



8 WATER RESOURCES

8.1 Introduction

8.1.1 This Chapter, prepared by Wardell Armstrong LLP, reports the likely significant effects of the Proposed Development in terms of Water Resources in the context of the Site and surrounding area. In particular it considers the likely significant effects on the water environment relating to changes in the hydrological and hydrogeological regime, and pollution and degradation in water quality. For the purpose of this Chapter 'Proposed Development' refers to the Atlantic Wharf, Butetown Masterplan and Cardiff Arena and Hotel, and the 'Site' refers to the land on which the Proposed Development will be located.

8.1.2 This Chapter (and its associated appendices) is not intended to be read as a standalone assessment and reference should be made to the front end of this ES (Chapters 1 – 6), as well as the final chapters, 'Summary of Residual and Cumulative Effects' and 'Conclusions' (Chapters 21 - 22).

8.2 Legislation, Policy and Guidance

8.2.1 The relevant legislation, policy and guidance are listed below, with details provided in Appendix 8.1.

Legislative Framework

8.2.2 Following the exit of the UK from the European Union (EU), the Environment (EU Exit) Regulations 2019 came into force on exit day. This updated some of the legislation outlined below, to ensure that these continued to function properly following exit. The EU Water Framework Directive has been transposed into legislation in Wales by The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017. However, there are outstanding changes yet to be made to the 1991 Water Resources Act following the exit of the UK from the EU.

8.2.3 The applicable legislative framework is summarised as follows:

- European Directive: The Water Framework Directive (2000/60/EC);
- European Directive: The Groundwater Daughter Directive (2006/118/EC);
- European Directive: The Priority Substances Directive (2008/105/EC);
- Act of Parliament: The Environment Protection Act 1990;
- Act of Parliament: The Land Drainage Act 1991; and



- Act of Parliament: The Water Resources Act 1991, Water Act 2003 & Water Act 2014.

Planning Policy

8.2.4 The applicable planning policy is summarised as follows:

- Future Wales: The National Plan 2040;
- Planning Policy Wales (Edition 11);
- Cardiff Local Development Plan 2006 – 2026; and
- Technical Advice Note (TAN) 15: Development and Flood Risk.

Guidance

8.2.5 The applicable guidance is summarised as follows:

- CIRIA C741: Environmental Good Practice on Site Guide (4th Edition);
- CIRIA C750: Groundwater control: design and practice (2nd Edition);
- CIRIA C753: Sustainable Urban Drainage Systems Manual;
- CIRIA C532: Control of Water Pollution from Construction Sites;
- CIRIA C650: Environmental Good Practice on Site (Expansion of C502);
- Pollution Prevention Guidelines (PPG) 1*: General Guide to the Prevention of Pollution;
- PPG2*: Above Ground Oil Storage;
- PPG4*: Treatment & Disposal of Sewage Where no Foul Sewer;
- PPG5*: Works & Maintenance In, Or Near Water;
- PPG6*: Working at Construction and Demolition Sites;
- PPG8*: Safe Storage and Disposal of Used Oils;
- PPG21*: Polluting Incident Response Planning;
- PPG22*: Dealing with Spills;
- UK Technical Advisory Group on the WFD, UK Environmental Standards & Conditions (Phase 2) (Final, 2008); and
- Environment Agency's Groundwater Protection Guides (adopted by Natural Resources Wales), including but not limited to: 'Protect Groundwater and Prevent Groundwater Pollution'; 'Groundwater Protection Technical Guidance'; and 'Groundwater Protection Position Statements'.

It is noted that although the Pollution Prevention Guidance Notes (PPG)s (marked with an asterisk within the guidance) have been withdrawn by Natural Resources Wales,

they are still considered to be a relevant and effective source of best practice information and are widely used and accepted.

8.3 Assessment Methodology and Significance Criteria

Scope of the Assessment

8.3.1 This desk based study collates information, reviews maps published by Natural Resources Wales (NRW) and the British Geological Survey (BGS) and takes into account available site-specific data. This information has been used to determine the baseline conditions of the Site and develop a hydrogeological conceptual site model (HCSM) of the water environment.

8.3.2 The following tasks have been undertaken to ensure that the baseline data informs the impact assessment:

- Collation of publicly available information on climate; soils, bedrock and superficial geology; surface hydrology and flood risk; and aquifers;
- Request, collation and review of the following information from NRW and Vale of Glamorgan Council: licensed abstractions; consented discharges; groundwater level data; groundwater quality data; river/watercourse flow data; surface water quality data' and locations/types of private water supplies within and adjacent to the Site; and
- Collation of Water Framework Directive (WFD) classifications and environmental objectives obtained from the NRW website for surface water bodies and groundwater bodies within and adjacent to the Site.

Effects Not Considered within the Scope

8.3.3 The effect on and from Flood Risk is not covered within this Chapter.

Extent of the Study Area

8.3.4 A desk study has been undertaken to establish the baseline water environment and other relevant features located within 2km of the boundary of the Site.

Consultation Undertaken to Date

8.3.5 Table 8.1 provides a summary of the consultation activities undertaken in support of the preparation of this Chapter. Copies of relevant correspondence are provided in Appendix 8.2.

Table 8.1: Summary of Consultation Undertaken to Date		
Organisation	Meeting Date and other forms of Consultation	Summary of Outcome of Discussion
Natural Resources Wales	Data requested by email on 28 May 2021	Data received by email on 01 June 2021: <ul style="list-style-type: none"> - Abstraction licence data - Surface water quality data - Water Framework Directive data - Licensed landfill sites - Pollution incidents
Cardiff Council	Private Water Supply data requested by email on 28 May 2021	Response received on 01 June 2021 advising that Private Water Supply data is held by the shared regulatory service, delivered by the Vale of Glamorgan Council. Request transferred to the Vale of Glamorgan Council on 01 June 2021.
Vale of Glamorgan Council	Private Water Supply data request transferred from Cardiff Council on 01 June 2021	Private Water Supply data received by email on 07 July 2021.
Natural Resources Wales	Scoping Response dated 14/07/2021	<p>The assessment of potential impacts of the development on the identified sensitive receptors should be both during construction and operation. The ES should also consider how these predicted impacts may change due to climate change and if necessary, ensure the proposal is resilient or able to adapt to climate change.</p> <p>There is a well-established surface water network serving the location. Surface water sewers can often act as pathways for suspended solid based pollutions, especially during enabling works and construction phases of a development. NRW consider this should be also scoped into the ES. NRW consider the ES should assess the impacts of pollution from the construction stage on the water environment including highly sensitive receptors such as the Severn Estuary. At this stage NRW consider that there will be generic prevention</p>

