

Dŵr Cymru Welsh Water

# 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. 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 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 Towy 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. Demand management and leakage reduction by at least 15% during AMP7 was also mandated by 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 preferred planning scenario (1 in 200 year level of drought resilience for emergency measures, tested against a medium emission climate change scenario) within the 25-year period to 2050. The zones with an identified shortfall are SEWCUS, the Tywi Gower, Mid-South Ceredigion (which has a forecast deficit under more extreme scenarios), and Clwyd Coastal. To resolve these issues, Welsh Water's draft WRMP24 proposes:

- A leakage programme to maintain leakage performance over the AMP8 period. The plan presents a challenging target of reducing leakage by a further 10% during AMP8 as part of Welsh Water's longer term target to achieve 50% reduction of 2017/18 leakage levels by 2050, thus reducing abstraction from the environment.
- A metering programme that will support both the achievement of Welsh Water's leakage strategy and the long term reduction in average domestic per capita consumption to 110 l/p/d by 2050.

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<sup>1</sup> Ofwat, NRW & EA (2022), Water Resources Planning Guideline – Updated 22 July 2022

- Network improvements to increase drought resilience in the SEWCUS and Tywi Gower Zones.
- WTW enhancement to increase our peak supply capability in the Mid & South Ceredigion zone.

As part of the WRMP development process, DCWW initially identified feasible supply-side and demand-side options to resolve deficits, improve network resilience and make water available for transfer. These options were subject to a staged filtering process (which included a high-level consideration of the HRA-related risks associated with each option) designed to establish the best-value plan for DCWW taking into account the regional plan requirements. The draft WRMP24 therefore proposes:

- five supply options;
- two 'demand' options.

This assessment considers all of the feasible supply side options individually, and subsequently the five 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 2022 WRPG (Box 1).

**Box 1: WRPG 2022****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

<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]

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.



## 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 expected to be in line with that published in 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 (2022). 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 (2021) 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)<sup>4</sup>.

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<sup>4</sup> The no deterioration baseline for each water body and element is the status reported in the RBMP. At present this is RBMP 2. Discussion with EA and through review of EA internal guidance#1 identified that the EA consider 'When making management decisions, any 'interim' classification results are also relevant [in addition to the published RBMP stratus] to making sure any deterioration in status is taken into account and to meet the objective of aiming to achieve good status in water bodies.'

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

Discussion with NRW and through review of NRW internal guidance#2 identified that NRW consider 'You must use the most recent classification information [currently WFD Cycle 2 Interim Classification 2018] in any assessment.'

#2 NRW (2020) Guidance for assessing activities and projects for compliance with the Water Framework Directive. Operation Guidance Note 72

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>5</sup>.
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:

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<sup>5</sup> WRPG (2022) 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'. At present this is RBMP2. 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

- 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>6</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**).

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<sup>6</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).

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
<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>7</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.
- 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>8</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.

<sup>7</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)

<sup>8</sup> <https://nrfa.ceh.ac.uk/data/search>

- 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>9</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**.

**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.

<sup>9</sup> Environment Agency (2011) Method statement for the classification of 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	Reason, if not confirmed as compliant
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_NORTH_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.)	
Run-of-river abstraction	GREAT_SPRINGS_TO_COURT_FARM	SEW005a	Compliant (med conf.)	

Option Type	Option Name	Option ID	Outcome	Reason, if not confirmed as compliant
Run-of-river abstraction	GREAT_SPRINGS_TO_LLA NDEGFEDD	SEW005c	Non-compliant (med conf.)	Changes to the water quality of the reservoir and transfer of INNS are possible as a result of the transfer from the Great Spring, which could impact on the ecological status of the water body.
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.
Reservoir_increase abstraction Run-of-river abstraction	GRWYNE_RESERVOIR	SEW009	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.
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.
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. The change in overtopping regime of the reservoir may impact high flows in the river downstream.
Reservoir_increase abstraction	YNYS-Y-FRO	SEW036b	Non-compliant (med 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 river downstream.

