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**Dŵr Cymru Welsh Water**

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# **Water Resources Management Plan**

**Water Framework Directive compliance assessment**

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## Report for

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## Document revisions

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1	Draft issued for comment	28/09/22
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# 1. Introduction and purpose of report

## 1.1 Background and purpose of report

Water companies in England and Wales have a statutory requirement to prepare a Water Resources Management Plan (WRMP) every five years. The latest Water Resource Planning Guideline (WRPG) produced by the regulatory bodies<sup>1</sup> (Ofwat, The Environment Agency and Natural Resources Wales) advises that it is the water companies' requirement to have regard to River Basin Management Plans (RBMPs) and Water Framework Directive regulations in their WRMPs. This report will demonstrate how Dŵr Cymru Welsh Water (DCWW) have met this requirement in the assessment of their WRMP24 feasible options and preferred plan options.

## 1.2 DCWW's revised draft Water Resource Management Plan

Welsh Water provides water and sewerage services to some 3 million customers in much of Wales and small parts of Cheshire and Herefordshire in England. It also has over 100,000 business customers, and in total delivers more than 850 million litres of drinking water every day. This can increase by up to 20 per cent during a hot summer. Most of the water Welsh Water abstracts is supplied from impounding reservoirs although significant volumes are abstracted from lowland river sources such as those on the Rivers Wye and Usk in South East Wales, the River Tywi in South West Wales and the River Dee in North Wales. Groundwater accounts for less than 5 per cent of water supplies by Welsh Water but at a local level, may be the whole supply.

In previous WRMPs, Welsh Water identified and implemented significant asset investment to manage the implementation of the Water Framework Directive and Habitats Directives through abstraction licence changes. A reduction in leakage levels of 15% during AMP7 was set in order to achieve regulatory expectation.

Welsh Water's supply demand balances (SDB) have been generated for each of the 23 water resource zones. This identified that three zones would not be resilient under the most likely planning scenario within the 25-year period to 2050. The zones with an identified shortfall are SEWCUS, Tywi Gower and Lleyr Harlech-Barmouth.

As part of the WRMP development process, DCWW identified a long list of feasible supply-side and demand-side options to resolve the forecast WRZ deficits. These options were subject to a staged filtering process (which included a high-level consideration of the WFD-related risks associated with each option) designed to establish the best-value plan for DCWW taking into account the regional plan requirements. Welsh Water's revised draft WRMP24 therefore proposes:

- For Lleyr Harlech – Barmouth WRZ the deficit will be overcome by demand management measures only for household and non-household customers (e.g. leakage / network improvement programmes, metering enhancements, water efficiency audits, grey water recycling, rainwater harvesting, etc.).
- For SEWCUS WRZ and Tywi Gower WRZ, the deficit will be overcome by demand management measures and four supply-side options.

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<sup>1</sup> Ofwat, NRW & EA (2023), Water Resources Planning Guideline, Version 12 – Updated March 2023

This assessment considers all of the feasible supply-side options individually, and subsequently the four preferred supply side options together.

### **1.3 The Water Framework Directive**

The Water Framework Directive (2000/60/EC) is an EU Directive establishing a framework for Community action in the field of water policy which aims to protect and improve the water environment. The Directive was brought into UK law in 2003 and subsequently revoked by the Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 in England and Wales. From this point forward “WFD” refers to the legislation applicable to England and Wales, not the EU Directive.

### **1.4 WFD requirements for WRMPs**

The purpose of a WRMP is to set out how a water company will achieve a secure supply of water for its customers whilst protecting the environment and is resilient to a range of future challenges more extreme droughts, climate change, population growth.

As part of the WRMP, water companies must demonstrate that they have considered a range of environmental legislation, including the WFD regulations. The requirements for a WFD assessment of a water company WRMP are outlined in the 2023 WRPG (Box 1).

**Box 1: WRPG 2023****Section 8.2.2 Assessing environmental constraints*****"A. River Basin Management Plan and Water Framework Directive***

*River Basin Management Plan (RBMP) and the Water Framework Directive environmental objectives are a constraint on your options. You should screen out any options that have unacceptable environmental impacts that cannot be overcome.*

*You should ensure that there is no risk of deterioration from a potential new abstraction or from increased abstraction at an existing source before you consider it as a feasible option. Alternatively, if investigations are yet to be completed, you should set out what your alternative options would be should those investigations demonstrate that there will be an unacceptable environmental impact.*

*You should also assess new supply options against the RBMP measures and objectives for each water body and meet your obligations to avoid future deterioration. You should ensure that your feasible options do not compromise the achievement of RBMP objectives.*

*You should talk to the Environment Agency or Natural Resources Wales about any intended actions that may:*

- *cause deterioration of status (or potential)*
- *prevent the achievement of the water body status objectives in the river basin management plans*
- *prevent the achievement of water body status (or potential) for new modifications*

*You should do this as soon as possible before developing your plan. You should make a clear statement in your plan about any potential impacts."*

These WRPG requirements reflect the Welsh Government Guiding Principles for Developing Water Resources Management Plans<sup>2</sup>, which state that companies should *"demonstrate how you support the delivery of the objectives of the River Basin Management Plans, highlight any potential competing priorities between the plans, and align with the River Basin Management Plans"*.

The WRPG refer to ensuring 'no deterioration' of water body status. A European Court of Justice (ECJ) ruling<sup>3</sup> clarified that 'no deterioration' means a deterioration **between** a whole 'status class' (e.g. 'good', 'moderate', etc.) of one or more of the relevant 'quality elements' (e.g. biological, physico-chemical, etc.). This definition applies equally to Artificial Water Bodies and Heavily Modified Water Bodies in respect of the relevant quality elements that relate to the defined uses of these water bodies. The ECJ ruling further states that if the quality element concerned is already in the lowest class, any deterioration of that element constitutes a deterioration of the status. References to 'no deterioration' in this WFD methodology align to this ECJ ruling.

<sup>2</sup> Welsh Government (2022) The Welsh Government Guiding Principles for Developing Water Resources Management Plans (WRMPs) 2022

<sup>3</sup> ECJ Case C-461/13: Bund für Umwelt und Naturschutz Deutschland v Bundesrepublik Deutschland <http://curia.europa.eu/juris/document/document.jsf?docid=178918&mode=req&pageIndex=1&dir=&occ=first&part=1&text=&doclang=EN&cid=175124> [accessed 30.6.16]

## 2. WFD Compliance Assessment Methodology

The purpose of this section is to set out the approach used when assessing the WFD compliance of the feasible options and preferred plan of DCWW's WRMP24. **Section 2.1** identifies the WFD Assessment Objectives used throughout the WRMP process. **Section 2.2** describes the proportionate level of detail for the assessments.

The assessment approach presented here has been applied to the feasible list of options and the Preferred Plan. It is understood that all options have been through a form of high-level WFD screening prior to being included in the Refined Feasible List of options. As a result, any options where there are any unalterable WFD constraints, therefore not suitable for promotion, are either not included or are flagged in the Revised Feasible List.

All assessments have been undertaken for the reporting unit of a WFD water body. The appropriate baseline information for water bodies status and targets is as set out using 2021 WFD status, which is in line with the third cycle of RBMPs (RBMP3).

### 2.1 WFD Assessment Objectives for testing compliance

This section provides the WFD Assessment Objectives used as a test of constraint when testing WFD compliance at an individual potential option-level as set out in WRPG (2023). This section also provides the additional, progressive WFD Assessment Objectives that have been assessed at a plan-level.

#### Option-level WFD Assessment Objectives

Principally, the WFD acts as an indicator of constraint and determines where the WRMP or constituent options do not meet WFD Objectives set out in Regulation 13 of the WFD Regulations. In line with WRPG (2023) and UKWIR (2021) guidance the principle WFD Assessment Objectives that the WRMP (both feasible options and programmes) has been tested against are:

1. To prevent deterioration of any WFD element of any water body - in line with Regulation 13(2)(a) and 13(5)(a).
2. To prevent the introduction of impediments to the attainment of 'Good' WFD status or potential for any water body in line with Regulation 13(2)(b) and 13(5)(c)<sup>4</sup>.

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<sup>4</sup> WRPG (2023) states that this a test to identify any options that 'prevent the achievement of the water body status objectives in the river basin management plan'. Discussion with EA and through review of EA internal guidance#1 identified that the EA consider 'less stringent objectives are not permanent and the assessment of any new activity or project must take into account the need to continue to aim for good status. The new activity or project must not jeopardise the achievement of good status in the future, irrespective of whether a less stringent objective was set in RBMP2'.

#1 EA (2021) Supporting implementation of river basin management plans position. LIT 14339. 01/2021



3. To ensure that the planned programme of water body measures in RBMP2 to protect and enhance the status of water bodies are not compromised.

If an option has been assessed to definitively not comply with the WFD Assessment Objectives set out above, then the option has been reported as WFD non-compliant and removed from the WRMP process. This only applies to options for which a clear and obvious conclusion around non-compliance can be reached, and for which no mitigation to provide compliance is possible.

If an option is assessed to potentially not comply with the WFD Assessment Objectives set out above then the option has been reported as 'potentially WFD non-compliant'. If an option is reported as 'potentially WFD non-compliant' it has remained in the WRMP process as it may be appropriate to consider the option further where it is considered that additional evidence to improve confidence in the assessment and/or licence design could mitigate the potentially WFD non-compliant issues. Any risks of WFD non-compliance would be investigated as part of a licence application, and mitigation requirements agreed with the Environment Agency.

### **Plan-level WFD Assessment Objectives**

The WFD Assessment Objectives presented above are the fundamental WFD Assessment Objectives that have been tested against at both the option-level and plan-level.

There are a number of further WFD Assessment Objectives, set out in the WRPG, which have been tested against at a plan-level. These are considered as progressive WFD Assessment Objectives rather than tests of constraint and do not lead to WFD non-compliance where they are not achieved. These objectives are as follows:

4. To assist the attainment of the WFD Objectives for the water body – in line with Regulation 13(2)(b) and 13(2)(c)
5. To assist the attainment of the objectives for associated WFD protected areas – in line with Regulation 13(6)
6. To reduce the treatment needed to produce drinking water and look to work in partnership with others; promoting the requirements of Article 7 of the WFD.

A negative answer to the WFD Assessment Objectives above does not determine that the plan has WFD constraints; however, they can be used in decision making by the water company.

Where WFD Assessment Objectives 1, 2 and/or 3 are not met by a programme or plan then, unless there is no reasonable alternative, that plan has not been progressed as the preferred plan without discussion with the relevant regulatory body. Discussion with the regulatory body includes:

- If a plan is reported as potentially WFD non-compliant it may be appropriate to consider an adaptive plan where it is considered that additional evidence to improve confidence in assessment and enhanced design could mitigate the potentially WFD non-compliant issues.
- Where a plan is assessed as WFD non-compliant, in circumstances where there is an over-riding public interest or the benefits of achieving the WFD Assessment Objectives are outweighed by benefits to human health, human safety or sustainable development there is scope to apply for a Regulation 19 exemption as to why these WFD Assessment Objectives are not achieved.

## 2.2 Proportionate level of detail for assessments

Throughout the WRMP process WFD compliance has been tested at relevant stages parallel to the wider WRMP programme. The approach taken to test WFD compliance for feasible options and consequent programmes of options is as follows:

- Stage 1 Option-level Assessment – this is a full assessment that covers the feasible list of options.
- Stage 2 Programme-level assessment – the cumulative effects of the options that make up any Programmes have been assessed.
- Stage 3 Preferred WRMP programme assessment – the preferred WRMP programme for DCWW has been assessed for impacts with other water companies' WRMPs, regional WRMPs and impacts with any WRMPs for other water resource zones within their own company.

In order to ensure the WFD assessment is proportionate for each stage, an outline of the assessment for each stage is provided in this section.

### Stage1 Option-level assessment

As advocated in the UKWIR (2021) guidance, each option has gone through a process to determine if it is compliant with the three principal WFD Assessment Objectives (as set out in Section 2.1). For proportionality of option assessment there are four steps, with each step becoming increasingly detailed. Where there is sufficient confidence in an assessment's conclusions the option has not progressed onto the next step. The four steps are summarised in the bullet points below, and further described in the subsequent sections:

- *Step 1 Screening based on activities* - to either exclude options from further assessment where it can be reasonably expected that the option would not have an influence on any WFD status elements or supporting elements, or identify which activities require progressing to Steps 2 or 3 assessment and in which water bodies.
- *Step 2 Screening based on magnitude of hydrogeological/hydrological impact and water body context*- to either exclude options from assessment where they are negligible or low impact, or identify which activities require progressing to Step 3 assessment and in which water bodies.
- *Step 3 Impact assessment* – either using existing assessments or an expert judgement approach based on source-pathway-receptor to establish likelihood of compliance with agreed WFD Assessment Objectives in all relevant water bodies. A confidence rating has been given to all assessments to reflect the amount of uncertainty in the design, environmental baseline and magnitude of impact.
- *Step 4 Detailed impact assessment* - specific to the option using measured baseline data, including additional bespoke collected evidence, and detail on design and operating pattern.

Further detail on how these steps have been assessed is set out below for the option-level assessment.

## Step 1: Screening based on activities

All options in the feasible list have been subject to this step. Where an option is screened as WFD compliant at this stage it has been accompanied by a robust explanation as to why this assessment can be made without the need to progress the option to Step 2. Instances where there is considered no risk to WFD compliance are identified as:

- Demand management activities;
- Supply options which have passed a sustainability assessment<sup>5</sup> at an abstraction rate up to the proposed option rate;
- Network constraint (i.e. improving infrastructure to achieve greater deployable output) options that do not result in additional abstraction (in comparison to recent abstraction rates), or where that additional abstraction has been identified as sustainable; provided the construction does not affect WFD protected areas or increase the risk of the transfer of INNS.

At this stage, the majority of construction activities can be screened out of further assessment with these activities being mitigatable assuming best practice construction techniques, and only involving short-term impacts (i.e. will not cause deterioration over the 6-year RBMP cycle).

Where an option is concluded as potentially being non-compliant with the WFD Assessment Objectives after Step 1 screening, the option has been progressed to Step 2 screening.

## Step 2: Screening based on magnitude of hydrogeological/hydrological impact and water body context

Step 2 screening identifies the water body name, ID and type of any water bodies that could potentially be impacted. The potential impacts are determined by the type of option. The UKWIR (2021) guidance identifies a range of option types and their potential impacts (**Table 2.1**).

Table 2.1 Potential effects to screen in to WFD assessment by option type

Option type	Impact type to test
<b>New groundwater abstraction, or increase in license rate</b>	<ul style="list-style-type: none"> <li>• Change in groundwater quantity</li> <li>• Impact on groundwater dependent terrestrial ecosystems</li> <li>• Impact on connected surface waters (flow change effects on ecology and water quality dilution)</li> <li>• Likelihood of saline ingress into aquifer</li> </ul>
<b>Aquifer recharge/ aquifer storage and recovery</b>	Effects specific to source water used for recharge
<b>Reservoir</b>	Impact on connected surface waters (flow change effects on ecology and water quality dilution)
<b>Run-of river abstraction</b>	Flow change effects on ecology and water quality dilution

<sup>5</sup> e.g. Surface water options WRGIS Band 1, 2 and 3 pass at fully licensed; groundwater options passing WFD groundwater tests; WINEP investigation are identified as sustainable by EA (UKWIR, 2021).

<b>River regulation</b>	Flow change effects on ecology and water quality dilution in regulated reach
<b>Reuse</b>	<ul style="list-style-type: none"> <li>• Flow and water quality change effects on ecology and chemical status in receiving watercourse</li> <li>• Flow and water quality change effects on ecology and chemical status in water course previously receiving discharge</li> </ul>
<b>Desalination</b>	Hydrodynamic changes on ecology in abstracted water body, including through pathways of salinity and sedimentation pattern change
<b>Inter-basin transfer</b>	<ul style="list-style-type: none"> <li>• Flow change effects on ecology and water quality dilution in donor watercourse</li> <li>• Direct ecological effects from introduction of invasive non-native species</li> <li>• Flow and water quality change effects on ecology and chemical status in receiving watercourse</li> </ul>

At this stage, the context of the water body will be considered to identify any additional constraints e.g. any protected areas, or any planned water body measures in RBMP2.