Organisation	Meeting Date and other forms of Consultation	Summary of Outcome of Discussion
		and/or mitigation measures available which could be included in a detailed Construction Environmental Management Plan (CEMP). It is acknowledged that the site has been subject to a legacy of industrial workings historically which would have resulted in significant contamination to the ground and/or groundwater. Should significant contamination be identified, a Controlled Waters Piling Risk Assessment may be required to protect underlying groundwater from surface contamination,

Assessment Methodology

- 8.3.6 The method of baseline data collection and assessment has been agreed with Natural Resources Wales (Appendix 8.2) and is in accordance with current guidance and industry best practice.
- 8.3.7 Table 8.2 sets out the criteria for determining the sensitivity of receptors, which documents a hierarchy of factors relating to the water environment. When a receptor meets multiple criteria or there is an absence of verified published data, the highest applicable sensitivity category is assigned to allow an assessment of the worst-case scenario.

Sensitivity	Criteria	Typical Examples
Very High	Receptor has a high quality and rarity on a national or regional scale and limited potential for substitution. Receptor is highly vulnerable to impacts that may arise from the project and recoverability is long-term or not possible.	Source Protection Zone 1; abstractions for public or private drinking water supply.
High	Receptor has a high quality and rarity on a local scale and limited potential for substitution. Receptor is generally vulnerable to impacts that may arise from the project and recoverability is slow and/or costly.	Principal Aquifer providing a regionally important resource or supporting a site protected under EU and UK habitat legislation (i.e. Groundwater Dependent terrestrial ecosystems GWDTEs); Source Protection Zone 2 or 3; surface water protected under EU or UK habitat legislation (e.g. SSSI, SAC, Ramsar Site); designated Salmonid / Cyprinid Waters and/or fishery present; nationally and internationally

Table 8.2: Receptor Sensitivity Criteria		
Sensitivity	Criteria	Typical Examples
		designated sites hydro-ecological receptors.
Medium	Receptor has a medium quality and rarity, local scale and limited potential for substitution/replacement, receptor is somewhat vulnerable to impacts that may arise from the project and/or has moderate to high recoverability.	Secondary A Aquifer; Secondary B Aquifer providing water supply to private abstractions; Groundwater in peat deposits; surface water classified as a 'main river'; abstractions for non-potable use; statutory designate hydro-ecological receptors.
Low	Receptor with a low quality and rarity, local scale and limited potential for substitution. Receptor is not generally vulnerable to impacts that may arise from the project and/or has high recoverability.	Secondary B Aquifers; Secondary Undifferentiated Aquifers; ordinary watercourse; abstractions for industrial use (i.e. dust suppression); non-statutory designated hydro-ecological sites.
Very Low	Attribute has a very low environmental importance and/or rarity on local scale. Receptor is of negligible value, not vulnerable to impacts that may arise from the project and/or has high recoverability.	Man-made feature with no ecological importance (i.e. land drains).
Note Professional judgement based on the baseline condition of the receptor should be used to determine a receptor's sensitivity.		

8.3.8 Table 8.3 describes the guideline criteria used to assess the magnitude of change from the baseline condition that may result from the Proposed Development.

Table 8.3: Criteria to Assess Magnitude of Change	
Magnitude of Change	Typical Example
High	Total loss of, or alteration to, the baseline resource such that post-development characteristics or quality would be fundamentally and irreversibly changed.
Medium	Loss of or alteration to the baseline resource such that post-development characteristics or quality would be partially changed.
Low	Small changes to the baseline resource, which are detectable, but the underlying characteristics or quality of the baseline situation would be similar to pre-development conditions.
Negligible	A very slight change to the baseline conditions, which is barely distinguishable, and approximates to the 'no change' situation.

8.3.9 The scale of impacts is determined in relation to the sensitivity of the receptor and the potential magnitude of change from baseline conditions, using the matrix shown in Table 8.4. Impacts can be either beneficial or adverse; and minor, moderate, or major; or negligible.

Table 8.4 Criteria to Determine Scale of Impacts						
		Receptor Sensitivity				
		Very High	High	Medium	Low	Very Low
Magnitude of Change from Baseline Condition	High	Major	Major	Moderate	Moderate	Minor
	Medium	Major	Moderate	Moderate	Minor	Minor
	Low	Moderate	Minor	Minor	Negligible	Negligible
	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible

Significance Criteria

8.3.10 Guideline criteria for categories of significant effect are included in Table 8.5. Impacts that have been determined to be major or moderate are considered to have a significant effect and require mitigation to address them. Impacts that are identified as minor or negligible are not considered to have a significant effect and no further mitigation is required.

Table 8.5 Guideline Criteria for Categories of Significant Effect			
Scale of Impact	Significant Effect?	Definition	Guideline Criteria
Major	Yes	A fundamental change to the environment	Changes in water quality or quantity affecting widespread catchment or groundwater resources of strategic significance or changes resulting in substantial loss of conservation value to aquatic habitats and designations.
Moderate	Yes	A large, but non-fundamental change to the environment	Changes in water quality or quantity affecting part of a catchment or groundwaters of moderate vulnerability, or changes resulting in loss of conservation value to aquatic habitats or designated areas.
Minor	No	A small but detectable change to the environment	Localised changes in drainage patterns or groundwater flow, or changes resulting in minor and reversible impacts on surface and groundwater quality or aquatic habitats.
Negligible	No	No detectable change to the environment	No impact on drainage patterns, surface and groundwater quality or aquatic habitat.

8.4 Baseline Conditions

Site Description

8.4.1 The Site is located within the Inner Harbour area of Cardiff Bay, Cardiff. The Site description and a description of the Proposed Development are included within Chapters 2 and 3.

Rainfall

8.4.2 The UK Climate Projection (UKCP18) is available on the Met Office Website for the Severn River Basin District. Table 8.6 presents the UKCP18 projected percentage change in precipitation for the 90th Percentiles for the four emission scenarios of winter and summer periods, for the available time slices. The winter period percentage change ranges from 0% to over+60% (i.e. wetter), whilst the summer period range is from -10% (i.e. drier) to +10% (i.e. wetter).