Option Type	Option Name	Option ID	Outcome	Reason, if not confirmed as compliant
Reservoir_increase abstraction	PANT-YR-EOS_AND_YNYS-Y-FRO	SEW036c	Non-compliant (med 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. The change in overtopping regime of the reservoir may impact high flows in the river downstream.
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	Non-compliant (low conf.)	The impact of mean daily flows in the Afon Lwyd as a result of the abstraction is assessed to be minor, however, the ALS indicates restricted water for abstraction at Q95. 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_TO_LLANDEGFEDD_RESERVOIR	SEW053	Non-compliant (low conf.)	The impact of mean daily flows in the Afon Lwyd as a result of the abstraction are assessed to be minor, however, the ALS indicates restricted water for abstraction at Q95. 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. Changes to the water quality of Llandegfedd Reservoir and transfer of INNS are possible as a result of the transfer, which could impact on the ecological, physico-chemical and chemical status of the water body.
Effluent reuse	NANTYBWCH_WASTEWATER	SEW063	Compliant (Step 2)	

Option Type	Option Name	Option ID	Outcome	Reason, if not confirmed as compliant
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.
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)	
Washwater discharge	LLWYNON_GRAVITY_MAIN_UPGRADES	SEW168	Compliant (low conf.)	
Water Treatment Works	Crai Distribution - Rezoning and Valve Isolation	TWG03	Compliant (Step 1)	
Raw Water Mains	Upsize Llangyfelach WPS	TWG09	Compliant (Step 1)	
Network Upgrades	Bryn Gwyn Distribution Options - Felindre WTW Supply to Llanon	TWG11	Compliant (Step 1)	
Raw Water Mains	Crai Distribution Options - Upsize Christopher Road WPS	TWG12	Compliant (Step 1)	

Option Type	Option Name	Option ID	Outcome	Reason, if not confirmed as compliant
Raw Water Mains	Crai Distribution - Rezoning and Valve Isolation	TWG13	Compliant (Step 1)	
Network Upgrades	Ystradfellte - Reverse flow through Tonna control valve	TWG14	Compliant (Step 1)	
Raw Water Mains	Llyn y Fan Fach Regulation	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<sup>10</sup>. It lists the water bodies that are impacted by more than one option, in order to consider whether any water body may be impacted by more than one option. It is clear that this is not the case for DCWW's Preferred Plan, with only two water bodies being identified as potentially impacted, which are hydrologically unconnected. The list of water bodies is informed through the option-level assessments, but has also looked

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.

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<sup>10</sup> STTA4 NWT\_VYRNWY 4 has not been included since it is not expected to have any influence on WFD compliance

Table 4.1 Summary of options in the Preferred Plan

Option Name	Option ID	Relevant WFD water bodies	Outcome of individual option assessment
LLECHRYD_WTW	MSC08	GB110062043563	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>GB110062043563</b> <b>Teifi - Afon Ceri to estuary</b>	MSC08	Compliant (low conf.)	Flows in the River Teifi could be reduced by up to 7.6% (Q95) as a result of the total abstraction rate of 21 MI/d (worst case scenario). However, there is <1% impact when considering only the increase from the current to proposed abstraction rates that comprises the option (2 MI/d increase, from 19 MI/d current). The ALS indicates that water is available for abstraction across the entire flow regime (including accounting for the Teifi Special Area of Conservation).
<b>GB109057027240</b> <b>Taff - conf R Cynon to conf Rhondda R</b>	SEW168	Compliant (low conf.)	Discharges to the watercourse (via the Nant Cae-dudwg tributary) are expected to take place once-twice per year during dry weather. As the water body is of Good to High status for all elements apart from Fish (Moderate due to Fish), it is likely that new permit limits will be imposed to prevent deterioration. Considering the expected infrequent use of the discharge, it would be unlikely to have a notable effect on the Nant Cae-dudwg, or on the Taff downstream.