For any options that are sourced from groundwater, any local surface water bodies that are likely to be hydraulically connected have been identified. The impact on both the groundwater water body and the surface water bodies has been assessed. Similarly, any links between lake water bodies and river water bodies have been taken into consideration when assessing options that impact lake water bodies.

Impacts are not confined to the water body where the option is located, as the impacts of an option can transverse multiple water bodies. In these instances, assessments have been conducted against each water body in the flow pathway until no WFD compliance risk is identified.

In England & Wales, hydrology is a supporting element to WFD status and is not a status element that contributes directly to WFD ecological status. Regulators' hydrogeological/hydrological assessment tools and their outputs can provide suitable information from which to assess the magnitude of effect. Hydrogeological/hydrological appraisal tasks that have been undertaken are:

- Review the regulatory position<sup>6</sup> on water available for abstraction in an aquifer, reach or catchment. The available quantity can be compared with the increase in abstraction associated with an option. These assessments often include an indication of water availability under different flow conditions, which adds specificity to potential operational considerations such as hands-off flow conditions.
- Review the regulatory position on WFD hydrology, including the pass-forward flow from rivers to transitional waters.
- Review the regulatory position on the extent of influence of flow on status elements failing their targets, including biological status elements, physico-chemical status elements, hydro-morphology and groundwater quantitative status.

<sup>6</sup> Natural Resources Wales Abstraction Licensing Strategies:

<https://naturalresources.wales/about-us/what-we-do/water/water-available-in-our-catchments/?lang=en>

Natural Resources Wales Catchment Abstraction Management Strategy datasets:

<http://lle.gov.wales/catalogue/item/WaterResourceReliabilityData> (March 2021)

<http://lle.gov.wales/catalogue/item/WaterResourceAvailabilityData> (March 2021)

- For surface waters, review the likely changed river flow regime against measured river flows from the long-term records of nearby gauging stations held on the National River Flow Archive<sup>7</sup>, to inform the magnitude of change in flow.

Where the hydrogeological/hydrological appraisal identifies operational activities that are considered with confidence to be low impact these will be concluded as WFD compliant, subject to review of local WFD protected areas.

### Step 3: Impact assessment

Where a WFD assessment has not identified an option as WFD compliant through the screening processes of Step 1 and Step 2, the option has been subject to impact assessment.

For each option, the construction and operational activities which have been screened into the Step 3 impact assessment are identified. A source-pathway-receptor approach to identifying effects on WFD Assessment Objectives has been undertaken. Using that approach, the source of change is the construction or operational activity. The pathway includes physical environment changes such as water level change, flow velocity change, morphological change. The receptor is the WFD status element or the WFD protected area.

For each option, a source-pathway-receptor approach to identifying effects on WFD Assessment Objectives has been undertaken. In this approach, the source of change is the construction or operational activity, the pathway is any physical environment changes such as in water levels, flow velocities, morphology or water quality, and the receptor is the WFD status element or the WFD protected area. All relevant WFD status elements have been considered, according to the water body type:

- Groundwater bodies: Quantitative tests including dependent surface water body status, groundwater dependent terrestrial ecosystems (GWDTE), saline intrusion and water balance. Chemical tests including dependent surface water body status, GWDTEs, drinking water protected areas, saline intrusion and general quality.
- River water bodies: fish, invertebrates, macrophytes, physico-chemical water quality, chemicals;
- Transitional water bodies: phytoplankton, angiosperms, macroalgae, invertebrates, fish, physico-chemical water quality, chemicals.

Each element is assessed individually, and the worst-case compliance conclusion is taken as the overall conclusion for the water body (i.e. if one element is non-compliant, then the water body will be identified as being non-compliant), in line with Environment Agency (2011)<sup>8</sup>.

A confidence rating has been assigned to all assessments to reflect the amount of uncertainty in the option design, environmental baseline and magnitude of impact. The confidence level categories that have been used are presented in **Table 2 2**.

<sup>7</sup> <https://nrfa.ceh.ac.uk/data/search>

<sup>8</sup> Environment Agency (2011) Method statement for the classification of surface water bodies

Table 2.2 WFD compliance assessment confidence level categories

Confidence category	Description
<b>Low</b>	Known WFD compliance risks/ failures and potential pathways from option's activities - where assessment based on expert judgement alone
<b>Medium</b>	Reasonable levels of evidence for at risk activities. Some assumptions and expert opinion required around risk areas.
<b>High</b>	Good level of evidence with minimal assumptions or low risk activity

#### Step 4: Detailed impact assessment

The UKWIR (2021) guidance identifies that where there remains low confidence as to whether an option is compliant with the WFD Assessment Objectives and the option is included in the preferred plan, a more detailed impact assessment (which may include bespoke groundwater modelling) is required. This stage has not been carried out for any of DCWW's options.

### Stage 2: Programme level cumulative assessment

In order to support programme development, the potential for cumulative effects of different combinations of constrained options has been highlighted. Informed through the option-level assessment which have already been set out per water body, a list of all WFD water bodies assessed for the individual options was assimilated. Where more than one option was assessed for the same water body a cumulative assessment has been undertaken of the multiple options, against the agreed set of WFD Assessment Objectives, using the same methodologies as for the option-level assessment. This required the revision of the high level hydrological and/or hydrogeological assessment which underpins the testing of the WFD Assessment Objectives. It is noted that the programme level assessments include any additional linked water bodies which are impacted by the cumulative effect of options (in addition to those that are identified in the option-level assessment), such as downstream surface water bodies.

An overall WFD compliance statement for each programme has been prepared, setting out compliance with each of the agreed WFD Assessment Objectives and the level of confidence in the assessment.

### Stage 3: Assessment of the Preferred WRMP against other plans and projects

The potential in-combination impact of the whole WRMP, regional WRMP and with WRMPs for other water companies has been considered. If assessment were to be necessary, then a similar process to that identified above for the individual options would be used.

## 2.3 Consultation

A draft WFD compliance assessment methodology report was issued to the regulators (Natural Resources Wales, the Environment Agency and Natural England) on 8th April 2021 to set out the method for completing the WFD compliance assessments for the water companies in the WRW region. A meeting was held with regulators on 28 April 2021 and comments on the report were

received to get regulatory feedback on the draft methodology report. These comments were addressed and a Final WFD compliance assessment methodology report and comment log were issued to the regulators on 16th July 2021.

## 3. Option-level (Stage 1) WFD Assessment outcomes

This section outlines the outcomes of the WFD compliance assessment at an option-level for each of the options in the feasible list.

### 3.1 Feasible options included in the WFD Compliance Assessment

Through an extensive optioneering process, considering a wide range of potential options to balance future supply and demand, DCWW have selected the most suitable options to make up the feasible options list. This list includes both demand side and supply side options, of which only the latter require a WFD Compliance Assessment. The supply side options are presented in **Table 3.1**.

### 3.2 Option level WFD Compliance Assessment

This section presents a summary of the option level WFD Compliance Assessment for all options included in the feasible list. It is the outcome of methodological Stage 1, which includes a summary of the screening (methodological Step 1 and Step 2) and impact assessment (methodological Step 3). These are reported in full in **Appendix A** and **Appendix B** respectively, with a summary in **Table 3.1**.

In summary, the list of feasible options includes:

- 18 options that are anticipated to be Compliant with the WFD
- 7 options that are potentially non-compliant (with low confidence)
- 7 options that are potentially non-compliant (with medium confidence)
- No options that are expected to be non-compliant (with high confidence).



Table 3.1 Summary of WFD Compliance Assessment of Feasible Options

Option Type	Option Name	Option ID	Outcome	Reasoning (for options assessed at Step 3)
Reservoir_increase abstraction	CLAERWEN_TRANSFER	MSC01	Non-compliant (low conf.)	Decreasing the volume, depth and residency time of water in the reservoir as a result of increased abstraction could result in changes to physico-chemical quality elements, potentially causing a deterioration in status and/or introducing impediments. The change in overtopping regime of the reservoir may impact high flows in the Afon Claerwen, which in turn could impact fish, invertebrate and macrophyte/phytobenthos populations.
Network Upgrades	ZONAL_CONNECTION_N ORTH_CEREDIGION	MSC02	Compliant (Step 1)	
Reservoir_raise height	LLYN_EGNANT_0.5m	MSC06A	Non-compliant (low conf.)	Raising the reservoir level and capacity could change the hydrological regime and morphological conditions within the reservoir. Changes to reservoir spills would affect the downstream water course, although the immediately downstream water course is not classified as a WFD water body.
Reservoir_raise height	LLYN_EGNANT_1.0m	MSC06B	Non-compliant (low conf.)	Raising the reservoir level and capacity could change the hydrological regime and morphological conditions within the reservoir. Changes to reservoir spills would affect the downstream water course, although the immediately downstream water course is not classified as a WFD water body.
Network Upgrades	DERI_GOCH_UPGRADES	MSC07	Compliant (Step 1)	
Run-of-river abstraction	LLECHRYD_WTW	MSC08	Compliant (low conf.)	The increased abstraction, when applied with the flow constraints agreed with NRW, is anticipated to be WFD compliant.
Groundwater abstraction	GREAT_SPRING_TO_COURT_FARM	SEW005a	Compliant (med conf.)	The increase in groundwater abstraction is anticipated to be WFD compliant.

Option Type	Option Name	Option ID	Outcome	Reasoning (for options assessed at Step 3)
Groundwater abstraction	GREAT_SPRINGS_TO_LLA NDEGFEDD	SEW005c	Compliant (low conf.)	The increase in groundwater abstraction, and transfer of treated water to the reservoir, are anticipated to be WFD compliant.
Reservoir_raise height	TALYBONT_RESERVOIR	SEW007	Non-compliant (med conf.)	Raising the reservoir level and capacity could change the hydrological regime and morphological conditions within the reservoir, while changes to reservoir spills would affect the downstream water course.
River regulation	GRWYNE_RESERVOIR	SEW009	Non-compliant (med conf.)	Abstraction from the reservoir would change the hydrological regime and could potentially result in recurrence of historic phytoplankton blooms.  Discharge to downstream watercourse would result in changes to flows that could impact on biological or physico-chemical elements, although the discharge has been planned to avoid the most sensitive reaches
Reservoir_increase abstraction	PONTHIR_AND_WENTWO OD	SEW022	Non-compliant (med conf.)	New abstraction from the reinstated reservoir may cause deterioration by lowering water levels (particularly during dry weather conditions) and altering water quality and ecology, particularly in relation to algal blooms.  Use of treated effluent for water supply would reduce discharge from Ponthir WwTW, however as the existing discharge is to the Usk Estuary, this is not expected to result in non-compliance.
Run-of-river abstraction	PONTHIR_STANDALONE	SEW022a	Compliant (Step 2)	
Reservoir_increase abstraction	PANT-YR-EOS	SEW036a	Non-compliant (low conf.)	Decreasing the volume, depth and residency time of water in the reservoir as a result of increased abstraction could result in changes to physico-chemical quality elements, potentially causing a deterioration in status and/or introducing impediments. As there is no required compensation release from the reservoir, an increase in abstraction may reduce flow in the downstream river waterbody, with potential for impacts on biological or physico-chemical elements.

Option Type	Option Name	Option ID	Outcome	Reasoning (for options assessed at Step 3)
Reservoir_increase abstraction	YNYS-Y-FRO	SEW036b	Non-compliant (low conf.)	Decreasing the volume, depth and residency time of water in the reservoir as a result of increased abstraction could result in changes to physico-chemical quality elements, potentially causing a deterioration in status and/or introducing impediments. As there is no required compensation release from the reservoir, an increase in abstraction may reduce flow in the downstream river waterbody, with potential for impacts on biological or physico-chemical elements.
Reservoir_increase abstraction	PANT-YR-EOS_AND_YNYS-Y-FRO	SEW036c	Non-compliant (low conf.)	Decreasing the volume, depth and residency time of water in the reservoirs as a result of increased abstraction could result in changes to physico-chemical quality elements, potentially causing a deterioration in status and/or introducing impediments. As there is no required compensation release from the reservoir, an increase in abstraction may reduce flow in the downstream river waterbody, with potential for impacts on biological or physico-chemical elements.
Groundwater abstraction	SCHWYLL BOREHOLES	SEW044	Non-compliant (low conf.)	Reinstated abstraction from the Swansea Southern Carboniferous Limestone may cause deterioration to nearby Groundwater Dependent Terrestrial Ecosystems and saline intrusion is noted in the option scopebook. Nearby surface water bodies are likely to have some connectivity to the groundwater body, so flows could be reduced due to reductions in baseflow or increased losses to ground resulting from increased groundwater abstraction. Changes to hydrological regime, river continuity and morphological conditions could impact fish invertebrates and macrophyte/phytobenthos populations, as well as physico-chemical and chemical quality.
Run-of-river abstraction	AFON_LWYD	SEW052	Compliant (low conf.)	The increased abstraction, when applied with the flow constraints agreed with NRW, is anticipated to be WFD compliant.
Run-of-river abstraction	AFON_LWYD_TO_LLANDE GFEDD_RESERVOIR	SEW053	Non-compliant (low conf.)	The potential non-compliance is related to Llandegfedd reservoir, where further detail would be required to confirm compliance. Changes to the water quality of Llandegfedd Reservoir and transfer of INNS are possible as a result of the transfer,

Option Type	Option Name	Option ID	Outcome	Reasoning (for options assessed at Step 3)
				<p>which could impact on the ecological, physico-chemical and chemical status of the waterbody.</p> <p>The abstraction from the Afon Lwyd is assumed to be WFD compliant, as it would be operated in line with flow constraints set out by NRW.</p>
Washwater recovery	NANTYBWCH_WASTEWA TER	SEW063	Compliant (Step 2)	
Reservoir_new abstraction	WENTWOOD	SEW064	Non-compliant (med conf.)	New abstraction from the reinstated reservoir may cause deterioration by lowering water levels (particularly during dry weather conditions) and altering water quality and ecology, particularly in relation to algal blooms.
Effluent reuse	CARDIFF_EAST_AND_COG G_MOORS	SEW067	Compliant (Step 2)	
Network Upgrades	MEMORIAL	SEW166	Compliant (Step 1)	
Run-of-river abstraction	WYE_TO_SEVERN_TRENT	SEW167	Compliant (Step 2)	
Network upgrades	LLWYNON_GRAVITY_MAI N_UPGRADES	SEW168	Compliant (low conf.)	It is assumed that a discharge consent would be agreed for the new intermittent discharge associated with this option, and that the option would be WFD compliant.
Washwater Recovery	Bryn Gwyn WTW Supernatant Recovery	TWG03	Compliant (Step 1)	
Network upgrades	Upsize Llangyfelach WPS	TWG09	Compliant (Step 1)	

Option Type	Option Name	Option ID	Outcome	Reasoning (for options assessed at Step 3)
Network Upgrades	Bryn Gwyn Distribution Options - Felindre WTW Supply to Llanon	TWG11	Compliant (Step 1)	
Network Upgrades	Crai Distribution Options - Upsize Christopher Road WPS	TWG12	Compliant (Step 1)	
Network Upgrades	Crai Distribution - Rezoning & Cwmdu Bridge Valve Isolation	TWG13	Compliant (Step 1)	
Network Upgrades	Ystradfellte - Reverse flow through Tonna control valve	TWG14	Compliant (Step 1)	
Reservoir reinstatement	Llyn y Fan Fach	TWG15	Compliant (Step 2)	
Network Upgrades	Bryn Gwyn Distribution Options - Carn Powell SRV to Llannon SRV	TWG026	Compliant (Step 1)	

## 4. Programme-level (Stage 2) WFD Assessment

### 4.1 Introduction

In order to understand the WFD compliance of the draft WRMP as a whole, a cumulative assessment has been undertaken of the options within the Preferred Plan. This makes use of the individual option-level assessments (as presented in **Section 3**), but also recognises that when considered as a whole Plan, some water bodies could be impacted by more than one option. For each WFD water body that is impacted by one or more options within the plan, an impact assessment has been undertaken to understand the cumulative impact on the receptors within that water body as a result of all of the options being in operation. This section then provides an overall assessment of all options and all water bodies associated with the Preferred Plan.

### 4.2 Cumulative Assessment of the Preferred Plan

**Table 4.1** shows the options that make up the Preferred Plan, and the water bodies that could be impacted by any option. The Preferred Plan includes only two water bodies being identified as potentially impacted, and they are hydrologically unconnected. Therefore there is no potential for cumulative impacts.