Table 8.6: Projected Change in Precipitation (%) for the Severn River Basin District for the Winter and Summer Periods								
Time Slice: 2020 - 2039		Time Slice: 2040 - 2079		Time Slice: 2060 - 2079		Time Slice: 2080 - 2099		
RCP2.6, RCP4.5, RCP6.0	RCP8.5	RCP2.6, RCP4.5, RCP6.0	RCP8.5	RCP2.6, RCP4.5, RCP6.0	RCP8.5	RCP2.6	RCP4.5, RCP6.0	RCP8.5
Winter								
0% - +20%	0% - +30%	+10% - +30%	+10% - +40%	+10% - +40%	+10% - +50%	+10% - +30%	+10% - +50%	+20% - +>60%
Summer								
0% - +20%		0% - +10%	-10% - +10%	-10% - +10%		-10% - +10%		-10% - 0%
RCP – Representative Concentration Pathway								

8.4.3 Long Term Average (LTA) monthly rainfall data from between 1977 and 2021 has been obtained from the Met Office for Cardiff Bute Park, located at NGR ST 17600 77300, 2.7 kilometres (km) north west of the Site. Results are summarised in Table 8.7 with projected precipitation changes.

Month	Average Rainfall (mm)	Average Rainfall (mm) with Projected Change in Precipitation		
		-10%	+10%	+60%
January	123.15	110.84	135.47	197.04
February	91.40	82.26	100.54	146.24
March	89.45	80.51	98.40	143.12
April	63.02	56.72	69.33	100.84
May	69.68	62.71	76.64	111.48
June	64.94	58.45	71.44	103.91
July	71.85	64.67	79.04	114.97
August	93.19	83.87	102.51	149.11
September	86.41	77.77	95.05	138.25
October	117.53	105.78	129.29	188.05
November	123.17	110.85	135.49	197.07
December	133.34	120.00	146.67	213.34

Surface Water Features

- 8.4.4 There are no mapped watercourses within the Site boundary.
- 8.4.5 A Dock Feeder Culvert runs north to southeast across the western section of the Site, and runs under Schooner Way and the current Cardiff County Hall carpark. The upstream entry manhole is located at grid reference ST 19193 75195. There is also an Associated British Ports (ABP) culvert at the eastern boundary of the Site which runs from north to south.
- 8.4.6 Atlantic Wharf is located adjacent to the eastern boundary of the Site, and two canal feeders enter the wharf to the north of the Site. Roath Basin is located c.300 metres (m) south of the Site, and Roath Dock is located c.390m southeast.
- 8.4.7 The River Taff is a Main River and is located c.550m west of the Site. Cardiff Bay is located c.300m south of the Site. The Severn Estuary is located 1.6km southeast of the Site.

Surface Water Quality

- 8.4.8 According to the NRW Water Watch Wales Online Map Viewer the Site is located within the Severn River Basin District, the South East Valleys Management Catchment, the “Taff downstream Cynon” Operational Catchment and the “Taff – conf Rhondda R to Castle Street” surface waterbody (ID: GB109057027270).
- 8.4.9 The Taff – conf Rhondda R to Castle Street surface waterbody has an ecological status



of Moderate and a chemical status of Fail.

Surface Water Designations and Classifications

8.4.10 The Site is not located within a drinking water protected area (river catchment), or a nitrate vulnerable zone.

Flood Risk

8.4.11 The TAN 15 Flood Risk Development Advice Map shows that the Site is located within Zone B, defined as areas known to have flooded in the past.

8.4.12 The Natural Resources Wales National Flood Hazard Map shows that the Site is not located within an area considered to be at risk of flooding from rivers. An area of the Site along the northeast boundary is shown to be at low to medium risk of flooding from the sea, and some small, isolated areas across the Site are considered to be at low to medium risk of flooding from surface water and small watercourses.

8.4.13 A Flood Statement at Appendix 8.5 provides further information in relation to flood risk. It is considered that a Flood Consequences Assessment (FCA) is not required for the detailed element of the hybrid planning application as the existing and proposed site are outside flood risk zones and well above the extreme flood levels. The majority of the outline element of the hybrid planning application is also outside flood risk zones and well above the extreme flood levels. Consideration continues in terms of the end use of a localised area along the north-eastern boundary, to determine any FCA requirements, and further information will be provided as necessary for submission of the planning application.

Geology

Made Ground and Soils

8.4.14 According to British Geological Survey (BGS) mapping the Site is entirely underlain by Made Ground.

8.4.15 Soils for England and Wales mapping identifies that the soil type at the Site and for the surrounding area is unclassified.

8.4.16 There are nine BGS borehole logs available across the northern area of the Site. The BGS borehole logs record made ground from ground level to between 1.95m below ground level (bgl) in the north west and 9.6m bgl in the north of the Site. The made ground is generally described as firm to soft red, brownish grey to dark grey, silty to very silty clay with some fine-grained, weak, shaley mudstone and silty mudstone

fragments and rounded to sub angular cobbles of coal, house bricks, glass, gravel, flints, concrete, and some organic material. In the west of the Site the made ground is described as dark grey sand and sandy gravel, with cobbles and some brick. Where topsoil is present in the east of the Site it is described as firm, very silty ashy topsoil, and in the west of the Site is described as black topsoil with occasional rock fragments and coarse gravel.

8.4.17 An additional BGS borehole log is available in the south of the Site, which describes the Made Ground as silt to a depth of 1.7m bgl.

Superficial Deposits

8.4.18 BGS mapping shows the Site to be underlain by Tidal Flat Deposits, comprised of clay, silt, and sand. The area to the north of the Site is mapped as being underlain by Glaciofluvial Sheet Deposits (Devensian sand and gravel). Alluvium (clay, silt, sand and gravel) is mapped as underlying the area to the north west of the Site, associated with the River Taff and Taff Vale.

8.4.19 BGS borehole logs record the Tidal Flat Deposits underlying the Made Ground at the Site to depths between 8.5 and 16.5m bgl. The Tidal Flat Deposits in the north to northeast of the Site are generally described as soft to firm grey and brown mottled silty clay with organic matter, becoming more stiff with some gravel with depth. Thin bands of peat were recorded in some borehole logs. The borehole logs in the north west also record medium to coarse sand with gravel beneath the clay.

8.4.20 The BGS borehole log in the south of the Site records the Tidal Flat Deposits between 1.7 and 11.8m bgl, and describes the Tidal Flat Deposits as soft to very soft blue grey occasionally orange-brown fissured laminated silty clay with some coarse sand, fine subrounded gravel and organic material to 9.3m bgl, underlain by very dense, grey brown, fine to coarse, angular to subrounded gravel with much silty, very sandy clay.

