

Appendix 11A
WFD Screening

WFD Screening Assessment

WFD/01

Final | 24 July 2020

This report takes into account the particular instructions and requirements of our client.

It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

Job number 264904

Ove Arup & Partners Ltd
4 Pierhead Street
Capital Waterside
Cardiff CF10 4QP
United Kingdom
www.arup.com

ARUP

Document Verification

ARUP

Job title				Job number	
Document title		WFD Screening Assessment		File reference	
Document ref		WFD/01			
Revision	Date	Filename			
Final	14/08/20	Description			
			Prepared by	Checked by	Approved by
		Name	Sian Leake	Tom Styles	
		Signature	<i>S. R. Leake</i>	<i>Tom Styles</i>	
		Filename			
		Description			
			Prepared by	Checked by	Approved by
		Name			
		Signature			
		Filename			
		Description			
			Prepared by	Checked by	Approved by
		Name			
		Signature			
		Filename			
		Description			
			Prepared by	Checked by	Approved by
		Name			
		Signature			
Issue Document Verification with Document <input checked="" type="checkbox"/>					

Contents

	Page
1 Introduction	1
1.1 WFD Background	1
1.2 Project Background	2
2 Project Details	3
3 Baseline Information	4
3.1 Zone of Influence	4
3.2 Surface Water	5
3.3 Groundwater	9
3.4 Protected Sites	9
4 Screening	10
4.1 Proposed Activities	10
5 Summary	14

1 Introduction

Ove Arup & Partners has been commissioned by Welsh Government to undertake a preliminary Water Framework Directive (WFD) assessment to assess the environmental impacts of the Global Centre of Rail Excellence. This preliminary assessment is to support the outline planning application submitted to Powys County Council (PCC) and Neath Port Talbot County Borough Council (NPTCBC) for those works.

The Welsh Government is proposing to develop a rail testing, maintenance, research, development and storage facility, known as the Global Centre of Rail Excellence (GCRE) at the site of the Onllwyn Washery and Nant Helen Open Cast mine at which coaling operations are coming to an end and final site restoration by Celtic Energy is consented.

The site for the proposed development is approximately 475ha and includes the following components listed below and represented on Figure 1.1.

The proposed works are to include the following:

- Large railroad test track (outer track);
- High tonnage infrastructure test track (inner track);
- Site access;
- Associated development; and
- The washery site comprising:
 - An operations and control centre/office;
 - Research and development centre;
 - 4-road rolling stock maintenance shed;
 - Storage siding for medium-long term storage;
 - Carriage wash and CET spine facility;
 - Decommissioning facility;
 - Stationary testing facility; and
 - Associated development.

1.1 WFD Background

The WFD has been in force since 2000 and is currently the largest and most influential piece of European Union (EU) legislation relating to the water environment. All new (and current on-going) activities in the water environment need to be guided by the requirements of the WFD. In Wales, Natural Resources Wales (NRW) is the Competent Authority for implementing WFD.

This WFD assessment aims to determine the effects of the proposed scheme on ecological quality and potential. The assessment will identify any potential

impacts that could cause deterioration in the status of a water body or that could prevent the water body from meeting its WFD objectives.

The Directive requires that Environmental Objectives be set for all surface and ground waters in England and Wales to enable them to achieve Good Status (or Good Ecological Potential for Heavily Modified and Artificial Water Bodies) by a defined date. These Environmental Objectives are listed below:

- Prevent deterioration in the status of aquatic ecosystems, protect them and improve the ecological condition of waters;
- Aim to achieve at least good status for all water bodies by 2015. Where this is not possible and subject to the criteria set out in the Directive, aim to achieve good status by 2021 or 2027;
- Meet the requirements of Water Framework Directive Protected Areas;
- Promote sustainable use of water as a natural resource;
- Conserve habitats and species that depend directly on water;
- Progressively reduce or phase out the release of individual pollutants or groups of pollutants that present a significant threat to the aquatic environment;
- Progressively reduce the pollution of groundwater and prevent or limit the entry of pollutants; and
- Contribute to mitigating the effects of floods and droughts.

