LAND AT CHANNEL VIEW, GRANGETOWN
CARDIFF

ENVIRONMENTAL STATEMENT

VOLUME 2
CHAPTER 7: ECOLOGY

INTRODUCTION

7.1 This Chapter has been produced by Tetra Tech. This chapter of the Environmental Statement (ES) assesses the likely impacts on ecology from the Proposed Development at Channel View, Grangetown, Cardiff (the Site).

7.2 The Ecological Impact Assessment (EcIA) presents the baseline ecology and nature conservation aspects of the Site, assesses the likely significant effects of the Proposed Development upon ecological receptors, outlines mitigation measures proposed to reduce adverse impacts and promote biodiversity gains; and summarises the overall predicted ecological effects (i.e. the residual effects) of the Proposed Development. The assessment has been undertaken with regard to the Chartered Institute of Ecology and Environmental Management (CIEEM) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine (2018).

7.3 The Study Area is defined as the area within the redline application boundary of the Site plus a 2 km search area around the Site to identify ecological receptors (predominantly designated sites of nature conservation value and habitats connected to the Site via green corridors) that may be subject to impacts as a result of the Proposed Development. This is based on the advice of CIEEM in its Guidelines for Preliminary Ecological Appraisal (2017) and Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine (2018). This search area was extended to 5 km for European designated sites where a potential pathway to a significant effect was identified.

7.4 The ecological surveys of the Site extended beyond the Site boundary to include waterbodies within 500 m and immediately adjacent habitats (i.e. within 50 m of the Site) where accessible, in accordance with the Guidelines for Preliminary Ecological Appraisal (CIEEM, 2017).

7.5 The Chapter is accompanied by the following Appendices:

- 1.1 – Ecological Appraisal;
- 1.2 – Bat Report;

7.6 For ease of reading, the common names of plants and animals have been used in this chapter. Full scientific names have been included within the relevant technical appendices.

ASSESSMENT METHODOLOGY

Policy Background

National Policy

7.7 The national planning policy guidance is found principally in Planning Policy Wales Edition 11 (PPW) dated February 2021 (Welsh Government, 2021). The document is supported by a series of Technical Advice Notes (TANs) with the most relevant for ecology being TAN 5: Nature Conservation and Planning (Welsh Government, 2009), which provides advice on how the land use planning system should contribute to protecting and enhancing biodiversity and geological conservation.

7.8 Paragraph 6.4.2 states that local planning authorities, along with other public bodies, as part of the Environment (Wales) Act 2016 have a duty to take reasonable steps, consistent with the proper exercise of their functions, to further the conservation and enhancement of biodiversity and help maximise contributions to achieve well-being goals.

7.9 Paragraph 6.4.3 states that the planning system has a key role to play in helping to reverse the decline in biodiversity and increasing the resilience of ecosystems, at various scales, by ensuring appropriate mechanisms are in place to both protect against loss and to secure enhancement. Addressing the consequences of climate change should be a central part of any measures to conserve biodiversity and the resilience of ecosystems. Development plan strategies, policies and development proposals must consider the need to:

support the conservation of biodiversity, in particular the conservation of wildlife and habitats;

ensure action in Wales contributes to meeting international responsibilities and obligations for biodiversity and habitats;

ensure statutorily and non-statutorily designated sites are properly protected and managed;

safeguard protected and priority species and existing biodiversity assets from impacts which directly affect their nature conservation interests and compromise the resilience of ecological networks and the components which underpin them, such as water and soil, including peat; and

secure enhancement of and improvements to ecosystem resilience by improving diversity, condition, extent and connectivity of ecological networks.

7.10 Paragraph 6.4.4 states that biodiversity and resilience considerations should be taken into account at an early stage in development planning. All reasonable steps must be taken to maintain and enhance biodiversity and promote the resilience of ecosystems which should be balanced with the wider economic and social needs of business and local communities.

7.11 Paragraphs 6.4.11, 6.4.14 and 6.4.22 state that planning authorities must have regard to the relative significance of international, national and local designations in considering the weight to be attached to nature conservation interests, and that the international and national responsibilities and obligations for conservation should be fully met. Statutorily designated sites must be protected from damage and deterioration, with their important features conserved and enhanced by appropriate management. Statutorily protected species protected under European or UK legislation, or under Section 7 of the Environment (Wales) Act 2016 are material considerations if a development would result in disturbance or harm to the species or its habitat, and the range and population of the species should be sustained.

7.12 Paragraph 6.4.21 states 'Planning authorities must follow a step-wise approach to maintain and enhance biodiversity and build resilient ecological networks by ensuring that any adverse environmental effects are firstly avoided, then minimized, mitigated, and as a last resort compensated for; enhancement must be secured wherever possible'.

7.13 Paragraphs 6.4.24-26 also gives emphasis to the importance of trees, hedgerows and woodlands (especially ancient woodland) and states 'Ancient woodland and semi-natural woodlands and individual ancient, veteran and heritage trees are irreplaceable natural resources, and have significant landscape, biodiversity and cultural value. Such trees and woodlands should be afforded protection from development which would result in their loss or deterioration unless there are significant and clearly defined public benefits; this protection should prevent potentially damaging operations and their unnecessary loss. In the case of a site recorded on the Ancient Woodland Inventory, authorities should consider the advice of NRW.'

7.14 Related to these Biodiversity and Ecological Network policies, Section 6.2 gives weight to the protection and enhancement of multi-functional green infrastructure, which is important for sustainable management of natural resources. Green infrastructure should be incorporated into development through appropriate site selection and use of creative design.

7.15 Circular Letter CL-05-04 reaffirmed the Welsh Government's commitment to ensuring that designated sites and species of nature conservation importance are protected from damage and deterioration, with their important features conserved by appropriate management. The letter advised that under specific circumstances a pre-commencement condition should be attached to planning consents requiring the applicant to provide the LPA with a copy or their European Protected Species (EPS) Licence (once issued by NRW). The Circular Letter was withdrawn in March 2018 in an attempt to reduce the number of pre-commencement conditions, with LPA's advised to instead use a replacement informative (to be attached to all relevant consent notices) to avoid unnecessary duplication controls of other legislation.

Local Policy

7.16 The site lies within the jurisdiction of Cardiff Council. The Cardiff Local Development Plan 2006-2026 (Cardiff County Council, 2016), constitutes the development plan for the area. Specific environmental policies included within the LDP that are of relevance to the ecology of the site are summarised below.

7.17 Policy EN5 Designated Sites. Development will not be permitted that would cause unacceptable harm to sites of international or national nature conservation importance. Development proposals that would affect locally designated sites of nature conservation and geological importance should maintain or enhance the nature conservation and/or geological importance of the designation. Where this is not the case and the need for the development outweighs the conservation importance of the site, it should be demonstrated that there is no satisfactory alternative location for the development which avoids nature conservation impacts, and compensation measures designed to ensure that there is no reduction in the overall nature conservation value of the area or feature.

7.18 Policy EN6 Ecological Networks and Features of Importance for Biodiversity. Development will only be permitted if it does not cause unacceptable harm to:

Landscape features of importance for wild flora and fauna, including wildlife corridors and 'stepping stones' which enable the dispersal and functioning of protected and priority species;

Networks of importance for landscape or nature conservation.

7.19 Particular priority will be given to the protection, enlargement, connectivity and management of the overall nature of semi-natural habitats. Where this is not the case and the need for the development outweighs the nature conservation importance of the site, it should be demonstrated that there is no satisfactory alternative location for the development and compensatory provision will be made of comparable ecological value to that lost as a result of the development.

7.20 Policy EN7 Priority Habitats and Species. Development proposals that would have a significant adverse effect on the continued viability of habitats and species which are legally protected or which are identified as priorities in the UK or Local Biodiversity Action Plan will only be permitted where:

The need for development outweighs the nature conservation importance of the site;

The developer demonstrates that there is no satisfactory alternative location for the development which avoids nature conservation impacts; and

Effective mitigation measures are provided by the developer.

7.21 Where harm is unavoidable it should be minimised by effective mitigation to ensure that there is no reduction in the overall nature conservation value of the area. Where this is not possible compensation measures designed to conserve, enhance, manage and, where appropriate, restore natural habitats and species should be provided.

7.22 In addition, the Cardiff Green Infrastructure Supplementary Planning Guidance document is considered of relevance to the project.

Environment (Wales) Act

7.23 As part of the Welsh Government's commitment to reversing the decline in biodiversity in Wales and increasing the resilience of its ecosystems, the Env (Wales) Act 2016 aims to build greater resilience into our ecosystems. Biodiversity and well-functioning ecosystems provide natural solutions that build resilience, which in turn help society create jobs, support livelihoods and human well-being, adapt to the adverse impacts of climate change and contribute to sustainable development.

7.24 Part 1 of the Environment Act sets out Wales' approach to planning and managing natural resources at a national and local level with a general purpose linked to statutory 'principles of sustainable management of natural resources' defined within the Act.

7.25 Section 6 under Part 1 of the Act places an enhanced duty on public authorities to 'seek to maintain and enhance biodiversity' so far as it is consistent with the proper exercise of those functions. In so doing, public authorities must also seek to 'promote the resilience of ecosystems'. This duty replaces the section 40 duty in the Natural Environment and Rural Communities Act 2006 (NERC Act 2006), in relation to Wales, and applies to those authorities that fell within the previous duty.

7.26 Section 7 replaces the duty in section 42 of the NERC Act 2006. The Welsh Ministers will publish, review and revise lists of living organisms and types of habitat in Wales, which they consider are of key significance to sustain and improve biodiversity in relation to Wales. The Welsh Ministers must

also take all reasonable steps to maintain and enhance the living organisms and types of habitat included in any list published under this section, and encourage others to take such steps. Certain public authorities will also be required to consider the section 7 list, in complying with the new biodiversity duty under section 6 of the Act. The list is important in assisting public bodies to identify potential issues that they may wish to address in meeting their well-being objectives, in addition to contributing to the well-being goal 'a resilient Wales' (Goal 2). The current Section 7 lists are interim lists which are exactly the same as the previous list under Section 42 of the NERC Act, and is under review in consultation with NRW.

7.27 Part 1 of the Act, including Sections 6 and 7, came into force on 21st May 2016.

LEGISLATION

International Legislation

7.28 The EC Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora (92/43/EEC) promotes the maintenance of biodiversity by requiring Member States to take measures to maintain or restore natural habitats and wild species at a favourable conservation status, including the introduction of protection for those habitats and species of European importance.

7.29 The Convention on the Conservation of European Wildlife and Natural Habitats 1979 (the Bern Convention) which carries an obligation to protect and conserve over 500 wild plants species and more than 1000 wild animal species.

7.30 The EC Council Directive on the Conservation of Wild Birds (79/409/EEC amended to 2009/147/EC) which provides a framework for the conservation and management of, and human interactions with, wild birds in Europe.

7.31 The Convention on Wetlands of International Importance especially as Waterfowl Habitat 1972 (the Ramsar or Wetlands Convention) which has the status of a legal treaty for the designation and protection of wetland habitats. The Ramsar Convention allows the designation of wetlands of international importance as Ramsar Sites, the promotion of the wise use of all wetlands in the territory of each country, and international cooperation with other countries to further the wise-use of wetlands and their resources.

7.32 The Convention on the Conservation of Migratory Species of Wild Animals 1979 (the Bonn Convention) which provides a global system offering protection for all threatened migratory species and their habitats.

National Legislation

7.33 The Wildlife and Countryside Act 1981 (as amended) (W&CA) is the primary legislation covering endangered or threatened species in England and sets out the framework for the designation of SSSIs and SPAs.

7.34 The Conservation of Habitats and Species Regulations 2017 action the UK's implementation of the Habitats Directive, including the protection of European Protected Species and the designation of SACs.

7.35 The Protection of Badgers Act 1992 brings together all the legislation that is specific to badgers, with the exception of their inclusion on Schedule 6 of the W&CA.

7.36 The Hedgerows Regulations 1997 aims to protect hedgerows of importance from destruction. The Regulations only apply to hedgerows growing on or adjacent to certain land use categories.

7.37 The Countryside and Rights of Way (CRoW) Act 2000 affords a greater level of protection to SSSIs, provides better management arrangements for Areas of Outstanding Beauty and strengthens wildlife enforcement legislation. Section 74(2) of the Act requires the Secretary of State to list those habitats and species of Principal Importance for the conservation of biodiversity, in accordance with the United Nations Convention of Biological Diversity 1992.

7.38 The Natural Environment and Rural Communities (NERC) Act 2006 is designed to help achieve a rich and diverse natural environment and thriving rural communities through modernised and simplified arrangements for delivering Government Policy. Elements of the act most relevant to the Proposed Development include (i) extension of the CRoW biodiversity duty to public bodies and statutory undertakers to ensure due regard to the conservation of biodiversity; and (ii) modification

of the CRoW Act 2000 so that species listed under Section 74 are now listed under Section 41 of the NERC Act 2006. Priority Habitats and Priority Species for England and Wales (formerly listed in the superseded UK Biodiversity Action Plan) are detailed under Section 41.

Relevant Species-specific Legislation

Reptiles

7.39 The adder *Vipera berus*, grass snake *Natrix helvetica*, slow-worm *Anguis fragilis* and common lizard *Lacerta vivipara* receive partial or full protection under the W&CA as amended which makes it an offence to:

- Intentionally or recklessly kill or injure these animals; and
- Sell, offer for sale, possess or transport for the purpose of sale or publish advertisement to buy or sell individual reptiles.

Birds

7.40 It is an offence to intentionally kill, injure or take any wild bird or take, damage or destroy the nest (whilst being built or in use) or its eggs under the W&CA. In addition, there are 194 species that are subject to special conservation measures concerning their habitat in order to ensure their survival and reproduction. This includes an offence to disturb any birds listed on Schedule 1 of the W&CA whilst nesting, or their dependant young.

Badgers

7.41 It is illegal for a person to kill, injure or take a badger under the Protection of Badgers Act 1992. It is also an offence to destroy, damage or obstruct an entrance to a badger's sett, or to disturb animals whilst within a sett.

7.42 A NRW Mitigation Licence will be required if development works affect badger setts. This can also include direct / indirect disturbance near to a sett.

Bats

7.43 All UK species of bat are European Protected Species which means they are protected under the Conservation of Habitats and Species Regulations 2017. -It is an offence to:

- Deliberately, recklessly or intentionally kill, injure or take a bat;
- Deliberately, intentionally or recklessly damage, destroy or obstruct access to any structure or place used for shelter or protection by a bat; or
- Deliberately disturb an animal while it is occupying a structure or place which it uses for that purpose.

7.44 An EPSML from NRW is required for any development works that would affect bat roosts.

Otter

7.45 Otter is afforded full protection under Section 9 of the Wildlife and Countryside Act 1981 (WCA; as amended) through their inclusion on Schedule 5 of the Act. Otter also receive full protection as European Protected Species under Section 41 of The Conservation of Habitats and Species

Regulations 2010 (as amended) through their inclusion on Schedule 2 of the Regulations. It is an offence to:

- Intentionally, deliberately or recklessly capture, kill, injure or take a wild otter; and/or
- Intentionally, deliberately or recklessly damage or destroy any breeding site, structure or resting place which any otter uses for shelter or protection: and
- Intentionally, deliberately or recklessly disturb any otter while it is occupying a structure or place which it uses for shelter or protection: and
- Intentionally or recklessly obstruct access to any structure or place which an otter uses for shelter or protection.