Bedrock Geology

8.4.21 BGS mapping shows the Site to be underlain by the Mercia Mudstone Group - Mudstone.

8.4.22 The BGS borehole logs across the Site describe the Mercia Mudstone as stiff to very stiff red, brown and green very silty clay with occasional mudstone lithorelicts and bands of highly weathered mudstone. From between 19 – 22m bgl the Mercia Mudstone is described as brownish red moderately to highly weathered fine grained calcareous silty fine sandy mudstone (very weak to weak) with occasional greenish



grey bands of mudstone and stiff clay and occasional sandstone.

Linear Features

8.4.23 There are no linear features mapped within 2km of the Site.

Hydrogeology

Groundwater Designations and Classifications

8.4.24 The Tidal Flat Deposits underlying the Site are classified by NRW as a Secondary (Undifferentiated) Aquifer – assigned in cases where it has not been possible to attribute either category A or B to a rock type.

8.4.25 The Mercia Mudstone is classified by NRW as a Secondary B Aquifer – predominantly lower permeability layers which may store and yield limited amounts of groundwater due to localised features such as fissures, thin permeable horizons and weathering.

8.4.26 The Site is not located within a Source Protection Zone (SPZ).

Groundwater Elevation and Flow

8.4.27 Water strikes were recorded in eight of the ten BGS borehole logs available for the Site. Groundwater was encountered at depths between 2.5 and 14.0m bgl, and was found to rise by 0.1 – 0.2m after 20 minutes in most boreholes. Water strikes were recorded in both the superfcials and the underlying Mercia Mudstone.

8.4.28 Groundwater elevations indicate that the groundwater flow direction within the Tidal Flat Deposits is towards the southeast, and suggest a series of perched units within the Tidal Flat Deposits.

8.4.29 Within BGS borehole logs ST17NE1114 and ST17SE304 the boreholes were cased following the initial water strikes, and a second water strike was recorded. In ST17NE1114, in the north east of the Site the rest water level was recorded at 13.7m bgl, and in ST17SE304 in the south of the Site the second water strike was recorded at 10.4m bgl rising to 9m bgl. Groundwater elevations indicate that groundwater flow within the Mercia Mudstone is also towards the south east.

Groundwater Quality

8.4.30 Groundwater quality data was requested from NRW on 28 May 2021; however no recent groundwater quality data within 2km of the Site was made available.

8.4.31 Under the WFD, the Site is located within the SE Valleys Southern Devonian Old Red Sandstone and Triassic Mercia Mudstone groundwater body. The chemical and quantitative status of the groundwater body are both classified as Good.

Private Water Supplies, Abstractions and Discharges

8.4.32 NRW have provided data on licensed abstractions within 2km of the Site. A summary of these licences is provided in Table 8.8.

Table 8.8: Licensed Abstractions within 2km				
Licence No.	Licence Holder	NGR & Indicative Location	Purpose	Source
WA/057/0025/013	City of Cardiff Council	ST 18104 74494	Industrial, Commercial, Public Services: Schools & Colleges – Heat Pump	GW
21/57/25/0048	Celsa Manufacturing (UK) Ltd	ST 19491 75241	Industrial, Commercial, Public Services: Metal – Evaporative Cooling	SW
21/57/25/0048	Celsa Manufacturing (UK) Ltd	ST 19491 75241	Industrial, Commercial, Public Services: Metal – Evaporative Cooling	SW
21/57/25/0029	S A Brain & Co Ltd	ST 1814 7568	Industrial, Commercial, Public Services: Breweries / Wine – Non Evaporative Cooling	GW

8.4.33 According to NRW, there are 92 permitted discharges within 2km of the Site, comprising 30 sewage outlets (non-water undertaker), 41 sewage outlets (water undertaker) and 21 trade outlets.

8.4.34 Data regarding Private Water Supplies (PrWS) was requested from Cardiff Council on 25 May 2021. On 01 June 2021, Cardiff Council advised that it does not hold this information, and the request was forwarded to Vale of Glamorgan Council. The Vale of Glamorgan council responded on 02 July 2021 and confirmed that there are no PrWS within 2km of the Site.

Hydro-ecology and Designated Sites

8.4.35 Cardiff Bay Wetland and Hamadryad Park is located 750m south west of the Site and is designated as a Local Nature Reserve.

8.4.36 The Severn Estuary is located 1.3km southeast of the Site and is designated as a Special Area of Conservation (SAC), Site of Special Scientific Interest (SSSI), Special Protection Area (SPA) and RAMSAR (Wetland of International Importance).

Active and Historic Landfills and Pollution Events

8.4.37 According to NRW there are 14 effective waste permits within 2km of the Site, details of which are summarised within Table 8.9. None of these permits are located up hydraulic gradient of the Site.

Table 8.9 Active Waste Permits			
Site Name	Waste Activity	NGR	Distance from Site
Roath Dock	A11: Household, Commercial & Industrial Waste Transfer Stn	ST 20312 74837	0.75km south east
East Moors Waste Transfer Station	A11: Household, commercial and industrial waste transfer station	ST 19610 75714	0.52km north east
East Moors Waste Transfer Station	A11: Household, commercial and industrial waste transfer station	ST 19610 75714	0.52km north east
ABP Fletchers Wharf	A11: Household, Commercial & Industrial Waste Transfer Stn	ST 20358 74703	0.82km south east
ABP Fletchers Wharf	A11: Household, Commercial & Industrial Waste Transfer Stn	ST 20358 74703	0.82km south east
Sims Tremorfa	A20: Metal Recycling Site (mixed MRS's)	ST 20934 75628	1.50km north east
Alun Griffiths (Contractors) Limited	A16: Physical Treatment Facility	ST 20590 74687	1.05km south east
European Metal Recycling Ltd	S0821: SR2008 No21: Metal recycling site	ST 20300 75200	0.77km east
European Metal Recycling Ltd	S0907: SR2009 No7: Storage of furnace ready	ST 20300 75200	0.77km east

Table 8.9 Active Waste Permits			
Site Name	Waste Activity	NGR	Distance from Site
	scrap metal for recovery		
P H S Ltd	A12: Clinical Waste Transfer Station	ST 20674 75639	1.35km north east
Biffa Viking Place Waste Transfer Stn	A11: Household, Commercial & Industrial Waste Transfer Stn	ST 20830 74792	1.27km south east
Biffa Viking Place Waste Transfer Stn	A11: Household, Commercial & Industrial Waste Transfer Stn	ST 20830 74792	1.27km south east
Bayliss Metals	A19: Metal Recycling Site (Vehicle Dismantler)	ST 21044 75745	1.65km north east
European Metal Recycling Ltd	A19: Metal Recycling Site (Vehicle Dismantler)	ST 20298 75164	0.75km east

8.4.38 There are four surrendered waste permits within 2km of the Site, details of which are summarised in Table 8.10. Of these, none are located up hydraulic gradient of the Site.