The Directive was transposed into law in England and Wales by the Water Environment (Water Framework Directive) (England and Wales) Regulations 2003. The framework for delivering this Directive is through the River Basin Management Plans (RBMPs). There are three River Basin Districts (RBD) that cover Wales: Dee, Severn and Western Wales. NRW is responsible for drawing up the RBMPs for Dee and Western Wales river basin districts. The responsibility for the RBMP for Severn is shared between NRW and Environment Agency. Each RBD has been characterised into smaller management units known as Water Bodies. These include all river, lake, groundwater, coastal, and transitional waters located within that RBD.

The Ecological Status or Potential of each water body in the RBD is established on the basis of specific criteria and boundaries defined against biological, physicochemical, and hydromorphological Quality Elements, and is ultimately determined by whichever of these elements is poorer.

The scheme is located in the Western Wales RBD. The RBMP details the Environmental Objectives, alongside the specific actions which are necessary to enable each water body in the RBD to meet these objectives.

1.2 Project Background

The project site is within the Dulais Valley located within Powys and Neath Port Talbot, with the Brecon Beacons National Park Authority boundary immediately to the north. Nearby settlements include Onllwyn, Seven Sisters, Ystradgynlais,

Caehopkin, Abercrave or Coelbren. The site is predominantly brownfield land that has been heavily worked by open cast mining. Much of the site has been revegetated.

The proposed site is currently being mined by Celtic Energy, who will cease extraction operations in 2021, at which point Celtic Energy will be required to restore the land in accordance with regulatory requirements and agreements with PCC. Celtic Energy has submitted a revised restoration strategy for approval (under Section 73 application under the Town and Country Planning Act 1990) which would change the existing approved restoration scheme (for planning application ref 18/1070/REM). The purpose of the variation is to allow for a *'flexible and adaptable landform for a variety of uses on restoration including agriculture, nature conservation, leisure, tourism and some industrial uses'*¹.

The revised restoration proposal looks to provide a flexible landform that can be used or adapted for a diverse set of future uses, including: traditional agriculture, woodland and nature conservation uses, to amenity, leisure and tourism.

In April 2020, Celtic Energy submitted two planning applications reference 20/0738/FUL (Powys) and P/2020/0362 (Neath Port Talbot) for a complementary earthworks scheme to provide a comprehensive, flexible and adaptable landform across the entire site that could support a wide range of future uses which included the GCRE, establishing the earthworks formation and associated drainage and landscaping for two of the key components of the rail testing facility, namely the high speed and infrastructure test loops and rail line connections.

2 Project Details

The proposed project includes rail testing, maintenance, research, development and storage facility, known as the Global Centre of Rail Excellence (GCRE). Table 1 outlines the main details of the proposed works.

Table 1: Details of the proposed project.

Project Details	
Applicant name	Welsh Government
Application reference number (where applicable)	n/a
Description of activities	<ul style="list-style-type: none"> • Large railroad test track (outer track); • High tonnage infrastructure test track (inner track); • Site access; • Associated development; and • The washery site comprising:

¹ Celtic Energy s73 application for variation of condition 45 of planning application 18/1070/REM – further addendum to original environmental statement and supporting information submitted under planning reference 18/1070/REM including revised LVIA.

	<ul style="list-style-type: none"> • An operations and control centre/office; • Research and development centre; • 4-road rolling stock maintenance shed; • Storage siding for medium-long term storage; • Carriage wash and CET spine facility; • Site access; • Decommissioning facility; and • Stationary testing facility.
Location of activity (central point XY coordinates or national grid reference)	SN825113
Footprint of activity (ha)	475
Timings of activity (including start and finish dates)	Approximately 42 weeks including site preparation and landscaping. Start and finish dates tbc.
Relevant supporting documents	Hydrology and Flooding ES chapter Drainage Strategy

3 Baseline Information

3.1 Zone of Influence

The Water Framework Directive Cycle 2 (2018) information² shows that the site is located between four WFD river water body catchments. These include:

- Tawe - Confluence with Nant Llech to Confluence with Giedd (ID GB110059032170)
- Nant Llech - Headwaters to confluence with Tawe (ID GB110059032240)
- Pyrddin – Headwaters to confluence with Nedd Fechan (ID GB110058032400)
- Dulais - Headwaters to confluence with River Neath (ID GB110058032430)

All four WFD river water bodies are classified as being at **Good** status, and as such Good Status Objectives are not relevant.