Screening Assessment Stage

7.46 A screening request was submitted to Cardiff City Council in October 2019. It was confirmed that the proposed development would require the submission of an Environmental Statement.

Scoping Assessment Stage

7.47 A scoping response was received on the 6th January 2020. With reference to ecology, it was confirmed that the ES should include sufficient information to enable the local planning authority to determine the extent of any environmental impacts arising from the proposed scheme on legally protected species, including those which may also comprise notified features of designated sites affected by the proposals.

7.48 NRW statutory consultation response and the key points included:

- To determine the extent of any environmental impacts arising from the proposed scheme on legally protected species, including those which may also comprise notified features of designated sites affected by the proposals.
- Where the potential for significant impacts on protected species is identified, we advocate that a Conservation Plan is prepared for the relevant species and included as an Annex to the ES.
- Appropriate survey for otter is undertaken, and that opportunities are sought to enhance the ecological value of the riparian corridor.
- Sensitive lighting strategy.

Assessment Methodology

7.49 The impact assessment for ecology has been carried out in accordance with Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine (2018), hereafter referred to as the CIEEM Guidelines.

7.50 The impact assessment process involves:

- Identifying and characterising impacts;
- Incorporating measures to avoid and mitigate (reduce) these impacts;
- Assessing the significance of any residual effects after mitigation;
- Identifying appropriate compensation measures to offset significant residual effects; and
- Identifying opportunities for ecological enhancement.

7.51 The starting point for any assessment of impacts is to determine which ecological features should be subject to detailed assessment. These are only selected where significant impacts on the feature are possible as a result of a project.

7.52 This approach is consistent with the EIA Regulations, which only require investigation of likely significant effects. A summary of the key points from the relevant guidance, as relevant to this assessment, is provided below.

7.53 A further scoping exercise was undertaken for the Site and was submitted to NFDC in December 2019. No comments in respect to ecology were received prior to the submission of the ES and subsequently the planning application.

Determining Importance

7.54 The CIEEM Guidelines recommend that the value of ecological features is determined based on a geographic frame of reference that includes the following levels:

- International – Special Protection Areas (SPA), Special Areas of Conservation (SAC), Ramsar Sites, etc;
- National – Sites designated at UK level, e.g. Sites of Special Scientific Interest (SSSI);
- Regional – Habitats or populations of species of value at a regional (i.e. South Wales) level;
- County – Designated Sites, such as and Sites of Importance to Nature Conservation (SINCs), or habitats / species populations of value at a county / unitary authority (i.e Cardiff City) level; and
- Local – Habitats or species populations of value in a local (i.e. Grangetown) context.

7.55 Where habitats or species populations are not considered to be important within the context of this assessment, they are assessed as having negligible importance.

Habitats

7.56 In accordance with the CIEEM Guidelines, the importance of habitats is measured against published selection criteria where available. Reference is also made to the list of HPIs under Section 41 of the NERC Act 2006. Reference is also made to the local Habitat Action Plans (LHAPs).

7.57 Species of European (international) conservation importance are listed on Annexes II, IV and V of the Habitats Directive and Annex I of the Birds Directive. Species that are considered to be priorities for conservation in England are listed under Section 41 of the NERC Act 2006.

7.58 In accordance with the CIEEM Guidelines, the importance of species populations is measured using existing criteria where available. Contextual information about distribution and abundance is considered, including trends based on any historical records available.

7.59 Legally protected species are always considered important where there is potential for a breach of relevant legislation.

Predicting and Characterising Ecological Impacts

7.60 In accordance with the CIEEM guidelines, when describing impacts, reference is made to the following, where applicable:

- Positive / Adverse – whether an impact improves or reduces the quality of the receptor.
- Extent – the area over which an impact occurs.
- Duration – the time for which an impact is expected to last.
- Magnitude – the size or intensity of the impact.

- Reversibility – a permanent impact is one that is irreversible within a reasonable timescale or for which there is no reasonable chance of action being taken to reverse it (a temporary impact is one from which a spontaneous recovery is possible).
- Timing and frequency – whether impacts occur during critical life-stages or seasons.

Direct and Indirect Ecological Impacts

7.61 Both direct and indirect impacts are considered within this assessment. A direct impact is directly attributable to a defined action such as the physical loss of a habitat or the immediate mortality of an individual of a particular species. Indirect impacts are attributable to an action, but which affect ecological resources through effects on an intermediary ecosystem, process or receptor. An example of an indirect effect would be the loss of an important prey species for a predator.

Approaches for Determining Significant Impacts

7.62 In accordance with the CIEEM Guidelines, a significant impact, in ecological terms, is defined as an impact which either supports or undermines the conservation objectives for important ecological features or for biodiversity in general.

7.63 In accordance with the CIEEM Guidelines, the approach adopted here aims to determine if an impact is significant or not on the basis of a discussion of the factors which characterise it – i.e. the ecological significance of an impact is not dependent on the value of the feature in question. The value of any feature that will be significantly affected is used to determine the geographical scale at which the impact is significant. For example, an ecologically significant impact on a feature of value at County Level is regarded as a significant impact at County Level. This in turn is used to determine the implications in terms of legislation, policy and / or development control.

7.64 As noted above, impacts are only assessed in detail for receptors of sufficient value that impacts upon them may be significant (in terms of legislation or policy).

7.65 Significant impacts remaining after mitigation (the residual impacts), together with an assessment of the likelihood of success in the mitigation, are the factors to be considered against legislation, policy and development control in determining the planning application.

Limitations of the Assessment

7.66 There are no significant overall limitations that are considered to compromise the validity of this chapter, although details of any qualifications or limitations that are specifically relevant to a particular floral or faunal survey, are provided in the relevant appendices (Appendix 5.1 to 5.4).

BASELINE CONDITIONS

Existing baseline

Statutory Designated Sites

7.67 A desk study formed part of the Ecological Appraisal (Appendix 7.1). This included a search using the Department for Environment, Food and Rural Affairs (DEFRA) database known as MAGIC. This was used to gather details on the statutory designated sites within 2 km of the site. Records of non-statutory sites and protected and notable habitats and species were also obtained from South East Wales Biodiversity Records Centre (SEWBReC).

7.68 The statutory sites within 2 km of the site are given in Table 7.1. These are listed in order of whether they are internationally designated or nationally designated, then by increasing distance from the site.

Table 7.1 Statutory designated sites for nature conservation within 2 km of the site

Name	Importance	Distance	Reason for designation
Severn Estuary (Wales) Special Protection Area (SPA)/ Ramsar/ Special Area of Conservation (SAC)	International	1.6 km SE	Internationally important site designated for a wide range of features: Estuary, Subtidal sandbanks, Intertidal Mud and Sand, Atlantic salt meadow/salt marshes, Reefs, Migratory fish (river & sea lamprey & twaite shad, salmon, eel, sea trout and Allis Shad), Assemblage of fish species (>100 species), Internationally important populations of migratory bird species, waterfowl and wintering bird species, Assemblage of nationally important populations of waterfowl, Hard substrate habitats (Rocky shores).
Severn Estuary SSSI (Wales)	National	1.6 km SE	The Severn Estuary SSSI covers approximately 15,000 ha of foreshore and inter-tidal habitat. It is designated for its habitats and species assemblages as listed above.
Cwm Cydfin, Leckwith SSSI	National	0.97 km W	A mixed deciduous woodland overlying Triassic Marls and Rhaetic rocks. The main trees are pedunculate oak, ash, elm, maple with hazel, dogwood and spindle. The ground flora is varied and especially rich alongside the streams.
Hamadryad Park and Cardiff Bay Wetlands LNR	County	150 m E	Site includes a playing fields and open grassland crossed by metalled pathways. However the site also includes a former salt marsh and a complex of grassland and shallow lagoons (designated as a SINC) which provides feeding and nesting opportunities for many birds (e.g. heron, bearded tit, Cetti's warbler, little egret), important populations of wintering birds (eg snipe, teal), pipistrelle and noctule bats, common frogs, common toads and otters. It is also an important spawning area for coarse fish in Cardiff Bay.

The desk study (Appendix 7.1) returned 24 non-statutory designated sites for nature conservation with 2 km of the site. These were all SINCs and are given in Table 7.2.

Table 7.2 Non-Statutory Designated Sites

Name	Importance	Distance	Reason for designation
Cardiff Bay Wetlands SINC	County	510 m E	A former salt marsh and a complex of grassland and shallow lagoons which provides feeding and nesting opportunities for many birds (e.g. heron, bearded tit, Cetti's warbler, little egret), important populations of wintering birds (eg snipe, teal), pipistrelle and noctule bats, common frogs, common toads and otters. It is also an important spawning area for coarse fish in Cardiff Bay.
River Taff SINC	County	0 km, adjacent on east side	One of the three main rivers within Cardiff important for migratory fish, otters, wildfowl and bankside vegetation and acts as a major wildlife corridor. Bats, otters, Atlantic salmon, trout, grass snake and kingfisher are amongst the diverse species recorded.
Grangemoor Park SINC	County	0.1 km W	A former landfill site now covered by rough unimproved grassland, scrub, plantations, two ponds and damp ditches. It supports a wide range of plants and animals including common frog, smooth newt, palmate newt, narrow-leaved everlasting pea, bee orchid, skylark and slow-worm.
River Ely SINC	County	0.4 km W	One of the three main rivers within Cardiff, important for migratory fish, otters, wildfowl and bankside vegetation (including monk's-hood) and acts as a major wildlife corridor.
Cogan Spur SINC	County	1 km SW	Lesser Horseshoe Bat roost in the hollow structure of the A4055 bridge across the Ely
SINC no. 188 Factory Wood SINC	County	1.1 km W	Broad-leaved deciduous woodland
Leckwith pond and marsh SINC	County	1.1 km W	A former saline pond dug as a storm water facility now dominated by reeds.
SINC no. 189 Reservoir Wood SINC	County	1.4 km SW	Broad-leaved deciduous woodland
Canton Common Ditch SINC	County	1.9 km NW	A small remnant of Canton Common marshlands that supports a varied emergent and bankside vegetation including flowering rush and purple loosestrife together with associated fauna including common frog, smooth newt and water-shrew

7.69 The qualifying features of the designated sites are summarised in Table 7.3 below:

7.70

7.71 Table 7.3: Summary of Notified features of each designation

Feature	SAC	SPA	Ramsar Site	SSSI
Estuary	Yes	Supporting habitat to designated bird interests	Yes	(Yes)
Subtidal sandbanks	Yes	No – outside boundary of SPA	No – outside boundary of Ramsar site	No – outside boundary of SSSI
Intertidal mud and sand	Yes	Supporting habitat to designated bird interests	Component of Ramsar "estuaries" feature and supporting habitat to designated bird interests	Yes
Atlantic salt meadow / salt marshes	Yes	Supporting habitat to designated bird interests	Component of Ramsar "estuaries" feature and supporting habitat to designated bird interests	Yes
Reefs	Yes	No	Intertidal Sabellaria contiguous with subtidal reefs is a component of the hard substrates subfeature of the Ramsar "estuaries" feature.	No – outside the boundary of SSSI.
Migratory Fish (River and Sea Lamprey and twaite shad)	Yes	No	Yes	(Yes)
Migratory Fish (salmon, eel, sea trout and Allis Shad)	Part of notable species sub-feature of estuary feature	No	Yes	(Yes)
Assemblage of fish species (>100 species)	Notable species sub-feature of estuary feature	No	Notable species sub-feature of estuary feature	(Yes)

Feature	SAC	SPA	Ramsar Site	SSSI
Internationally important populations of migratory bird species	Notable species sub-feature of estuary feature	Yes	Yes - Internationally important populations of waterfowl	Yes
Internationally important populations of wintering bird species	Notable species sub feature of estuary feature	Yes	Yes – internationally important populations of waterfowl	Yes
Assemblage of nationally important populations of waterfowl	Notable species sub-feature of estuary feature	Yes	Yes	Yes
Hard substrate habitats (Rocky Shores)	Notable species sub-feature of estuary feature	Supporting habitat to designated bird interests	Component of Ramsar "estuaries" feature and supporting habitat to designated bird interests	Yes
Freshwater grazing marsh / neutral grassland	No	Supporting habitat to designated bird interests within SPA but outside European Marine Site.		Yes (currently England only)

Table 7.4 summarises the qualifying interest features and supporting habitats of the Severn Estuary SPA.

7.72 Table 7.4: Qualifying features of Severn Estuary SPA

Species	Notes	Supporting Habitats
Internationally important populations of regularly occurring Annex 1 species [under Article 4.1 of the EU birds directive]		
Bewick's swan	Over wintering	**Intertidal mudflats and sandflats, saltmarsh.**
Internationally important populations of regularly occurring migratory bird species [under Article 4.2 of the EU Birds Directive]		
European white-fronted goose	Over wintering	**Intertidal mudflats and sandflats, saltmarsh. Hard substrate habitats.**
Dunlin	Over wintering	
Redshank	Over wintering	
Shellduck	Over Wintering	
Gadwall	Over-wintering	

Species	Notes	Supporting Habitats
Internationally important assemblage of waterfowl (wildfowl and waders) [Under Article 4.2 of the EU birds directive]		
Bewick's swan	The wintering waterfowl assemblage includes all regularly occurring waterfowl. Species that qualify as a listed component of the assemblage include all the internationally important regularly occurring migratory species as well as the Annex I wintering species. The list also includes species present in nationally important numbers or species whose populations exceed 2,000 individuals.	**Intertidal mudflats and sandflats. Saltmarsh. Hard substrate habitats.**
European white fronted goose		
Dunlin		
Redshank		
Shelduck		
Gadwall		
Wigeon		
Teal		
Pintail		
Pochard		
Tufted duck		
Ringed plover		
Grey plover		
Curlew		
Whimbrel		
Spotted redshank		

Habitats

7.73 Habitats recorded during the Ecological Appraisal (described in Appendix 7.1) within or immediately adjacent to the boundary of the Site were:

- Broad-leaved semi-natural woodland;
- Broad-leaf plantation woodland;
- Dense scrub;
- Parkland scattered trees;
- Unimproved neutral grassland;
- Amenity grassland;
- Swamp;
- Running water;
- Hardstanding: and
- Buildings & gardens.

Broad-leaved Semi-natural Woodland

7.74 Ferry Road Park has a small area of secondary semi-natural broad-leaved woodland mainly dominated by goat willow (although within the wood a few trees such as wild cherry are clearly

planted in lines) with amenity grassland as a ground layer and hence the habitat does not qualify as Cardiff LBAP albeit the woodland is considered to be of **Local** importance.

Broad-leaved plantation

7.75 The Marl has several plantations with poplars *Populus* sp. and other planted trees (birch *Betula* sp., black pine *Pinus nigra* and these areas are considered to be of **Local** importance.

Dense Scrub

7.76 There are areas of scrub with bramble *Rubus fruticosus* and young trees along the River Taff edge, the western side of Ferry Road Park where it grades into the woodland and in several blocks in the fenced areas of The Marl. These habitats are considered to be of **Local** importance.