Table 8.10 Surrendered Waste Permits			
Site Name	Waste Activity	NGR	Distance from Site
E Shed	SR/22: SR2011 No4: Treatment of waste wood <75000 tpa	ST 20509 75114	1.0km east
122/128 East Moors Road	A20: Metal Recycling Site (mixed MRS's)	ST 19499 75778	0.53km north east
122/128 East Moors Road	A20: Metal Recycling Site (mixed MRS's)	ST 19499 75778	0.53km north east
122/128 East Moors Road	A20: Metal Recycling Site (mixed MRS's)	ST 19499 75778	0.53km north east

8.4.39 There are 44 historic landfills located within 2km of the Site. Of those, five historic landfill permits intersect the Site boundary, details of which are summarised in Table 8.11.

Table 8.11 Historic Landfills Intersecting the Site Boundary		
Site Name	General Information	NGR
Timber Pond	Accepted industrial and household waste between 1920 and 1942	ST 31930 17510
Bute East Dock	Accepted inert and industrial waste between 1979 and 1989	ST 31940 17510



Junction Dry Dock	Accepted inert and industrial waste between 1976 and 1977	ST 31930 17460
Bute West Dock	Accepted inert, commercial and household waste between 1948 and 1971	ST 31900 17520
Hemingway Road Reservoir / GKN Fragmentiser Waste	Accepted inert and industrial waste between 1920 and 1942	ST 31930 17480

Hydrogeological Conceptual Site Model

Baseline HCSM

8.4.40 The baseline Hydrogeological Conceptual Site Model (HCSM) illustrates the water movement pathways from the ground surface to the bedrock aquifer under the current conditions at the Site. The existing HCSM can be summarised as follows:

8.4.41 Precipitation will either fall onto the existing buildings and associated hardstanding, onto the silty topsoil or where topsoil is not present, onto the Made Ground. Precipitation falling onto the existing buildings and associated hardstanding will runoff into the existing drainage system. Precipitation falling onto areas of topsoil or Made Ground will either runoff into the existing drainage system or infiltrate into the underlying superficial deposits. Once within the Tidal Flat Deposits, water will predominantly migrate laterally in a south easterly direction, in the direction of Cardiff Bay, with some vertical migration into the underlying bedrock. Groundwater within the bedrock will likely migrate in a south easterly direction, through fractures and sandier layers, towards Cardiff Bay.

Source-Pathway-Receptor CSM

8.4.42 The following Source-Pathway-Receptor relationships have been identified for the Proposed Development in relation to the water environment:

Potential Sources

8.4.43 Existing sources:

- Existing legacy pollution associated with the historic landfills at the Site;
- Existing pollution associated with the industrial legacy of the Site; and
- Potential pollution within the Made ground.

8.4.44 Potential sources occurring as a result of the Proposed Development:

- The use and storage of fuels and other potentially polluting materials may lead to

accidental spills/leaks from machinery and fuel storage areas during construction or during processes/activities on site during construction;

- Remobilisation of existing contamination, if present, including road drains and gullies which may contain accumulated oils, grease, or hydrocarbon heavy sediments, and petrol interceptors associated with car parking areas which may contain pollution;
- Sediment production associated with vehicle movement, earthworks and demolition;
- Subsurface seepages (alkaline leachate) into the groundwater from cement and concrete leachate; and
- Wastewater and foul drainage can lead to pollution if leaks occur from any associated pipework.

Potential Pathways

8.4.45 Pathways include:

- Rainwater can accumulate on the ground surface, where it can potentially mobilise to form runoff and travel downslope to low-lying areas or into the surface watercourses through the existing drainage infrastructure on the Site;
- Infiltration of precipitation through topsoil, made ground and superficial deposits;
- Groundwater flow within the superficial deposits and the bedrock;
- Construction works including excavations and piling can create a direct pathway into the bedrock;
- Potential abstractions and discharges associated with construction activities; and
- Installation of new utilities and drainage networks can create new preferential pathways either directly (e.g. spills entering drains and being discharged to surface water) or indirectly (e.g. if spills enter the sand around drains this can act as a preferential pathway from the surface).

Sensitive Receptors

8.4.46 Table 8.12 summarises the potential receptors and reasons for inclusion or exclusion from the assessment.

Table 8.12 Summary of Receptors and Sensitivity			
Receptor	Distance from Site	Receptor Sensitivity	Receptor at Risk from Proposed Development
Surface water in	550m west	Medium	No – there is unlikely to be a surface water

Table 8.12 Summary of Receptors and Sensitivity			
Receptor	Distance from Site	Receptor Sensitivity	Receptor at Risk from Proposed Development
the River Taff			pathway between the Site and the River Taff due to the infrastructure present (e.g. railway and road networks).
Surface water in Atlantic Wharf	The Site is adjacent to Atlantic Wharf on the Site's eastern boundary	Low	Yes – adjacent to the Site, some rainwater flows will be discharged into Atlantic Wharf.
Surface Water in Roath Basin	300m south	Low	Yes – whilst there is unlikely to be a surface water pathway due to the infrastructure present (e.g. road network), surface water will be discharged to Atlantic Wharf, which is connected to Roath Basin and Roath Dock. Roath Basin and Roath Dock are artificial features, likely to be concrete lined or partially lined, and unlikely to be groundwater or surface water dependent.
Surface Water in Roath Dock	390m south east	Low	
Groundwater within the Tidal Flat Deposits (Secondary (Undifferentiated) Aquifer)	The Site is located on the Secondary (Undifferentiated) Aquifer	Low	Yes – the Site is located on the Tidal Flat Deposits.
Groundwater within the Mercia Mudstone (Secondary B Aquifer)	The Site is located on the Secondary B Aquifer	Medium	Yes – the Site is located above the Mercia Mudstone.
Cardiff Bay	300m south	Medium	Yes – Potential connection through drainage network for surface water drainage.
Cardiff Bay Wetland and Hamadryad Park Local Nature Reserve	750m south west	Medium	Yes – wetland reserve influenced by Cardiff Bay, which is likely to receive surface water from the Site through the drainage network.
Severn Estuary hydro-ecologically designated site	1.6km south east	High	Yes – Groundwater flow is towards the south east and the coast.

