised and low risk			Potential changes to chemical status assumed localised and low risk

Supporting elements	Trend Assessment	guidance document available	Upward trend	Good by 2027		0 Low	Medium	No	No	No		0	Potential changes to chemical status assumed localised and low risk		Pot
						Does t	the compone	ent comply						_	
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	Design certainty	Assists attainme nt of water body objective s	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											1	
Trend Assessment	Agriculture and rural land management	Pollution from rural areas	No												
Chemical Drinking Water Protected	d Agriculture and rural land management	Pollution from rural areas	No												
General Chemical Test	Agriculture and rural land management	Pollution from rural areas	No											1	
Quantitative Dependent Surface W	/a Water Industry	Changes to the natural flow and levels of water	Yes			0 Low	Medium	No	No	No	Assumed mitigation associated with below	o	Temporary dewatering for construction could lead to temporary reductions in flow. However with appropriate mitigation this is not likely to impede measures		
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	e 0	to improve flow/ water balance		

#### Strategic Resource Option surface water assessment for:

T2ST Option C Yes

Is a groundwater assessment required?

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
GB106039030334	Thames (Evenlode to Thame)	River	3	0	0	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
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
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
GB106039023300	Pang	River	1	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
GB106039023220	Lambourn (Source to Newbury)	River	2	1	1	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
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
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
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
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
GB107042022710	Test (Upper)	River	2	1	1	No	No
GB107042022700	Test - Bourne Rivulet to conf Dever	River	2	1	1	No	No
GB107042022770	Dever	River	2	1	1	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
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
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
GB107042022580	Itchen	River	1	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
GB40601G600900	Berkshire Downs Chalk	GroundWaterBody	2	1	1	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
GB40701G501200	River Test Chalk	GroundWaterBody	2	2	1	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

Compromises water body objectives	Assists attainment of water body objectives
No	No
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
Level 2 assessment not required	Level 2 assessment not required
Level 2 assessment not required	Level 2 assessment not required
No	No
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
Level 2 assessment not required	Level 2 assessment not required
Level 2 assessment not required	Level 2 assessment not required
No	No
No	No
No	No
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
Level 2 assessment not required	Level 2 assessment not required
Level 2 assessment not required	Level 2 assessment not required
No	No
Level 2 assessment not required	Level 2 assessment not required
Uncertain	No
Level 2 assessment not required	Level 2 assessment not required



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