The assessment of those water bodies that could be impacted by the Preferred Plan is summarised in **Table 4.2**. The detail for each water body can be found in **Appendix B**. In summary, the Preferred Plan is not anticipated to result in any non-compliance in relation to the Water Framework Directive. Please note that for the purposes of environmental assessment, option SEW052 – Afon Lwyd' is included within the 'Preferred Plan' as this may be required to support a potential bulk supply to the Canal and River Trust and so we want to be proactive in understanding any potential negative environmental effects from this option.

Table 4.1 Summary of options in the Preferred Plan

Option Name	Option ID	Relevant WFD water bodies	Outcome of individual option assessment
AFON_LWYD	SEW052	GB109056032911	Compliant (low conf.)
MEMORIAL	SEW166	None	Compliant (Step 1)
LLWYNON_GRAVITY_MAIN_UPGRADES	SEW168	GB109057027240	Compliant (low conf.)
Crai Distribution Options - Upsize Christopher Road WPS	TWG12	None	Compliant (Step 1)
Ystradfellte - Reverse flow through Tonna control valve	TWG14	None	Compliant (Step 1)

Table 4.2 Cumulative Assessment of the Preferred Plan

Water body	Options contributing to cumulative effect	Risk of WFD non-compliance	Comments
<b>GB109056032911 Afon Lwyd-below Mon and Brecon Canal</b>	SEW052	Compliant (low conf.)	This option involves a new abstraction from the Afon Lwyd. The abstraction would be operated in line with flow constraints set out by NRW. Potential risks associated with low flows would be avoided by those constraints, which do not allow abstraction when flows are below 30 Ml/d. The full rate of abstraction would only be allowed when flow is greater than 70 Ml/d. On this basis, it can be assumed that the option would not have an impact on WFD compliance in the Afon Lwyd.
<b>GB109057027240 Taff - conf R Cynon to conf Rhondda R</b>	SEW168	Compliant (low conf.)	This option would involve a new intermittent discharge to the River Taff. Discharges are expected to take place during dry weather, hence during times with less dilution, with some potential for impacts on water quality and subsequently fish. However, it is expected that appropriate conditions could be agreed as part of a discharge consent, to enable the option to be WFD compliant.

## **5. Preferred WRMP (Stage 3) WFD Assessment against other plans and projects**

The potential for combined impacts of DCWW's Preferred Plan with other water companies' draft WRMPs has been considered. No potential in-combination impacts have been identified.



## 6. WFD compliance summary of DCWW's revised draft WRMP24

A summary of the assessment is provided in **Table 6.1**, which considers the overall compliance of the Preferred Plan. In summary, the Preferred Plan is concluded to be compliant with the WFD Assessment objectives.

Table 6.1 Summary of plan level WFD compliance for the DCWW WRMP24

WFD Assessment Objective	Summary of WFD compliance (Preferred Plan)	Explanation
<b>1) To prevent deterioration of any WFD element of any water body - in line with Regulation 13(2)(a) and 13(5)(a)</b>	Compliant	All options in the preferred plan have been concluded to be compliant, individually and cumulatively.
<b>2) To prevent the introduction of impediments to the attainment of 'Good' WFD status or potential for any water body -in line with Regulation 13(2)(b) and 13(5)(c).</b>	Compliant	All options in the preferred plan have been concluded to be compliant, individually and cumulatively.
<b>3) To ensure that the planned programme of water body measures in RBMP2 to protect and enhance the status of water bodies are not compromised.</b>	Compliant	No planned water body measures, as identified in the RBMP3, have been identified as being compromised.
<b>4) To assist the attainment of the WFD objectives for the water body – in line with Regulation 13(2)(b) and 13(2)(c)</b>	Neutral	The assessment as presented here does not show that the plan would assist in attainment of the WFD objectives for any water bodies. However, this may be possible through delivery of BNG or other enhancements, once those are further developed. Demand and leakage management options could also assist.
<b>5) To assist the attainment of the WFD objectives for associated WFD protected areas – in line with Regulation 13(6)</b>	Compliant	The HRA for the WRMP concludes that, based on the currently available data, none of the options will adversely affect the integrity of any European sites, alone or in combination.
<b>6) To progressively reduce or phase out the release of individual pollutants or groups of pollutants that present a significant threat to the aquatic environment</b>	Compliant	None of the options in the preferred plan involve the deliberate release of pollutants to the aquatic environment.

# Appendix A

## Option-level screening

This Appendix presents the results of the WFD compliance assessment screening outcomes (methodological Step 1 and Step 2) for all of the options included in the feasible list and indicates whether they were screened in for an impact assessment (methodological Step 3) based on the potential risk of deterioration of WFD status. Where an option has been screened in for an impact assessment, the water bodies that were screened in have also been identified. The outcomes of the screening steps are displayed. The impact assessment for the options and water bodies scoped in for further assessment are presented in Appendix B.

Option Name	WRMP24 Ref	Water body name	Water body ID	Option Type	Screened in	Reason for screening out
CLAERWEN_TRANSFER	MSC01	Claerwen Reservoir Afon Claerwen - conf Afon Arban to Caban-coch	GB30938427 GB109055042230	Reservoir_increase abstraction	Yes	
ZONAL_CONNECTION_NORTH_CEREDIGION	MSC02	N/A	N/A	Network Upgrades	No	Step 1 Construction of new infrastructure will require appropriate consenting and permitting, but WFD compliance unlikely to be a barrier to implementation of the option.  Operation - network scheme only, no new/increased abstraction from the water environment.
LLYN_EGNANT_0.5m	MSC06A	Llyn Egnant	GB31038409	Reservoir_raise height	Yes	
LLYN_EGNANT_1.0m	MSC06B	Llyn Egnant	GB31038409	Reservoir_raise height	Yes	
DERI_GOCH_UPGRADES	MSC07	N/A	N/A	Network Upgrades	No	Step 1 Construction of new infrastructure will require appropriate consenting and permitting, but WFD compliance unlikely to be a barrier to implementation of the option.  Operation - network scheme only, no new/increased abstraction from the water environment.
LLECHRYD_WTW	MSC08	Teifi - Afon Ceri to estuary	GB110062043563	Run-of-river abstraction	Yes	
GREAT_SPRINGS_TO_COURT_FARM	SEW005a	Usk and Wye Southern Carboniferous Limestone Severn Lower	GB40901G206300 GB530905415401	Run-of-river abstraction	Yes	
GREAT_SPRINGS_TO_LLANDEGFEDD	SEW005c	Usk and Wye Southern Carboniferous Limestone Severn Lower Llandegfedd Reservoir	GB40901G206300 GB530905415401 GB30941363	Run-of-river abstraction	Yes	
TALYBONT_RESERVOIR	SEW007	Talybont Reservoir Caerfanell - source to conf R Usk	GB30940365 GB109056033000	Reservoir_raise height	Yes	
GRWYNE_RESERVOIR	SEW009	Grwyne Fawr Reservoir Grwyne Fawr - conf Grwyne-Fechan to conf R Usk Usk conf Afon Cwnnon to conf Gavenny R Usk - conf R Gavenny to conf Olway Bk	GB30939891 GB109056032980 GB109056040082 GB109056040083	Reservoir_increase abstraction Run-of-river abstraction	Yes	
PONTHIR_AND_WENTWOOD	SEW022	Wentwood Reservoir Usk Estuary	GB30941762 GB530905415404	Reservoir_increase abstraction	Yes	
PONTHIR_STANDALONE	SEW022a	Usk Estuary	GB530905415404	Run-of-river abstraction	No	Step 2 Construction of new infrastructure will require appropriate consenting and permitting, but WFD compliance unlikely to be a barrier to implementation of the option.  Operation: the Usk Estuary is designated a SSSI and SAC therefore requires a higher level of protection. However, a reduction in volume (30 MI/d) of final effluent discharging to the Usk estuary will have a negligible effect on water quality, and as the Usk is tidal at the discharge location, the impact of flow reduction from Ponthir WwTW (and any associated dilution effect in the Usk) will also be negligible, therefore WFD compliant.
PANT-YR-EOS	SEW036a	Pant-yr-eos Reservoir Pantyreos Bk - source to Barrack Hill	GB30941829 GB109056026840	Reservoir_increase abstraction	Yes	
YNYS-Y-FRO	SEW036b	Ynysfro Reservoir Pantyreos Bk - source to Barrack Hill	GB30941926 GB109056026840	Reservoir_increase abstraction	Yes	
PANT-YR-EOS_AND_YNYS-Y-FRO	SEW036c	Pant-yr-eos Reservoir Ynysfro Reservoir Pantyreos Bk - source to Barrack Hill	GB30941829 GB30941926 GB109056026840	Reservoir_increase abstraction	Yes	
SCHWYLL_BOREHOLES	SEW044	Swansea Southern Carboniferous Limestone OGMORE ESTUARY Ogmore - confluence with Llynfi to tidal limit Ewenny - conf with Ewenny Fach to tidal limits Alun - headwaters to confluence with Ewenny	GB41001G201300 GB541005815300 GB110058026280 GB110058026250 GB110058026220	Groundwater abstraction	Yes	
AFON_LWYD	SEW052	Afon Lwyd - below Mon and Brecon Canal	GB109056032911	Run-of-river abstraction	Yes	
AFON_LWYD_TO_LLANDEGFEDD_RESERVOIR	SEW053	Afon Lwyd - below Mon and Brecon Canal Llandegfedd Reservoir	GB109056032911 GB30941363	Run-of-river abstraction	Yes	
NANTYBWCH_WASTEWATER	SEW063	N/A	N/A	Effluent reuse	No	Step 2 Construction of new infrastructure will require appropriate consenting and permitting, but WFD compliance unlikely to be a barrier to implementation of the option.  Operation: leaving 2-2.5 MLD in Shon Sheffrey Reservoir is unlikely to have any impact on the hydrological functioning of the reservoir, given the relatively small volume of water compared with the entire reservoir. Any changes to the reservoir spill regime to downstream watercourse will be negligible.
WENTWOOD	SEW064	Wentwood reservoir	GB30941762	Reservoir_new abstraction	Yes	
CARDIFF_EAST_AND_COGG_MOORS	SEW067	N/A	N/A	Effluent reuse	No	Step 2 Construction of new infrastructure will require appropriate consenting and permitting, but WFD compliance unlikely to be a barrier to implementation of the option.  Operation: sourcing washwater from final effluent across 2 WwTWs equates to ~0.4 MLD of final effluent not being discharged to surface waters. Cardiff Eastmoors WwTW discharges effluent to the Severn Estuary, so impact on flow is negligible. The Cogg Moors WwTW discharges to a small unnamed watercourse that flows into a short reach of WFD watercourse (no EA gauges present), before discharging into the Bristol Channel (coastal water) after ~2.4 km. Assessed as negligible impact on flows. Overall WFD compliant
MEMORIAL	SEW166	N/A	N/A	Network Upgrades	No	Step 1 Construction of new infrastructure will require appropriate consenting and permitting, but WFD compliance unlikely to be a barrier to implementation of the option.  Operation - network scheme only, no new/increased abstraction from the water environment.
WYE_TO_SEVERN_TRENT	SEW167	N/A	N/A	Run-of-river abstraction	No	Step 2 Construction of new infrastructure will require appropriate consenting and permitting, but WFD compliance unlikely to be a barrier to implementation of the option.  Operation: increased abstraction to Severn Trent would be offset by equivalent reduction in abstraction for DCWW supply, therefore no net impact. Overall WFD compliant.
LLWYNON_GRAVITY_MAIN_UPGRADES	SEW168	Taff - conf R Cynon to conf Rhondda R	GB109057027240	Washwater discharge	Yes	
Crai Distribution - Rezoning and Valve Isolation	TWG03	N/A	N/A	Water Treatment Works	No	Step 1 Construction of new infrastructure will require appropriate consenting and permitting, but WFD compliance unlikely to be a barrier to implementation of the option.  This option involves the recovery of the supernatant from the surface water run-off from a WTW. As a result, there are no pathways for this option to impact any WFD water bodies. As such there is a negligible risk to WFD compliance.

Upsize Llangyfelach WPS	TWG09	N/A	N/A	Raw Water Mains	No	<p>Step 1 Construction of new infrastructure will require appropriate consenting and permitting, but WFD compliance unlikely to be a barrier to implementation of the option.</p> <p>This scheme involves a network transfer with no new abstractions or discharge to WFD water bodies. As a result there is a negligible risk to WFD compliance.</p>
Bryn Gwyn Distribution Options - Felindre WTW Supply to Llanon	TWG11	N/A	N/A	Network Upgrades	No	<p>Step 1 Construction of new infrastructure will require appropriate consenting and permitting, but WFD compliance unlikely to be a barrier to implementation of the option.</p> <p>This scheme involves a network transfer with no new abstractions or discharge to WFD water bodies. As a result there is a negligible risk to WFD compliance.</p>
Crai Distribution Options - Upsize Christopher Road WPS	TWG12	N/A	N/A	Raw Water Mains	No	<p>Step 1 Construction of new infrastructure will require appropriate consenting and permitting, but WFD compliance unlikely to be a barrier to implementation of the option.</p> <p>This scheme involves a network transfer with no new abstractions or discharge to WFD water bodies. As a result there is a negligible risk to WFD compliance.</p>
Crai Distribution - Rezoning and Valve Isolation	TWG13	N/A	N/A	Raw Water Mains	No	<p>Step 1 Construction of new infrastructure will require appropriate consenting and permitting, but WFD compliance unlikely to be a barrier to implementation of the option.</p> <p>This scheme involves a network upgrade with no new abstractions or discharge to WFD water bodies. As a result there is a negligible risk to WFD compliance.</p>
Ystradfellte - Reverse flow through Tonna control valve	TWG14	N/A	N/A	Network Upgrades	No	<p>Step 1 Construction of new infrastructure will require appropriate consenting and permitting, but WFD compliance unlikely to be a barrier to implementation of the option.</p> <p>This scheme involves a network upgrade with no new abstractions or discharge to WFD water bodies. As a result there is a negligible risk to WFD compliance.</p>
Llyn y Fan Fach Regulation	TWG15	N/A	N/A	Raw Water Mains	No	<p>Step 2 Construction of new infrastructure will require appropriate consenting and permitting, but WFD compliance unlikely to be a barrier to implementation of the option.</p> <p>This option would lead to additional abstraction from Llyn y Fan Reservoir. Llyn y Fan Reservoir is not a WFD water body and the impact on the downstream surface water flows is expected to be negligible. As such, there is a negligible risk to WFD compliance.</p>
Bryn Gwyn Distribution Options - Carn Powell SRV to Llanon SRV	TWG026	N/A	N/A	Network Upgrades	No	<p>Step 1 Construction of new infrastructure will require appropriate consenting and permitting, but WFD compliance unlikely to be a barrier to implementation of the option.</p> <p>This scheme involves transfer of water between service reservoirs with no new abstractions or discharge to WFD water bodies. As a result there is a negligible risk to WFD compliance.</p>

# Appendix B

## Option-level impact assessment

This Appendix presents the impact assessment (methodological Step 3) for the options that were screened in for more detailed assessment through the screening steps (as set out in Appendix A). An impact assessment table has been completed for each water body for each option that has been identified through the screening process.

Option	MSC01	CLAEWEN TRANSFER	Assessed magnitude of hydrological effect:	Uncertain
Water body type	Lake		Sources & pathways of potential effect:	
Hydromorph designation	Heavily modified		This option has progressed to Step 3 impact assessment because of a new surface water abstraction of 7 MI/d from Claerwen Reservoir. Initial review of regulatory position of water availability and changes to flow regimes can not discount potential for deterioration. Potential impacts include hydrological regime change effects on ecology and water quality dilution.	
Water body ID	GB30938427			
Water body name	Claerwen Reservoir			

Status element	Baseline Status		Reasons for not achieving good status	Assessment of option		
	RBMP2 status (2015)	2021 (C3) status		Assessment	Potential for deterioration	Potential for introduction of impediments
Phytoplankton	High	High		The 2021 overall water body status is moderate, and physical modifications of the waterbody is given as the reason for not achieving good status, in relation to the mitigation measures assessment, and total phosphorus.	Compliant (low conf.)	n/a
Invertebrates				A new abstraction of up to 7 MI/d could change the hydrological regime and morphological conditions within the reservoir, and water edge conditions with resulting impacts on ecological populations, particularly shoreline habitats. However, due to the relatively small abstraction rate in relation to the size/volume of the waterbody, the risk of deterioration in status is deemed low.	Compliant (low conf.)	n/a
Macrophytes/ phytobenthos		High			Compliant (low conf.)	n/a
Phys-chem water quality (in support of ecological status)	High	High	Total phosphorus. RNAG - Diffuse sources - agriculture and rural land management (probable), and Natural (probable)	Decreasing the volume, depth and residency time of water in the reservoir could result in changes to physico-chemical quality elements (e.g. BOD, DO, pH, temperature), potentially causing a deterioration in status and/or introducing impediments.	Non-compliant (low conf.)	Non-compliant (low conf.)
Chemicals	NA	High		The option would not introduce new priority or priority hazardous chemicals to the reservoir. Operation of the reservoir at increased capacity is unlikely to have an impact on the chemical status of the water body	Compliant (high conf.)	n/a
RBMP2 water body measures			None		n/a	Compliant (high conf.)
Overall assessment of WFD Regulations compliance of the option in this water body					Non-compliant (low conf.)	

