



Gravity

Smart Campus

Gravity LDO Environmental Statement

**Volume 1 – Chapter 12:
Biodiversity**

12 Biodiversity

12.1 Introduction

12.1.1 This Chapter presents an assessment of the likely significant ecological effects of the Proposed Development. It begins with a description of the methods used in the assessment. This is followed by a description of the relevant baseline conditions of the Site and surrounding area, together with an assessment of the likely significant effects of the Proposed Development during demolition and construction works and once the Proposed Development is completed and operational. Mitigation measures are identified where appropriate to avoid, reduce or offset any adverse effects identified and / or enhance likely beneficial effects. Taking account of the mitigation measures, the nature and significance of the likely residual effects are described.

12.1.2 This Chapter is supported by the following appendices:

- **Appendix 12.1:** Habitat Survey Report
- **Appendix 12.2:** Bat Activity Survey Report
- **Appendix 12.3:** Bat Roost Survey Report
- **Appendix 12.4:** Badger Survey Report
- **Appendix 12.5:** Bird Survey Report
- **Appendix 12.6:** Great Crested Newt Survey Report
- **Appendix 12.7:** Reptile Survey Report
- **Appendix 12.8:** Water Vole Survey Report
- **Appendix 12.9:** Invertebrate Survey Report
- **Appendix 12.10:** SSSI unit condition summary
- **Appendix 12.11:** Biodiversity Impact Assessment Calculations
- **Appendix 12.12:** Shadow Habitats Regulations Assessment

12.1.3 This Chapter has been prepared by Ecology Solutions. In accordance with Regulation 18(5) of the Town and Country Planning (Environmental Impact Assessment) Regulations 2017, as amended, a statement outlining the relevant expertise and qualifications of competent experts appointed to prepare this ES is provided in **Appendix 1.6**.

12.2 Policy, Legislation, Guidance and Standards

Legislative Framework

12.2.1 The applicable legislative framework is summarised as follows:

- The Conservation of Habitats and Species Regulations 2017 (as amended by the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019);
- Wildlife and Countryside Act 1981 (as amended);

- The Protection of Badgers Act 1992;
- The Hedgerow Regulations 1997;
- Countryside and Rights of Way Act 2000; and
- Natural Environment and Rural Communities Act 2006 (sections 40 and 41).

12.2.2 Consideration has also been given to the forthcoming Environment Bill that is currently subject to examination by UK Parliament.

National Planning Policy

12.2.3 The National Planning Policy Framework (NPPF) sets out the Government's requirements for the planning system and was first published on 27th March 2012. The most recent version was published on 20th July 2021.

12.2.4 The key element of the NPPF is that there should be "a presumption in favour of sustainable development" (paragraphs 10 to 11). It is important to note this presumption "does not apply where the plan or project is likely to have a significant effect on a habitats site (either alone or in combination with other plans or projects), unless an appropriate assessment has concluded that the plan or project will not adversely affect the integrity of the habitats site" (paragraph 182). 'Habitats site' has the same meaning as the term 'European site' as used in the Habitats Regulations 2017.

12.2.5 Hence the direction of Government policy is clear; that is, the presumption in favour of sustainable development is to apply in circumstances where there is potential for an effect on a European site, if it has been shown that there will be no adverse effect on that designated site as a result of the development in prospect.

12.2.6 The NPPF also considers the strategic approach that Local Authorities should adopt with regard to the protection, maintenance and enhancement of green infrastructure, priority habitats and ecological networks, and the recovery of priority species.

12.2.7 Paragraphs 179 to 181 of the NPPF comprise a number of principles that Local Authorities should apply, including encouraging opportunities to incorporate biodiversity in and around developments; provision for refusal of planning applications if significant harm cannot be avoided, mitigated or compensated for; applying the protection given to European sites to potential Special Protection Areas (SPAs), possible Special Areas of Conservation (SACs), listed or proposed Ramsar sites and sites identified (or required) as compensatory measures for adverse effects on European sites; and the provision for the refusal for developments resulting in the loss or deterioration of 'irreplaceable' habitats – unless there are 'wholly exceptional reasons' (for instance, infrastructure projects where the public benefit would clearly outweigh the loss or deterioration of habitat) and a suitable compensation strategy exists.

12.2.8 National policy therefore implicitly recognises the importance of biodiversity and that with sensitive planning and design, development and conservation of the natural heritage can co-exist, and benefits can, in certain circumstances, be obtained.

Local Planning Policy

12.2.9 The Sedgemoor Local Plan (SLP) was adopted in February 2019 and is the current document in use for development management purposes. This succeeds the prior Sedgemoor Core Strategy which allocated the 616-acre site as a commercial development opportunity.