Parkland scattered trees

7.77 The Marl has a range of planted trees including lime hybrid *Tilia x vulgaris*, poplars, pears and cherries. There are also many planted trees along the urban streets e.g. South Clive Street. These habitats are considered to be of **Local** importance.

Running Water

7.78 The River Taff marks the eastern edge of the site and is of **County** importance.

Other Habitats

7.79 All other habitats recorded on site were not botanically diverse and were common and widespread in the local area. The unimproved neutral grassland did not qualify as Unimproved neutral grasslands UK BAP or Cardiff LBAP habitat as two small examples present on site result either from lack of management of amenity grass and are very species-poor, or were sown and both areas of this habitat were not of botanical value. The swamp habitat were located in tiny areas along the River Taff dominated by reed. Reed beds are a UK BAP and Cardiff LBAP habitat but these stands are too small to be of value to characteristic specialist reedbed species and as such do not qualify as UKBAP or LBAP habitats. All other habitats are therefore considered to have **Negligible** importance.

Species

GCN

7.80 The desk study information from SEWBReC returned no records of GCN within 2 km of the site.

7.81 During the Tetra Tech survey no ponds were recorded within the site however OS mapping recorded one pond is located approximately 300m to the west of the site in Grangemoor Park

which is isolated from the site by Cardiff Bay Retail Park, residential housing and Ferry Road and as such no access was required to assess the pond for it's suitability to support breeding GCN.

7.82 No breeding habitat on site for GCN.

7.83 Due to the lack of records from the local records centre, and the barriers to dispersal between the pond in Grangemoor Park and the site, it is considered that GCN are absent from the local area and are considered to be of **negligible** importance.

Reptiles

7.84 The desk study conducted through SEWBReC returned records of one species of reptiles within 2 km of the site, which was for slow worm (closest record 0.6 km north of the site which translocated 450 slow worms from a site at Clive Lane, Cardiff) and grass snake are mentioned in the SINC citation of the River Taff which lies directly to the east of the site.

7.85 Due to the discrete and isolated areas of suitable habitat on site, namely the unimproved neutral grassland for reptiles to bask and forage; the broadleaf semi-natural woodland and scrub offering suitable hibernation habitat and the River Taff directly to the east of the site offering commuting and foraging habitat for grass snakes, whilst presence is unknown (surveys are not required as a displacement approach will be adopted), a worse case scenario has been assumed and at most, the site is considered to be of **Local** importance to reptiles.

Bats

7.86 The desk study conducted through SEWBReC returned records of at least six species of bat within 2 km of the site. These were brown long-eared bat *Plecotus auratus*, common pipistrelle *Pipistrellus pipistrellus,* Nathusius's pipistrelle *Pipistrellus nathusii,* soprano pipistrelle *Pipistrellus pygmaeus* lesser horseshoe *Rhinolophus hipposideros and Noctule Nyctalus noctule.*

7.87 The data search also identified 18 bat roost(s) (for common, soprano, Nathusius' pipistrelle, long-eared bat roosts and lesser horseshoe) and three possible roosts for common and soprano pipistrelle within 2 km of the site. Three of these confirmed roosts have since been demolished under licence, long-eared bat and common pipistrelle bat roosts. The closest roosts to the site is directly to the north east of the site which was for a common pipistrelle found hanging in a room of a building in 2011 and subsequently release; and approximately 0.1 km south of the site for three common pipistrelle recorded in a block of flats in 2012 and 2013 directly to the south of South Clive Road.

7.88 The site was separated into areas characteristic of each building type. The location of the buildings within the site are shown in Figure 2, Appendix 7.2. These were as follows:

- South Clive Street Houses 50 – 64 – **High bat roosting suitability**;
- South Clive Street Houses 117 – 127 – **Moderate bat roosting suitability;**
- Channel View Road – houses (to the east of Channel View Road) -**Low bat roosting suitability;**
- Channel View Road Flats (in SE corner of site) - **Low bat roosting suitability: and**
- Channel View Multi-storey Flats - **Negligible bat roosting suitability**

7.89 No internal assessment was carried out of the buildings due to safety concerns with the current Covid-19 pandemic.

7.90 To enable the survey of the large number of buildings on Channel View Road (classified as Low suitability) these buildings were split into three areas; Block 1, Block 2 and Block 3 as shown in Figure 3, Appendix 7.2. Five surveyors were positioned around Block 1 and six surveyors were positioned around Block 2 and 3 with one emergence survey completed for each block in line with Low suitability methodology (Collins 2016). The survey included an element of emergence and backtracking survey with experienced surveyors making visual observations of bats commuting from their roosts and attempting to track back to the roost based on these observations. The methodology was originally discussed with Matthew Harris Cardiff Council Ecologist on 1st June 2020 with amendments due to the later commission date agreed on 20th August 2020.

7.91 A series of emergence/ re-entry surveys were carried out from 24th August to 22nd September 2020 with reference to the BCT Guidelines (Collins, 2016) and based on the building suitability.

7.92 The dusk emergence surveys commenced 15 minutes before sunset and continued for at least 1.5 hours after sunset. The pre-dawn re-entry survey commenced 1.5 hours before sunrise and continued until 15 minutes after sunrise.

7.93 A total of three roosts were identified on site during the emergence / re-entry surveys:

Maternity roost of soprano pipistrelle bats 54 South Clive Street (Demolition Phase F proposed late 2031);

Maternity roost of soprano pipistrelle bats 60 South Clive Street (Demolition Phase F proposed late 2031);

Summer (non-breeding) day roost of common pipistrelle at 121 South Clive Street (Demolition Phase B proposed late 2023).

7.94 In general, the trees are in good condition with few opportunities for roosting, though a few split limbs and knot holes were noted on poplars in The Marl which could offer sites for small temporary roosts, these trees were assessed as having Low suitability to roosting bats.

7.95 The habitats on site provide a High suitability foraging and commuting resource (Collins 2016) with linear features (including the River Taff), deciduous woodland present within the site and good connectivity to similar off site habitats. As the habitats that provide suitable foraging and commuting habitat are being retained (namely The Marl & Ferry Road Woodland) with small areas of habitat loss, no further surveys were complete. Given the widespread coverage of emergence/return surveys a good understanding of the species of bat using the site are known which include common pipistrelle, soprano pipistelle and noctule.

7.96 Based on the criteria within Valuing Bats in Ecological Impact Assessment (Wray *et al.*, 2010), foraging and commuting bats are considered to be of **Local** importance. The roosting bats in buildings 54 and 60 are considered to be of **County** importance and within building 121 of **Local** importance.

Badger

7.97 The desk study conducted through SEWBReC returned one record of badger within 2 km of the site. The site supports dense scrub and Ferry Park Road woodland offering potentially suitably habitat for sett development as well as foraging and commuting. In addition, the amenity grassland in The Marl no obvious signs of badger such as setts, latrines, snuffle holes or mammal paths were noted. Badgers are therefore considered to be of **Negligible** importance.

Hazel Dormice

7.98 The SEWBReC data search returned no records of hazel dormice within 2km of the site.

7.99 Ferry Road Park woodland to the west of the site supports vegetation with a suitable food source to hazel dormice including both seed and berry producing species, however the woodland is only 1.3ha in area and isolated with no habitat connectivity to offsite suitable habitat and as such will not be able to support a viable population of dormice.

7.100 Due to the lack of records from the local records centre and isolated nature of the habitat, it is considered that dormice are absent from the local area. Hazel dormice are therefore considered to be of **Negligible** importance.

Otter

7.101 The desk study returned records of otter *Lutra lutra* within 2 km of the site (associated with Cardiff Bay, downstream of the River Taff approx. 1km south and the River Ely). Otter are listed as a feature of the Cardiff Bay Wetlands and Hamadryad Park SINC.

7.102 No watercourse, ditches or waterbodies suitable to support otter were present on site.

7.103 The western bank of the River Taff adjacent to the site was inspected for signs of otters during the field survey. No evidence of otters was found, though following the floods of February 2020 there was a lot of plant debris and rubbish washed up along the bank about 1 m above the current water levels, which covered any potential bare ground where otter footprints could have been seen. There was only one obvious small rock which could have been used for spraint marking however no evidence was noted.

7.104 Otter are likely to use the River Taff to commute, and SEWBReC have records of otters from Cardiff Bay which the River Taff flows into. However, the Marl recreational space and Taff Trail within the site, which is heavily used by residents, lies directly adjacent to the River Taff and as such is considered that the River alongside the site is unsuitable for otters to lay up/holt creation. In addition, the bankside and small band of scrub does not support sufficient cover.

7.105 It is considered that the site itself is of **Negligible** importance to otter. However, the River Taff immediately east of the Site is considered to be of **Local** importance to foraging and commuting otter.

Water Vole

7.106 The SEWBReC data search provided no records for water vole *Arvicola amphibius* within 2 km of the site.

7.107 There were no watercourses, ditches or waterbodies suitable water vole were present on site. The River Taff is considered to be too deep and wide flowing at this location to support water vole and the banks largely comprise made ground unsuitable for burrow creation.

7.108 Therefore, the site is considered to be of **Negligible** importance to water vole.

Birds

7.109 The SEWBReC data search returned 1398 records for birds within 2km over the last 10 years that covered 121 species of which 97 are of at least some conservation concern. Of these SEWBReC have provided records within the site using The Marl including song thrush, mistle thrush, fieldfare, redwing and Iceland Gull.

7.110 Of the bird species recorded, 52 records (from the past 10 years) are from the River Taff (varying from adjacent to the site or 2km north). The closest records to the site are for Cetti's warbler (WCA Schedule 1), little gull, black headed gull, cormorant, mallard, mute swan and tufted duck. Many of the remaining records are wetland species associated with Cardiff Bay, LNR & SINC and the Severn Estuary SPA/Ramsar. Kingfisher (a Schedule 1 species) as listed as a reason for designation for the River Taff.

7.111 The habitats on site (e.g. scattered trees, woodland, scrub and buildings) provide suitable nesting habitat for common bird species, however the majority of the site (amenity and semi-improved grassland) is unsuitable for nesting but offer resource for birds to forage. The river back immediately adjacent to the site is considered to be unsuitable for kingfisher.

7.112 A range of typical urban and opportunist birds were noted during the survey, mainly using The Marl; lesser black-backed gull, starling *Sturnus vulgaris*, long-tailed tit, great tit, chaffinch, wren, robin, carrion crow and one pair of nesting magpies. One dunnock was seen in Ferry Road Park. The habitats within the site are likely to support a range of nesting birds within the scrub and woodland vegetation and The Marl & Ferry Park Woodland is likely to be used by foraging birds, as such the site is considered to be of **Local** importance to breeding birds.

7.113 The Severn Estuary SPA/Ramsar (1.6km SE) and Cardiff Bay LNR/SINC both support populations of wintering birds. The Marl provides limited suitable habitat on site for wintering birds, but due to the high recreational use, the Taff trail (pedestrian and cycle trail) and the optimal habitat in the wider area, the site is considered to be of **Negligible** importance for notable wintering bird species associated with these designated sites.

7.114 The Cardiff Bay Barrage is 1.1 km long and extends from Cardiff Docks in the north to Penarth in the south. The project commenced in 1994 and was completed in 1999, and features locks and bridges, sluice gates and a fish pass (Cardiff Harbour Authority, 2021).

7.115 Waterbirds within the bay were monitored over 14 years to determine the impacts of the barrage (Burton *et al*. 2003). The aim of the monitoring was to confirm:

If the numbers and distribution of birds within the Bay were affected by construction work associated with the barrage;

Were birds displaced by the inundation of the bay following barrage closure and how did the waterbird community change;

Were birds displaced from the Bay able to re-locate to other neighbouring sites; and,

Was there any impact on the condition and survival of birds that were forced to re-locate.

7.116 Initial work indicated that the overall numbers of wintering waterbirds supported in the Bay had declined prior to barrage-closure, possibly due to changes in habitat quality. The distribution and behaviour of birds in the Bay were also affected by disturbance during the building works (Burton *et al*. 2003).

7.117 Following barrage-closure, the numbers of waterbirds using Cardiff Bay in the four winters were greatly reduced. A very few individuals of five key species – shelduck, oystercatcher, dunlin, curlew and redshank – continued to use the bay, though primarily as a high tide roost site. A total of 31 species of waterbird and an annual mean of 22.0 were recorded in the Bay during the four years following barrage-closure, in comparison to a total of 50 and an annual mean of over the 10 previous years. The decline in waterbird species' diversity in Cardiff Bay since barrage-closure has been due, primarily, to a loss of waders. However, at the same time, there has been a slight increase in the numbers of 'other' waterbird species such as grebes and rails. Among waders and wildfowl, only mute swan and two diving duck species – pochard and tufted duck – increased in

number following barrage-closure. There has thus been a change from a diverse waterbird community dominated by large numbers of estuarine specialists, to a less diverse community comprising relatively small numbers of freshwater species (Burton *et al*. 2003).

7.118 Although the size and diversity of the waterbird community using Cardiff Bay has been reduced, the Bay does now provide habitat for a range of freshwater species. Developing aquatic vegetation within the Cardiff Bay Wetlands Reserve, an area of 8 ha established on the Bay's northern shore, and elsewhere within the Bay attracts grebes, coot, teal and mallard throughout the year and also now provides opportunities for nesting birds in spring. Seven species – great crested grebe, little grebe, mute swan, shelduck, mallard, tufted duck and coot – have bred in small numbers in the Bay since barrage-closure (Burton *et al*. 2003).

Shelduck

7.119 The majority of the shelduck that formerly used Cardiff Bay have been displaced by its inundation. There was no evidence that shelduck displaced from Cardiff Bay were able to settle on the adjacent coast at Rhymney or Orchard Ledges, or elsewhere on the north-west Severn. Although there was a small increase in Shelduck numbers at Orchard Ledges in the winter following closure, this was not sustained. Numbers also subsequently declined at Rhymney. It is thus likely that the shelduck that were displaced from the Bay were either forced to disperse to more distant areas or that increased competition for food led to increased mortality in the population (Burton *et al*. 2003).

Oystercatcher

7.120 Oystercatcher have been almost entirely lost to Cardiff Bay as a result of its inundation and as with Shelduck, there was no evidence that oystercatcher displaced from the Bay were able to settle at either Rhymney or Orchard Ledges, or elsewhere on the north-west Severn. An initial increase in numbers at Rhymney in the winter following barrage-closure would have accounted for the birds displaced from the Bay, but was not sustained (Burton *et al*. 2003).

Dunlin

7.121 Only small numbers of dunlin were recorded in the Bay following its inundation, only visiting the site to roost over high tide. Declines were recorded on all the study sites prior to closure and these have continued since. As these declines were likely to have been the result of external factors, there might have been spare capacity for the Dunlin displaced from the Bay. However, because of the continued decline in numbers of Dunlin on the Severn Estuary as a whole, it has not been possible to determine whether birds displaced from the Bay have been able to settle elsewhere (Burton *et al*. 2003).