Option	MSC01	CLAEWEN TRANSFER	Assessed magnitude of hydrological effect:	Uncertain
Water body type	River		Sources & pathways of potential effect:	
Hydromorph designation	No designation		This option has progressed to Step 3 impact assessment because of a new surface water abstraction of 7 MI/d from Claerwen Reservoir. Initial review of regulatory position of water availability and changes to flow regimes can not discount potential for deterioration. This is the downstream connected water body to Claerwen Reservoir; potential impacts include flow change effects on ecology and water quality dilution.	
Water body ID	GB109055042230			
Water body name	Afon Claerwen - conf Afon Arban to Caban-coch			

Status element	Baseline Status		Reasons for not achieving good status					Assessment of option		
	RBMP2 status (2015)	2021 (C3) status	Flow	Morphology	Sanitary water quality	Nutrients	Other	Assessment	Potential for deterioration	Potential for introduction of impediments
Fish								As a result of a new abstraction from Claerwen Reservoir, reduced/affected outflows could impact the downstream river waterbody.	Non-compliant (low conf.)	n/a
Invertebrates							Unknown	It is assumed that there would be no change to compensation flows released from the reservoir. Longer term there would be a change to the pattern of overtopping which would reflect the reduced reservoir volume, but it is difficult to anticipate what this would be. The change in overtopping regime may impact high flows in the Afon Claerwen, which in turn could impact fish, invertebrate and macrophyte/phytobenthos populations.	Non-compliant (low conf.)	Non-compliant (low conf.)
Macrophytes/ phytobenthos								The ALS for the north west Wye catchment area indicates that water is restricted for licensing at Q95 but available across the remaining flow regime. The 2021 overall WFD waterbody status is poor, with the driving element identified as invertebrates.	Non-compliant (low conf.)	n/a
Physico-chemical								Decreasing the volume, depth and residency time of water in the reservoir could result in changes to physico-chemical quality elements (e.g. BOD, DO, pH, temperature), of the water released downstream, potentially causing a deterioration in status and/or introducing impediments.	Non-compliant (low conf.)	Non-compliant (low conf.)
Chemicals								The option would not introduce new priority or priority hazardous chemicals but lower flows could result in a minor reduction in dilution of chemicals already present in the beck. This risk is deemed very low.	Compliant (low conf.)	n/a
RBMP2 water body measures									n/a	Compliant (high conf.)
Overall assessment of WFD Regulations compliance of the option in this water body									Non-compliant (low conf.)	

Option	MSC06a	LLYN_EGNANT_DAM_RAISING_0.5M	Assessed magnitude of hydrological effect:	Uncertain
Water body type	Lake		Sources & pathways of potential effect:	
Hydromorph designation	Natural		This option has progressed to Step 3 impact assessment because the option proposes raising the top water level of Llyn Egnant Reservoir by 0.5m, thus increasing the capacity of the reservoir (by about 90 Ml). Potential impacts include hydrological regime change effects on ecology and water quality dilution. Note that the downstream watercourse is not a WFD water body immediately downstream, so the assessment has covered only the reservoir itself.	
Water body ID	GB31038409			
Water body name	Llyn Egnant			

Status element	Baseline Status		Reasons for not achieving good status	Assessment of option	
	RBM2 status (2015)	2021 (C3) status		Potential for deterioration	Potential for introduction of impediments
Phytoplankton				Non-compliant (low conf.)	n/a
Invertebrates				Non-compliant (low conf.)	Non-compliant (low conf.)
Macrophytes/ phytobenthos				Non-compliant (low conf.)	n/a
Physico-chemical				Non-compliant (low conf.)	n/a
Chemicals				Compliant (med. conf.)	n/a
RBMP2 water body measures				n/a	
Overall assessment of WFD Regulations compliance of the option in this water body				Non-compliant (low conf.)	



Option	MSC06b	LLYN_EGNANT_DAM_RAISING_1.0M	Assessed magnitude of hydrological effect:	Uncertain
Water body type	Lake		Sources & pathways of potential effect: This option has progressed to Step 3 impact assessment because the option proposes raising the top water level of Llyn Egnant Reservoir by 1.0m, thus increasing the capacity of the reservoir (by about 90 Ml). Potential impacts include hydrological regime change effects on ecology and water quality dilution. Note that the downstream watercourse is not a WFD water body immediately downstream, so the assessment has covered only the reservoir itself.	
Hydromorph designation	Natural			
Water body ID	GB31038409			
Water body name	Llyn Egnant			

Status element	Baseline Status		Reasons for not achieving good status	Assessment of option	
	RBMP2 status (2015)	2021 (C3) status		Potential for deterioration	Potential for introduction of impediments
Phytoplankton			<p>Assessment</p> <p>The 2021 overall water body status is poor, with poor hydrology given as the RNAG in 2015 and unknown (pending investigation) in 2021.</p> <p>Raising the reservoir level and capacity could change the hydrological regime and morphological conditions within the reservoir, and water edge conditions with resulting impacts on ecological populations, particularly shoreline habitats. The reservoir would have a larger surface area, with new flooded areas around the perimeter of the current reservoir, raised levels of the reservoir could lead to impacts on benthic communities and could potentially lead to a deterioration in plant communities.</p> <p>Increasing the volume, depth and residency time of water in the reservoir could result in changes to physico-chemical quality elements (e.g. TP, BOD, DO, pH, temperature), potentially causing a deterioration in status.</p> <p>The option would not introduce new priority or priority hazardous chemicals to the reservoir. Operation of the reservoir at increased capacity is unlikely to have an impact on the chemical status of the water body</p>	Non-compliant (low conf.)	n/a
Invertebrates				Non-compliant (low conf.)	Non-compliant (low conf.)
Macrophytes/ phytobenthos				Non-compliant (low conf.)	n/a
Physico-chemical				Non-compliant (low conf.)	n/a
Chemicals				Compliant (med. conf.)	n/a
RBMP2 water body measures				n/a	
Overall assessment of WFD Regulations compliance of the option in this water body				Non-compliant (low conf.)	

Option	MSC08	Upsize Llechryd WTW	Assessed magnitude of hydrological effect:	Negligible
Water body type	River		Sources & pathways of potential effect:	
Hydromorph designation	No designation		This option has progressed to Step 3 impact assessment because the option allows for increased abstraction from the River Teifi from 19 MI/d to 21 MI/d. Initial review of regulatory position of water availability and changes to flow regimes could not discount potential for deterioration. Potential impacts include flow change effects on ecology and water quality composition.	
Water body ID	GB110062043563			
Water body name	Teifi - Afon Ceri to estuary			

Status element	Baseline Status		Reasons for not achieving good status					Assessment of option		
	RBMP2 status (2015)	2021 (C3) status	Flow	Morphology	Sanitary water quality	Nutrients	Other	Assessment	Potential for deterioration	Potential for introduction of impediments
Fish	High	High						The 2021 overall WFD waterbody status is moderate, with the driving element identified as macrophytes and phyto-benthos combined. Changes to the hydrological regime, river continuity and morphological conditions could potentially impact fish, invertebrate and macrophyte/phyto-benthos populations, and must consider features of the Afon Teifi SAC.	Compliant (low conf.)	n/a
Invertebrates	High	High						The ALS indicates that water is available for abstraction in the lower Teifi, but with a HOF at Q85 to protect the SAC. Separate discussion with NRW has indicated limited resource availability down to Q98, in line with the proposed 2 MI/d increase (from 19 MI/d to 21 MI/d). Modelled operation of the licence is within the bounds agreed with NRW, and is therefore assumed to be WFD compliant.	Compliant (low conf.)	n/a
Macrophytes/phyto-benthos	High	High			Suspected				Compliant (low conf.)	Compliant (low conf.)
Physico-chemical	High	High						Reduction in flow, particularly during times of low flow could result in changes to physico-chemical quality elements (e.g. BOD, DO, pH, temperature), potentially causing a deterioration in status. However, as the proportional increase in abstraction is very low the impact is assessed as negligible.	Compliant (low conf.)	n/a
Chemicals	High	High						The option would not introduce new priority or priority hazardous chemicals, although lower flows could result in a reduction in dilution of chemicals already present in the waterbody, and potentially a further deterioration in status. However, as the proportional increase in abstraction is very low the impact is assessed as negligible.	Compliant (med. conf.)	n/a
RBMP2 water body measures									n/a	
Overall assessment of WFD Regulations compliance of the option in this water body									Compliant (low conf.)	

Option	SEW005a	GREAT_SPRINGS_TO_COURT_FARM	Assessed magnitude of hydrological effect:	Minor		
Water body type	Groundwater		Sources & pathways of potential effect:			
Water body ID	GB40901G206300		This option has progressed to Step 3 impact assessment because it is proposed to abstract 30 MLD of additional water from the Great Spring that infiltrates the Severn Rail Tunnel (with discharge into the Severn Estuary). Existing Network Rail pumps will pump it to a new pumping station at DCWW's Sudbrook WTW. This will deliver 30 MLD of raw water to a new collection chamber at Court Farm. Potential impacts are flow change effects on ecology and water quality dilution.			
Water body name	Usk and Wye Southern Carboniferous Limestone					
	<b>Baseline Status</b>		<b>Assessment of option</b>			
<b>Status element</b>	<b>RBMP2 status (2015)</b>	<b>2021 (C3) status</b>	<b>Reasons for not achieving good status</b>	<b>Assessment</b>	<b>Potential for deterioration</b>	<b>Potential for introduction of impediments</b>
Dependent surface water body status				It is assumed that the total volume of water abstracted from the Severn Tunnel (and hence the aquifer) will not change, but that more water will be taken by DCWW. On this basis there should be no change to any dependent surface water bodies.	Compliant (low conf.)	n/a
Ground water dependent terrestrial ecosystem test				It is assumed that the total volume of water abstracted from the Severn Tunnel (and hence the aquifer) will not change, but that more water will be taken by DCWW. On this basis there should be no change to any GWDTEs.	Compliant (low conf.)	n/a
Saline intrusion				It is assumed that the total volume of water abstracted from the Severn Tunnel (and hence the aquifer) will not change, but that more water will be taken by DCWW. On this basis there should be no change to risks of saline intrusion	Compliant (low conf.)	n/a
Water balance				It is assumed that the total volume of water abstracted from the Severn Tunnel (and hence the aquifer) will not change, but that more water will be taken by DCWW. On this basis there should be no change to the water balance	Compliant (low conf.)	n/a
Chemical (overall)				It is assumed that the total volume of water abstracted from the Severn Tunnel (and hence the aquifer) will not change, but that more water will be taken by DCWW. There is therefore expected to be no mechanism for changes to chemical status.	Compliant (med. conf.)	n/a
RBMP2 water body measures		None			n/a	
Overall assessment of WFD Regulations compliance of the option in this water body					Compliant (low conf.)	

Option	SEW005a	GREAT_SPRINGS_TO_COURT_FARM	Assessed magnitude of hydrological effect:	Minor
Water body type	Transitional water		Sources & pathways of potential effect:	
Hydromorph designation	Heavily modified		This option has progressed to Step 3 impact assessment because it is proposed to abstract 30 MLD of additional water from the Great Spring that infiltrates the Severn Rail Tunnel (with discharge into the Severn Estuary). Existing Network Rail pumps will pump it to a new pumping station at DCWW's Sudbrook WTW. This will deliver 30 MLD of raw water to a new collection chamber at Court Farm. Potential impacts are flow change effects on ecology and water quality dilution.	
Water body ID	GB530905415401			
Water body name	SEVERN LOWER			

Status element	Baseline Status		Reasons for not achieving good status	Assessment of option		
	RBMP2 status (2015)	2021 (C3) status		Assessment	Potential for deterioration	Potential for introduction of impediments
Phytoplankton				The 2021 overall water body WFD status is moderate with an ecological status of moderate, with driving elements identified as mercury, invertebrates and mitigation assessment.  Abstraction of up to 30 MLD is unlikely to have an adverse effect on the hydrological regime of the Severn Estuary. The proposed abstraction volumes would be not result in any significant changes to the higher end of the flow regime that maintains the baseline morphological characteristics of the River Severn. It is also unlikely that there would be significant change in frequency and duration of low flows, and therefore, unlikely to result in a reduction in wetted perimeter or greater volumes of suspended sediment deposition in the lower reach.	Compliant (med. conf.)	n/a
Angiosperms			Unknown		Compliant (med. conf.)	n/a
Macroalgae					Compliant (med. conf.)	n/a
Invertebrates					Compliant (med. conf.)	n/a
Fish					Compliant (med. conf.)	n/a
Phys-chem water quality (in support of ecological status)				Reduction in flow in the estuary, particularly during times of low flow, could result in changes to physico-chemical quality elements (e.g. P, BOD, DO, pH, temperature), potentially causing a deterioration in status. However, the relatively small volume of abstraction compared with flows in the estuary mean impacts will be negligible.	Compliant (med. conf.)	n/a
Chemicals			Brominated diphenylether (Sewage discharge-confirmed; contaminated water body- confirmed); Mercury and its Compounds (atmospheric discharge-confirmed; contaminated water body- confirmed)	The option would not introduce new priority or priority hazardous chemicals but lower flows could result in a reduction in dilution of chemicals already present in the waterbody, and potentially a further deterioration in status. However, the relatively small volume of abstraction compared with flows in the estuary mean impacts will be negligible.	Compliant (med. conf.)	Compliant (low conf.)
RBMP2 water body measures					n/a	
Overall assessment of WFD Regulations compliance of the option in this water body					Compliant (med. conf.)	

Option	SEW005c GREAT_SPRINGS_TO_LLANDEGFEDD	Assessed magnitude of hydrological effect:	Minor
Water body type	Transitional water	Sources & pathways of potential effect:	
Hydromorph designation	Heavily modified	This option has progressed to Step 3 impact assessment because it is proposed to abstract 30 MLD of additional water from the Great Spring that infiltrates the Severn Rail Tunnel (with discharge into the Severn Estuary). Existing Network	
Water body ID	GB530905415401	Rail pumps will pump it to a new pumping station at DCWW's Sudbrook WTW. This will deliver up to 30ML/d of raw water to Court Farm reservoir, then up to Llandegfedd reservoir, along a new 700 dia raw water main. Potential impacts are flow change effects on ecology and water quality dilution.	
Water body name	SEVERN LOWER		

Status element	Baseline Status		Reasons for not achieving good status	Assessment of option		
	RBMP2 status (2015)	2021 (C3) status		Assessment	Potential for deterioration	Potential for introduction of impediments
Phytoplankton				The 2021 overall water body WFD status is moderate with an ecological status of moderate, with driving elements identified as mercury, invertebrates and mitigation assessment.  Abstraction of up to 30 MLD is unlikely to have an adverse effect on the hydrological regime of the Severn Estuary. The proposed abstraction volumes would be not result in any significant changes to the higher end of the flow regime that maintains the baseline morphological characteristics of the River Severn. It is also unlikely that there would be significant change in frequency and duration of low flows, and therefore, unlikely to result in a reduction in wetted perimeter or greater volumes of suspended sediment deposition in the lower reach.	Compliant (med. conf.)	n/a
Angiosperms			Unknown		Compliant (med. conf.)	n/a
Macroalgae					Compliant (med. conf.)	n/a
Invertebrates					Compliant (med. conf.)	n/a
Fish					Compliant (med. conf.)	n/a
Phys-chem water quality (in support of ecological status)					Compliant (med. conf.)	n/a
Chemicals			Brominated diphenylether (Sewage discharge-confirmed; contaminated water body- confirmed); Mercury and its Compounds (atmospheric discharge-confirmed; contaminated water body- confirmed)	The option would not introduce new priority or priority hazardous chemicals but lower flows could result in a reduction in dilution of chemicals already present in the waterbody, and potentially a further deterioration in status. However, the relatively small volume of abstraction compared with flows in the estuary mean impacts will be negligible.	Compliant (med. conf.)	Compliant (low conf.)
RBMP2 water body measures					n/a	
Overall assessment of WFD Regulations compliance of the option in this water body					Compliant (med. conf.)	