12.2.10 The Core Strategy was informed by the 2009 Bridgwater Vision, updated in 2015, which identified the site as a transformational opportunity. The Vision provides a guide to

development to 2060 included the Huntspill Energy Park (HEP) as a one of the character areas for the Vision. Within the design principles it states that careful landscape design will be used to maintain and enhance biodiversity.

- 12.2.11 The Puriton Energy Park Supplementary Planning Document (SPD) was adopted in 2012 and was part of a strategy to create a proactive response to site development to accelerate site disposal and regeneration. It that respect the Core Strategy and the SPD have been ultimately successful.
- 12.2.12 To note as background, the SPD set out a baseline summary of the ecological survey work undertaken that informed the production of the SPD at that time. The document confirmed that proposals would need to be informed by further survey work and an ecological impact assessment that includes a management strategy. Since 2012, there has been monitoring of conditions on site, and a comprehensive re-survey set out in this report with the associated impact assessment and management strategy.
- 12.2.13 The SPD included provision for creating opportunities for enhancing the ecological value of the site through the provision of a park around the site's perimeter. Other recommended deliverables included the integration of public open space and sustainable water management with ecological assets using green corridors as well as ecological benefits as part of a sustainable and green setting within the surrounding landscape.
- 12.2.14 Since the adoption of the SPD, the whole 616 acre site has been agreed by Government as an enterprise zone, a hybrid application for the Huntspill Energy Park has been consented.
- 12.2.15 The LPA has also consented a remediation programme, which has been fully completed up to November 2020, and signed off. This required site engineering and remediation works over extensive tranches of the site.
- 12.2.16 The current SLP incorporates the HEP hybrid planning consent, as a commitment and seeks to safeguard the land for the delivery of the link road. This consent is now in implementation with the link road being largely constructed and due for final completion in the Autumn 2021.
- 12.2.17 The HEP consent has a number of planning conditions including the need for a strategic landscape masterplan (condition 36) and strategic design principles (condition 29) which were informed by the council policy documents including the development plan and the SPD. These documents have been submitted to SDC and agreed, therefore discharged.
- 12.2.18 The Local Development Order proposal (approved July 2020) takes account of the local policy context and the changing national and local policy context, to take a more proactive approach to climate change and economic transformation, through a market led approach, focused on delivery of a smart campus on the enterprise zone site. The Design Guide with the LDO will take account of the new and emerging requirements and provide a link to the approved design principles and SPD where relevant and appropriate.
- 12.2.19 The Site forms a key component of the Spatial Vision for Sedgemoor, as set out within the SLP. Gravity is named as a key catalyst to enable Sedgemoor to realise its potential as a leading innovation centre that builds on the unique natural assets of Sedgemoor landscape. In order to deliver this vision Strategic Priority 5 has been developed to underpin the Local Plan approach, of which the Site is a key component.
- 12.2.20 Policy S1 refers to the presumption in favour of sustainable development and the approach states that policies and site allocations within the Local Plan have been guided by this principle.
- 12.2.21 Policy S5 relates to mitigating the causes and adapting to the effects of climate change. Objective of this policy set out that the natural environment should be safeguarded as part of any development and ensure that habitats and species have the ability to adapt to the effects of climate change.

- 12.2.22 The Proposed Development is included as a Major Infrastructure Project under policy MIP1 and as a Bridgewater Vision Project under policy B1. The SLP acknowledges that the Site is allocated for energy uses, has outline planning consent and that part of the plan has been implemented in delivering the new access road.
- 12.2.23 There are five policies in the SLP that relate to the site and nature conservation, Policies **D20-23** and **D29**. Policy **D20** is concerned with protection of biodiversity and habitats of nature conservation significance, as well as the protection of statutory designated sites. Policy **D21** relates to the protection of ecological networks, such as wetlands, grassland and woodland, whilst Policy **D22** refers specifically to the protection of trees and woodland. Policy **D23** refers to Bat Consultation Zones in relation to SACs and Policy **D29** relates to the protection and enhancement of existing green infrastructure.

Guidance

- 12.2.24 The evaluation and effect assessment method is based on the guidelines produced by the Chartered Institute of Ecology and Environmental Management (CIEEM), which avoids the provision of definitions as to how to assign habitats and species different levels of value and relies on an approach that involves professional judgement and the use of available guidance and information.
- 12.2.25 Technical guidance produced in relation to SAC for bats within Somerset have been reviewed. The guidance documents identify consultation zones to assist in understanding where it is necessary to consider potential effects on these sites, in order to avoid harm to the bat populations associated with the Bat SACs. The Bat SACs for which guidance has been produced are North Somerset and Mendip Bat SAC, Hestercombe House SAC and Exmoor and Quantocks SAC. For clarity, the Site falls outside of the Bat Consultation Zones for each of these SACs.