8.4.47 The water resources receptors identified in Table 8.12 that are not at risk from the Proposed Development have been scoped out of the assessment and therefore are not considered further.

Limitations

8.4.48 The following represent potential limitations to the Baseline:

- Background concentrations of nutrients within the River Taff and other surface water features are unknown as no monitoring data was available within the 2km search area;
- No groundwater quality monitoring data was made available by NRW; and
- At the time of writing, only historic BGS borehole logs were available to provide Site specific geological and hydrogeological information.

8.5 Assessment of Effects

8.5.1 The following assessment assumes that construction will be undertaken in accordance with industry best practice, and that a Construction Environmental Management Plan (CEMP), or equivalent, will be developed, adopted, and adhered to throughout the construction phase of the Proposed Development.

Construction Phase

8.5.2 Table 8.13 details the likely significant effects that may occur as a result of construction related activities associated with the Proposed Development.

8.13 Summary of Potential Impacts during the Construction Phase	
Activity	Potential Impacts
Soil compaction	Compaction due to the use of heavy machinery reduces infiltration, increases runoff and shortens the rainfall-runoff response.
Soil stripping and vegetation removal	Soil stripping reduces soil moisture storage capacity and may increase runoff. Removal of vegetation reduces interception and evapotranspiration rates, increases runoff and increases suspended solids entrained in runoff.
Use of machinery on site	Accidental spills or leakage of fuel and oil from machinery and fuel storage onsite during the construction phase could impact the underlying groundwater and enter surface water watercourses/drains and waterbodies.
Earthworks	Mobilisation of existing contamination in the soil and subsurface, if present, could migrate to impact underlying groundwater and enter surface watercourses and bodies. Particularly in areas where historic landfills are recorded. Excavation and removal of the topsoil and shallow superficial deposits could reduce the rainfall-runoff response and also alter groundwater levels.

8.13 Summary of Potential Impacts during the Construction Phase	
Activity	Potential Impacts
	<p>Deep excavations and piling can create preferential pathways into groundwater for existing contamination, or spills and leakages to migrate through.</p> <p>Dewatering of excavations can mobilise existing pollution within groundwater if discharged directly into surface water.</p> <p>Mobilisation of sediment, which could enter watercourses/drains and waterbodies.</p>
Demolition works	Demolition works have the potential to produce sediment, which could be entrained and enter surface watercourses/drains and waterbodies.
Use of cement and concrete	<p>Leaching of cement / concrete into groundwater may result in a degradation in groundwater quality.</p> <p>Pollution from spills or leakage of concrete / cement leachates to surface water leading to a degradation of water quality.</p>
Construction of impermeable surfaces	Reduction in recharge to the superficial deposits and underlying bedrock aquifer thereby locally reducing groundwater levels. This will also increase runoff to surface water drains and may lead to flooding.
Construction of subsurface infrastructure	<p>Impede shallow groundwater flow that can cause groundwater mounding on the upgradient side and reducing groundwater levels on the downgradient side.</p> <p>Pollution from spills or leakage of concrete/cement leachates to surface water.</p>

Operational Phase

8.5.3 Table 8.14 details the likely significant effects that may occur as a result of the presence and operation of the Proposed Development.

8.14 Summary of Potential Impacts during Operational Phase	
Activity	Potential Impacts
Impermeable surfaces	Reduction in recharge to the underlying aquifer thereby locally reducing groundwater levels. This will also increase runoff to surface water drains and may lead to flooding.
Subsurface infrastructure	Impede shallow groundwater flow that can cause groundwater mounding on the upgradient side and reducing groundwater levels on the downgradient side.
Alteration of the existing drainage regime	Alteration of the existing drainage regime may alter both the amount of runoff within the surface water catchment, and groundwater recharge, thereby altering the flow rates and volumes within the waterbodies within these catchments.
Vehicle movement	Vehicle movement has the potential to result in accidental spills or leaks of fuel and oil which could impact the underlying groundwater and enter drains leading to surface watercourses and waterbodies. Salt spreading associated with increased vehicle traffic has the potential to impact groundwater or surface water runoff quality.

8.14 Summary of Potential Impacts during Operational Phase	
Activity	Potential Impacts
Wastewater drainage	Wastewater from leaking sewerage infrastructure has the potential to impact underlying groundwater and enter surface watercourse and waterbodies.

Design Solutions and Assumptions

8.5.4 The Proposed Development will be undertaken in line with current guidance and codes of best practice intended to prevent adverse environmental impacts during construction. A Construction Environmental Management Plan (CEMP) or equivalent will be produced that will incorporate the key principles of the best practice, legislation, regulations and guidance. The key principles of the CEMP will include (but will not be limited to) the following:

- Construction design to minimise disruption to the natural flow regime;
- Planning and preparation of works to ensure that all precautions are taken to provide protection to watercourses, groundwater and attenuation features, including the supervision of sub-contractors and liaison with Cardiff Council and NRW;
- Installation of attenuation features at the outset to allow establishment before any surface water sewer connection is made from the Proposed Development. The programming and phasing as part of the final detailed elements of the masterplan and subsequent planning permissions will ensure this is carried out on the ground;
- Adoption of measures to prevent and control the release of sediment, such as blocking of sewers and surface water drains before commencing demolition works. The CEMP will specify the maintenance requirements to ensure that sediment control measures, drains and potholes are regularly inspected, cleared, infilled and/or repaired;
- Securely storing all fuel, oils and other polluting substances within suitably bunded containers and placed upon impermeable surfaces in accordance with the relevant provisions of the Environmental Permitting (England and Wales) Regulations 2016;
- The total quantity and range of potential pollutants to be used on Site is anticipated to be small;
- The use of integrated drip trays for any static machinery/plant where practicable. All plant, vehicles and machinery will also be regularly inspected for leaks;
- Refuelling is to be undertaken in designated refuelling areas, with the use of



biodegradable oils and lubricants considered wherever possible;

- The preparation of pollution incident response plans, identifying the type and location of onsite resources (spill kits, absorbent materials etc.) available for the control of accidental releases of pollution and other environmental incidents. These resources will be available to contractors at all times of operation;
- Any abstractions, discharges, or exemptions will be subject to licencing requirements and approval through NRW before commencement;
- Cement/concrete mixes will be calculated to ensure that sufficient quantities are supplied without any need for disposal of excess and cement/sand mix ratio will be monitored for consistency and suitability.