Option	SEW005c	GREAT_SPRINGS_TO_LLANDEGFEDD	Assessed magnitude of hydrological effect:	Minor		
Water body type	Groundwater		Sources & pathways of potential effect:			
Water body ID	GB40901G206300		This option has progressed to Step 3 impact assessment because it is proposed to abstract 30 MLD of additional water from the Great Spring that infiltrates the Severn Rail Tunnel (with discharge into the Severn Estuary). Existing Network Rail pumps will pump it to a new pumping station at DCWW's Sudbrook WTW. This will deliver 30 MLD of raw water to a new collection chamber at Court Farm. Potential impacts are flow change effects on ecology and water quality dilution.			
Water body name	Usk and Wye Southern Carboniferous Limestone					
	<b>Baseline Status</b>		<b>Assessment of option</b>			
<b>Status element</b>	<b>RBMP2 status (2015)</b>	<b>2021 (C3) status</b>	<b>Reasons for not achieving good status</b>	<b>Assessment</b>	<b>Potential for deterioration</b>	<b>Potential for introduction of impediments</b>
Dependent surface water body status				It is assumed that the total volume of water abstracted from the Severn Tunnel (and hence the aquifer) will not change, but that more water will be taken by DCWW. On this basis there should be no change to any dependent surface water bodies.	Compliant (low conf.)	n/a
Ground water dependent terrestrial ecosystem test				It is assumed that the total volume of water abstracted from the Severn Tunnel (and hence the aquifer) will not change, but that more water will be taken by DCWW. On this basis there should be no change to any GWDTEs.	Compliant (low conf.)	n/a
Saline intrusion				It is assumed that the total volume of water abstracted from the Severn Tunnel (and hence the aquifer) will not change, but that more water will be taken by DCWW. On this basis there should be no change to risks of saline intrusion	Compliant (low conf.)	n/a
Water balance				It is assumed that the total volume of water abstracted from the Severn Tunnel (and hence the aquifer) will not change, but that more water will be taken by DCWW. On this basis there should be no change to the water balance	Compliant (low conf.)	n/a
Chemical (overall)				It is assumed that the total volume of water abstracted from the Severn Tunnel (and hence the aquifer) will not change, but that more water will be taken by DCWW. There is therefore expected to be no mechanism for changes to chemical status.	Compliant (med. conf.)	n/a
RBMP2 water body measures	None				n/a	
<b>Overall assessment of WFD Regulations compliance of the option in this water body</b>					<b>Compliant (low conf.)</b>	

Option	SEW005c	GREAT_SPRINGS_TO_LLANDEGFEDD	Assessed magnitude of hydrological effect:	Minor
Water body type	Lake		Sources & pathways of potential effect:	
Hydromorph designation	Heavily Modified		This option has progressed to Step 3 impact assessment because it is proposed to abstract 30 MLD of additional water from the Great Spring that infiltrates the Severn Rail Tunnel (with discharge into the Severn Estuary). Existing Network Rail pumps will pump it to a new pumping station at DCWW's Sudbrook WTW. This will deliver up to 30MI/d of raw water to Court Farm reservoir, then up to Llandegfedd reservoir, along a new 700 dia raw water main. Potential impacts are flow change effects on ecology and water quality dilution.	
Water body ID	GB30941363			
Water body name	Llandegfedd Reservoir			

Status element	Baseline Status		Reasons for not achieving good status	Assessment of option		
	RBMP2 status (2015)	2021 (C3) status		Assessment	Potential for deterioration	Potential for introduction of impediments
Phytoplankton				The 2021 overall water body status of the reservoir is moderate, with diffuse agricultural sources and other point sources identified as RNAG.  The Great Spring source is a groundwater abstraction from the limestone. The aquifer from which the water is abstracted is at Good chemical and quantitative status (Usk & Wye Southern Carboniferous Limestone). Abstracted water will be treated at Sudbrook WTW, including to manage differences in hardness between the source and reservoir. On this basis, it is not anticipated that there would be any impact on water quality (phys-chem or chemicals) or biology of the reservoir.  It is anticipated that the volume of water transferred to the reservoir would be balanced by water abstracted for supply, so changes to the overall quantity of water in the reservoir and the hydrological regime would be minimal.	Compliant (low conf.)	n/a
Invertebrates					Compliant (low conf.)	n/a
Macrophytes					Compliant (low conf.)	Compliant (low conf.)
Physico-chemical			Total Phosphorus (unknown- suspected)		Compliant (low conf.)	Compliant (low conf.)
Chemicals					Compliant (low conf.)	Compliant (low conf.)
RBMP2 water body measures					n/a	
Overall assessment of WFD Regulations compliance of the option in this water body					Compliant (low conf.)	

Option	SEW007	TALYBONT_RESERVOIR	Assessed magnitude of hydrological effect:	Minor
Water body type	Lake		Sources & pathways of potential effect:	
Hydromorph designation	Heavily Modified		This option has progressed to Step 3 impact assessment because the option proposes raising the top water level of Talybont Reservoir by 0.5m (by raising the main embankment crest and overflow sill), thus increasing the capacity of the reservoir (by about 630 MI). Initial review of regulatory position of water availability and changes to flow regimes can not discount potential for deterioration. Potential impacts include hydrological regime change effects on ecology and water quality dilution.	
Water body ID	GB30940365			
Water body name	Talybont Reservoir			

Status element	Baseline Status		Reasons for not achieving good status	Assessment of option	
	RBMP2 status (2015)	2021 (C3) status		Potential for deterioration	Potential for introduction of impediments
Phytoplankton	Yellow	Yellow		Non-compliant (med. conf.)	n/a
Invertebrates				Non-compliant (med. conf.)	n/a
Macrophytes/ phytobenthos	Blue	Blue		Non-compliant (med. conf.)	n/a
Physico-chemical			Total phosphorus (unknown- probable)	Non-compliant (med. conf.)	n/a
Chemicals	Green	Blue		Compliant (high conf.)	Compliant (low conf.)
RBMP2 water body measures				n/a	
Overall assessment of WFD Regulations compliance of the option in this water body				Non-compliant (med. conf.)	



Option	SEW007	TALYBONT_RESERVOIR	Assessed magnitude of hydrological effect:	Minor
			Sources & pathways of potential effect:	
Water body type	River		This option has progressed to Step 3 impact assessment because the option proposes raising the top water level of Talybont Reservoir by 0.5m (by raising the main embankment crest and overflow sill), thus increasing the capacity of the reservoir (by about 630 MI). Initial review of regulatory position of water availability and changes to flow regimes can not discount potential for deterioration. This is the downstream connected water body to Talybont Reservoir, potential impacts include flow change effects on ecology and water quality dilution.	
Hydromorph designation	Heavily Modified			
Water body ID	GB109056033000			
Water body name	Caerfanell - source to conf R Usk			

Status element	Baseline Status		Reasons for not achieving good status					Assessment of option		
	RBMP2 status (2015)	2021 (C3) status	Flow	Morphology	Sanitary water quality	Nutrients	Other	Assessment	Potential for deterioration	Potential for introduction of impediments
Fish	High	High		Confirmed				Raising the reservoir embankment crest and overflow sill will cause a short term decrease in overtopping while the reservoir fills to its new capacity. Longer term there would be a change to the pattern of overtopping which would reflect the new storage capacity, but it is difficult to anticipate what this would be without further evidence.	Non-compliant (med. conf.)	n/a
Invertebrates	High	High						It is assumed that there would be no changes to compensation released from the reservoir, but the ALS indicates that there is no water available within the catchment across the flow regime, so the change in overtopping regime may impact high flows in the river, which in turn could impact fish, invertebrate and macrophyte/phytobenthos populations.	Non-compliant (med. conf.)	n/a
Macrophytes/ phytobenthos	High	High						The 2021 overall water body status is moderate due to fish, and physical modifications of the waterbody is given as the reason for not achieving good status, in relation to barriers and impoundment. The lack of a fish pass in the scheme could prevent the fish from reaching Good Status. However, assuming that suitable arrangements are in place for fish/eel passage at the weir crest during the operational phase, there would be no biological effects so the risk could be decreased.	Non-compliant (med. conf.)	n/a
Physico-chemical	High	High						Increasing the volume, depth and residency time of water in the reservoir could result in changes to physico-chemical quality elements (e.g. BOD, DO, pH, temperature), of the water released downstream, potentially causing a deterioration in status.	Non-compliant (med. conf.)	n/a
Chemicals	High	High						The option would not introduce new priority or priority hazardous chemicals, and would only affect high flows so would not have an impact on dilution.	Compliant (med. conf.)	n/a
RBMP2 water body measures									n/a	
Overall assessment of WFD Regulations compliance of the option in this water body									Non-compliant (med. conf.)	

Option	SEW009	GRWYNE FAWR_RESERVOIR	Assessed magnitude of hydrological effect:	Minor
			Sources & pathways of potential effect:	
Water body type	Lake		This option has progressed to Step 3 impact assessment because the option proposes a new abstraction of up to 10 MLD from Grwyne Fawr Reservoir on a put and take arrangement (to be abstracted from the Usk at Prioress Mill). Initial review of regulatory position of water availability and changes to flow regimes can not discount potential for deterioration. Potential impacts include hydrological regime change effects on ecology and water quality dilution.	
Hydromorph designation	Heavily Modified			
Water body ID	GB30939891			
Water body name	Grwyne Fawr Reservoir			

Status element	Baseline Status		Reasons for not achieving good status	Assessment of option		
	RBMP2 status (2015)	2021 (C3) status		Assessment	Potential for deterioration	Potential for introduction of impediments
Phytoplankton				The 2021 overall water body status is moderate, with mitigation measures assessment (which was moderate in 2015) given as the reasons for not achieving good status. There is a historical problem with algal blooms in this reservoir, therefore abstracting water at times of low levels could exacerbate any water quality issues, which could impact on WFD status.	Non-compliant (med. conf.)	n/a
Invertebrates				The ALS indicates that there is restricted water available for licensing across the entire flow regime. However, the proposal is not for daily abstraction but using a 'put and take' operation. It is assumed that this would be mainly used during times of low flow on the River Usk (although more detail would be useful), and hence may coincide with lower water levels in the reservoir. This would increase drawdown in a reservoir that has been used to a relatively natural regime in recent years since it has not been used operationally. Such a change could have an impact on biological communities. The operation of the reservoir should account for water quality pressures as well as water resources to lower the risk of an environmental impact. It is assumed that compensation releases to the downstream watercourse will be maintained.	Non-compliant (med. conf.)	n/a
Macrophytes/phytobenthos					Non-compliant (med. conf.)	n/a
Physico-chemical				New abstraction from the reservoir, particularly at times of low levels, could result in changes to physico-chemical quality elements (e.g. TP, BOD, DO, pH, temperature) due to reduced dilution, potentially causing a deterioration in status and an introduction of impediments.	Non-compliant (med. conf.)	n/a
Chemicals				The option would not introduce new priority or priority hazardous chemicals to the reservoir.	Compliant (high conf.)	Compliant (low conf.)
RBMP2 water body measures					n/a	
Overall assessment of WFD Regulations compliance of the option in this water body					Non-compliant (med. conf.)	

Option	SEW009	GRWYNE FAWR_RESERVOIR	Assessed magnitude of hydrological effect:	Minor
Water body type	River		Sources & pathways of potential effect:	
Hydromorph designation	No designation		This option has progressed to Step 3 impact assessment because the option proposes a new abstraction of up to 10 MLD from Grwyne Fawr Reservoir on a put and take arrangement (to be abstracted from the Usk at Prioress Mill). Initial review of regulatory position of water availability and changes to flow regimes can not discount potential for deterioration. This is the downstream connected water body to Grwyne Fawr Reservoir, potential impacts include flow change effects on ecology and water quality composition.	
Water body ID	GB109056040000			
Water body name	Grwyne Fawr- source to conf Grwyne-Fechan			

Status element	Baseline Status		Reasons for not achieving good status					Assessment of option		
	RBMP2 status (2015)	2021 (C3) status	Flow	Morphology	Sanitary water quality	Nutrients	Other	Assessment	Potential for deterioration	Potential for introduction of impediments
Fish								<p>This reach of the Grwyne Fawr watercourse has a 2021 overall WFD status of moderate, with the driving element identified as fish. The 'put and take' water would be discharged at the downstream end of this waterbody (at the confluence with the Gwyne Fechan), specifically to avoid impacts on salmon spawning sites.</p> <p>It is assumed that compensation releases to the watercourse will remain as previous, however, abstraction from the reservoir may result in delayed reservoir refill and resulting spill, therefore having potential impacts on high flow conditions in the Grwyne Fawr. This may be of short duration, but more evidence is required to confirm. A precautionary view has been taken, since the reservoir has not been used for a number of years so has been acting as a relatively natural water body, so this will be a 'new' abstraction that will change the regime. By passing the sensitive fishing areas located on this watercourse (by pipeline) will mitigate any potential changes in water chemistry/quality due to reservoir releases. Additionally, a 2012 review of this option by DCWW noted that "although there would be reduced spill frequency from the reservoir following reinstatement, the licence has been included in the Environment Agency's Review of Consents process and has not been identified as requiring reductions. The operation of the reservoir is therefore considered not to impact on these species downstream."</p> <p>Any decrease in flow could result in changes to physico-chemical quality elements (e.g. P, BOD, DO, pH, temperature), potentially causing a change in status. However, any impact is assessed as low due to potential impacts on high flows, and that low flow conditions will be maintained by compensation releases from the reservoir.</p> <p>The option would not introduce new priority or priority hazardous chemicals, and would not significantly influence dilution since the only change would be at high flows.</p>	Non-compliant (low conf.)	Non-compliant (low conf.)
Invertebrates									Non-compliant (low conf.)	n/a
Macrophytes/ phytobenthos									Non-compliant (low conf.)	n/a
Physico-chemical									Non-compliant (low conf.)	n/a
Chemicals									Compliant (high conf.)	n/a
RBMP2 water body measures								n/a		
Overall assessment of WFD Regulations compliance of the option in this water body									Non-compliant (low conf.)	

Option	SEW009	GRWYNE FAWR_RESERVOIR	Assessed magnitude of hydrological effect:	Minor
Water body type	River		Sources & pathways of potential effect:	
Hydromorph designation	No designation		This option has progressed to Step 3 impact assessment because the option proposes a new abstraction of up to 10 MLD from Grwyne Fawr Reservoir on a put and take arrangement (to be abstracted from the Usk at Prioress Mill). Initial review of regulatory position of water availability and changes to flow regimes can not discount potential for deterioration. This is the downstream connected water body to Grwyne Fawr Reservoir (via a raw water pipeline), potential impacts include flow change effects on ecology and water quality composition.	
Water body ID	GB109056032980			
Water body name	Grwyne Fawr - conf Grwyne-Fechan to conf R Usk			

Status element	Baseline Status		Reasons for not achieving good status					Assessment of option		
	RBMP2 status (2015)	2021 (C3) status	Flow	Morphology	Sanitary water quality	Nutrients	Other	Assessment	Potential for deterioration	Potential for introduction of impediments
Fish	High	High		Probable				Water abstracted from Grwyne reservoir will be discharged to this water body, hence increasing the flows. There could also be some resulting change to the high flow balance (as refill to Grwyne reservoir will be delayed). This reach of the Grwyne Fawr watercourse has a 2021 overall WFD status of moderate with the driving element identified as fish.	Non-compliant (med. conf.)	Non-compliant (med. conf.)
Invertebrates	High	High						Q95 flows at the downstream Grwyne at Millbrook flow gauge (catchment area 82 km <sup>2</sup> ) could be increased by 34.5% as a result of raw water transferred from the reservoir. Although the proposal is for the transfer to be intermittent (on a put and take basis), this increase in flow, particularly at low flows, could affect flow regimes with potential impacts on water quality composition and ecology. The option could also lead to deterioration and/or impediments to reaching good status in terms of fish. These impacts could be positive, providing extra flow during dry periods, but further detail and mitigation (e.g. confirming appropriate times and conditions for use of the option) may be needed.	Non-compliant (med. conf.)	n/a
Macrophytes/ phytobenthos		High						This is particularly given the sensitivity of the upper reaches for salmon spawning, further evidence would be needed to ensure that changes to the flow regime d/s will not impact the wider catchment.	Non-compliant (med. conf.)	n/a
Physico-chemical	High	High						Any decrease in flow during times of high flows (related to spill events), could result in changes to physico-chemical quality elements (e.g. P, BOD, DO, pH, temperature), potentially causing a change in status. However, any impact is assessed as low due to potential impacts on high flows, and that low flow conditions will be maintained by compensation releases from the reservoir.	Non-compliant (low conf.)	n/a
Chemicals	High	High						The option would not introduce new priority or priority hazardous chemicals but lower flows could result in a minor reduction in dilution of chemicals already present in the beck, and potentially further deterioration in status.	Non-compliant (low conf.)	n/a
RBMP2 water body measures									n/a	
Overall assessment of WFD Regulations compliance of the option in this water body									Non-compliant (med. conf.)	