Curlew

7.122 Curlew have only used Cardiff Bay for roosting since its inundation and in decreasing numbers. Prior to barrage-closure, Curlew numbers had been stable within the Bay, and at the neighbouring Orchard Ledges, though had shown a slight decline at Rhymney. Curlew numbers increased at Orchard Ledges in the two winters following closure. This increase would have only accounted for some of the displaced birds, but has not been sustained (Burton *et al*. 2003).

Redshank

7.123 Only small numbers of redshank were recorded in Cardiff Bay following its inundation, primarily using the site as a high tide roost. Prior to barrage-closure, numbers of Redshank had decreased at both Cardiff Bay and Rhymney. Over the four subsequent winters, however, the numbers recorded

at Rhymney increased significantly. The increase observed could account for the loss of birds from the Bay (Burton *et al*. 2003).

7.124 Habitats along the River Taff are suitable for wintering and passage birds and may support qualifying species of the Severn Estuary SPA and Ramsar and Schedule 1 species (kingfisher and Cetti's warbler). Due to the overall reduction in the waterbird assemblage within Cardiff Bay, it is considered unlikely that the River Taff would support a significant assemblage of birds associated with the European designated sites.

7.125 The river is considered to be of county importance; breeding birds are of **Local** importance and wintering and migratory birds (which are qualifying features of European designated sites) are of **International** importance.

Fish

7.126 The SEWBReC data search provided 13 records of fish including sea lamprey Petromyzon marinus, eel *Anguilla anguilla* and smelt *Osmerus eperlanus* within 2 km of the site (all records were from Cardiff Bay except one record of sea lamprey from the River Ely).

7.127 Migratory fish (river & sea lamprey & twaite shad, salmon, eel, sea trout and Allis Shad) are qualifying species for the Severn Estuary SAC and Ramsar and are of **International** importance.

7.128 The citation for the River Taff SINC which is directly to the east of the site states that it is one of the three main rivers within Cardiff important for migratory fish with reference to salmon and trout.

7.129 No waterbodies are present on site, and it is assumed given the SINC citation for the River Taff that migratory fish use the stretch of the river directly to the east of the site.

7.130 The site itself is considered to be of **Negligible** importance for fish species. The adjacent River Taff supports migratory fish which are receptors of **International** importance.

Invertebrates

7.131 SEWBReC returned 411 records of terrestrial invertebrates and 11 records of freshwater and marine invertebrates. An abundance of records are from Cardiff Bay Wetlands Reserve, Grangemoor Park, Leckwith Moors and River Ely with occasional records from gardens.

7.132 The shrill carder and brown-banded bumblebees, cinnabar, grayling, small heath, small blue and wall are Section 7 species (and consequently also Cardiff BAP species). These invertebrates are mainly moths, butterflies and bees. Whilst it is possible to some extent to use garden vegetation for feeding or breeding it is considered that the surrounding area such as Grangemoor Park is of greater value and notable and protected species are more than likely to be using these offsite habitats. The site itself is suitable for a range of common invertebrates and it not likely to support any significant populations of invertebrate species of conservation value. Overall, the site is considered to be of **Negligible** importance for invertebrates.

Hedgehogs

7.133 The SEWBReC data search provided 28 records for hedgehog including one from South Clive Street within the site from 2008.

7.134 The habitats onsite are considered optimal (the gardens and The Marl) for hedgehogs and given the record of hedgehog along South Clive Street, it is assumed that hedgehogs are present in the area. As such the site itself is considered to be of **Local** importance to hedgehog.

Plants

7.135 The SEWBReC data search provided one notable plant record for cornflower *Centaurea cyanus* from Grangemoor Park within 2 km of the site; this was noted as likely to have been planted as part of a wild flower seed mix and is not of conservation significance.

7.136 No statutorily protected plants, nationally rare or nationally scarce species were recorded

7.137 The site is considered to be of **Negligible** importance to plants.

Invasive Plant Species

7.138 Japanese knotweed was present in 2 places along the River Taff banks in small quantities. One small clump of Montbretia was also noted (refer to Figure 2 within Appendix 1.1 for locations). Both these species are listed on W&CA Schedule 9 and should not be allowed to spread.

Future baseline

7.139 In the absence of the Proposed Development going ahead, it is anticipated that the Site will remain under its current management (a combination of private residential use and recreational open space). With the continued implementation of current management practices, it is not expected that the ecological character of the Site would change significantly over the next ten years. Therefore, the future baseline is not anticipated to differ significantly from the current baseline.

Mitigation within the Submitted Design

7.140 The following green infrastructure elements have been incorporated into the masterplan for the site:

The Marl will be retained as a high-quality City Park;

Street trees will be planted along the Main Avenue;

Communal Gardens have been designed to provide outdoor amenity space for residents.

Drainage features will be created within the Marl to add to amenity and biodiversity value. These will include planting, specimen shrubs and information boards.

Rain gardens within the development will include soft landscaping and informal play opportunities; and,

Biophilic features such as green living walls have been incorporated into the design to integrate the Marl into the development, both horizontally and vertically and increasing the biodiversity at the site.

POTENTIAL IMPACTS

7.141 As stated above, impacts are only assessed in detail for features both of sufficient value that impacts upon them may be significant and also potentially vulnerable to significant impacts arising from the development. Consequently, impacts have only been assessed in detail for those receptors that are of at least Local value or are subject to legal protection.

7.142 This detailed assessment will therefore concentrate on the likely significant effects in respect of the following receptors only:

- European designated sites (SPA, SAC, Ramsar) (International Importance)
- Statutory designated sites (SSSI / LNR) - (National importance);
- Non-statutory designated sites (SINC) (County importance);
- Semi-natural broadleaved woodland (Local importance);
- Broad-leaved Semi-natural Woodland (Local importance);
- Broad-leaved plantation (Local importance);
- Dense Scrub (Local importance);
- Parkland scattered trees (Local importance);
- Reptiles (Local importance)
- Bats – roosting (County importance);
- Bats – foraging / commuting (Local importance);
- Breeding Birds (Local importance);
- Wintering and Passage birds (International importance);
- Otter (Local importance)
- Fish (International importance)
- Hedgehog (Local importance)
- Invasive Plants – Legal offence

Construction Phase Effects

7.143 This section predicts and characterises the likely construction phase impacts on the sensitive ecological features identified above in light of the embedded mitigation above, but in the absence of any other additional mitigation measures.

Statutory Designated Sites

The River Severn SPA, SAC, Ramsar and SSSI

Habitat Loss

7.144 The application site is located 1.6 km to the north west of the Statutory designated sites. The development will not result in the direct loss of any of the qualifying habitats of the SAC / SPA / Ramsar or SSSI. There will be **no significant effects** from direct habitat loss and the confidence level is **certain / near certain**.

Changes in Water Quality

7.145 In the absence of mitigation, a pollution event during construction could reach the River Taff, which forms a hydrological link between the site and the SAC, SPA, Ramsar and SSSI. Pollution events could include physical pollution (i.e. silt / sediment) or chemical pollution (oil, fuel or chemicals). This could result in the degradation of habitats which support designated bird interests.

7.146 The SAC and Ramsar support over 100 species of fish, including migratory fish species. Physical pollution (sedimentation) could smother habitats used by fish, resulting in degradation. However, it is noted that the volume of water within the River Taff and Severn Estuary would likely disperse sediment (if physical pollution was to occur).

7.147 Chemical pollution could result in direct harm to fish resulting in mortality, damage to gills and epithelia. Lower levels of discharge could result in an accumulation of the pollutants in aquatic organisms.

7.148 As noted above, a physical / chemical pollution event could result in the degradation of habitats used by breeding and wintering birds and waterfowl. Pollution could result in mortality of birds, should they consume a contaminated food source, harm to feathers, or loss of functionally linked land.

7.149 Overall, it is considered that if a pollution event were to occur, this could result in a **temporary** or **permanent significant adverse effect** at an **International level**. The confidence in this assessment is **probable,** as this would be Dependent upon the scale of the pollution event and any dilution effects.

Noise and vibration

7.150 The application site is located 1.6 km to the north west of the Severn Estuary SAC. Fish (including migratory fish) are a qualifying feature of the SAC and use the River Taff which is immediately adjacent to the site.

7.151 Noise and vibration during construction could disturb or harm fish species. Sound is used for communication between fishes, mating behaviour, the detection of prey and predators, orientation and migration and habitat selection. Potential impacts can range from auditory injury and deafness, temporary hearing damage, behavioural disturbance and death. Furthermore, anything that interferes with the ability of a fish to detect and respond to biologically relevant sounds can decrease survival and fitness of individuals and populations (Popper & Hawkins, 2019).

7.152 The proposed development will require piling during the construction phase which could result in the disturbance of fish (including migratory fish). Whilst fish species are mobile, the works could result in a barrier effect to movement through from the river into the marine environment. Other general noise during construction could also result in disturbance of fish.

7.153 Atlantic salmon are a qualifying feature of the SAC and Ramsar. Upstream spawning migrations by adult Atlantic salmon take place throughout much of the year. The adult population may be split into two cohorts, with the first consisting of individuals spending just one year at sea (grilse) and the second consisting of individuals that spend more than one year at sea (multi-sea winter (MSW) salmon). Upstream migration between the two cohorts varies with MSW salmon migrating earlier between February and July whereas grilse migrate later between July and September (Hendry and Crag-Hine, 2003; Hawkins and Smith, 1986). The adult migration has been reported by some studies to be largely nocturnal (Solomon *et al*., 1999; Smith and Smith 1997). There is also evidence that during times of higher flows some migration occurs up river during the daytime (Smith *et al*., 1996).

Juvenile salmon, known as smolts, migrate out to sea between April and June (Hendry and Crag-Hine, 2003). Smolts begin to shoal up and will initially migrate at night following the tidal currents, however once water temperatures reach 12°C smolts will begin to migrate during the day as well as night (Potter and Dare, 2003).

7.154 River and Sea Lamprey are qualifying features of the SAC and Ramsar. River lamprey live as their larval stage (ammocoetes) in silty sediment in freshwater whilst they grow to maturity before migrating to live in the estuarine environment as macrophthalmia, before moving back upstream to spawn as adults a few years later. They migrate upstream in winter (and sometimes spring) mainly between October and December. River lamprey are most vulnerable to noise and vibration when they are in the estuarine environment as macrophthalmia.

7.155 Sea lamprey spawn upstream and move out into the marine environment to mature. Migration upstream is generally at night from April through to May, with spawning in late May or June. Downstream migration occurs between July and September. During the daytime the adults rest under rocks and overhanging banks of the river.

7.156 European eels start as eggs in the Sargasso Sea near Bermuda and spend 18 months floating on ocean currents towards the coasts of Europe and North Africa. They enter rivers and lakes and spend anything from 5 to 20 years feeding and growing into adult eels. They then return to sea and swim 3000 miles for over a year back to spawn in the Sargasso Sea. Adult European eels begin their spawning migration from European rivers and coasts during the autumn of each year (predominantly October to December) (Righton *et al*, 2016).

7.157 Sea trout spawn between November and February. The female digs a nest (redd) in gravel shallows and releases eggs which are fertilised by one or more males. Eggs hatch into alevins which stay in the gravel living off the yolk sack. They then emerge as fry and grown into parr which live in rivers finding cover under stones, weed and training bankside plants. They require shallow water that is not too fast flowing. After 1 – 3 years in the river, in April / May the young sea trout change so that they can survive in salt water – they migrate to sea, often at night and in shoals. As adults, the trout feed in the sea or estuary, moving to freshwater (usually their natal river) April to September. Many return to the sea after spawning, some returning to spawn again and again (Wild Trout Trust, 2021).

7.158 Allis Shad and Twaite Shad are anadromous fish meaning they can live in both salt and freshwater environments. Mature shad spend their life in the sea. In spring (usually in the month of May) shad migrate up rivers and into freshwater to breed. The young shad live in freshwater for some time before they begin to make their way back downstream and towards the sea. Usually, shad will have reached the sea by the time they are two years old and live in saltwater until they reach sexual maturity at any time between the age of three and seven. Allis shad can only reproduce once and die after breeding, whereas twaite shad can carry out the journey and reproduce multiple times (British Sea Fishing, 2021).

7.159 In the absence of mitigation, it is considered that noise from piling and general construction could have a **significant adverse effect** on fish (including migratory fish). As a piling risk assessment has not yet been undertaken and the extent of noise and vibration is unknown, the confidence level is **uncertain**.

7.160 Noise and vibration during construction also have the potential to disturb qualifying bird species which may use functionally linked land along the River Taff. Time that birds spend responding to disturbance is time not spent feeding and results in unnecessary energy expenditure, and thus risks increasing energetic output while reducing energetic input. This can adversely affect condition and ultimately survival of birds. Displacement from one feeding site to others also increases available pressure on resources.

7.161 The Tide Toolbox Waterbird Disturbance Tool can be used to consider the potential disturbance to waterbirds from a range of construction activities on or adjacent to wetland systems. Not all the qualifying species of the designated sites are referenced within the toolkit. The toolkit indicates that redshank, shelduck and grey plover have high disturbance potential. The Tide Toolkit indicates that redshank are very tolerant of moderate and even high levels of visual disturbance stimuli; however, birds that are closer than 100 m of works should be considered when commencing works. Conversely, redshank are particularly sensitive to noise stimuli, especially in conjunction with visual stimuli. Noise of up to 70 dB is acceptable at the bird, but with caution above 55dB (60dB in a highly disturbed area) (Tide Toolkit, 2021).

7.162 Shelduck are sensitive to moderate and high-level visual disturbance. Ducks that are closer than 500m to activity should be given consideration when commencing works and efforts should be made to avoid activities with a potential high level of disturbance at such time if possible.

7.163 Shelduck are quite sensitive to noise stimuli but due to their wary nature and liability to flush, the minimum approach distance can be expected to be no less than 150m. At this distance, works noise required to create a high level of disturbance at this range would be 115-120dB at source and thus not particularly prohibitive unless undertaking piling. This would increase to 125-130dB at 500m (Tide Toolbox, 2021).

7.164 Due to the urban location of the site, it is considered that birds would be habituated to some noise and disturbance from traffic and people, although the level of tolerance would depend upon the species.

7.165 As a piling risk assessment has not yet been undertaken, and based upon a precautionary approach, the noise and vibration could have a **significant adverse** effect upon qualifying bird species; this would be **temporary**, and the confidence level is **uncertain**.

Visual disturbance

7.166 It is assumed that the proposed development, including demolition, construction, and occupation of the site would occur within a timeframe of circa 10 years, which would include some overlapping of demolition/ construction/ and occupation phases (Refer to Chapter 4 – Townscape and Visual Impact Assessment). The proposed development will include the construction of new buildings, which will include a new 12 storey tower block (tower view) in the south-west of the site.

7.167 The movement of tall cranes and large vehicles associated with the demolition and construction of the over 55s living accommodation above and near to the river is likely to result in visual disturbance and additional sound, but would be in context to the sound associated with the A4232 Cardiff Bay Link Road.

7.168 There is no direct line of sight from the SPA/SAC/Ramsar to the site due to the A4232 bridge which crosses the River Taff to the south of the site combined with the Cardiff Bridge Barrage.

7.169 Although birds within the boundary of the SAC / SPA / Ramsar / SSSI are unlikely to be affected by visual disturbance, wintering and migratory birds and waterfowl may use functionally linked land associated with the River Taff. However, the monitoring report for the Cardiff Bay Barrage (Burton *et al*. 2003) states since the Cardiff Bay Barrage construction qualifying bird species numbers have reduced significantly.