8.5.5 As the environmental measures outlined above will be adopted and adhered to, they are considered to be embedded within the design proposals.

8.5.6 The design proposals will evolve in conjunction with the drainage strategies (Appendix 8.3) and, as such, the assessment also assumes that these strategies are incorporated within the Proposed Development.

Assessment of Effects

Construction Phase Assessment

8.5.7 A summary of the construction phase assessment is detailed within Table 8.15. With appropriate mitigation in place the assessment found that with the adoption of good industry best practice in place, the magnitude of change from the baseline conditions is likely to be **negligible** or **low (adverse)**. As such the scale of the effect is considered to be **minor** or **negligible**, which is **not significant**.

Operational Phase Assessment

8.5.8 A summary of the operational phase assessment is detailed within Table 8.16. With appropriate mitigation in place the assessment found that with the adoption of good industry best practice in place, the magnitude of change from the baseline conditions is likely to be **negligible** or **low (adverse)**. As such the scale of the effect is considered to be **minor** or **negligible**, which is **not significant**.



Table 8.15 Construction Phase Impacts Assessment							
Activity	Potential Effect	Nature and geographical significance of effect	Receptor	Sensitivity	Magnitude of effect	Scale of potential effect	Significant effect?
Soil compaction	See Table 8.13	Long term, irreversible, adverse, local	Atlantic Wharf	Low	Negligible	Negligible	No
			Roath Basin & Roath Dock	Low	Negligible	Negligible	No
			TFD Secondary U Aquifer	Low	Negligible	Negligible	No
			Bedrock Secondary B Aquifer	Medium	Negligible	Negligible	No
			Cardiff Bay	Medium	Negligible	Negligible	No
			Cardiff Bay Wetland and Hamadryad Park LNR	Medium	Negligible	Negligible	No
			Severn Estuary Designated Site	High	Negligible	Negligible	No
Soil stripping and vegetation removal	See Table 8.13	Long term, irreversible, adverse, local	Atlantic Wharf	Low	Negligible	Negligible	No
			Roath Basin & Roath Dock	Low	Negligible	Negligible	No
			TFD Secondary U Aquifer	Low	Negligible	Negligible	No
			Bedrock Secondary B Aquifer	Medium	Negligible	Negligible	No
			Cardiff Bay	Medium	Negligible	Negligible	No
			Cardiff Bay Wetland and Hamadryad Park LNR	Medium	Negligible	Negligible	No
			Severn Estuary Designated Site	High	Negligible	Negligible	No
Use of machinery on	See Table 8.13	Long term, irreversible, adverse,	Atlantic Wharf	Low	Low	Negligible	No
			Roath Basin & Roath Dock	Low	Negligible	Negligible	No



Table 8.15 Construction Phase Impacts Assessment

Activity	Potential Effect	Nature and geographical significance of effect	Receptor	Sensitivity	Magnitude of effect	Scale of potential effect	Significant effect?
site		local	TFD Secondary U Aquifer	Low	Low	Negligible	No
			Bedrock Secondary B Aquifer	Medium	Low	Minor	No
			Cardiff Bay	Medium	Negligible	Negligible	No
			Cardiff Bay Wetland and Hamadryad Park LNR	Medium	Negligible	Negligible	No
			Severn Estuary Designated Site	High	Negligible	Negligible	No
Earthworks	See Table 8.13	Long term, irreversible, adverse, local	Atlantic Wharf	Low	Low	Negligible	No
			Roath Basin & Roath Dock	Low	Negligible	Negligible	No
			TFD Secondary U Aquifer	Low	Low	Negligible	No
			Bedrock Secondary B Aquifer	Medium	Low	Minor	No
			Cardiff Bay	Medium	Negligible	Negligible	No
			Cardiff Bay Wetland and Hamadryad Park LNR	Medium	Negligible	Negligible	No
			Severn Estuary Designated Site	High	Negligible	Negligible	No
Demolition works	See Table 8.13	Short term, irreversible, adverse, local	Atlantic Wharf	Low	Low	Negligible	No
			Roath Basin & Roath Dock	Low	Negligible	Negligible	No
			TFD Secondary U Aquifer	Low	Negligible	Negligible	No



Table 8.15 Construction Phase Impacts Assessment							
Activity	Potential Effect	Nature and geographical significance of effect	Receptor	Sensitivity	Magnitude of effect	Scale of potential effect	Significant effect?
			Bedrock Secondary B Aquifer	Medium	Negligible	Negligible	No
			Cardiff Bay	Medium	Negligible	Negligible	No
			Cardiff Bay Wetland and Hamadryad Park LNR	Medium	Negligible	Negligible	No
			Severn Estuary Designated Site	High	Negligible	Negligible	No
Use of cement and concrete	See Table 8.13	Long term, irreversible, adverse, local	Atlantic Wharf	Low	Low	Negligible	No
			Roath Basin & Roath Dock	Low	Negligible	Negligible	No
			TFD Secondary U Aquifer	Low	Low	Negligible	No
			Bedrock Secondary B Aquifer	Medium	Low	Minor	No
			Cardiff Bay	Medium	Negligible	Negligible	No
			Cardiff Bay Wetland and Hamadryad Park LNR	Medium	Negligible	Negligible	No
			Severn Estuary Designated Site	High	Negligible	Negligible	No
Construction of impermeable surfaces	See Table 8.13	Long term, irreversible, adverse, local	Atlantic Wharf	Low	Low	Negligible	No
			Roath Basin & Roath Dock	Low	Negligible	Negligible	No
			TFD Secondary U Aquifer	Low	Negligible	Negligible	No
			Bedrock Secondary B Aquifer	Medium	Negligible	Negligible	No



Table 8.15 Construction Phase Impacts Assessment							
Activity	Potential Effect	Nature and geographical significance of effect	Receptor	Sensitivity	Magnitude of effect	Scale of potential effect	Significant effect?
			Cardiff Bay	Medium	Negligible	Negligible	No
			Cardiff Bay Wetland and Hamadryad Park LNR	Medium	Negligible	Negligible	No
			Severn Estuary Designated Site	High	Negligible	Negligible	No
Construction of subsurface infrastructure	See Table 8.13	Long term, irreversible, adverse, local	Atlantic Wharf	Low	Negligible	Negligible	No
			Roath Basin & Roath Dock	Low	Negligible	Negligible	No
			TFD Secondary U Aquifer	Low	Low	Negligible	No
			Bedrock Secondary B Aquifer	Medium	Low	Minor	No
			Cardiff Bay	Medium	Negligible	Negligible	No
			Cardiff Bay Wetland and Hamadryad Park LNR	Medium	Negligible	Negligible	No
			Severn Estuary Designated Site	High	Negligible	Negligible	No