The site falls within one groundwater body, Tawe - Swansea Carboniferous Coal Measures (GB41002G201000), which has an overall status of **Poor**.

The location of the project site and associated surface water features is shown in ES Figure 11.1.

² Water Watch Wales, Cycle 2 (2018), Available at:
<https://nrw.maps.arcgis.com/apps/webappviewer/index.html?id=4ef6ea25c5984c939636714dbfce25f3>

A general site walkover was conducted on 28th November 2018 to support this work. Most of the watercourses on the site itself are artificial ditches part of the water drainage system for the mine site. The whole area has been mined at some point during the last 50 years.

3.2 Surface Water

3.2.1 Tawe – Confluence with Nant Llech to Confluence with Giedd

The Tawe - Confluence with Nant Llech to Confluence with Giedd water body (ID GB110059032170) is achieving overall **Good** status (Table 2), with both ecological status and chemical status classified as **Good**. Biological quality elements such as invertebrates are at **Good** status, whereas fish, macrophytes and diatoms are **High**. Supporting physico-chemical elements are achieving **High** status, other than ammonia which has a status of **Good**. As a result, physico-chemical status is **Good**.

Table 2 Summary of WFD status for Tawe – Confluence with Nant Llech to Confluence with Giedd

Macrophytes and phytobenthos combined	
Diatoms	
Hydromorphological Supporting Elements	
Hydrological regime	
Morphology	

3.2.2 Nant Llech - Headwaters to confluence with Tawe

The Nant Llech - Headwaters to confluence with Tawe water body (ID GB110059032240) is achieving overall **Good** status (Table 3), with both ecological and chemical status also **Good**. Biological status is **Good**, with elements such as fish and macrophytes at **Good** status, whereas invertebrates and diatoms are **High**. Physico-chemical status is classified as **High**.

Table 3 Summary of WFD status for Nant Llech – Headwater to confluence with Tawe.

Invertebrates	
Fish	
Macrophytes and phytobenthos combined	
Diatoms	
Physico-chemical elements	
Ammonia	High
Dissolved oxygen	High
pH	High
Phosphate	High

Temperature	High
Hydromorphological Supporting Elements	
Hydrological regime	High
Morphology	
	Not assessed

3.2.3 Pyrddin – Headwaters to confluence with Nedd Fechan

The Pyrddin – Headwaters to confluence with Nedd Fechan water body (ID GB110058032400) is achieving overall **Good** status (Table 4). Biological status is **Good**, with all quality elements attaining **Good** status. Physico-chemical elements achieved **High** status and hydromorphological elements are **Not High**.

Table 4 Summary of WFD status for Pyrddin – Headwaters to confluence with Nedd Fechan

OVERALL STATUS	Good
ECOLOGICAL STATUS	Good
Biological Quality Elements	Good
Invertebrates	Good
Fish	Good
Macrophytes and phytobenthos combined	Good
Diatoms	Good
Physico-chemical elements	High
Ammonia	High
Dissolved oxygen	High
pH	High
Phosphate	High
Temperature	High
Hydromorphological Supporting Elements	Not High
Hydrological regime	High
Morphology	Good
Specific Pollutants	Not Assessed
CHEMICAL STATUS	Good

3.2.4 Dulais - Headwaters to confluence with River Neath

The Dulais - water body (ID GB110058032430) is achieving overall **Good** status (Table 5). Biological status is **Good**, with invertebrates at **High** status, whereas fish, macrophytes and diatoms are **Good**. Physico-chemical status is classified as **High**.