## **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 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
1) To prevent deterioration of any WFD element of any water body - in line with Regulation 13(2)(a) and 13(5)(a)	Compliant	All options in the plan have been concluded to be compliant, individually and cumulatively.
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).	Compliant	All options in the plan have been concluded to be compliant, individually and cumulatively.
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.	Compliant	No planned water body measures, as identified in the RBMP2, have been identified as being compromised.
4) To assist the attainment of the WFD objectives for the water body – in line with Regulation 13(2)(b) and 13(2)(c)	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.
5) To assist the attainment of the WFD objectives for associated WFD protected areas – in line with Regulation 13(6)	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.
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	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	Severn Lower	GB530905415401	Run-of-river abstraction	Yes	
GREAT_SPRINGS_TO_LLANDEGFEDD	SEW005c	Severn Lower Llandegfedd Reservoir	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 Cwannon 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	GB30941762	Reservoir_increase abstraction	Yes	
PONTHIR_STANDALONE	SEW022a	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: 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	Ynysyfro 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 Ynysyfro 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 Llannon 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		
			Sources & pathways of potential effect:			
Water body type		Lake	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.			
Hydromorph designation		Heavily modified				
Water body ID		GB30938427				
Water body name		Claerwen Reservoir				
	Baseline Status		Reasons for not achieving good status	Assessment of option		
Status element	RBMP2 status (2015)	2021 (C3) status			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)			Total phosphorus. RNAG - Diffuse sources - agriculture and rural land management (suspected)	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:  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.		
Hydromorph designation		No designation								
Water body ID		GB109055042230								
Water body name		Afon Claerwen - conf Afon Arban to Caban-coch								
		Baseline Status		Reasons for not achieving good status				Assessment of option		
Status element	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								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					Low pH (acidification): diffuse sources (confirmed), urban and transport (confirmed)			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
			Sources & pathways of potential effect:	
Water body type		Lake	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 MI). 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		

Baseline Status		Reasons for not achieving good status	Assessment of option		
Status element	RBMP2 status (2015)	2021 (C3) status	Assessment	Potential for deterioration	Potential for introduction of impediments
Phytoplankton			<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>	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			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.	Non-compliant (low conf.)	n/a
Chemicals		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 (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		
			Sources & pathways of potential effect:			
Water body type		Lake	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 MI). 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				
Baseline Status			Assessment of option			
Status element	RBMP2 status (2015)	2021 (C3) status	Reasons for not achieving good status	Assessment	Potential for deterioration	Potential for introduction of impediments
Phytoplankton				The 2021 overall water body status is poor, with poor hydrology given as the RNAG in 2015 and unknown (pending investigation) in 2021.	Non-compliant (low conf.)	n/a
Invertebrates				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.	Non-compliant (low conf.)	Non-compliant (low conf.)
Macrophytes/ phytobenthos					Non-compliant (low conf.)	n/a
Physico-chemical				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.	Non-compliant (low conf.)	n/a
Chemicals		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 (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: 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 can not discount potential for deterioration. Potential impacts include flow change effects on ecology and water quality composition.		
Hydromorph designation		No designation								
Water body ID		GB110062043563								
Water body name		Teifi - Afon Ceri to estuary								
		Baseline Status		Reasons for not achieving good status				Assessment of option		
Status element	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 phytobenthos combined. Changes to the hydrological regime, river continuity and morphological conditions could impact fish, invertebrate and macrophyte/phytobenthos populations.	Compliant (low conf.)	n/a
Invertebrates	High	High						Flows in the River Teifi could be reduced by up to 7.6% (Q95) as a result of the total abstraction rate of 21 MI/d, calculated using flow data from Glanteifi gauging station ~2.2 km upstream of the abstraction location. However, there is <1% impact on Q95 flows when considering only the increase from the current to proposed abstraction rates (2 MI/d increase, from 19 MI/d current). The ALS indicates that water is available for abstraction across the entire flow regime. In this case, with water available in the catchment, the total abstraction being less than 10%, and the proportional increase in abstraction associated with the option being very low, the impact is assessed as negligible and therefore compliant.	Compliant (low conf.)	n/a
Macrophytes/ phytobenthos									Compliant (low conf.)	Compliant (low conf.)
Physico-chemical								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						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, 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
			Sources & pathways of potential effect:	
Water body type		Transitional water	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.	
Hydromorph designation		Heavily modified		
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	Blue	Green		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.	Compliant (med. conf.)	n/a
Angiosperms	Yellow	Yellow		Abstraction of up to 30 MLD is unlikely to have an adverse effect on the hydrological regime of the Severn Estuary. It is unlikely that the magnitude of abstraction may result in a flow regime that is below the EFI threshold to support good ecology. The proposed abstraction volumes would be unlikely to 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
Macroalgae					Compliant (med. conf.)	n/a
Invertebrates	Green	Yellow			Compliant (med. conf.)	n/a
Fish	Green	Green			Compliant (med. conf.)	n/a
Phys-chem water quality (in support of ecological status)					Compliant (med. conf.)	n/a
Chemicals	Red	Yellow	Mercury And Its Compounds	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 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 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	High	Good		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.	Compliant (med. conf.)	n/a
Angiosperms	High	High		Abstraction of up to 30 MLD is unlikely to have an adverse effect on the hydrological regime of the Severn Estuary. It is unlikely that the magnitude of abstraction may result in a flow regime that is below the EFI threshold to support good ecology.	Compliant (med. conf.)	n/a
Macroalgae	High	High		The proposed abstraction volumes would be unlikely to 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
Invertebrates	Good	High			Compliant (med. conf.)	n/a
Fish	Good	Good			Compliant (med. conf.)	n/a
Phys-chem water quality (in support of ecological status)	High	High		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	High	High	Mercury And Its Compounds	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
			Sources & pathways of potential effect:	
Water body type		Lake	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.	
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 (med. 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 (med. conf.)	n/a
Macrophytes				The Great Spring has Good to High status for all ecological and phys-chem status elements other than Angiosperms, and Fail for chemical status, due to Mercury and its compounds and BDPE. 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 (med. conf.)	Non-compliant (low conf.)
Physico-chemical			Dissolved oxygen, Total P, Total N. RNAG: diffuse agricultural sources (probable), point sources (other) (suspected)	Water transfer from the Great Spring could potentially be of a different physio-chemical composition (e.g. TP, BOD, DO, pH, temperature), potentially causing a deterioration in status or an introduction of impediments.	Non-compliant (med. conf.)	Non-compliant (low conf.)
Chemicals		High		The option has the potential to introduce new priority or priority hazardous chemicals to the reservoir from the source of raw water. Great Spring WFD assessment states that mercury and Brominated diphenylether (BDPE) are all RNAG (Chemical status).	Non-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					Non-compliant (med. conf.)	