7.170 Visual disturbance during construction could result in a **significant adverse effect** upon Qualifying bird species of the SAC / SPA / Ramsar and SSSI while using functionally linked land. This effect would be **temporary,** and the confidence level is **uncertain**.

Air Pollution

7.171 Guidance on the Assessment of the Impacts of Construction on Air Quality and the Determination of their Significance (IAQM, 2019) states that detailed assessment of the effects of construction related air pollution only require detailed assessment when sensitive receptors (such as the designated sites included within this assessment) are located within a maximum of 500 m from construction works and 200 m from the roads used by construction traffic. The proposed development site is located beyond 500 m from the designated sites. In addition, traffic modelling prepared for this project shows that roads assessed are not located within 200m of the designated site. Therefore, air quality impacts from construction works are unlikely to adversely affect the favourable conservation status of qualifying features of the designated site.

7.172 There will be **no significant effects** from air pollution during construction and the confidence is **certain / near certain**.

Cwm Cydfin, Leckwith SSSI

7.173 Cwm Cydfin, Leckwith SSSI lies 0.97 km to the west of the site and is designated for its woodland habitats. Changes in air quality is the only potential pathway of effect between the SSSI and the site. As the SSSI is over 500m away from the development, there will be **no significant effects** from changes in air quality during construction and the confidence is **certain / near certain**.

Cardiff Bay Wetland and Hamadryad Park LNR / SINC

7.174 Cardiff Bay Wetland and Hamadryad Park LNR/SINC lies 150 m east at its closest point. The LNR / SINC comprises a former salt marsh and a complex of grassland and shallow lagoons which provides feeding and nesting opportunities for breeding birds, wintering birds, bats and otter. It is also an important spawning area for coarse fish in Cardiff Bay.

7.175 Cardiff Bay Wetland and Hamadryad Park LNR/SINC is hydrologically linked to the site via the River Taff. As discussed for the River Severn SPA, SAC, Ramsar and SSSI, in the absence of mitigation, if a pollution event were to occur, it could result in the degradation of wetland habitats downstream of the site. This could have a **significant adverse effect** on the species which use the LNR (breeding and wintering birds, otter, fish) and the confidence level is **probable**.

7.176 Noise and vibration during construction has the potential to disturb the species which use LNR / SINC. Due to the urban location of the site and ambient noise levels from the A4232, it is considered that general construction noise is unlikely to have an adverse effect on species within the LNR / SINC. However, piling has the potential to cause more significant disturbance. Piling has the potential to disturb breeding birds (including Schedule 1 species – Cetti's warbler, kingfisher) if undertaken during the breeding bird season (March – September). Disturbance of Schedule 1 species while nesting would constitute a **legal offence**. Piling over the winter could disturb wintering or migratory birds which are qualifying species of the SPA / SAC / Ramsar and use the LNR/SINC as functionally linked land.

7.177 Piling also has the potential to disturb otter if resting places (holts/couches) are present within the zone of influence of the works. As otter resting places are protected under the W&CA this would constitute a **legal offence**.

7.178 In the absence of mitigation, piling could also have a **significant adverse effect** upon breeding fish and the confidence is **uncertain**.

7.179 There is no direct line of sight between the site and the LNR / SINC due to the A4232 bridge which crosses the River Taff to the south of the site combined with the Cardiff Bridge Barrage. Therefore, visual disturbance of species within the LNR / SINC will be limited. The demolition of the existing buildings and use of cranes during construction of the new high-rise building could result in some temporary visual disturbance.

7.180 In the absence of mitigation it is considered that there will be **no significant adverse effect** from visual disturbance, but the confidence is **uncertain.**

7.181 As the LNR/SINC is 0.14 km away from the development, there will be **no significant effects** from changes in air quality during construction and the confidence level is **certain / near certain**.

Non-statutory designated sites

River Taff SINC

7.182 The River Taff SINC lies immediately east of the Site and is hydrologically linked to the River Severn SPA, SAC, Ramsar and SSSI and the Cardiff Bay Wetland LNR / SINC. As discussed above, habitats and species associated with the river could be affected by changes in water quality, noise and vibration. Noise, vibration and visual disturbance during construction has the potential to disturb nesting bird if undertaken during the nesting bird season (March to September). The citation for the SINC lists kingfisher and Cetti's warbler which are Schedule 1 bird species for which it is an offence to intentionally or recklessly disturb at, on or near an 'active' nest. The banks of the river immediately adjacent to the site are considered unsuitable for kingfisher nests, however schedule 1 birds could be disturbed by activities such as piling which have a wider zone of influence.

7.183 It is noted that the bankside vegetation acts as a wildlife corridor, therefore any additional lighting used during the construction phase could disturb nocturnal wildlife such as otter or foraging and commuting bats.

7.184 Therefore, it is considered that in the absence of mitigation, the development could have a **significant adverse effect** upon the River Taff SINC, and the confidence level is **probable**.

Grangemoor Park SINC

7.185 Grangemoor Park SINC is located 0.1 km W of the site. In the absence of mitigation, pollution such as dust (during demolition and construction) could reach the park. Noise during construction could disturb species which use the park such as skylark. If this were to occur it could have a **significant adverse effect** at a **County** level.

River Ely SINC

7.186 The River Ely SINC lies 0.4km W and upstream of the Site. In the absence of mitigation, pollution such as dust (during demolition and construction), could reach the river Ely. If this were to occur, it could have a **significant adverse effect** at a **County Level**.

7.187 Although the River Ely is hydrologically liked to the site via the River Taff, the river Ely is upstream. Therefore, a pollution event affecting the river Taff would be unlikely to affect the River Ely and no significant effects are anticipated.

Other SINCS within 2 km

7.188 Given the separation distances between all other SINCs (Cogan Spur, SINC no. 188 Factory Wood, SINC no. 189 Reservoir Wood and Canton Common Ditch SINC) and the site, no significant effects from water pollution, noise, vibration, visual disturbance, lighting or air pollution are anticipated.

7.189 There will be **no significant affects** upon all other SINCs within 2 km of the site during construction and the confidence level is **certain / near certain**.

Habitats

Broad-leaved Semi-natural Woodland

7.190 The plans for the site indicate that less than 0.1 ha of broad-leaved woodland will be lost to facilitate the development. This loss will be **permanent**. A small area of broad-leaved semi-natural woodland within Ferry Park woodland will be lost to facilitate pedestrian access within the site to connect the internal pedestrian routes with the natural habitat surrounding the site. The loss of this woodland will not have **no significant effect** on the overall woodland integrity. However, in the absence of mitigation, direct damage to other trees could result from use of machinery, compaction of soil or damage to roots. If this were to occur, there would be a **significant adverse effect** at a **Local level**.

Broad-leaved plantation

7.191 The landscaping plans for the site indicate 1.26 ha of plantation woodland habitat will be lost within The Marl to facilitate the development. The loss of this woodland will be **permanent** and will result in a **significant adverse effect** at a **Local level**.

Dense scrub

7.192 There are areas of scrub with bramble and young trees along the River Taff edge, the western side of Ferry Road Park where it grades into the woodland and in several blocks in the fenced areas of The Marl.

7.193 The landscape plan for the site indicates that 0.15 ha of scrub habitat will be lost to create the proposed beach area and gardens. However, the scrub which is immediately adjacent to the River Taff will be retained.

7.194 Scrub habitats are common in the wider area and the loss off this small area of scrub habitat within the site will result in a **non-significant effect** on this habitat at a **Local** level.

Parkland scattered trees

7.195 The landscaping plans for the site indicate approximately 11 scattered trees will be lost and 30 scattered trees will be retained. In the absence of mitigation this loss will result in a **non-significant adverse effect** at a **local** level.

Protected and Notable Species

Reptiles

7.196 Whilst reptile surveys were not completed as the majority of suitable habitat will be retained, there are areas of suitable reptile habitat within the site which could be used by foraging, commuting and basking reptiles including areas of the Marl and residential gardens (associated with South Clive Street). Whilst the majority of The Marl have largely been retained, there is some construction proposed in these areas. The unmitigated loss of the habitats through the proposed development will be both permanent and temporary in nature. Permanent impacts would arise from habitat loss due to the construction of new residential dwellings within The Marl and where there is suitable reptile habitat within gardens which will be demolished; and temporary loss through potential encroachment of construction traffic within the buffers in the absence of mitigation.

7.197 Furthermore, the removal of vegetation and movement of vehicles associated with the construction could injure and/or kill reptiles present. This would be a **contravention of the W&CA**. Together, these impacts are likely to have a **significant adverse effect** at a Local level on the conservation status of reptiles present.

Bats

7.198 The Proposed Development will result in the loss of two bat roosts at 60 (soprano pipistrelle maternity roost) and 121 South Clive Street (common pipistrelle non-breeding day roost) and potential disturbance to a roost at 54 South Clive Street.

7.199 The demolition works of 60 and 121 South Clive Street would therefore result the destruction to these bat roosts and potential disturbance of the roost within 54 South Clive Street without appropriate mitigation. In the absence of mitigation this will result in damage and destruction to two bat roosts (maternity and non-breeding day roost) and potential disturbance to bats within their roost. There is also potential for bats to be injured or killed if using the roost during demolition. This would result in a **significant adverse effect** at the **County** level and a **breach of legislation**.

7.200 Temporary disturbance will occur due noise and vibration during construction which could disturb roosting bats which in the absence of an appropriate licence could constitute a **legal offence**.

7.201 The unmitigated loss of woodland, scattered trees and scrub within the site would have a **significant adverse effect** upon foraging and commuting bats which are a receptor of County importance.

7.202 There is potential for disturbance of bats from construction phase lighting. Artificial lighting can increase the risk of predation, deter bats from using roost locations, sever commuting routes and alter bats feeding behaviour. In the absence of mitigation, changes in lighting on site could have a **significant adverse effect** upon foraging and commuting bats at a **local level**.

Breeding Birds

7.203 Habitats within and adjacent to the site have suitability for breeding birds. Construction activities have the potential to result in damage, loss, or disturbance to a breeding birds' nest if undertaken

during the main nesting season (March to September inclusive) without any mitigation in place. Temporary disturbance will occur due to noise, vibration, construction traffic movement, construction activities such as felling of vegetation, demolition of buildings, piling and increased human presence within the Site. No disturbance of nesting birds will occur if works take place outside this period.

7.204 There is a large amount of alternative, suitable habitat, which could be accessed by nesting birds within the wider area. Therefore, it is considered that temporary habitat loss and disturbance would have a **non-significant effect** at the local population level.

7.205 However, in the absence of mitigation, damage to active nests is likely and would represent an **offence under the W&CA**. This is considered to be a **significant adverse effect** on this receptor of **Local** Importance.

Wintering and Migratory Birds

7.206 Habitats adjacent to the site and in the wider area have suitability for wintering birds and birds on migratory passage. These include qualifying species of the River Severn SPA and Ramsar. As discussed above, construction activities (noise, vibration, visual disturbance) have the potential to disturb wintering and passage bird species. A pollution event could result in degradation of habitats which support wintering and migratory birds and could result in contamination of food sources.

7.207 In the absence of mitigation, the proposed development could have a **significant adverse effect** upon wintering and passage bird species which are a receptor of **International** importance.

Otter

7.208 Whilst the site itself was considered unsuitable for otter, there is potential for disturbance of otter commuting along the River Taff, from construction phase lighting, noise and vibration. Noise and vibration from piling could result in disturbance of otter holts within the zone of influence. Disturbance of an otter holt would be a **breach of legislation** under the W&CA.

7.209 In the absence of mitigation, the proposed development would result in a **significant adverse effect** upon otter which is a receptor of **Local** importance.

Fish

7.210 As discussed above, the River Taff is cited as an important River to migratory fish, and as such there is potential for a pollution incident and noise and vibration (including piling) disturbance to impact these species.

7.211 In the absence of mitigation, the development will have a **significant adverse effect** upon fish, which are a receptor of **International** importance.

Hedgehog

7.212 Hedgehogs were considered to be an important feature as they are covered by Cardiff BAP and there is potential through damage or destruction of active rest/nest sites or direct injury/mortality to hedgehogs during construction. In the absence of mitigation, hedgehog could be killed or injured during site clearance or construction. This would result in a **significant adverse effect** upon a receptor of **Local** importance.

Invasive Plant Species

7.213 Invasive plant species (Japanese knotweed and Montbrettia) were recorded adjacent to the banks of the River Taff. In the absence of mitigation, it is possible for these species to be disturbed and spread to habitats outside the site. This would constitute a **legal offence**.

Operational Phase Effects

7.214 This section predicts and characterises the likely operational phase impacts on the sensitive ecological features identified above in the absence of appropriate mitigation.

Statutory Designated Sites

Changes in Water Quality

7.215 It is considered that with the inbuilt mitigation (SuDS features and rainwater gardens) there will be no uncontrolled discharge of water into the River Taff. Therefore, it is considered that there will be **no significant effects** from changes in water quality during operation and the confidence level is **certain / near certain**.

Visual disturbance / bird strike

7.216 The new buildings have been designed using brick as the primary material (refer to Chapter 4 – Townscape and Visual Impact Assessment) and will be in keeping with the surrounding architecture. Green living walls will highlight the main access cores of the buildings. These materials will be visible to birds, minimising the risk of bird strike. It is considered that there will be **no significant effects** from visual disturbance or bird strike during operation, and the confidence level is **certain / near certain.**

Changes in Recreation

7.217 The proposals will bring approximately 768 additional residents to the area and will thus increase the recreational use of the wider countryside.

7.218 Severn Estuary (Wales) SPA/Ramsar and SAC is 3.55km walk/cycle ride from the site and as such it is assumed that existing residents use this area throughout the year. However, the proposed scheme will result in an additional 768 residents (assuming 2.4 per dwelling) and the increase is considered insignificant given the heavily popularized location. As such the species associated with the SPA, SAC, SSSI and Ramsar are considered to be tolerant of disturbance given that the barrage crosses the water which is used for recreation and runs parallel to this designated Site. As such, it is considered that there will be **no adverse effect** on these Statutory designated sites from recreation and the confidence is **certain / near certain**.

Changes in Air Quality

7.219 The proposals will result in the increase in dwellings of 320 assuming 2.4 per household which will total approximately 768 additional residents. Traffic movements are likely to be the most significant source of air pollutants during operation. The air quality assessment found that there

would be **no significant effects** upon the River Severn SPA, SAC, Ramsar and SSSI (refer to Chapter 6 – Air Quality, for further information) and the confidence is certain / near certain.

7.220 Cwm Cydfin, Leckwith SSSI has no public access within the Statutory designated site and such there will be no adverse effect on this Statutory designated site from recreation. However, Chapter 6 for air quality scoped in Cwm Cydfin, Leckwith SSSI as it was located within 200 m of the road network. The maximum predicted increase of NOx at the Statutory designated site due to changes in traffic movement associated with the development, is 0.1 µg/m³, which is below the 0.4 µg/m³, as stated in the guidance (IAQM, 2019).