Table 5 Summary of WFD status for Dulais – Headwaters to confluence with River Neath

OVERALL STATUS	Good
ECOLOGICAL STATUS	Good
Biological Quality Elements	Good
Invertebrates	High
Fish	Good
Macrophytes and phytobenthos combined	Good

Diatoms	Good
Physico-chemical elements	High
Ammonia	High
Dissolved oxygen	High
pH	High
Phosphate	High
Temperature	High
Hydromorphological Supporting Elements	Not High
Hydrological regime	Not High
Morphology	Good
Specific Pollutants	Not assessed
CHEMICAL STATUS	Good

3.3 Groundwater

The scheme is located within the Swansea Carboniferous Coal Measures groundwater body (ID GB41002G201000). The overall status for the groundwater body is **Poor**, driven by a **Poor** chemical status, likely associated with a legacy of coal mining activities in the region (Table 6). Natural Resources Wales has designated that it is technically infeasible to reach ‘good’ status at this waterbody by 2021 due to coal minewater³.

The site is topographically located on high ground, which suggests that the water table may be relatively low in relation to the ground surface. The ground condition assessment desk study has identified level of 70 to 120 metres below ground level in the area based on online available data.

Table 6 Summary of WFD groundwater body status

Quality Element	Status
OVERALL STATUS	Poor
Quantitative	Good
Chemical	Poor

3.4 Protected Sites

There are no Natura 2000 Sites located within the WFD surface water body catchments. There is a Special Area of Conservation (SAC) located approximately 5 miles east of the site, which falls within the the Swansea Carboniferous Coal Measures groundwater body. However, the features in this protected area are all related to supporting surface habitats and are separated by a topographic water divide, so it not relevant for this assessment.

³ Natural Resources Wales (2015) Consultation on updating the River Basin Management Plan: River Basin Management Planning Overall Annex.

4 Screening

4.1 Proposed Activities

Activities that may result in an impact on WFD quality elements may take place during construction and/or operation of the proposed development. Details of the expected activities, whether they have been screened in/out of further assessment, along with an explanation for the screening decision, are provided in Table 7.

The design and construction information are currently at an outline stage and is subject to change. This assessment should be revisited during the detailed design and construction of the scheme to ensure these activities remain compliant with the objectives of the WFD.

4.1.1 Construction Activities

Key activities construction activities will include temporary dewatering to allow construction of below ground elements and excavation works. A desk study ground condition assessment has been completed, and a site investigation will be undertaken. The ground condition assessment has identified that as the site has been impacted by both sub-surface and surface coal mining activities, potential ground contamination resulting from such activities is likely. Potential contaminants associated with coal mining activities typically include various metals, metalloids, sulphates, PAHs, TPHs and asbestos. The site investigation will confirm the presence and nature of any contamination. Dewatering activities and excavation works in a contaminated ground setting pose a risk to both groundwater and surface water. Although the risk may be limited to a certain extent by the potentially low water level in relation to the high ground setting of the site, appropriate method statements and mitigation will be required once site investigations have been undertaken and the nature of the risk is better understood.

Additional risks related to the construction activities could include risks arising from works in or near watercourses, which could be increased by sediment mobilisation from and discharge of site runoff, and accidental spillage of pollutants. These risks should be managed by ensuring that there is an appropriate Construction Environmental Management Plan in place to ensure that there are no negative impacts to WFD quality elements.

4.1.2 Operational Activities

Activities that could pose a risk to WFD quality elements during operation include discharge of surface water via SuDS to the four WFD catchments identified in Section 3.2. If an insufficient level of treatment is provided and not managed, discharges may be of an acceptable quality and have the potential to adversely impact the status of WFD elements.

Discharge of foul water generated on site has the potential to impact quality elements through release into the water environment or sewerage network. Potential impacts can occur if discharge infrastructure is not of sufficient capacity or is not correctly maintained and managed.

Additional activities that could pose a risk to WFD quality elements include accidental spillage of pollutants entering surface watercourses or seepage into groundwater bodies (e.g. fuel spills from trains on testing track and in facilities within the washery site or vehicles on development roads and car park).