Option	SEW007	TALYBONT_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 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.	
Hydromorph designation		Heavily Modified		
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		Assessment	Potential for deterioration	Potential for introduction of impediments
Phytoplankton				The 2021 overall water body status is moderate, with total phosphorus, phytoplankton blooms and mitigation measures assessment (which was moderate in 2015) given as the RNAG.	Non-compliant (med. conf.)	n/a
Invertebrates				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.	Non-compliant (med. conf.)	n/a
Macrophytes/ phytobenthos	High	High			Non-compliant (med. conf.)	n/a
Physico-chemical			Total Phosphorus, Phytoplankton blooms, Mitigation Measures Assessment (moderate)	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.	Non-compliant (med. conf.)	n/a
Chemicals		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.)	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								
Assessment of option										
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			Probable	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								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						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
Water body type	Lake		Sources & pathways of potential effect: 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			

Baseline Status			Reasons for not achieving good status	Assessment of option		
Status element	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			Mitigation Measures Assessment (moderate)	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.)	Non-compliant (low conf.)
Chemicals		High		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:  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.					
Hydromorph designation			No designation							
Water body ID			GB109056040000							
Water body name			Grwyne Fawr- source to conf Grwyne-Fechan							
			Baseline Status		Reasons for not achieving good status			Assessment of option		
Status element	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						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.	Non-compliant (low conf.)	Non-compliant (low conf.)
Invertebrates	High	High						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."	Non-compliant (low conf.)	n/a
Macrophytes/ phytobenthos									Non-compliant (low conf.)	n/a
Physico-chemical	High	High						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.	Non-compliant (low conf.)	n/a
Chemicals	High	High						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.	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		
			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		GB109056032980								
Water body name		Grwyne Fawr - conf Grwyne-Fechan to conf R Usk								
Baseline Status		Reasons for not achieving good status			Assessment of option					
Status element	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					Pending investigation	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								
		Baseline Status		Reasons for not achieving good status				Assessment of option		
Status element	RBMP2 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 km2). 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	High								Compliant (med. conf.)	n/a
Macrophytes/ phytobenthos									Compliant (med. conf.)	n/a
Physico-chemical									Compliant (med. conf.)	n/a
Chemicals		High						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.	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 (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		GB109056040083								
Water body name		Usk - conf R Gavenny to conf Olway Bk								
Baseline Status			Reasons for not achieving good status				Assessment of option			
Status element	RBMP2 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 classification of moderate with driving elements identified as polycyclic aromatic hydrocarbons (PAH), fish, macrophytes/phytobenthos and 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.	Compliant (med. conf.)	Compliant (med. conf.)
Invertebrates	High	High							Compliant (med. conf.)	n/a
Macrophytes/ phytobenthos	High								Compliant (med. conf.)	Compliant (med. conf.)
Physico-chemical					Phosphate				Compliant (med. conf.)	Compliant (med. conf.)
Chemicals			Polycyclic aromatic hydrocarbons (PAH)				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.	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			