7.221 Chapter 6 assessed that the annual average exposure to NOx at Cwm Cydfin, Leckwith SSSI, due to changes in traffic movements associated with the development, is <0.01 micrograms/m3.

7.222 It is considered that there will be no significant adverse effects on this Statutory designated site as from the review of ordnance survey maps there is no public access into this Statutory designated site and as such **no significant adverse effect** is anticipated in relation to visitor pressure or air quality during operation.

7.223 Cardiff Bay Wetlands and Hamadryad Park LNR lies 1.72 km walk/cycle from the Site, however for the reasons described in Section 1.1.216 above, there are **no significant adverse effect** is anticipated in relation to visitor pressure during operation.

Non-Statutory Designated Sites

7.224 The River Taff SINC is discussed separately as it has public access and runs directly to the east of the Site. The Taff trail runs parallel to the Taff adjacent to the Site. An increase in population of 768 residents is considered insignificant given the Taff trail is currently heavily used, The Marl will be enhanced for its recreational use to encourage future residents to use this area and the Taff trail already has in-built measures to withstand visitor pressure, such as fencing and pathways, which direct the public away from the most sensitive habitats.

7.225 There is potential for increased lighting leading to disturbance to the functionality of the non-Statutory designated Site. This could have a **significant adverse effect** on this receptor of **county** importance.

7.226 The following SINCS identified have existing public access which are Grangemoor Park, Cardiff Bay Wetland Reserve, SINC No. 189 and River Ely SINC. However, the access to SINC No. 189 is minimal with only a 0.32km section of footpath throughout the non-Statutory Site. The remaining non-Statutory Sites with public access are currently heavily used. However, the Proposed scheme will result in an additional 768 residents (assuming 2.4 per dwelling) and the increase is considered insignificant given the heavily popularized location and as such the species associated with this non-Statutory designated Sites listed, are considered to be used to disturbance given their urbanized locations, and these sites already have in-built measures to withstand visitor pressure, such as fencing and pathways, which direct the public away from the most sensitive habitats . As such, it is considered that there will be **no significant adverse effect** either alone or in-combination on these non-Statutory designated sites from recreation.

Habitats

7.227 In the absence of mitigation, additional recreation within the site would have an adverse effect upon woodland habitats from public access, litter and dog fowling however this is unlikely to be

significant due to the existing recreational use of the site. This would have a **non-significant adverse effect** at **a Local** level.

7.228 The planting of new trees and shrubs and biophilic green walls as part of the landscaping scheme for the site will have a **non-significant positive effect** at the **Local** level.

Protected and Notable Species

Reptiles

7.229 During occupation, there is potential for adverse effects upon reptiles from inappropriate management of suitable habitats which could result in mortality/injury to reptiles or reduction in the Site's carrying capacity for reptiles. In the absence of mitigation, this would result in a **breach of legislation** and a **significant adverse effect** upon this receptor of **Local** importance.

Bats

7.230 In the absence of mitigation, the loss of vegetation and changes in lighting within the site has potential to have a **significant adverse effect** upon a receptor of **County** importance and the confidence level is **certain / near certain**.

Breeding Birds

7.231 Newly created habitats within the site will be suitable for nesting birds This is likely to result in a **non-significant positive effect** on breeding birds at a **Local** level.

Wintering and Passage Birds

7.232 Habitats along the River Taff and wider area may support wintering and migratory birds. The proposals will bring approximately 768 additional residents to the area and will thus increase the recreational use of the wider countryside. This increase is however considered insignificant given the urban location of the site. The bird assemblage is likely to be habituated to high levels of human disturbance given the proximity of the Cardiff Bay Trail, the Cardiff Bay link Road and the Cardiff Barrage. Therefore, recreational disturbance will have a **non-significant effect** upon wintering and migratory birds which are a receptor of **International** importance.

Otter

7.233 Otter are mainly active at night and will use habitats along the River Taff. Additional lighting during the operational phase of the development could reduce the suitability for otter commuting along the river. However, due to the urban location of the site, ambient light levels are unlikely to change significantly. There will be **no significant effects** upon foraging and commuting otter during the operational phase of the development and the confidence level is **certain / near certain**.

Fish

7.234 There will be no works affecting the River Taff once the development becomes operational. There will be no direct discharge of water into the River Taff which could affect fish. Therefore, there will

be **no significant effects** upon fish / migratory fish during operation and the confidence level is **certain / near certain**.

Hedgehog

7.235 Additional roads and traffic may present a hazard to hedgehog during operation. Furthermore, fences defining gardens could restrict the movement of hedgehog through the landscape. In the absence of mitigation, this would result in **a significant adverse effect** upon the hedgehog population at the **local** level.

MITIGATION MEASURES

7.236 This section describes the additional mitigation measures which will be implemented to avoid, minimise and/or compensate for predicted adverse impacts on ecological receptors as a result of the proposed development. Those receptors affected by significant adverse impacts have been considered, along with those receptors that have legal protection (e.g. nesting birds). Where impacts cannot be mitigated for, compensation measures to offset the impacts can be considered instead. The principles and preferred hierarchy of mitigation is therefore as follows:

1. Avoidance – to avoid adverse effects as far as possible by designing out or using alternative to achieve a neutral (or better) overall effect;
2. Reduction – to minimise adverse effects as far as possible;
3. Compensation – this involves implementing mitigation measures designed to off-set the predicted impacts and are often delivered either elsewhere on-site or potentially at an off-site location, in order to compensate in overall terms for the predicted impacts.

7.237 In addition to reducing adverse impacts, where possible, ecological enhancements are also proposed in order to enhance biodiversity overall and help the proposed development to meet the requirements for no net loss in biodiversity, as required under the NPPF. This aims to help provide a diverse ecosystem with high nature conservation value in the long-term. Enhancements discussed may be implemented during the construction phase, but become more valuable as they establish throughout the operational phase and lifetime of the proposed development – e.g. as new habitats mature.

Construction Phase

General Mitigation

7.238 All mitigation outlined in this section will be applied during the construction phases of the proposed development to minimise negative impacts and help maintain the retained ecological features on Site.

7.239 The following measures will be employed to protect sensitive habitats within and adjacent to the Site:

A Construction and Environment Management Plan (CEMP) will be prepared prior to construction detailing the measures which will be implemented to prevent adverse effects on ecological receptors within the zone of influence.

A Piling Risk Assessment (PRA) will be completed that takes into account all types of piles and their impacts on various receptors such as environmental, noise and pollution preferential pathways. The information from this assessment will inform the CEMP.

All existing trees and shrubs that are to be retained will be protected in accordance with BS 5837:2012 - Trees in Relation to Design, Demolition and Construction – Recommendations.

Habitats to be retained will be fenced, screened or otherwise demarcated as ‘no-go’ areas with signage where appropriate to prevent inadvertent use/harm.

An Ecological Clerk of Works (ECoW) will be employed during the construction period to oversee Site clearance and any works which could affect designated sites. They will advise on the

adoption of best practice procedures for the Site clearance works and adherence to the procedures and guidelines stated in this document. The role of the ECoW will be agreed with the relevant stakeholders in advance of the commencement of construction.

The Site workforce will be briefed about ecological matters relevant to the Site during their induction, prior to the commencement of construction and periodically as required during the construction phase. This briefing will be delivered through toolbox talks so that all operatives are aware of their responsibility to work in accordance with the mitigation measures on Site and relevant wildlife legislation.

The lighting layout and specification will be designed in consultation with an ecologist to minimise potential impacts of light spill during construction and operation.

The ecological value of the site will be enhanced post construction by selective specimen tree and shrub planting in accordance with the landscaping plans for the site.

Statutory Designated Sites

7.240 A CEMP will be prepared and will provide effective, site-specific procedures and mitigation measures to monitor and control environmental impacts throughout the construction phase of the development. It is considered that with the implementation of a CEMP, there will be **no significant effects** upon water quality and the confidence level is **certain / near certain**.

7.241 A Piling Risk Assessment (PRA) will be completed that takes into account all types of piles and their impacts on various receptors such as environmental, noise and pollution preferential pathways. The information from this assessment will inform the CEMP.

7.242 Piling has the potential to have an adverse effect upon fish / migratory fish. There is evidence to suggest much of the fish migration takes place over night, apart from times of high flow during daylight hours. Therefore, restricting all operations to daylight hours may reduce potential for impact on migratory fish species.

7.243 Some mitigation to reduce effects on migratory fish could include working for periods of up to four hours, then leaving for four hours undisturbed to allow fish movements with no disturbance.

7.244 A 'soft start' may be necessary, gradually increasing the power from low level to full over period of at least 20-30 minutes so that fish can move away and become accustomed to noise levels.

7.245 The qualifying fish species may be present migrating up and/or downstream throughout the year. However, with daylight working restrictions and the short-term intermittent frequency of the activity, it is unlikely that there will be any significant risks to the migratory species of the River Taff if the works are carried out between **June and August** albeit it at this stage it is a worst case scenario until the Piling Risk Assessment has been prepared and impacts reassessed.

7.246 Otter range over long stretches of watercourses (up to 40 miles) and hence can avoid or move away from acute disturbance caused by noise or vibration. The PRA will define the potential ZoI from piling. An otter survey will be undertaken to confirm that there are no otter resting places which will be disturbed by the works. If otter will be disturbed, a **licence from NRW will be sought** to allow the works to proceed.

7.247 The works have the potential to disturb wintering and migratory birds if undertaken between September and March.

7.248 It is recommended that piling works which require significant noise and vibration are undertaken during daylight hours between June and August to avoid and minimise risk of disturbance to of wintering / migratory birds and fish / migratory fish.

7.249 Hoarding will be erected around the site to minimise visual disturbance to wintering and migratory birds. Furthermore, the phasing of the development will reduce the intensity of disturbance within the site.

7.250 The development will be phased over 10 years (Refer to Chapter 2 which includes further information on the Programme and Phasing). Piling is only likely to be required during Phase 1 of the development (which is closest to the river).

7.251 With the implementation of a CEMP (which will include measures implemented to avoid pollution, minimise noise, vibration and visual disturbance) appropriate timing of works, and European protected species mitigation licenses implemented (otter) it is considered that there will be **no-significant effects** upon the statutory designated sites and the confidence level is **certain / near certain**.

Non-statutory designated sites

7.252 A CEMP will be prepared which will provide effective, site-specific procedures and mitigation measures to monitor and control environmental impacts throughout the construction phase of the development. It is considered that with the implementation of a CEMP, a wildlife sensitive lighting strategy, hoarding and phasing / sensitive timing of works, there will be **no significant effects** upon the non-statutory designated sites and the confidence level is **certain / near certain**.

Habitats

7.253 The CEMP will detail the measures required to protect retained habitats of ecological value within the site. All existing trees and scrub to be retained will be protected in accordance with BS 5837:2012 - Trees in Relation to Design, Demolition and Construction - Recommendations. Habitats to be retained will be fenced, screened or otherwise demarcated as 'no-go' areas with signage where appropriate to prevent inadvertent use/harm. An Ecological Clerk of Works (ECoW) will be employed during the construction period to oversee clearance of any sensitive habitats (woodland, tall grassland and scrub areas). With the implementation of these measures, there will be **no-significant effects** upon habitats of ecological importance and the **confidence is certain / near certain**.

Reptiles

7.254 Full details of the measures to protect reptiles for each phase of the development should be detailed within a Reptile Mitigation Strategy which will be agreed with Cardiff Council prior to the commencement of each phase of the development.

7.255 Clearance works will be completed during the season when reptiles are active (March to October) and within suitable weather conditions (dry, light winds and temperatures between 10°C and 19°C);

7.256 All clearance works will be supervised by an ECoW. Prior to works commencing, the ECoW will give a 'Tool Box Talk' to all site contractors, explaining:

Which habitats have the potential for presence of reptiles and other protected species;

How to avoid harming them; and

What to do in the event they are found.

7.257 The habitat clearance will be carried out in two stages. Firstly, the vegetation will be strimmed by hand to a height of 300mm. The clearance will be completed towards suitable retained habitat to encourage any reptiles present to move to adjacent vegetation. All areas of vegetation will be checked prior to cutting by the ECoW.

7.258 Whilst the vegetation is being strimmed, any log/ brash piles or other potential reptile refugia sites (such as piles of rubber tyres and rubble piles), will be dismantled by the ECoW by hand. The refugia piles will be immediately removed or located outside the proposed works area. All strimmed vegetation will be removed off-site or used to create habitat piles in retained vegetation. A second cut will be made 24 hours later to ground level.

7.259 Prior to the works commencing a suitable receptor site for any reptiles found will be agreed with Cardiff Council. The receptor site will ideally have the following features:

Be as close to the donor site as possible (within the same county/ administrative area/ geology and habitat type);

Currently does not support a population of the species to be translocated, or holds a low population and/ or has the capacity to support more reptiles because of the complexity of the habitat, and/or a suboptimal habitat that can be enhanced to increase its capacity to support a larger population, if necessary;

Not be subject to planning or other threats in the foreseeable future.

7.260 With the above mitigation, there will be **no significant effects** upon reptiles, and the confidence level is **certain / near certain**.

Roosting Bats

7.261 As the demolition of 60 and 121 South Clive Street would contravene relevant wildlife legislation, a **European Protected Species Mitigation Licence (EPSML) from NRW is required** in order for the proposed works to proceed. The roost at 54 South Clive Street will be retained as part of the proposals however the demolition works are likely to disturb any bats present in this building and therefore the licence will cover this property. Buildings with identified roosts to be covered by the licence include:

Maternity roosts of soprano pipistrelle bats at 54 and 60 South Clive Street (Demolition Phase F proposed late 2031);

Summer (non-breeding) day roost of common pipistrelle bat at 121 South Clive Street (Demolition Phase B proposed late 2023).

7.262 The roosts have been identified to be impacted in Demolition Phase B (proposed late 2023) and Demolition Phase F (proposed late 2031) as detailed above which are covered by the outline planning application (see Powell Dobson Architects Phasing Plans). No roosts were recorded in the first phase covered by the full planning application.

7.263 It is recommended update bat surveys are completed as part of the Reserved Matters application for future phases to inform the current status of roosting bats within the buildings onsite. This will enable further modification of the development design to reduce impacts on roosting bats. Further bat surveys are also likely to be required to inform any subsequent EPSL application. Update surveys should be completed in line with the BCT Guidelines and completed within the previous survey season of the application.

7.264 Prior to the commencement of any works (including buildings not to be covered by an EPSML), a **toolbox talk will be given** to contractors to include information on the bats roosting on site, bat signs and what to do if bats are found during works. This will also be clearly shown on the contractors site compound notice board with contact information for the ecologist. For buildings covered by an EPSML the method statement from the EPMSL will be detailed to the contractor and discussed as required.

7.265 Details of mitigation will be provided and agreed within the EPSML, but will likely include the provision of new roosting features and sensitive timing of demolition.

7.266 It is considered that with the implementation of the above mitigation, there will be **no significant effects** upon roosting bats, and the confidence level is **certain / near certain**.

Foraging and commuting bats

7.267 The Institution of Lighting Professionals (ILP) states that the impacts from artificial lighting on bats are likely to have significant impacts on some species, potentially affecting reproductive, foraging and roosting opportunities (ILP, 2018).