Table 7 Screening of proposed activities against WFD objectives

Proposed Activity	Potential impacts and mitigation measures	Screen In/Out of further assessment
<i>Construction (Temporary) Activities</i>		
Temporary dewatering to allow construction of below-ground elements	Temporary dewatering poses a risk to surface and groundwater due to risks of soil contamination. Desktop reviews suggests that due to the relatively low groundwater level on site, any dewatering required will not significantly impact surface or groundwater. The risk would be mitigated provided there is an appropriate CEMP in place to ensure there are no negative impacts of WFD quality elements.	Out
Works in or near to watercourses (e.g. open cut installation of new pipe beneath watercourse)	Potential impacts from activities affecting watercourses that are part of the tributary network of the river WFD water bodies. This risk would be mitigated provided there is an appropriate CEMP in place to ensure there are no negative impacts of WFD quality elements.	Out
Sediment mobilisation from site runoff	Potential impacts from excess sediment affecting watercourses that are part of the tributary network of the river WFD water bodies. This risk would be mitigated provided there is an appropriate CEMP in place to ensure there are no negative impacts of WFD quality elements.	Out
Discharge of site runoff	Potential impacts from discharge affecting watercourses that are part of the tributary network of the river WFD water bodies. This risk would be mitigated provided there is an appropriate CEMP in place to ensure there are no negative impacts of WFD quality elements.	Out
Accidental spillage of pollutants (e.g. fuel leakage from storage or plant)	Potential impacts from pollutants affecting watercourses that are part of the tributary network of the river WFD water bodies. This risk would be mitigated provided there is an appropriate CEMP in place to ensure there are no negative impacts of WFD quality elements.	Out
Excavation works (e.g. the digging of trial or borrow pits)	Excavation poses a risk to surface and groundwater due to risks of soil contamination. This risk would be mitigated provided there is an appropriate CEMP in place to ensure there are no negative impacts of WFD quality elements.	Out
<i>Operational (Permanent) Activities</i>		
Discharge of surface water via SuDS to the surrounding four WFD catchments	Surface water drainage across the site has the potential to create a pollution pathway for contamination (e.g. run off from car park or carriage washing facility) to enter the surrounding WFD catchments. SAB consent is being sought which includes the incorporation of Sustainable Drainage Systems (SuDS). The drainage strategy for the proposed development describes how surface water will pass through the SuDS features including swales and attenuation ponds. The features would remove pollutants to an acceptable level, in line with the 'Simple Index Approach' which is the recognised method of assessing water quality within Welsh Governments Statutory Standards for SuDS.	Out

	Following the implementation of SuDS there are not expected to be permanent impacts on the status or future potential of WFD quality elements.	
Discharge of foul water generated on site to the surrounding WFD catchments or existing sewer network	<p>Foul water drainage across the site has the potential to create a pollution pathway for contaminants to enter the wider water environment.</p> <p>The site would seek to connect to the wider foul drainage network, operated by Dwr Cymru Welsh Water. A foul water drainage strategy has been developed for the site. This will follow relevant guidelines which will ensure pollutants from the sewerage do not enter the wider water environment.</p> <p>Following the relevant constraints, this activity is anticipated to not result in a decline in any WFD quality elements or prevent them from attaining Good status or potential in the future.</p>	Out
Accidental spillage of pollutants from trains on testing track into groundwater bodies	<p>The proposed development comprises a testing track for trains. Trains are sources of accidental spills as a result of fuel leaks on the testing track. For groundwater bodies, accidental spills can directly infiltrate at source or infiltrate through surface water drainage features. The likelihood of spills is low as trains will not be stationed and be constantly moving. Accidental spills on the tracks will be collected in the track drainage in the form of train ballasts preventing direct infiltration at source. However, there is potential for seepage into groundwater through the surface water drainage features (swales) connecting to the track drainage.</p> <p>Further detailed risk assessment should be undertaken as part of detailed design when more information is available to confirm the appropriate treatment and design.</p>	In
Accidental spillage of pollutants from trains on testing track into surface water bodies	<p>The proposed development comprises a testing track for trains. Trains are sources of accidental spills as a result of fuel leaks on the testing track. For surface watercourses, accidental spills have the potential to run off into surface watercourses. The likelihood of spills is low as trains will not be stationed and be constantly moving. Accidental spills on the tracks will be collected in the track drainage in the form of train ballasts and connect into the site drainage comprising a treatment train of SuDS features.</p> <p>Further detailed risk assessment should be undertaken as part of detailed design more information is available to confirm the appropriate treatment and design.</p>	In
Accidental spillage of pollutants from vehicles on development roads and car park into groundwater bodies	<p>Vehicles are sources of accidental spills as a result of fuel leaks on the roads and car park. For groundwater bodies, accidental spills can directly infiltrate at source or infiltrate through surface water drainage features. The likelihood of spills is low as there will be low traffic on the roads and within the car park and collisions are not expected. Direct infiltration at source is unlikely due to the impermeable nature of the development roads and car park. However, there is potential for seepage into groundwater through the surface water drainage features (swales) connecting to the roads and car park.</p> <p>Further detailed risk assessment should be undertaken as part of detailed design when more information is available to confirm the appropriate treatment and design.</p>	In