  

Baseline Status		Reasons for not achieving good status	Assessment of option		
Status element	RBMP2 status (2015)		Assessment	Potential for deterioration	Potential for introduction of impediments
Phytoplankton		Phytoplankton blooms	The 2021 overall WFD water body status is moderate, with driving elements identified as phytoplankton and total P.  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. 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 affect on associated ecology.	Non-compliant (med. conf.)	n/a
Invertebrates			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
Macrophytes/ phytobenthos				Non-compliant (med. conf.)	n/a
Physico-chemical		Total P - Poor (very certain)	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	SEW036a	PANT-YR-EOS	Assessed magnitude of hydrological effect:	Minor
Water body type	Lake		Sources & pathways of potential effect:  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.	
Hydromorph designation	Heavily Modified			
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		Assessment	Potential for deterioration	Potential for introduction of impediments
Phytoplankton				The 2021 overall water body status is moderate, with driving elements identified as total P, total N and mitigation assessment.	Non-compliant (low conf.)	n/a
Invertebrates				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
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.)	n/a
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.)	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 (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 13.7Ml/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								

	Baseline Status		Reasons for not achieving good status					Assessment of option		
Status element	RBMP2 status (2015)	2021 (C3) status	Flow	Morphology	Sanitary water quality	Nutrients	Other	Assessment	Potential for deterioration	Potential for introduction of impediments
Fish				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.	Compliant (med. conf.)	Compliant (med. conf.)
Invertebrates								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.	Compliant (med. conf.)	n/a
Macrophytes/ phytobenthos								It is assumed that there would be no changes to compensation releases from the reservoir so low flows should be unaffected. With less water in the reservoir due to increased abstraction, the reservoir will take longer to refill, and spill may be delayed/reduced. However, this is likely to have only a minor impact on d/s flows in terms of the proportion of time that the reservoir spills for. As a result, the changes downstream are not expected to have an impact on biological or WQ elements.	Compliant (med. conf.)	n/a
Physico-chemical									Compliant (med. conf.)	n/a
Chemicals								The option would not introduce new priority or priority hazardous chemicals, and the conclusions above also apply.	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 (med. 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 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		Assessment	Potential for deterioration	Potential for introduction of impediments
Phytoplankton				The 2021 overall water body status is moderate, with the driving element identified as mitigation assessment.	Non-compliant (med. conf.)	n/a
Invertebrates				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
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, 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
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 (med. 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 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 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								
	Baseline Status		Reasons for not achieving good status				Assessment of option			
Status element	RBMP2 status (2015)	2021 (C3) status	Flow	Morphology	Sanitary water quality	Nutrients	Other	Assessment	Potential for deterioration	Potential for introduction of impediments
Fish				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.  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.  It is assumed that there would be no changes to compensation released from the reservoir so low flows should be unaffected. With less water in the reservoir due to increased abstraction, the reservoir will take longer to refill, and spill may be delayed/reduced. However, this is likely to have only a minor impact on d/s flows in terms of the proportion of time that the reservoir spills for. As a result, the changes downstream are not expected to have an impact on biological or WQ elements.	Compliant (med. conf.)	Compliant (med. conf.)
Invertebrates	High	High							Compliant (med. conf.)	n/a
Macrophytes/ phytobenthos							RNAG: unknown		Compliant (med. conf.)	n/a
Physico-chemical									Compliant (med. conf.)	n/a
Chemicals		High							The option would not introduce new priority or priority hazardous chemicals, and the conclusions above also apply.	Compliant (med. conf.)
RBMP2 water body measures									n/a	
								Overall assessment of WFD Regulations compliance of the option in this water body	Compliant (med. 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		Assessment	Potential for deterioration	Potential for introduction of impediments
Phytoplankton				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.)	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. 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			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.)	Non-compliant (low conf.)
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	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		Assessment	Potential for deterioration	Potential for introduction of impediments
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 (med. 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			Total Phosphorus	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 (med. conf.)	