Option	SEW009	GRWYNE FAWR_RESERVOIR	Assessed magnitude of hydrological effect:	Minor
			Sources & pathways of potential effect:	
Water body type	River		This option has progressed to Step 3 impact assessment because the option proposes a new abstraction of up to 10 MLD from Grwyne Fawr Reservoir on a put and take arrangement (to be abstracted from the Usk at Prioress Mill). Initial review of regulatory position of water availability and changes to flow regimes can not discount potential for deterioration. This is the downstream connected water body to Grwyne Fawr Reservoir (via a raw water pipeline), potential impacts include flow change effects on ecology and water quality composition.	
Hydromorph designation	No designation			
Water body ID	GB109056040082			
Water body name	Usk conf Afon Crawnon to conf Gavenny R			

Status element	Baseline Status		Reasons for not achieving good status					Assessment of option		
	RBM2 status (2015)	2021 (C3) status	Flow	Morphology	Sanitary water quality	Nutrients	Other	Assessment	Potential for deterioration	Potential for introduction of impediments
Fish								The watercourse has a 2021 overall WFD classification of good with driving elements identified as invertebrates, macrophytes/phytobenthos and phosphate.  Q95 flows at the Grwyne at Millbrook flow gauge (catchment area 82 km <sup>2</sup> ) could be increased by 34.5% as a result of raw water transferred from the reservoir. The Grwyne Fawr confluences with the Usk just downstream, at which point the catchment area is 757 km <sup>2</sup> . Further downstream on the Usk, at Chain bridge, there would be a 2.5% flow increase at Q95 (catchment area 912 km <sup>2</sup> ). The increase in GB109056040082 is therefore likely to be around 5% or less. This minor change to flows is unlikely to have an adverse impact on biology or water quality.	Compliant (med. conf.)	n/a
Invertebrates									Compliant (med. conf.)	n/a
Macrophytes/ phytobenthos									Compliant (med. conf.)	n/a
Physico-chemical									Compliant (med. conf.)	n/a
Chemicals									Compliant (high conf.)	n/a
RBM2 water body measures									n/a	
Overall assessment of WFD Regulations compliance of the option in this water body									Compliant (med. conf.)	

Option	SEW009	GRWYNE FAWR_RESERVOIR	Assessed magnitude of hydrological effect:	Minor
Water body type	River		Sources & pathways of potential effect:	
Hydromorph designation	No designation		This option has progressed to Step 3 impact assessment because the option proposes a new abstraction of up to 10 MLD from Grwyne Fawr Reservoir on a put and take arrangement (to be abstracted from the Usk at Prioress Mill). Initial review of regulatory position of water availability and changes to flow regimes can not discount potential for deterioration. This is the downstream connected water body to Grwyne Fawr Reservoir (via a raw water pipeline), potential impacts include flow change effects on ecology and water quality composition.	
Water body ID	GB109056040083			
Water body name	Usk - conf R Gavenny to conf Olway Bk			

Status element	Baseline Status		Reasons for not achieving good status					Assessment of option		
	RBMP2 status (2015)	2021 (C3) status	Flow	Morphology	Sanitary water quality	Nutrients	Other	Assessment	Potential for deterioration	Potential for introduction of impediments
Fish	Yellow	Yellow						<p>The watercourse has a 2021 overall classification of moderate with driving elements identified as polycyclic aromatic hydrocarbons (PAH), fish, macrophytes/phytobenthos and P</p> <p>Q95 flows at the Grwyne at Millbrook flow gauge (catchment area 82 km<sup>2</sup>) could be increased by 34.5% as a result of raw water transferred from the reservoir. The Grwyne Fawr confluences with the Usk where there is a 2.5% flow increase at Usk at Chainbridge gauge (catchment area 912 km<sup>2</sup>). This minor change to flows is unlikely to have an adverse impact on biology or water quality.</p> <p>The option would not introduce new priority or priority hazardous chemicals, and the small percentage change in flows means there will be only a small change to dilution.</p>	Compliant (med. conf.)	Compliant (med. conf.)
Invertebrates	Blue	Blue					Compliant (med. conf.)		n/a	
Macrophytes/ phytobenthos	Blue	Yellow					Compliant (med. conf.)		Compliant (med. conf.)	
Physico-chemical	Green	Yellow			Phosphate		Compliant (med. conf.)		Compliant (med. conf.)	
Chemicals	Red	Yellow			Polycyclic aromatic hydrocarbons (PAH)		Compliant (high conf.)		Compliant (high conf.)	
RBMP2 water body measures								n/a		
								Overall assessment of WFD Regulations compliance of the option in this water body	Compliant (med. conf.)	

Option	SEW022	PONTHIR_AND_WENTWOOD	Assessed magnitude of hydrological effect:	Minor
Water body type	Lake		Sources & pathways of potential effect:	
Hydromorph designation	Heavily Modified		This option has progressed to Step 3 impact assessment because the option proposes a new abstraction of up to 7 MLD (licensed; average 4.3 MLD) from Wentwood Reservoir. Initial review of regulatory position of water availability and changes to flow regimes can not discount potential for deterioration. Potential impacts include hydrological regime change effects on ecology and water quality dilution.	
Water body ID	GB30941762			
Water body name	Wentwood Reservoir		The option also involves use of up to 30 MI/d of treated final effluent from Ponthir WwTW, which would reduce the existing discharge from Ponthir WwTW to the tidal Usk estuary.	

Status element	Baseline Status		Reasons for not achieving good status	Assessment of option		
	RBMP2 status (2015)	2021 (C3) status		Assessment	Potential for deterioration	Potential for introduction of impediments
Phytoplankton			Phytoplankton blooms- forestry, unknown (suspected)	The 2021 overall WFD water body status is moderate, with driving elements identified as phytoplankton and total P. There are recognised problems with algal blooms at the reservoir.	Non-compliant (med. conf.)	Non-compliant (low conf.)
Invertebrates				New abstraction from this reinstated reservoir may cause further deterioration by lowering water levels (particularly during dry weather conditions) and increasing the concentration of any water quality determinands, or be a potential impediment to improvement, particularly in relation to phytoplankton blooms.	Non-compliant (med. conf.)	n/a
Macrophytes/ phytobenthos				Any such effects would also have the potential to impact on plants, fish and invertebrates. The lowering of water levels may also impact on shoreline conditions with an affect on associated ecology.  The ALS indicates that Wentwood Reservoir is located in the Usk Estuary and Coastal Area. This area is not assessed using the CAMS resources assessment so it is not possible to determine water availability.	Non-compliant (med. conf.)	n/a
Physico-chemical			Total phosphorus- forestry, unknown (probable)	New abstraction from the reservoir could result in changes to physico-chemical quality elements (e.g. TP, BOD, DO, pH, temperature), due to reduced dilution, especially during dry weather conditions, thus potentially causing a deterioration in status and an introduction of impediments.	Non-compliant (med. conf.)	Non-compliant (low conf.)
Chemicals				The option would not introduce new priority or priority hazardous chemicals to the reservoir.	Compliant (high conf.)	Compliant (high conf.)
RBMP2 water body measures					n/a	
Overall assessment of WFD Regulations compliance of the option in this water body					Non-compliant (med. conf.)	

Option	SEW022	PONTHIR_AND_WENTWOOD	Assessed magnitude of hydrological effect:	Minor
Water body type	Transitional water		Sources & pathways of potential effect:	
Hydromorph designation	Heavily modified		This option has progressed to Step 3 impact assessment because the option proposes a new abstraction of up to 7 MLD (licensed; average 4.3 MLD) from Wentwood Reservoir. Initial review of regulatory position of water availability and changes to flow regimes can not discount potential for deterioration. Potential impacts include hydrological regime change effects on ecology and water quality dilution.	
Water body ID	GB530905415404			
Water body name	USK			
			The option also involves use of up to 30 MI/d of treated final effluent from Ponthir WwTW, which would reduce the existing discharge from Ponthir WwTW to the tidal Usk estuary.	

Status element	Baseline Status		Reasons for not achieving good status	Assessment of option		
	RBMP2 status (2015)	2021 (C3) status		Assessment	Potential for deterioration	Potential for introduction of impediments
Phytoplankton				A reduction of discharge in to the estuary of up to 30 MLD is unlikely to have an adverse effect on the hydrological regime of the estuary. The proposed abstraction volumes would be not result in any significant changes to the higher end of the flow regime that maintains the baseline morphological characteristics. It is also unlikely that there would be significant change in frequency and duration of low flows, and therefore, unlikely to result in a reduction in wetted perimeter or greater volumes of suspended sediment deposition in the lower reach.	Compliant (med. conf.)	n/a
Angiosperms					Compliant (med. conf.)	n/a
Macroalgae		High			Compliant (med. conf.)	n/a
Invertebrates		High			Compliant (med. conf.)	n/a
Fish					Compliant (med. conf.)	n/a
Phys-chem water quality (in support of ecological status)				Reduction in flow in the estuary, particularly during times of low flow, could result in changes to physico-chemical quality elements (e.g. P, BOD, DO, pH, temperature), potentially causing a deterioration in status. However, the small volume of abstraction compared with flows in the estuary mean impacts will be negligible.	Compliant (med. conf.)	n/a
Chemicals		High		The option would not introduce new priority or priority hazardous chemicals although lower flows could result in a reduction in dilution of chemicals already present in the waterbody, and potentially a further deterioration in status. However, the relatively small volume of abstraction compared with flows in the estuary mean impacts will be negligible.	Compliant (med. conf.)	Compliant (low conf.)
RBMP2 water body measures					n/a	
Overall assessment of WFD Regulations compliance of the option in this water body					Compliant (med. conf.)	



Option	SEW036a	PANT-YR-EOS	Assessed magnitude of hydrological effect:	Minor
Water body type	Lake		Sources & pathways of potential effect:	
Hydromorph designation	Heavily Modified		This option has progressed to Step 3 impact assessment due to a planned additional abstraction of 13.7MI/d from Pant-yr-Eos reservoir, to be supplied to Court Farm WTW through a new pipe connected to the existing LG Main. Potential impacts include hydrological regime change effects on ecology and water quality dilution.	
Water body ID	GB30941829			
Water body name	Pant-yr-eos Reservoir			

Status element	Baseline Status		Reasons for not achieving good status	Assessment of option	
	RBMP2 status (2015)	2021 (C3) status		Potential for deterioration	Potential for introduction of impediments
Phytoplankton				Assessment	
Invertebrates				The 2021 overall water body status is moderate, with driving elements identified as total P, total N and mitigation assessment.  The ALS indicates that water is not available for licensing in the area at Q95 and Q70, with restricted water available at Q50 and Q30.	Non-compliant (low conf.)
Macrophytes/ phytobenthos				Additional abstraction from the reservoir may cause deterioration by lowering water levels (particularly during dry weather conditions) and increasing the concentration of any water quality determinands. Any such effects would have the potential to impact on plants, fish and invertebrates. The lowering of water levels may also impact on shoreline conditions with an effect on associated ecology.	Non-compliant (low conf.)
Physico-chemical			Total Phosphorus (Quite certain)	Increased abstraction from the reservoir could result in changes to physico-chemical quality elements (e.g. TP, BOD, DO, pH, temperature), particularly during low level conditions, potentially causing a deterioration in status and an introduction of impediments.	Non-compliant (low conf.)
Chemicals				The option would not introduce new priority or priority hazardous chemicals to the reservoir.	Compliant (high conf.)
RBMP2 water body measures					n/a
				Overall assessment of WFD Regulations compliance of the option in this water body	Non-compliant (low conf.)

Option	SEW036a	PANT-YR-EOS	Assessed magnitude of hydrological effect:	Minor
Water body type	River		Sources & pathways of potential effect:	
Hydromorph designation	No Designation		This option has progressed to Step 3 impact assessment due to a planned additional abstraction of 13.7MI/d from Pant-yr-Eos reservoir. Initial review of regulatory position of water availability and changes to flow regimes can not discount potential for deterioration. This is the downstream connected water body to the reservoir, potential impacts include flow change effects on ecology and water quality dilution.	
Water body ID	GB109056026840			
Water body name	Pantyreos Bk - source to Barrack Hill			

Status element	Baseline Status		Reasons for not achieving good status					Assessment of option		
	RBMP2 status (2015)	2021 (C3) status	Flow	Morphology	Sanitary water quality	Nutrients	Other	Assessment	Potential for deterioration	Potential for introduction of impediments
Fish	High	High		Probable				The 2021 overall water body status is moderate, with the driving element identified as fish. The RNAG for poor fish status in 2015 was physical modification causing a barrier to fish migration.	Non-compliant (low conf.)	Non-compliant (low conf.)
Invertebrates	High	High						The ALS indicates that water is not available for licensing in the area at Q95 and Q70, with restricted water available at Q50 and Q30. As a result of the HMWB investigation in 2018 (Sweco, 2018), a MRF was added to Henllys Brook, to maintain flow in Pant-yr-Eos Brook. However, there is no required compensation release from the reservoir itself. Therefore it is possible that an increase in abstraction could result in reduced flows downstream of the reservoir, throughout the flow regime.	Non-compliant (low conf.)	n/a
Macrophytes/ phytobenthos	High	High						This could potentially impact on biological or physico-chemical elements in the river waterbody.	Non-compliant (low conf.)	n/a
Physico-chemical	High	High							Non-compliant (low conf.)	n/a
Chemicals	High	High						The option would not introduce new priority or priority hazardous chemicals, and the conclusions above also apply.	Compliant (low conf.)	n/a
RBMP2 water body measures									n/a	
Overall assessment of WFD Regulations compliance of the option in this water body									Non-compliant (low conf.)	

Option	SEW036b	YNYS-Y-FRO	Assessed magnitude of hydrological effect:	Minor
Water body type	Lake		Sources & pathways of potential effect:	
Hydromorph designation	Heavily Modified		This option has progressed to Step 3 impact assessment due to a planned additional abstraction of 9 Ml/d from Ynys-Y-Fro reservoir, to be supplied to Court Farm WTW through a new pipe connected to the existing LG Main. Potential impacts include hydrological regime change effects on ecology and water quality dilution.	
Water body ID	GB30941926			
Water body name	Ynysyfro Reservoir			

Status element	Baseline Status		Reasons for not achieving good status	Assessment of option		
	RBMP2 status (2015)	2021 (C3) status		Potential for deterioration	Potential for introduction of impediments	
Phytoplankton				<p>Assessment</p> <p>The 2021 overall water body status is moderate, with the driving element identified as mitigation assessment.</p> <p>The ALS indicates that water is not available for licensing in the area at Q95 and Q70, with restricted water available at Q50 and Q30.</p>	Non-compliant (low conf.)	n/a
Invertebrates				Additional abstraction from the reservoir may cause deterioration by lowering water levels (particularly during dry weather conditions) and increasing the concentration of any water quality determinands. Any such effects would have the potential to impact on plants, fish and invertebrates, and could exacerbate phytoplankton blooms. The lowering of water levels may also impact on shoreline conditions with an effect on associated ecology.	Non-compliant (low conf.)	n/a
Macrophytes/ phytobenthos					Non-compliant (low conf.)	n/a
Physico-chemical				Increased abstraction from the reservoir could result in changes to physico-chemical quality elements (e.g. TP, BOD, DO, pH, temperature), potentially causing a deterioration in status.	Non-compliant (low conf.)	n/a
Chemicals				The option would not introduce new priority or priority hazardous chemicals to the reservoir.	Compliant (high conf.)	n/a
RBMP2 water body measures					n/a	
Overall assessment of WFD Regulations compliance of the option in this water body					Non-compliant (low conf.)	