Accidental spillage of pollutants from vehicles on development roads and car park into surface water bodies	Vehicles are sources of accidental spills as a result of fuel leaks on the roads and car park. For surface waters, accidental spills have the potential to run off into surface watercourses. The likelihood of spills is low as there will be low traffic on the roads and within the car park and collisions are not expected. The treatment train of SuDS features is considered sufficient to manage the impacts associated with accidental spills and it is not anticipated that accidental spills will result in a decline in any WFD quality element or prevent them from attaining Good status or potential in the future.	Out
Discharge of effluent from the individual facilities within the washery site into groundwater bodies	The washery site is comprised of facilities that will discharge effluent containing hydrocarbons, oils, sediment and other pollutants washed off the trains and spilt during activities such as refuelling. Pollution can infiltrate directly at source or infiltrate through surface water features during periods of low flow. Some facilities within the washery site are known to present a risk of pollution therefore these facilities will be equipped with specific drainage systems to intercept pollutants. Effluent leaving these facilities will be of an acceptable standard and will discharge into the wider site drainage design. Further detailed risk assessment should be undertaken as part of detailed design when more information is available to confirm the appropriate treatment and design.	In
Discharge of effluent from the individual facilities within the washery site into surface water bodies	The washery site is comprised of facilities that will discharge effluent containing hydrocarbons, oils, sediment and other pollutants washed off the trains and spilt. The facilities within the washery site present a greater risk of pollution than the testing track therefore each individual facility within the washery site will be equipped with a specific drainage system including measures for intercepting contaminants in the effluent released. The specific drainage systems connect into the site drainage system which, when combined, are considered sufficient to manage impacts and it is not anticipated that accidental spills will result in a decline in any WFD quality elements or prevent them attaining Good status or potential in the future.	Out

5 Summary

The proposed project comprises facilities for rail testing, maintenance, research, development and storage known as GCRE.

The site is located on high ground between four WFD river water body catchments, 'Tawe – Conf with Nant Llech to Conf with Giedd', 'Nant Llech – Headwaters to confluence with Tawe', 'Pyrddin - Headwaters to confluence with Nedd Fechan' and 'Dulais - Headwaters to confluence with River Neath'. All four water bodies are classified as being of **Good** status.

The site is located within the Tawe - Swansea Carboniferous Coal Measures WFD groundwater body, which has an overall status of **Poor**, driven by a **Poor** chemical status, likely associated with a legacy of coal mining activities in the region.

The scope of the detailed assessment is based upon the activities identified as potentially posing a risk to WFD quality elements in the screening assessment. The study area extends to the surface and ground waterbodies within the zone of influence.

Based on the screening assessment, several activities have the potential to impact WFD quality elements and have been screened in for more detailed assessment. The activities that are screened in for further assessment include:

- Accidental spillage of pollutants from trains on testing track into groundwater bodies; and
- Accidental spillage of pollutants from vehicles on development roads and car park into groundwater bodies.

The full WFD assessment will be completed at detailed design.