Option	SEW036c	PANT-YR-EOS_AND_YNYS-Y-FRO	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 13.7Ml/d from Pant-yr-Eos reservoir and 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 both of the reservoirs, 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									
	Baseline Status		Reasons for not achieving good status				Assessment of option			
Status element	RBMP2 status (2015)	2021 (C3) status	Flow	Morphology	Sanitary water quality	Nutrients	Other	Assessment	Potential for deterioration	Potential for introduction of impediments
Fish				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.  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.  It is assumed that there would be no changes to compensation released from the reservoir so low flows should be unaffected. With less water in the reservoir due to increased abstraction, the reservoir will take longer to refill, and spill may be delayed/reduced. However, this is likely to have only a minor impact on d/s flows in terms of the proportion of time that the reservoir spills for. As a result, the changes downstream are not expected to have an impact on biological or WQ elements.	Compliant (med. conf.)	Compliant (med. conf.)
Invertebrates									Compliant (med. conf.)	n/a
Macrophytes/ phytobenthos							RNAG: unknown		Compliant (med. conf.)	n/a
Physico-chemical									Compliant (med. conf.)	n/a
Chemicals							The option would not introduce new priority or priority hazardous chemicals, and the conclusions above also apply.	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 (med. conf.)		

Option	SEW044	SCHWYLL BOREHOLES	Assessed magnitude of hydrological effect:		Minor			
			Sources & pathways of potential effect:					
Water body type		Groundwater	This option has progressed to Step 3 impact assessment because of the reinstated abstraction of up to 25 Ml/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						
		Baseline Status		Reasons for not achieving good status		Assessment of option		
Status element	RBMP2 status (2015)	2021 (C3) status	Assessment			Potential for deterioration	Potential for introduction of impediments	
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			
				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	
			Sources & pathways of potential effect:							
Water body type		River		This option has progressed to Step 3 impact assessment because of the reinstated abstraction of up to 25 Ml/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		GB110058026280								
Water body name		Ogmore - confluence with Llynfi to tidal limit								
	Baseline Status		Reasons for not achieving good status					Assessment of option		
Status element	RBMP2 status (2015)	2021 (C3) status	Flow	Morphology	Sanitary water quality	Nutrients	Other	Assessment	Potential for deterioration	Potential for introduction of impediments
Fish							Uncertain	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								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								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								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			Due to Polycyclic aromatic hydrocarbons (PAHs)					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:					Minor	
			Sources & pathways of potential effect:						
Water body type		River		This option has progressed to Step 3 impact assessment because of the reinstated abstraction of up to 25 Ml/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							
	Baseline Status		Reasons for not achieving good status				Assessment of option		
Status element	RBMP2 status (2015)	2021 (C3) status	Flow	Morphology	Sanitary water quality	Nutrients		Potential for deterioration	Potential for introduction of impediments
Fish								Non-compliant (low conf.)	n/a
Invertebrates	High	High						Non-compliant (low conf.)	n/a
Macrophytes/ phytobenthos	High	High						Non-compliant (low conf.)	n/a
Physico-chemical	High	High						Non-compliant (low conf.)	n/a
Chemicals		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						This option has progressed to Step 3 impact assessment because of the reinstated abstraction of up to 25 Ml/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									
		Baseline Status		Reasons for not achieving good status				Assessment of option			
Status element	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						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					Due to phosphate, source not stated.			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						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					
			Sources & pathways of potential effect:						
Water body type		Transitional water	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							
		Baseline Status		Reasons for not achieving good status		Assessment of option			
Status element		RBMP2 status (2018)	2021 (C3) status			Assessment		Potential for deterioration	Potential for introduction of impediments
Phytoplankton						Impacts on flows in the Ogmores 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)				Due to Dissolved Inorganic Nitrogen		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	Moderate for zinc		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:		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 new abstraction from the Afon Lwyd, of 10 ML/d which has potential to decrease mean daily flows by 3.7%.				