7.268 It is recommended that lighting on the development site comprise LED lamps, with a low colour correlated temperature – preferably below 3500K (warm white). Lighting should be directed groundward to avoid light spillage, with hoods / shields as necessary. Light spill on retained habitats, i.e. The Marl and The River Taff should be a maximum of 1 lux. The detailed lighting plan will be designed in consultation with an ecologist, taking into account the latest best practice guidance and latest survey information.

7.269 Construction activity will cease before sunset to avoid disturbance of locally emerging bats as a result of artificial lighting. Construction activity will commence after sunrise to allow bats to return to their roosts undisturbed.

7.270 The Concept Landscape Strategy (Tetra Tech drawing A115866-1 201 Landscape Masterplan) includes a range of habitat creation including SuDS, tree and shrub planting and species rich grassland. All retained and created habitats should be subject to a site specific Habitat Management Plan (HMP) which seeks to enhance their biodiversity value in the long term. This will include enhancement for foraging and commuting bats.

7.271 It is considered that with the above mitigation, there will be **no significant effects** upon foraging and commuting bats, and the confidence level is **certain / near certain**.

Breeding birds

7.272 All bird's eggs and active nests are protected from damage and destruction under the W&CA.

7.273 In order to avoid impacts it is recommended that vegetation clearance/ building demotion is conducted outside of the breeding bird season (March to August inclusive). A PRA will be completed to confirm the ZoI for piling activities. Where habitats cannot be cleared/ demolished outside of the breeding season, and activities which will create noise / vibration (i.e. piling) are to take place, a suitably qualified ECoW will inspect suitable habitats within 48hours of clearance works. If a nesting bird is identified, the ECoW will advise on suitable working methods and exclusion zones to restrict works on site. Measures recommended will depend on the nature of the works in that area and, the species of bird identified to be nesting. Note that suitable working methods may result in delay(s) to undertaking site works within specific areas of site until the ECoW has advised that all the chicks have fledged.

7.274 It is considered that with appropriate mitigation, there will be **no significant effects** upon breeding birds and the confidence level is **certain / near certain**.

Wintering and Migratory Birds

7.275 The works have the potential to disturb wintering and migratory birds if undertaken between September and March. Measures to protect wintering and migratory birds are outlined in Sections 1.1236 and 1.1238 above. A CEMP will be produced that sets-out the framework and requirements for the management of environmental impacts associated with the construction phase of the project. The CEMP will include general best practice construction methods, timing of works to reduce potential impacts and site specific measures with reference to the PRA, Guidelines for Pollution Prevention Works and maintenance in or near water: GPP05 where appropriate to reduce for pollution prevention including water, vibration, dust and litter. The use of hoarding surrounding the development and the phasing of works will minimise visual disturbance. It is also recommended that works which create significant noise, vibration including piling or visual disturbance are undertaken between June and August.

7.276 With the implementation of the above mitigation, there will be **no significant effects** upon wintering or migratory birds during construction, and the confidence is **certain / near certain**.

Otter

7.277 Otters and their habitats are fully protected under the W&CA and Habitats Regulations and also a Cardiff LBAP species. The bank of the River Taff adjacent to the site is considered unsuitable for couches / holt creation for otters as the banks are made ground. There may be otter holts in the wider area that could be disturbed by noise / vibration from piling.

7.278 Otter range over long stretches of watercourses (up to 40 miles) and hence can avoid or move away from acute disturbance caused by noise or vibration. The PRA will define the potential ZoI from piling. An otter survey will be undertaken to confirm that there are no otter resting places which will be disturbed by the works. If otter will be disturbed, a **licence from NRW will be sought** to allow the works to proceed.

7.279 There will be no lighting along the eastern boundary of the site during construction.

7.280 With the implementation of a PRA and CEMP (which will include measures implemented to avoid pollution, minimise noise and vibration including piling) there will be **no significant effects** upon otter and the confidence level is **certain / near certain**.

Fish

7.281 Measures to prevent adverse effects upon fish / migratory fish are provided in Sections 1.1236 and 1.1238 above. With the implementation of a PRA and CEMP (which will include measures implemented to avoid pollution, minimise noise and vibration including piling) and appropriate timing of works, it is considered that there will be **no-significant effects** upon the statutory designated sites and the confidence level is **certain / near certain**.

Hedgehog

7.282 Areas of dense vegetation will be checked for hedgehog by an ECoW prior to removal. If a hedgehog is found, it will be moved to a safe area away from the works. If a hedgehog is found / disturbed during hibernation it will be taken to a hedgehog rescue centre.

7.283 With the above mitigation, there will be **no significant effects** upon hedgehog during construction and the confidence level is **certain / near certain**.

Invasive Plant Species

7.284 Two Schedule 9 plants are present on site; Japanese knotweed and Montbretia. These were recorded along the banks of the River Taff and are not likely to be directly impacted by the proposed development. However, as best practice it is recommended an invasive plant control strategy is implemented. Advice should be sought from an invasive weed specialist on appropriate, site specific methods (particularly due to the proximity of flowing water). Removal and treatment may take several months, therefore it is recommended advice is sought at the earliest opportunity.

Operational Phase

Statutory Designated Sites

7.285 The construction of 320 dwellings at this site is not considered likely to impact the Severn Estuary SPA, SAC and Ramsar or SSSI through changes in air quality during operation (refer to Chapter 6 – Air Quality).

7.286 The development will result in an additional 768 residents. The masterplan retains the majority of The Marl, to encourage future residents to make use of the green space within the development site, rather than increasing visitor pressure on the surrounding designated sites. Given the high population levels in Cardiff, and the high visitor numbers from elsewhere in the region, it is considered extremely unlikely that the minor increase in population resulting from this development would significantly impact the designated sites or their qualifying features.

7.287 There will be **no significant effects** upon the Severn Estuary SAC, SPA, Ramsar or SSSI sites during operation and the confidence level is **certain / near certain**.

7.288 Cwm Cydfin, Leckwith SSSI is 1.9km from the site and designated for its broadleaved woodland habitat. The air quality assessment (refer to Chapter 6 - Air Quality) found that there will be no significant changes in air quality during the operational phase of the development. There will therefore be **no significant effects** upon Cwm Cydfin, Leckwith SSSI and the confidence level is **certain / near certain**.

Non statutory designated sites

7.289 The development will result in an additional 768 residents. A small area of The Marl will be developed in the south of the site, but the majority of the open space will be retained and will continue to be used for recreation. In addition, the Taff trail runs along the eastern boundary of the site and will be available for recreation. The change in residential numbers is not considered likely to significantly impact the SINC site.

7.290 There will be **no significant effects** upon non-statutory designated sites during operation and the confidence level is **certain / near certain**.

Habitats

7.291 A Habitat and Landscape Management Plan (HLMP) for the site will be prepared, detailing how habitats within the site will be created and managed for biodiversity benefit post construction. Bins for rubbish and dog waste are already present along the Taff Trail, and it is considered that this area will be used by dog walkers / residents for recreation.

7.292 It is considered that with the implementation of a HLMP, the scheme will have a **non-significant positive effect** on habitats within the site and the confidence level is **certain / near certain**.

Reptiles

7.293 Inappropriate management during the operational phase of the development could have an adverse effect on reptile species during the operational phase of the development. The HLMP for the site will specify how habitats within the site should be managed to benefit reptiles and will specify appropriate working methods.

7.294 With the implementation of a HLMP for the site there will be **no significant effects** upon reptiles and the confidence level is **certain / near certain**.

Roosting Bats

7.295 The new roosting features incorporated into the development design will enhance the site for roosting bats during the operational phase. Lighting during the operational phase of the development will be addressed as part of the EPSML. This is considered to have a **non-significant positive effect** and the confidence level is **certain / near certain**.

Foraging and commuting bats

7.296 There will be no changes in lighting adjacent to the River Taff during the operational phase of the development. Once established, new soft landscaping within the site will provide suitable habitat for foraging and commuting bats, and a wildlife sensitive lighting scheme designed in consultation with an ecologist will retain dark corridors within the site.

7.297 With the above mitigation, there will be **no significant effects** upon foraging and commuting bats during the operational phase of the development and the confidence level is **certain / near certain**.

Breeding Birds

7.298 Once established, new trees and shrubs and the biophilic design including green walls and the Green Infrastructure network within the site will provide habitat suitable for nesting birds. The HLMP for the site will specify the timings of any management actions to make sure that birds are not disturbed during the nesting season.

7.299 It is considered that with the above mitigation, there will be **no significant effects** upon nesting birds and the confidence level is **certain / near certain**.

Wintering Birds

7.300 The proposals will bring approximately 768 additional residents to the area and will thus increase the recreational use of the wider countryside. This increase is however considered insignificant given the urban location of the site. The bird assemblage is likely to be habituated to high levels of

human disturbance given the proximity of the Cardiff Bay Trail, the Cardiff Bay link Road and the Cardiff Barrage. Therefore, recreational disturbance will have a **no significant effects** upon wintering and migratory birds and the confidence level is **certain / near certain**.

Otter

7.301 Otter are mainly active at night and will use habitats along the River Taff. There will be no changes in lighting adjacent to the River Taff during the operational phase of the development. Therefore, there will be **no significant effects** upon foraging and commuting otter during the operational phase of the development and the confidence level is **certain / near certain**.

Fish

7.302 There will be no works affecting the River Taff once the development becomes operational. There will be no direct discharge of water into the River Taff which could affect fish. Therefore, there will be **no significant effects** upon fish / migratory fish during operation and the confidence level is **certain / near certain**.

Hedgehog

7.303 The development will be designed to include green corridors to allow wildlife such as hedgehogs to move through the landscape. 'Hedgehog highways' will be incorporated into the development – these are gaps approximately 13cm by 13cm which are sufficient for any hedgehog to pass through but too small for most domestic pets.

7.304 With the provision of the above mitigation it is considered that the development will have a **non-significant positive effect** upon foraging / commuting hedgehog and the confidence level is **probable**.

RESIDUAL IMPACTS

7.305 It was identified that in the absence of mitigation, the proposed development would likely cause significant adverse impacts on some ecological receptors identified (including statutory and non-statutory designated sites, habitats and species) both on and off-site. The unmitigated impacts associated with the development included direct and indirect effects upon habitats and direct and the wildlife supported in these areas.

7.306 Therefore, mitigation has been devised to prevent significant adverse effects on sensitive ecological receptors within and adjacent to the Site.

7.307 Assuming that all the mitigation and enhancement measures are implemented successfully, it is concluded that there would be no residual significant adverse effects.

7.308 Table 7.5 below provides an assessment summary of the potential ecological effects and the anticipated residual environmental effects, following the implementation of the proposed additional mitigation, compensation or enhancement measures.

SUMMARY AND CONCLUSIONS

7.309 In the absence of mitigation, the proposed development has the potential to cause significant adverse impacts on the ecological receptors identified on Site and within the immediate area. Unmitigated impacts associated with the development include changes in water quality, air quality, noise, vibration, visual disturbance, changes in recreation and the loss of habitats. These changes could have and direct and indirect effects on the wildlife supported on site and in the surrounding area.

7.310 Table 7.5 below provides an assessment summary of the potential environmental effects and the anticipated residual environmental effects, following the implementation of the proposed mitigation, compensation or enhancement measures.

7.311 Assuming that all the mitigation and enhancement measures are implemented successfully, it is concluded that there would be **no residual significant adverse effects**.

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Table 7.5 Assessment Summary and Residual Environmental Effects (Ecology)

Ecological Receptor	Potential Impacts	Value of Receptor	Significance and Nature of Effect Without Additional Mitigation	Additional Mitigation	Residual Significance and Nature of Effect
Construction Impacts					
Statutory Designated Sites Severn Estuary SAC Severn Estuary Special Protection Area (SPA) Severn Estuary Ramsar Severn Estuary Special Area SSSI	Changes in water quality - Pollution (physical / chemical) resulting in degradation of habitats which in turn support qualifying species. Noise and vibration – piling during construction has potential to disturb qualifying bird species and migratory fish. Visual Disturbance (cranes, construction vehicles, demolition and construction) of wintering / migratory birds. Air Pollution – use of construction vehicles / additional site traffic. Particulate / dust pollution following demolition of buildings.	**International / National** • Habitats • Migratory Fish • Wintering Birds • Migrating birds	Significant Adverse Significant Adverse Significant Adverse Not Significant	A CEMP will be produced that sets-out the framework and requirements for the management of environmental impacts associated with the construction phase of the project. The CEMP will include general best practice construction methods, timing of works to reduce potential impacts and site-specific measures with reference to the Guidelines for Pollution Prevention Works and maintenance in or near water. A Piling Risk Assessment (PRA) will be completed that takes into account all types of piles and their impacts on various receptors such as environmental, noise and pollution preferential pathways. The information from this assessment will inform the CEMP. Works which create significant noise, vibration or visual disturbance will be undertaken between June and August to minimise effects upon migratory fish and avoid effects upon wintering birds. Hoarding to be erected around the construction area to reduce any potential lines of sight and disturbance to bird species. Phasing of the development will reduce the level of disturbance.	Not Significant Certain / near certain Not Significant Uncertain Not significant Certain / near certain Not significant / certain near certain
Statutory Designated Sites Cwm Cydfin, Leckwith SSSI	Air Pollution – use of construction vehicles / additional site traffic. Particulate / dust pollution following demolition of buildings.	**National** • Deciduous woodland	Not Significant Certain / near certain	N/A	Not Significant Certain / near certain

Ecological Receptor	Potential Impacts	Value of Receptor	Significance and Nature of Effect Without Additional Mitigation	Additional Mitigation	Residual Significance and Nature of Effect
Statutory Designated Sites Cardiff Bay Wetland Reserve LNR/SINC	Changes in water quality - Pollution (physical / chemical) resulting in degradation of habitats which may support qualifying species of the European designated sites. Noise and vibration - piling during construction has potential to disturb birds, otter and fish. Visual Disturbance (cranes, construction vehicles, demolition and construction) may disturb breeding, wintering or migratory birds.	County • Breeding birds (including Schedule 1 species) • Wintering birds • Bats • Otter • Spawning fish	Significant Adverse Significant Adverse Not Significant	A CEMP will be produced that sets-out the framework and requirements for the management of environmental impacts associated with the construction phase of the project. The CEMP will include general best practice construction methods, timing of works to reduce potential impacts and site-specific measures with reference to the Guidelines for Pollution Prevention Works and maintenance in or near water. A Piling Risk Assessment (PRA) will be completed that takes into account all types of piles and their impacts on various receptors such as environmental, noise and pollution preferential pathways. The information from this assessment will inform the CEMP. Works which create significant noise, vibration or visual disturbance will be undertaken between June and August to minimise effects upon migratory fish and avoid effects upon wintering birds. Hoarding to be erected around the construction area to reduce any potential lines of sight and disturbance to bird species. Phasing of the development will reduce the level of disturbance.	Not Significant – certain / near certain.
Non-Statutory Designated Sites River Taff SINC	Changes in water quality – physical or chemical pollution. Pollution incident from improper storage of construction materials/chemicals and equipment; chemical and fuel run-off from construction directly into this designated Site Increased lighting leading to disturbance to ecological functionality of the SINC Air pollution through dust or construction vehicle emissions; and Noise pollution and visual disturbance from construction activities or traffic.	County • Migratory fish, • Otter • Wildfowl • Bats • Otter • Grass snake • Kingfisher.	Significant adverse Significant adverse Not significant Significant adverse	A Construction Environmental Management Plan (CEMP) will be produced prior to construction commencing. As part of the CEMP it will include site specific measures with reference to the Guidelines for Pollution Prevention Works and maintenance in or near water: GPP05 to reduce for pollution including dust and run-off from the construction site. Sensitive lighting design and lighting proposals should be reviewed by a suitably qualified ecologist. A Piling Risk Assessment (PRA) will be completed that takes into account all types of piles and their impacts on various receptors such as environmental, noise and pollution preferential pathways. The information from this assessment will inform the CEMP. Works which create significant noise, vibration or visual disturbance will be undertaken between June and August to minimise effects upon migratory fish and avoid effects upon wintering birds. A pre-works check for otter holts / nesting birds will be required depending upon the zone of influence of piling operations.	Not Significant Certain / near certain Not significant Certain / near certain Not significant Certain / near certain Not significant