Table 8.16 Operational Phase Impacts Assessment

Activity	Potential Effect	Nature and geographical significance of effect	Receptor	Sensitivity	Magnitude of effect	Scale of potential effect	Significant effect?
Impermeable surfaces	See Table 8.14	Long term, irreversible, adverse, local	Atlantic Wharf	Low	Negligible	Negligible	No
			Roath Basin & Roath Dock	Low	Negligible	Negligible	No
			TFD Secondary U Aquifer	Low	Low	Negligible	No
			Bedrock Secondary B Aquifer	Medium	Low	Minor	No
			Cardiff Bay	Medium	Negligible	Negligible	No
			Cardiff Bay Wetland and Hamadryad Park LNR	Medium	Negligible	Negligible	No
			Severn Estuary Designated Site	High	Negligible	Negligible	No
Subsurface infrastructure	See Table 8.14	Long term, irreversible, adverse, local	Atlantic Wharf	Low	Negligible	Negligible	No
			Roath Basin & Roath Dock	Low	Negligible	Negligible	No
			TFD Secondary U Aquifer	Low	Low	Negligible	No
			Bedrock Secondary B Aquifer	Medium	Low	Minor	No
			Cardiff Bay	Medium	Negligible	Negligible	No
			Cardiff Bay Wetland and Hamadryad Park LNR	Medium	Negligible	Negligible	No
			Severn Estuary Designated Site	High	Negligible	Negligible	No
Alteration of the existing drainage regime	See Table 8.14	Long term, irreversible, adverse, local	Atlantic Wharf	Low	Negligible	Negligible	No
			Roath Basin & Roath Dock	Low	Negligible	Negligible	No
			TFD Secondary U Aquifer	Low	Negligible	Negligible	No
			Bedrock Secondary B Aquifer	Medium	Negligible	Negligible	No
			Cardiff Bay	Medium	Negligible	Negligible	No



Table 8.16 Operational Phase Impacts Assessment

Activity	Potential Effect	Nature and geographical significance of effect	Receptor	Sensitivity	Magnitude of effect	Scale of potential effect	Significant effect?
			Cardiff Bay Wetland and Hamadryad Park LNR	Medium	Negligible	Negligible	No
			Severn Estuary Designated Site	High	Negligible	Negligible	No
Vehicle movement	See Table 8.14	Long term, irreversible, adverse, local	Atlantic Wharf	Low	Low	Negligible	No
			Roath Basin & Roath Dock	Low	Negligible	Negligible	No
			TFD Secondary U Aquifer	Low	Low	Negligible	No
			Bedrock Secondary B Aquifer	Medium	Low	Minor	No
			Cardiff Bay	Medium	Negligible	Negligible	No
			Cardiff Bay Wetland and Hamadryad Park LNR	Medium	Negligible	Negligible	No
			Severn Estuary Designated Site	High	Negligible	Negligible	No
Wastewater drainage	See Table 8.14	Long term, irreversible, adverse, local	Atlantic Wharf	Low	Low	Negligible	No
			Roath Basin & Roath Dock	Low	Negligible	Negligible	No
			TFD Secondary U Aquifer	Low	Low	Negligible	No
			Bedrock Secondary B Aquifer	Medium	Low	Minor	No
			Cardiff Bay	Medium	Negligible	Negligible	No
			Cardiff Bay Wetland and Hamadryad Park LNR	Medium	Negligible	Negligible	No
			Severn Estuary Designated Site	High	Negligible	Negligible	No

8.6 Mitigation

8.6.1 The assessment assumes that the previously discussed environmental measures will be adopted and implemented. As no significant effects have been identified, no specific mitigations measures are recommended for either the construction or operation phases of the Proposed Development.

8.7 Residual Effects

8.7.1 As detailed within Table 8.15 and Table 8.16 no significant impacts have been identified, therefore there will be no significant residual effects.

8.8 Assessment of Cumulative Effects

8.8.1 Cumulative impacts on the water environment may occur when two or more major developments are under construction or are operational within the same catchment at the same time. Potential cumulative impacts include a deterioration in water quality as a result of pollutants entering into the waterbodies during earthworks and an alteration to the hydrogeological regime from changes in the amount of permeable surface and potential increase in flood risk.

8.8.2 Eighteen major developments have been identified within proximity of the Site, details of which are included within Chapter 5 (Approach to Environmental Impact Assessment).

8.8.3 It is expected that any additional surface water runoff resulting from increased impermeable surfaces associated with the above developments will be attenuated to greenfield runoff rates, reducing any potential cumulative impact relating to flood risk. SUDS will provide a measure of water quality treatment from the proposed residential estates and it would be expected that construction will be undertaken in line with industry best practice, and implementation of a CEMP where appropriate. Therefore, there should be no deterioration in water quality resulting from either the construction or operational phase, and thus no inter-cumulative impact.

8.8.4 There are regulations and best practice guidance in place to prevent any adverse impacts upon the water environment. Therefore, it is reasonable to assume that any other committed development will adhere to these and include sufficient appropriate measures, for example through implementation of a CEMP, to ensure no significant adverse effects upon water resources, in order to secure planning consent. As such, it

is believed that the other committed developments, in combination with the Proposed Development, will not result in any significant inter-cumulative or intra-cumulative effects.

8.9 WFD Assessment

8.9.1 A Water Framework Directive (WFD) assessment has been undertaken to assess the potential deterioration in the overall status of a water body from the Proposed Development. The WFD assessment is included in Appendix 8.4. The WFD assessment identified that the risk of the ‘Taff – Conf Rhondda R to Castle Street’ surface water body and the ‘SE Valleys Southern Devonian Old Red Sandstone & Triassic Mercia Mudstone’ not achieving WFD objectives as a result of the Proposed Development is low. The WFD assessment found that the Proposed Development will not affect the programme of measures for the assessed surface and groundwater bodies.

8.10 Conclusion

8.10.1 The potential impacts of the Proposed Development on the identified sensitive water resource receptors, with embedded mitigation in place, are considered to be Not Significant.

8.10.2 A WFD assessment also identified that the risk of the Proposed Development preventing the surface and groundwater bodies from achieving their WFD objectives is low.