Option	SEW036b PANT-YR-EOS	Assessed magnitude of hydrological effect:	Minor
		Sources & pathways of potential effect:	
Water body type	River	This option has progressed to Step 3 impact assessment due to a planned additional abstraction of 9 Ml/d from Ynys-Y-Fro reservoir. Initial review of regulatory position of water availability and changes to flow regimes can not discount potential for deterioration. This is the downstream connected water body to the reservoir, potential impacts include flow change effects on ecology and water quality dilution.	
Hydromorph designation	No Designation		
Water body ID	GB109056026840		
Water body name	Pantyreos Bk - source to Barrack Hill		

Status element	Baseline Status		Reasons for not achieving good status					Assessment of option		
	RBMP2 status (2015)	2021 (C3) status	Flow	Morphology	Sanitary water quality	Nutrients	Other	Assessment	Potential for deterioration	Potential for introduction of impediments
Fish	Orange	Yellow		Probable				The 2021 overall water body status is moderate, with the driving element identified as fish. The RNAG for poor fish status in 2015 was physical modification causing a barrier to fish migration.	Non-compliant (low conf.)	Non-compliant (low conf.)
Invertebrates	Blue	Blue						The ALS indicates that water is not available for licensing in the area at Q95 and Q70, with restricted water available at Q50 and Q30. As a result of the HMWB investigation in 2018 (Sweco, 2018), a MRF was added to Henllys Brook, to maintain flow in Pant-yr-Eos Brook. However, there is no required compensation release from the reservoir itself. Therefore it is possible that an increase in abstraction could result in reduced flows downstream of the reservoir, throughout the flow regime.	Non-compliant (low conf.)	n/a
Macrophytes/ phytobenthos	Yellow	Green						This could potentially impact on biological or physico-chemical elements in the river waterbody.	Non-compliant (low conf.)	n/a
Physico-chemical	Green	Green							Non-compliant (low conf.)	n/a
Chemicals	Green	Blue						The option would not introduce new priority or priority hazardous chemicals, and the conclusions above also apply.	Compliant (low conf.)	n/a
RBMP2 water body measures									n/a	
Overall assessment of WFD Regulations compliance of the option in this water body									Non-compliant (low conf.)	

Option	SEW036c	PANT-YR-EOS_AND_YNYS-Y-FRO	Assessed magnitude of hydrological effect:	Minor
Water body type	Lake		Sources & pathways of potential effect:	
Hydromorph designation	Heavily Modified		This option has progressed to Step 3 impact assessment due to a planned additional abstraction of 13.7MI/d from Pant-yr-Eos reservoir and 9 MI/d from Ynys-y-Fro Reservoir, to be supplied to Court Farm WTW through a new pipe connected to the existing LG Main. Potential impacts include hydrological regime change effects on ecology and water quality dilution.	
Water body ID	GB30941829			
Water body name	Pant-yr-eos Reservoir			

Status element	Baseline Status		Reasons for not achieving good status	Assessment of option	
	RBMP2 status (2015)	2021 (C3) status		Potential for deterioration	Potential for introduction of impediments
Phytoplankton				Assessment	
Invertebrates				The 2021 overall water body status is moderate, with driving elements identified as total P, total N and mitigation assessment.  The ALS indicates that water is not available for licensing in the area at Q95 and Q70, with restricted water available at Q50 and Q30.	Non-compliant (low conf.)
Macrophytes/ phytobenthos				Additional abstraction from the reservoir may cause deterioration by lowering water levels (particularly during dry weather conditions), with potential for resulting changes to water quality. Any such effects would have the potential to impact on plants, fish and invertebrates. The lowering of water levels may also impact on shoreline conditions with an effect on associated ecology.	Non-compliant (low conf.)
Physico-chemical			Total Phosphorus (Quite certain)	Increased abstraction from the reservoir could result in changes to physico-chemical quality elements (e.g. TP, BOD, DO, pH, temperature), particularly during low level conditions, potentially causing a deterioration in status and an introduction of impediments.	Non-compliant (low conf.)
Chemicals				The option would not introduce new priority or priority hazardous chemicals to the reservoir.	Compliant (high conf.)
RBMP2 water body measures					n/a
				Overall assessment of WFD Regulations compliance of the option in this water body	Non-compliant (low conf.)

Option	SEW036c	PANT-YR-EOS_AND_YNYS-Y-FRO	Assessed magnitude of hydrological effect:	Minor
Water body type	Lake		Sources & pathways of potential effect:	
Hydromorph designation	Heavily Modified		This option has progressed to Step 3 impact assessment due to a planned additional abstraction of 13.7MI/d from Pant-yr-Eos reservoir and 9 MI/d from Ynys-y-Fro Reservoir, to be supplied to Court Farm WTW through a new pipe connected to the existing LG Main. Potential impacts include hydrological regime change effects on ecology and water quality dilution.	
Water body ID	GB30941926			
Water body name	Ynysyfro Reservoir			

Status element	Baseline Status		Reasons for not achieving good status	Assessment of option		
	RBMP2 status (2015)	2021 (C3) status		Potential for deterioration	Potential for introduction of impediments	
				Assessment		
Phytoplankton				The 2021 overall water body status is moderate, with the driving element identified as mitigation assessment.  The ALS indicates that water is not available for licensing in the area at Q95 and Q70, with restricted water available at Q50 and Q30.	Non-compliant (low conf.)	n/a
Invertebrates				Additional abstraction from the reservoir may cause deterioration by lowering water levels (particularly during dry weather conditions), with potential for resulting changes in water quality. Any such effects would have the potential to impact on plants, fish and invertebrates, and could exacerbate phytoplankton blooms. The lowering of water levels may also impact on shoreline conditions with an effect on associated ecology.	Non-compliant (low conf.)	n/a
Macrophytes/ phytobenthos					Non-compliant (low conf.)	n/a
Physico-chemical				Increased abstraction from the reservoir could result in changes to physico-chemical quality elements (e.g. TP, BOD, DO, pH, temperature), potentially causing a deterioration in status.	Non-compliant (low conf.)	n/a
Chemicals				The option would not introduce new priority or priority hazardous chemicals to the reservoir.	Compliant (high conf.)	n/a
RBMP2 water body measures					n/a	
Overall assessment of WFD Regulations compliance of the option in this water body					Non-compliant (low conf.)	

Option	SEW036c	PANT-YR-EOS_AND_YNYS-Y-FRO	Assessed magnitude of hydrological effect:	Minor
Water body type	River		Sources & pathways of potential effect:	
Hydromorph designation	No Designation		This option has progressed to Step 3 impact assessment due to a planned additional abstraction of 13.7MI/d from Pant-yr-Eos reservoir and 9 MI/d from Ynys-y-Fro Reservoir. Initial review of regulatory position of water availability and changes to flow regimes can not discount potential for deterioration. This is the downstream connected water body to both of the reservoirs, potential impacts include flow change effects on ecology and water quality dilution.	
Water body ID	GB109056026840			
Water body name	Pantyreos Bk - source to Barrack Hill			

Status element	Baseline Status		Reasons for not achieving good status					Assessment of option		
	RBMP2 status (2015)	2021 (C3) status	Flow	Morphology	Sanitary water quality	Nutrients	Other	Assessment	Potential for deterioration	Potential for introduction of impediments
Fish	High	High		Probable				The 2021 overall water body status is moderate, with the driving element identified as fish. The RNAG for poor fish status in 2015 was physical modification causing a barrier to fish migration.	Non-compliant (low conf.)	Non-compliant (low conf.)
Invertebrates	High	High						The ALS indicates that water is not available for licensing in the area at Q95 and Q70, with restricted water available at Q50 and Q30. As a result of the HMWB investigation in 2018 (Sweco, 2018), a MRF was added to Henllys Brook, to maintain flow in Pant-yr-Eos Brook. However, there is no required compensation release from the reservoirs themselves. Therefore it is possible that an increase in abstraction could result in reduced flows downstream of the reservoirs, throughout the flow regime.	Non-compliant (low conf.)	n/a
Macrophytes/ phytobenthos	High	High					RNAG: unknown	This could potentially impact on biological or physico-chemical elements in the river waterbody.	Non-compliant (low conf.)	n/a
Physico-chemical	High	High							Non-compliant (low conf.)	n/a
Chemicals	High	High						The option would not introduce new priority or priority hazardous chemicals, and the conclusions above also apply.	Compliant (low conf.)	n/a
RBMP2 water body measures									n/a	
Overall assessment of WFD Regulations compliance of the option in this water body									Non-compliant (low conf.)	

Option	SEW044	SCHWYLL BOREHOLES	Assessed magnitude of hydrological effect:	Minor		
Water body type	Groundwater		Sources & pathways of potential effect:	This option has progressed to Step 3 impact assessment because of the reinstated abstraction of up to 25 MI/d from existing boreholes. Potential effects include changes to groundwater quality, impacts on GWDTE and connected surface waters, and ingress of saline water.		
Water body ID	GB41001G201300					
Water body name	Swansea Southern Carboniferous Limestone					
	<b>Baseline Status</b>		<b>Assessment of option</b>			
<b>Status element</b>	<b>RBMP2 status (2015)</b>	<b>2021 (C3) status</b>	<b>Reasons for not achieving good status</b>	<b>Assessment</b>	<b>Potential for deterioration</b>	<b>Potential for introduction of impediments</b>
Dependent surface water body status				Increased groundwater abstraction has the potential to reduce flows in overlying surface water features. The ALS indicates that the overlying surface water bodies have water available across the flow regime and are close to the tidal limit (bottom of surface water catchments). However, a review of the hydrogeological setting indicates high potential for connections to surface water, so an impact on surface water bodies cannot be ruled out.	Non-compliant (low conf.)	n/a
Ground water dependent terrestrial ecosystem test				Merthyr Mawr SSSI is relatively nearby and includes wetland habitats. Further information required, to determine whether the abstraction could impact on those habitats (or other GWDTEs not identified here).	Non-compliant (low conf.)	n/a
Saline intrusion				The scope book notes that the abstraction is subject to saline intrusion. Although the abstraction has operated historically and the status of this element is Good, it is not known how long ago the abstraction ceased, and whether it historically had a wider impact on saline intrusion to the aquifer. Without further evidence, the potential for deterioration should be considered.	Non-compliant (low conf.)	n/a
Water balance				The ALS indicates that there is water availability in the aquifer, therefore a moderate abstraction of 25 MLD should not lead to deterioration in quantitative water balance of the aquifer.	Compliant (med. conf.)	n/a
Chemical (overall)			Poor due to Chemical Groundwater Dependent Terrestrial Ecosystems test	Further information required, to determine which GWDTEs are failing for chemical status and hence whether there is any potential for the abstraction to impact on those habitats.	Non-compliant (low conf.)	Non-compliant (low conf.)
RBMP2 water body measures	None				n/a	
<b>Overall assessment of WFD Regulations compliance of the option in this water body</b>					Non-compliant (low conf.)	



Option	SEW044	SCHWYLL BOREHOLES	Assessed magnitude of hydrological effect:	Minor
Water body type	River		Sources & pathways of potential effect:	
Hydromorph designation	No Designation		This option has progressed to Step 3 impact assessment because of the reinstated abstraction of up to 25 MI/d from existing boreholes. Potential impacts include: impact on connected surface waters (flow change effects on ecology and water quality dilution). This is a surface water body linked to a groundwater abstraction option.	
Water body ID	GB110058026280			
Water body name	Ogmore - confluence with Llynfi to tidal limit			

Status element	Baseline Status		Reasons for not achieving good status					Assessment of option			
	RBMP2 status (2015)	2021 (C3) status	Flow	Morphology	Sanitary water quality	Nutrients	Other	Assessment	Potential for deterioration	Potential for introduction of impediments	
Fish	Green	Yellow						The 2021 overall water body status is moderate as a result of ecological (fish) and chemical status. The ALS indicates that water is available for abstraction across the entire flow regime.	Non-compliant (low conf.)	Non-compliant (low conf.)	
Invertebrates	Blue	Blue						The watercourse is likely to have some connectivity to the groundwater body, so flows could be reduced due to reductions in baseflow or increased losses to ground resulting from increased groundwater abstraction.	Non-compliant (low conf.)	n/a	
Macrophytes/ phytobenthos	Green	Blue						Changes to hydrological regime, river continuity and morphological conditions could impact fish invertebrates and macrophyte/phytobenthos populations. The watercourse has water available across the flow regime, mitigating the impacts of reductions in baseflows, but deterioration to the ecological status can not be ruled out.	Non-compliant (low conf.)	n/a	
Physico-chemical	Green	Blue						Reduction in flow, particularly during times of low flow could result in changes to physico-chemical quality elements (e.g. P, BOD, DO, pH, temperature), potentially causing a deterioration in status.	Non-compliant (low conf.)	n/a	
Chemicals	Red	Yellow	Due to Polycyclic aromatic hydrocarbons (PAHs) sewage discharge- confirmed						The option would not introduce new priority or priority hazardous chemicals but lower flows could result in a minor reduction in dilution of chemicals already present in the watercourse, and potentially further deterioration in status.	Non-compliant (low conf.)	Non-compliant (low conf.)
RBMP2 water body measures										n/a	
Overall assessment of WFD Regulations compliance of the option in this water body									Non-compliant (low conf.)		

Option	SEW044 SCHWYLL BOREHOLES	Assessed magnitude of hydrological effect: Sources & pathways of potential effect:	Minor
Water body type	River	This option has progressed to Step 3 impact assessment because of the reinstated abstraction of up to 25 MI/d from existing boreholes. Potential impacts include: impact on connected surface waters (flow change effects on ecology and water quality dilution). This is a surface water body linked to a groundwater abstraction option.	
Hydromorph designation	No Designation		
Water body ID	GB110058026250		
Water body name	Ewenny - conf with Ewenny Fach to tidal limits		

Status element	Baseline Status		Reasons for not achieving good status					Assessment of option		
	RBMP2 status (2015)	2021 (C3) status	Flow	Morphology	Sanitary water quality	Nutrients	Other	Assessment	Potential for deterioration	Potential for introduction of impediments
Fish	High	High						The 2021 overall water body status is Good. Fish and hydrological regime/morphology are given as reasons for not achieving High status. The ALS indicates that water is available for abstraction across the entire flow regime.	Non-compliant (low conf.)	n/a
Invertebrates	High	High						The watercourse is likely to have some connectivity to the groundwater body, so flows could be reduced due to reductions in baseflow or increased losses to ground resulting from increased groundwater abstraction.	Non-compliant (low conf.)	n/a
Macrophytes/phytobenthos	High	High						Changes to hydrological regime, river continuity and morphological conditions could impact fish invertebrates and macrophyte/phytobenthos populations. The watercourse has water available across the flow regime, mitigating the impacts of reductions in baseflows, but deterioration to the ecological status can not be ruled out.	Non-compliant (low conf.)	n/a
Physico-chemical	High	High						Reduction in flow, particularly during times of low flow could result in changes to physico-chemical quality elements (e.g. P, BOD, DO, pH, temperature), potentially causing a deterioration in status.	Non-compliant (low conf.)	n/a
Chemicals	High	High						The option would not introduce new priority or priority hazardous chemicals and the potential of lower flows to reduce dilution and increase chemical concentrations is considered negligible due to the current High status.	Non-compliant (low conf.)	n/a
RBMP2 water body measures									n/a	
Overall assessment of WFD Regulations compliance of the option in this water body									Non-compliant (low conf.)	