Water body ID		GB109056032911					Potential impacts are flow change effects on ecology and water quality dilution.				
Water body name		Afon Lwyd - below Mon and Brecon Canal									
		Baseline Status		Reasons for not achieving good status				Assessment of option			
Status element	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.  Mean daily flows in the Afon Lwyd could be reduced by 3.7% based on the flow record from the gauge located directly downstream of the abstraction point (Lwyd at Ponthir - data from 1966-1998).	Non-compliant (low conf.)	Non-compliant (low conf.)	
Invertebrates		High						The ALS indicates restricted water for abstraction at Q95 but available across the rest of the flow regime. Reductions in flows could result in reduced whole catchment dilution. This combined with limited water availability means deterioration in status can't be ruled out. Changes to the hydrological regime, river continuity and morphological conditions could impact fish, invertebrate and macrophyte/phytobenthos populations. However, any impacts would be relatively localised as the Afon Lwyd confluences with the Usk approximately 3.5 km downstream, at which point the system is tidal. Low confidence has been applied due to the small proportional reduction in flow.	Non-compliant (low conf.)	n/a	
Macrophytes/ phytobenthos		High							Non-compliant (low conf.)	n/a	
Physico-chemical					Phosphate - suspected sewage discharge			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.	Non-compliant (low conf.)	n/a	
Chemicals			Polycyclic Aromatic Hydrocarbons (PAHs)					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.	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	SEW053	AFON_LWYD_TO_LLANDEGFEDD_RESERV	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 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%. 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								
		Baseline Status		Reasons for not achieving good status			Assessment of option			
Status element	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.  Mean daily flows in the Afon Lwyd could be reduced by 3.7% based on the flow record from the gauge located directly downstream of the abstraction point (Lwyd at Ponthir - data from 1966-1998).	Non-compliant (low conf.)	Non-compliant (low conf.)
Invertebrates		High						The ALS indicates restricted water for abstraction at Q95 but available across the rest of the flow regime. Reductions in flows could result in reduced whole catchment dilution. This combined with limited water availability means deterioration in status can't be ruled out. Changes to the hydrological regime, river continuity and morphological conditions could impact fish, invertebrate and macrophyte/phytobenthos populations. However, any impacts would be relatively localised as the Afon Lwyd conflues with the Usk approximately 3.5 km downstream, at which point the system is tidal. Low confidence has been applied due to the small proportional reduction in flow.	Non-compliant (low conf.)	n/a
Macrophytes/ phytobenthos		High							Non-compliant (low conf.)	n/a
Physico-chemical					Phosphate - suspected sewage discharge			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.	Non-compliant (low conf.)	n/a
Chemicals			Polycyclic Aromatic Hydrocarbons (PAHs)					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.	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	SEW053	AFON_LWYD_TO_LLANDEGFEDD_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 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			

Baseline Status			Assessment of option			
Status element	RBMP2 status (2015)	2021 (C3) status	Reasons for not achieving good 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, Total N. 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		High		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:  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.			
Hydromorph designation	Heavily Modified					
Water body ID	GB30941762					
Water body name	Wentwood Reservoir					
	Baseline Status			Assessment of option		
Status element	RBMP2 status (2015)	2021 (C3) status			Potential for deterioration	Potential for introduction of impediments
Phytoplankton			Phytoplankton blooms	The 2021 overall WFD water body status is moderate, with driving elements identified as phytoplankton and total P.  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. 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 (med. conf.)	n/a
Invertebrates				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
Macrophytes/ phytobenthos					Non-compliant (med. conf.)	n/a
Physico-chemical			Total P - Poor (very certain)	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.)	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 Nant Cae-dudwg watercourse (a small tributary of the River Taff - not a WFD water body). The flushing would occur during dry weather, once or twice a year. 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								

wood.