Ecological Receptor	Potential Impacts	Value of Receptor	Significance and Nature of Effect Without Additional Mitigation	Additional Mitigation	Residual Significance and Nature of Effect
					Certain / near certain
River Ely SINC, Leckwith Pond & Marsh SINC	Pollution incident output into River Taff which is hydrologically linked to these designated Sites	County • Migratory fish • Otter • Wildfowl • Bankside vegetation.	Not Significant – both these sites are upstream of the Site and hence no impact is considered	A Construction Environmental Management Plan (CEMP) will be produced prior to construction commencing. As part of the CEMP it will include site specific measures with reference to the Guidelines for Pollution Prevention Works and maintenance in or near water: GPP05 to reduce for pollution including dust and run-off from the construction site.	Not Significant Certain / near certain.
Grangemoor Park SINC, Cogan Spur SINC, SINC No 188 Factory Wood, SINC No. 189 Reservoir Wood & Canton Common ditch SINC	No pathways of effect.	County • Habitats • Protected and notable species	Not Significant	N/A	Not Significant Certain / near certain
Broadleaved semi-natural woodland	Permanent loss. Physical damage to retained woodland trees and damage to trees through ground compaction, pollution and root severance, Increased light affecting value of retained woodland for wildlife.	Local	Significant adverse	Protection of woodland trees to be retained in accordance with BS5837 or following the advice of a suitably qualified arboriculturalist. A Construction Environmental Management Plan (CEMP) will be produced prior to construction. Sensitive lighting design and lighting proposals will be reviewed by a suitably qualified ecologist. Retained woodland will be enhanced with additional planting.	Not significant Certain / near certain
Broad-leaved plantation	Permanent loss of *1.26 ha of* plantation woodland. Physical damage to retained plantation trees and damage to trees through ground compaction, pollution and root severance. Increased light affecting value of retained woodland for wildlife.	Local	Significant adverse	Protection of woodland trees to be retained in accordance with BS5837 or following the advice of a suitably qualified arboriculturalist. A Construction Environmental Management Plan (CEMP) will be produced prior to construction. Sensitive lighting design and lighting proposals will be reviewed by a suitably qualified ecologist. New specimen trees and shrubs will be planted as part of the soft landscaping scheme for the site.	Not Significant Positive effect Certain / near certain

Ecological Receptor	Potential Impacts	Value of Receptor	Significance and Nature of Effect Without Additional Mitigation	Additional Mitigation	Residual Significance and Nature of Effect
Dense Scrub	*Permanent loss of small area of scrub.* *Increased light affecting value of retained scrub.*	Local	Not Significant adverse	Sensitive lighting design and lighting proposals should be reviewed by a suitably qualified ecologist.	Not Significant Certain / near certain
Parkland scattered trees	Permanent loss of small number of scattered trees Physical damage to retained plantation trees and damage to trees through ground compaction, pollution and root severance Increased light affecting value of retained woodland for wildlife.	Local	Not Significant adverse	Retained trees will be protected in accordance with BS5837 or following the advice of a suitably qualified arboriculturalist. A Construction Environmental Management Plan (CEMP) will be produced prior to construction. Sensitive lighting design and lighting proposals will be reviewed by a suitably qualified ecologist. New specimen trees and shrubs will be planted as part of the soft landscaping for the site.	Not Significant Positive effect Certain / near certain
Reptiles	Direct injury/ mortality of reptiles through destruction of habitat.	Local	Significant adverse Legal offence	Full details of the measures to protect reptiles for each phase of the development will be detailed within a Reptile Mitigation Strategy which will be agreed with Cardiff Council prior to the commencement of each phase of the development.	Not significant Certain / near certain
Bats (roosting)	Direct injury/ mortality of roosting bats and destruction & disturbance to roosts Increased lighting leading to destruction or abandonment of roosts. Disturbance through noise or vibration.	County	Significant adverse Legal offence	Destruction & disturbance of roosts under a NRW EPSML with a licenced bat ecologist supervising works with suitable compensatory habitat. Provision of new bat roosting habitat prior to any of the demolition works to roosts. Construction lighting will be directional and will be located away from the River Taff, woodland boundaries and the retained trees on The Marl with bat roosting potential Sensitive lighting design and lighting proposals should be reviewed by a suitably qualified ecologist.	Not significant Certain / near certain
Bat (foraging & commuting)	Disturbance to foraging/commuting bats from construction phase lighting.	Local	Significant adverse	Construction activity to cease at sunset, if not before, to avoid delaying the emergence of locally roosting bats as a result of artificial lighting. Construction activity to commence after sunrise to allow bats returning to local roosts are not impacted. Construction - lighting will be directed away from areas of retained habitat, particularly the River Taff, woodland and scrub. Sensitive	Not Significant Certain / near certain

Ecological Receptor	Potential Impacts	Value of Receptor	Significance and Nature of Effect Without Additional Mitigation	Additional Mitigation	Residual Significance and Nature of Effect
				lighting design and lighting proposals should be reviewed by a suitably qualified ecologist. Enhancement to The Marl & Ferry Park Woodland to foraging bats	
Breeding Birds	Loss of areas of existing breeding and foraging habitat, particularly building, scrub and parkland trees. Injury/mortality of nesting birds. Destruction or abandonment of nests through disturbance.	Local	Not Significant as alternative suitable habitat in the surrounding area. Significant adverse Legal offence Significant adverse Legal offence	All vegetation clearance shall be completed outside the breeding bird season (March – September incl.). If this is not possible, areas to be cleared shall be checked by a suitably qualified ecologist in advance to confirm the absence of active nests. Buildings that need to be demolished during the breeding bird season (March – September incl.). will be checked by a suitably qualified ecologist in advance to confirm the absence of active nests. If nests are found, a buffer zone will be established and the nest left in situ until the young have left the nest. Phasing of the development will reduce the level of disturbance across the site to breeding birds. A Piling Risk Assessment (PRA) will be completed that takes into account all types of piles and their impacts on various receptors (including birds). Where necessary checks of habitats within the ZoI will be undertaken. Lighting will be directional and will not be located along the scrub or the River Taff.	Not Significant Uncertain
Wintering birds and migratory birds	Pollution incident directly impacting River Taff. Noise and vibration Visual disturbance	International	Significant adverse	A CEMP will be produced that sets-out the framework and requirements for the management of environmental impacts associated with the construction phase of the project. The CEMP will include general best practice construction methods, timing of works to reduce potential impacts and site-specific measures with reference to the Guidelines for Pollution Prevention Works and maintenance in or near water. A Piling Risk Assessment (PRA) will be completed that takes into account all types of piles and their impacts on various receptors such as environmental, noise and pollution preferential pathways. The information from this assessment will inform the CEMP. Works which create significant noise, vibration or visual disturbance will be undertaken between June and August to minimise effects upon migratory fish and avoid effects upon wintering birds.	Not significant Uncertain

Ecological Receptor	Potential Impacts	Value of Receptor	Significance and Nature of Effect Without Additional Mitigation	Additional Mitigation	Residual Significance and Nature of Effect
				Hoarding to be erected around the construction area to reduce any potential lines of sight and disturbance to bird species. Phasing of the development will reduce the level of disturbance.	
Otter	Pollution incident directly impacting River Taff. Increased lighting leading to disturbance to commuting otter. Noise & vibration disturbance	Local	Significant adverse Significant adverse Significant adverse	A Construction Environmental Management Plan (CEMP) will be produced prior to construction commencing. As part of the CEMP it will include site specific measures with reference to the Guidelines for Pollution Prevention Works and maintenance in or near water: GPP05 to reduce for pollution including dust and run-off from the construction site. Lighting will be directional and will not be located along the woodland scrub or the River Taff. Sensitive lighting design and lighting proposals should be reviewed by a suitably qualified ecologist. Phasing of the development will reduce the level of disturbance across the site. A Piling Risk Assessment (PRA) will be completed that takes into account all types of piles and their impacts on various receptors (including otter). Where necessary checks of habitats within the ZoI will be undertaken by an ecologist.	Not Significant Uncertain
Fish	Pollution incident Noise & vibration disturbance to migratory fish	International	Significant adverse Significant adverse	A Piling Risk Assessment (PRA) will be completed that takes into account all types of piles and their impacts on various receptors (including fish). Works will be restricted to daytime hours and will avoid migratory periods. A Construction Environmental Management Plan (CEMP) will be produced prior to construction commencing. As part of the CEMP it will include site specific measures with reference to the Guidelines for Pollution Prevention Works and maintenance in or near water: GPP05 to reduce for pollution including dust and run-off from the construction site.	Not Significant Uncertain
Hedgehogs	Injury/mortality of nesting hedgehogs. Destruction or abandonment of nests/rest sites through disturbance & destruction.	Local	Significant adverse Significant adverse	ECOW to supervise vegetation removal during the breeding bird season and reptile active season (March to Sept incl.) will also check for hedgehog presence. For any vegetation removal outside of the breeding bird season where an ECOW will not be present, all site contractors will be given a toolbox talk which will include advice with what to do if a hedgehog is disturbed during the works.	Not Significant Certain / near certain

Ecological Receptor	Potential Impacts	Value of Receptor	Significance and Nature of Effect Without Additional Mitigation	Additional Mitigation	Residual Significance and Nature of Effect
Invasive plants	Spread of invasive plant species unlikely as outside the site boundary.	Legal offence	Not Significant – uncertain	An invasive species expert will be consulted for advice on removal of Japanese knotweed, and Montbretia.	Not Significant – certain / near certain
Operation					
Severn Estuary (Wales) Special Protection Area (SPA)/ Ramsar/ Special Area of Conservation (SAC)/SSSI	Changes in air quality Increase in recreational pressure to Severn Estuary SAC and Avon Valley SPA and Ramsar Increased predation of birds from domestic cats.	International	Not significant. Not Significant adverse effect - The masterplan retains the majority of The Marl and increase in population is calculated to be 768 based on 2.4 people per dwelling. Not significant	N/A Enhancement to existing The Marl to encourage use of the green space at the site to limit recreational visits to Statutory designated sites.	Not Significant Certain / near certain Not significant Certain / near certain Not significant Certain / near certain.
Cwm Cydfin, Leckwith SSSI	Increase in visitor pressure to designated Site Air pollution through increase in vehicular activity	National	Not Significant adverse effect – no access within Cwm Cydfin, Leckwith SSSI Air Quality Chapter assessed that the annual average exposure to NOx at Cwm Cydfin, Leckwith SSSI, due to changes in traffic movements associated with the development, is <0.01 micrograms/m3.	Enhancement to existing The Marl to encourage use of the green space at the site to limit visits to Statutory designated sites.	Not Significant Certain / near certain
Cardiff Bay Wetland Reserve LNR/SINC	Increase in visitor pressure to designated Site	County	Not Significant– 1.72km walk to this Site	Enhancement to existing The Marl to encourage use of the green space at the site to limit visits to Statutory designated sites.	Not Significant Certain / near certain

Ecological Receptor	Potential Impacts	Value of Receptor	Significance and Nature of Effect Without Additional Mitigation	Additional Mitigation	Residual Significance and Nature of Effect
River Taff SINC	Increase in visitor pressure to designated Site Increased lighting leading to disturbance ecological functionality of the non-Statutory designated Site	County	Not Significant Significant adverse	The Taff trail runs parallel to the Taff adjacent to the Site. The increase in dwellings of 320 assuming 2.4 per household will total an increase in population of 768 residents and this is considered insignificant given the Taff trail is currently heavily used and the Taff trail already has in-built measures to withstand visitor pressure, such as fencing and pathways, which direct the public away from the most sensitive habitats Lighting will be directional and will not be located along the River Taff. Sensitive lighting design and lighting proposals should be reviewed by a suitably qualified ecologist.	Not Significant Certain / near certain
Grangemoor Park, Cardiff Bay Wetland Reserve SINC (SINC No. 189 and River Ely SINC	Increase in visitor pressure to designated Site	County	Not Significant	The Marl will be enhanced for recreational use and as such it is considered this area will still be future residents preferential area to use for daily recreational use.	Not Significant Certain / near certain
Reptiles	Loss of habitat through inappropriate management	Local	Significant adverse	A habitat management plan will be prepared and will detail habitat management measures required to secure the long term biodiversity value of the site.	Not Significant Certain / near certain
Bats (roosting)	Direct loss of roosts Light spill on roosts	County	Significant adverse	New roost locations incorporated into the development masterplan. Lighting will be directional and will not be located adjacent to the existing bat roosts nor newly created bat roosts. Sensitive lighting design and lighting proposals should be reviewed by a suitably qualified ecologist. Monitoring bat roosts will be a required as part of the EPSML to check bats continue to use existing and new roosts.	Not Significant Certain / near certain
Bats (foraging)	Increased light affecting value for foraging and commuting bats	Local	Significant adverse	Lighting will be directional and will not be located adjacent to the broadleaf plantation or semi-natural habitat, scrub, parkland trees or areas of rough grassland. Sensitive lighting design and lighting proposals should be reviewed by a suitably qualified ecologist Sensitive management of the habitats informed by a habitat management plan for the site.	Not Significant Certain / near certain.

Ecological Receptor	Potential Impacts	Value of Receptor	Significance and Nature of Effect Without Additional Mitigation	Additional Mitigation	Residual Significance and Nature of Effect
Breeding Birds	Loss of suitable habitat through inappropriate management	Local	Significant	Sensitive management of the habitats outlined within a Habitat Management Plan.	Not Significant Certain / near certain
Wintering birds	Increased recreational disturbance.	International	Not significant	Enhancement to existing The Marl to encourage use of the green space at the site to limit recreational visits to Statutory designated sites.	Not significant Certain / near certain
Otters & Water voles	Recreational disturbance Increased light affecting value for commuting otter	Local	Not Significant	Taff Trail is heavily used by pedestrians and cyclists. Lighting will be directional and will not be located along the River Taff. Any lighting proposals should be reviewed by a suitably qualified ecologist.	Not Significant Certain / near certain
Hedgehog	Loss of habitat connectivity. Risk of mortality / injury from road traffic.	Local	Significant adverse	Hedgehog highways to be provided to maintain habitat connectivity throughout the site.	Not significant. Probable.