Option	SEW044	SCHWYLL BOREHOLES	Assessed magnitude of hydrological effect:	Minor
Water body type	River		Sources & pathways of potential effect: This option has progressed to Step 3 impact assessment because of the reinstated abstraction of up to 25 MI/d from existing boreholes. Potential impacts include: impact on connected surface waters (flow change effects on ecology and water quality dilution). This is a surface water body linked to a groundwater abstraction option.	
Hydromorph designation	No Designation			
Water body ID	GB110058026220			
Water body name	Alun - headwaters to confluence with Ewenny			

Status element	Baseline Status		Reasons for not achieving good status					Assessment of option		
	RBMP2 status (2015)	2021 (C3) status	Flow	Morphology	Sanitary water quality	Nutrients	Other	Assessment	Potential for deterioration	Potential for introduction of impediments
Fish								The 2021 overall water body status is Moderate due to ecological status, specifically phosphate. The ALS indicates that water is available for abstraction across the entire flow regime.	Non-compliant (low conf.)	n/a
Invertebrates	High	High						The watercourse is likely to have some connectivity to the groundwater body, so flows could be reduced due to reductions in baseflow or increased losses to ground resulting from increased groundwater abstraction.	Non-compliant (low conf.)	n/a
Macrophytes/phytobenthos	High	High						Changes to hydrological regime, river continuity and morphological conditions could impact fish invertebrates and macrophyte/phytobenthos populations. The watercourse has water available across the flow regime, mitigating the impacts of reductions in baseflows, but deterioration to the ecological status can not be ruled out.	Non-compliant (low conf.)	n/a
Physico-chemical	High	High				Probable		Reduction in flow, particularly during times of low flow could result in changes to physico-chemical quality elements (e.g. P, BOD, DO, pH, temperature), potentially causing a deterioration in status and introduction of impediments.	Non-compliant (low conf.)	Non-compliant (low conf.)
Chemicals	High	High						The option would not introduce new priority or priority hazardous chemicals but lower flows could result in a minor reduction in dilution of chemicals already present in the watercourse, and potentially further deterioration in status.	Non-compliant (low conf.)	n/a
RBMP2 water body measures									n/a	
Overall assessment of WFD Regulations compliance of the option in this water body									Non-compliant (low conf.)	

Option	SEW044	SCHWYLL BOREHOLES	Assessed magnitude of hydrological effect:	Minor
Water body type	Transitional water		Sources & pathways of potential effect: This option has progressed to Step 3 impact assessment because of the reinstated abstraction of up to 25 MI/d from existing boreholes. Potential impacts include: impact on connected surface waters (flow change effects on ecology and water quality dilution). This is a surface water body linked to a groundwater abstraction option.	
Hydromorph designation	No Designation			
Water body ID	GB541005815300			
Water body name	OGMORE ESTUARY			

Status element	Baseline Status		Reasons for not achieving good status	Assessment of option		
	RBMP2 status (2018)	2021 (C3) status		Assessment	Potential for deterioration	Potential for introduction of impediments
Phytoplankton				Impacts on flows in the Ogmore estuary would be negligible due to the significant influence the sea has on the waterbody. Any flow reductions passed down from the upstream water body would be minor and unlikely to have an impact on ecological populations.	Compliant (high conf.)	n/a
Angiosperms					Compliant (high conf.)	n/a
Macroalgae	High	High			Compliant (high conf.)	n/a
Invertebrates					Compliant (high conf.)	n/a
Fish					Compliant (high conf.)	n/a
Phys-chem water quality (in support of ecological status)	High	High	Dissolved organic nitrogen Specific pollutants	Any flow reductions passed down from the upstream water body would have a negligible impact water quality in this transitional water body.	Compliant (high conf.)	Compliant (high conf.)
Chemicals	High	High		Any flow reductions passed down from the upstream water body would have a negligible impact water quality in this transitional water body. The option would not introduce new priority or priority hazardous chemicals to the water environment.	Compliant (high conf.)	n/a
RBMP2 water body measures					n/a	
Overall assessment of WFD Regulations compliance of the option in this water body					Compliant (high conf.)	

Option	SEW052	AFON_LWYD	Assessed magnitude of hydrological effect: Sources & pathways of potential effect:	Minor
Water body type	River		This option has progressed to Step 3 impact assessment because of the new abstraction from the Afon Lwyd, of 10 ML/d which has potential to decrease mean daily flows by 3.7% at Q95 if operated without constraint. Potential impacts are flow change effects on ecology and water quality dilution.	
Hydromorph designation	No Designation			
Water body ID	GB109056032911			
Water body name	Afon Lwyd - below Mon and Brecon Canal			

Status element	Baseline Status		Reasons for not achieving good status					Assessment of option																				
	RBMP2 status (2015)	2021 (C3) status	Flow	Morphology	Sanitary water quality	Nutrients	Other	Assessment	Potential for deterioration	Potential for introduction of impediments																		
Fish				Suspected				The 2021 overall WFD water body status is moderate, with driving elements identified as PAH and fish.  The abstraction would be operated in line with flow constraints set out by NRW:  <table border="1" style="margin: 10px auto;"> <thead> <tr> <th colspan="3">River Flow</th> </tr> <tr> <th>Lower band (ML/d)</th> <th>Upper band (ML/d)</th> <th>Abstraction (ML/d)</th> </tr> </thead> <tbody> <tr> <td>&gt;70</td> <td></td> <td>10</td> </tr> <tr> <td>50</td> <td>70</td> <td>7</td> </tr> <tr> <td>30</td> <td>50</td> <td>4</td> </tr> <tr> <td>&lt;30</td> <td></td> <td>0</td> </tr> </tbody> </table> Potential risks associated with low flows would be avoided through use of these constraints, which do not allow abstraction when flows are below 30 ML/d. The full rate of abstraction would only be allowed when flow is greater than 70 ML/d. On this basis, it can be assumed that the option would not have an impact on WFD compliance of the Afon Lwyd of any elements.	River Flow			Lower band (ML/d)	Upper band (ML/d)	Abstraction (ML/d)	>70		10	50	70	7	30	50	4	<30		0	Compliant (low conf.)	Compliant (low conf.)
River Flow																												
Lower band (ML/d)	Upper band (ML/d)	Abstraction (ML/d)																										
>70		10																										
50	70	7																										
30	50	4																										
<30		0																										
Invertebrates							Compliant (low conf.)	n/a																				
Macrophytes/phytobenthos							Compliant (low conf.)	n/a																				
Physico-chemical							Compliant (low conf.)	n/a																				
Chemicals							The option would not introduce new priority or priority hazardous chemicals. While lower flows could result in a reduction in dilution of chemicals already present in the waterbody, the conditions set out above would avoid any impacts.	Compliant (med. conf.)	Compliant (med. conf.)																			
RBMP2 water body measures								n/a																				
								Overall assessment of WFD Regulations compliance of the option in this water body	Compliant (low conf.)																			

Option	SEW053	AFON_LWYD_TO_LLANDEGFEDD_RESERV	Assessed magnitude of hydrological effect:	Minor
Water body type	River		Sources & pathways of potential effect: This option has progressed to Step 3 impact assessment because of a proposed new abstraction of 10 MLD from the Afon Lwyd. This will deliver raw water to Court Farm reservoir, then to Llandegfedd reservoir. The new abstraction has potential to decrease mean daily flows in the river by 3.7% at Q95 if operated without constraint. Potential impacts are flow change effects on ecology and water quality dilution.	
Hydromorph designation	No Designation			
Water body ID	GB109056032911			
Water body name	Afon Lwyd - below Mon and Brecon Canal			

Status element	Baseline Status		Reasons for not achieving good status					Assessment of option																				
	RBMP2 status (2015)	2021 (C3) status	Flow	Morphology	Sanitary water quality	Nutrients	Other	Assessment	Potential for deterioration	Potential for introduction of impediments																		
Fish				Suspected				The 2021 overall WFD water body status is moderate, with driving elements identified as PAH and fish.  The abstraction would be operated in line with flow constraints set out by NRW:  <table border="1" style="margin: 10px auto;"> <thead> <tr> <th colspan="3">River Flow</th> </tr> <tr> <th>Lower band (ML/d)</th> <th>Upper band (ML/d)</th> <th>Abstraction (ML/d)</th> </tr> </thead> <tbody> <tr> <td>&gt;70</td> <td></td> <td>10</td> </tr> <tr> <td>50</td> <td>70</td> <td>7</td> </tr> <tr> <td>30</td> <td>50</td> <td>4</td> </tr> <tr> <td>&lt;30</td> <td></td> <td>0</td> </tr> </tbody> </table> Potential risks through use of these constraints, which do not allow abstraction when flows are below 30 ML/d. The full rate of abstraction would only be allowed when flow is greater than 70 ML/d. On this basis, it can be assumed that the option would not have an impact on WFD compliance of the Afon Lwyd of any elements.	River Flow			Lower band (ML/d)	Upper band (ML/d)	Abstraction (ML/d)	>70		10	50	70	7	30	50	4	<30		0	Compliant (low conf.)	Compliant (low conf.)
River Flow																												
Lower band (ML/d)	Upper band (ML/d)	Abstraction (ML/d)																										
>70		10																										
50	70	7																										
30	50	4																										
<30		0																										
Invertebrates							Compliant (low conf.)	n/a																				
Macrophytes/ phytobenthos							Compliant (low conf.)	n/a																				
Physico-chemical							Compliant (low conf.)	n/a																				
Chemicals							The option would not introduce new priority or priority hazardous chemicals. While lower flows could result in a reduction in dilution of chemicals already present in the waterbody, the conditions set out above would avoid any impacts.	Compliant (med. conf.)	Compliant (med. conf.)																			
RBMP2 water body measures								n/a																				
Overall assessment of WFD Regulations compliance of the option in this water body								Compliant (low conf.)																				

Option	SEW053	AFON_LWYD_TO_LLANDEGFEDD_RESERVOIR	Assessed magnitude of hydrological effect:	Minor
Water body type	Lake		Sources & pathways of potential effect: This option has progressed to Step 3 impact assessment because of a proposed new abstraction of 10 MLD from the Afon Lwyd. This will deliver raw water to Court Farm reservoir, then to Llandegfedd reservoir. Potential impacts are flow change effects on ecology and water quality dilution.	
Hydromorph designation	Heavily Modified			
Water body ID	GB30941363			
Water body name	Llandegfedd Reservoir			

Status element	Baseline Status		Reasons for not achieving good status	Assessment of option		
	RBMP2 status (2015)	2021 (C3) status		Assessment	Potential for deterioration	Potential for introduction of impediments
Phytoplankton				The 2021 overall water body status of the reservoir is moderate, with diffuse agricultural sources and other point sources identified as RNAG.	Non-compliant (low conf.)	n/a
Invertebrates				It is anticipated that the volume of water transferred to the reservoir would be balanced by water abstracted for supply, so changes to the overall quantity of water in the reservoir and the hydrological regime would be minimal.	Non-compliant (low conf.)	n/a
Macrophytes				The Afon Lwyd has Good to High status for all ecological and phys-chem status elements other than Fish (barriers to migration), and Moderate for chemical status, due to PAH. Changes to the water quality of the reservoir and transfer of INNS are possible as a result of the transfer, which could impact on the ecological status of the water body.	Non-compliant (low conf.)	n/a
Physico-chemical			Dissolved oxygen, Total P. RNAG: diffuse agricultural sources (probable), point sources (other) (suspected)	Water transfer from Afon Lwyd could potentially be of a different physio-chemical composition (e.g. TP, BOD, DO, pH, temperature), potentially causing a deterioration in status and an introduction of impediments.	Non-compliant (low conf.)	Non-compliant (low conf.)
Chemicals				The option has the potential to introduce new priority or priority hazardous chemicals to the reservoir from the source of raw water. Afon Lwyd WFD assessment states that PAHs are causing Moderate element status.	Non-compliant (low conf.)	n/a
RBMP2 water body measures					n/a	
Overall assessment of WFD Regulations compliance of the option in this water body					Non-compliant (low conf.)	

Option	SEW064	WENTWOOD RESERVOIR	Assessed magnitude of hydrological effect:	Minor
Water body type	Lake		Sources & pathways of potential effect:	
Hydromorph designation	Heavily Modified		This option has progressed to Step 3 impact assessment because the option proposes a new abstraction of up to 7 MLD (licensed; average 4.3 MLD) from Wentwood Reservoir. Initial review of regulatory position of water availability and changes to flow regimes can not discount potential for deterioration. Potential impacts include hydrological regime change effects on ecology and water quality dilution.	
Water body ID	GB30941762			
Water body name	Wentwood Reservoir			

Status element	Baseline Status		Reasons for not achieving good status	Assessment of option		
	RBMP2 status (2015)	2021 (C3) status		Assessment	Potential for deterioration	Potential for introduction of impediments
Phytoplankton	Yellow	Yellow	Phytoplankton blooms- forestry, unknown (suspected)	The 2021 overall WFD water body status is moderate, with driving elements identified as phytoplankton and total P. There are recognised problems with algal blooms at the reservoir.	Non-compliant (med. conf.)	Non-compliant (low conf.)
Invertebrates				New abstraction from this reinstated reservoir may cause further deterioration by lowering water levels (particularly during dry weather conditions) and increasing the concentration of any water quality determinands, or be a potential impediment to improvement, particularly in relation to phytoplankton blooms.	Non-compliant (med. conf.)	n/a
Macrophytes/ phytobenthos				Any such effects would also have the potential to impact on plants, fish and invertebrates. The lowering of water levels may also impact on shoreline conditions with an affect on associated ecology.  The ALS indicates that Wentwood Reservoir is located in the Usk Estuary and Coastal Area. This area is not assessed using the CAMS resources assessment so it is not possible to determine water availability.	Non-compliant (med. conf.)	n/a
Physico-chemical	Yellow	Orange	Total phosphorus- forestry, unknown (probable)	New abstraction from the reservoir could result in changes to physico-chemical quality elements (e.g. TP, BOD, DO, pH, temperature), due to reduced dilution, especially during dry weather conditions, thus potentially causing a deterioration in status and an introduction of impediments.	Non-compliant (med. conf.)	Non-compliant (low conf.)
Chemicals	Green	Blue		The option would not introduce new priority or priority hazardous chemicals to the reservoir.	Compliant (high conf.)	n/a
RBMP2 water body measures					n/a	
Overall assessment of WFD Regulations compliance of the option in this water body					Non-compliant (med. conf.)	



Option	SEW168	LLWYNON_GRAVITY_MAIN_UPGRADES	Assessed magnitude of hydrological effect:	Uncertain
			Sources & pathways of potential effect:	
Water body type	River		This option has progressed to Step 3 impact assessment because of a scheme that will use potable water for flushing a mains pipeline prior to its intermittent use. The washwater would be discharged to the River Taff. The flushing would occur during dry weather. An assessment of the impact of the washwater volume is not possible as it is unknown, however, the discharge is likely to require a consent for chlorine and pH levels, as well as volume.	
Hydromorph designation	No Designation			
Water body ID	GB109057027240			
Water body name	R Taff - conf R Cynon to conf Rhondda R			

Status element	Baseline Status		Reasons for not achieving good status					Assessment	Potential for deterioration	Potential for introduction of impediments
	RBMP2 status (2015)	2021 (C3) status	Flow	Morphology	Sanitary water quality	Nutrients	Other			
Fish	High	High		Confirmed				<p>A new intermittent discharge has the potential to have effects on water quality and hence potentially on water chemistry. Discharges are expected to take place during dry weather, hence during times with less dilution. In their consultation response on the draft WRMP, NRW commented on "the potential for deterioration of water quality of the Nant Cae-dudwg, and consequently the Taff", and that those "discharges may have a negative impact on fish species if they cause a deterioration of the water quality, particularly during periods of low flow and high temperature". This was in relation to an earlier version of the option design, which discharged to the Nant Cae-dudwg. The option has now been revised to discharge directly to the Taff.</p> <p>It is anticipated that a discharge consent would be required, and that appropriate conditions would be agreed to manage risks to water quality to the River Taff. On this basis, it is concluded (with low confidence) that the option would be WFD compliant.</p>	Compliant (low conf.)	Compliant (low conf.)
Invertebrates	High	High					Compliant (low conf.)		n/a	
Macrophytes/ phytobenthos		High					Compliant (low conf.)		n/a	
Physico-chemical	High	High					Compliant (low conf.)		n/a	
Chemicals	High	High					Compliant (low conf.)		n/a	
RBMP2 water body measures							n/a			
Overall assessment of WFD Regulations compliance of the option in this water body								Compliant (low conf.)		