12.3 Consultation

- 12.3.1 Consultation with relevant authorities and stakeholders in relation to the LDO has to date taken place in the form of regular (monthly) LDO Delivery Group meetings. Consultees include a representative of SDC, the Area Manager for Somerset, Avon and Wiltshire at Natural England and the Environment, Planning and Engagement Manager for Southwest at the Environment Agency.
- 12.3.2 In tandem with the LDO Delivery Group meetings, regular Environment sub-Group meetings have taken place. These have been attended by relevant stakeholders to discuss aspects of the project relevant to ecology, hydrology and landscaping.
- 12.3.3 Meetings have also been held directly with representatives of Natural England and the Environment Agency with regard to specific issues relevant to ecology including nutrient neutrality and protected species licencing.

12.4 Methodology

Study Area

- 12.4.1 The ecological study area is primarily defined as the areas contained within the LDO boundary. Consideration has also been given to areas outside of the LDO boundary, for example in light of the hydrological links between the Site and designated sites in the wider area, including those described below at **paragraph 12.6.16**, consideration has been given to the potential for adverse effects to arise at these sites from the Proposed Development. Furthermore, consideration has been given to areas adjacent to the Site, including ponds up to 500m from the Site boundary that may support breeding Great Crested Newt (GCN) *Triturus cristatus* and potential Badger *Meles meles* setts located within 30m from the Site boundary. In undertaking this assessment, regard has been had to the historic

understanding of the Site ecology, which includes baseline information gathered over a period in excess of ten years.

Baseline Data Collection

- 12.4.2 The majority of the Site has been the subject of extensive ecological surveys since 2008. EnvironPlus International Limited (EPI) undertook an initial suite of surveys in 2008, with Ecology Solutions having undertaken regular update work since 2011. Survey and assessment works are detailed in the ecology chapters of the 2013 ES and 2017 ES Addendum produced by Ecology Solutions in support of the 2017 Planning Consent.
- 12.4.3 The ecological information collected at the Site, or parts thereof, has been used to inform the decommissioning and remediation works that have been undertaken onsite. This has involved the submission of Natural England licence applications for roosting bats, GCN, Water Vole *Arvicola amphibius* and Badgers. The surveys have also informed general site maintenance and habitat management.
- 12.4.4 Ecology Solutions was further commissioned on behalf of Gravity in March 2020 to undertake a comprehensive programme of ecology surveys at the Site. Furthermore, specific survey and monitoring work has been undertaken in 2021 in relation to species such as bats and Badgers as well as habitat management. This survey information is considered as the basis for the current state of the environment. It should be noted that this survey work was undertaken with regard to the wider LDO Development boundary.
- 12.4.5 The methodology utilised for the survey work undertaken can be split into three areas, namely desk study, habitat survey, and faunal surveys. These are discussed in more detail within the baseline survey reports included at **Appendix 12.1 to 12.9** to this ES Chapter.
- 12.4.6 This chapter assesses the LDO Development against the future baseline scenario where the 2017 Planning Consent has been delivered. This 2032 baseline includes the approved development anticipated to come forward incorporating any further ecological mitigation required as part of the 2017 Planning Consent. As set out above, the historic and current state of the environment is well understood. However, it is important to note that the 2032 Baseline will be different from the Current State of the Environment of the Site. These differences are considered further below.

Habitats within the 2032 Baseline

- 12.4.7 The habitats that form the 2032 baseline will represent those delivered as part of the 2017 Planning Consent. This will include all landscape features and drainage features as well as habitat creation within the ecological mitigation measures. The time required to establish these habitats has been considered as part of the 2032 Baseline, as some habitats / features can be established relatively quickly (i.e. grasslands) compared to others (i.e. mature trees).
- 12.4.8 It is important to note that the Site boundary represents a greater area of land compared to the boundary of the 2017 Planning Consent. As such, the LDO boundary contains areas that fall outside of the 2017 Planning Consent. Where areas fall outside of the 2017 Planning Consent, but within the Site, they are considered to be unchanged from their current state (as described within the 2020 survey work), except where reasonable changes can be predicted. As part of this, it is assumed that current land uses and management (e.g., farming practices such as cattle grazing) would continue.

Faunal Species within the 2032 Baseline

- 12.4.9 As with the 2032 Baseline for habitats, the use of the Site by faunal species within the 2032 Baseline takes account of all the mitigation measures set out within the 2017 Planning Consent. Again, the baseline takes account of the difference between the 2017 Planning Consent boundary and the Site, where relevant.

- 12.4.10 As set out above in relation to works completed to date, a significant proportion of mitigation work related to protected species has been completed as part of the demolition and remediation within the ROF fence. This work and all other species-specific mitigation measures that are to be delivered as part of the 2017 Planning Consent are considered as part of the 2032 Baseline.

Designated Sites within the 2032 Baseline

- 12.4.11 The statutory and non-statutory designated sites and their relationship within the Site are described below with consideration given to the 2032 Baseline scenario.
- 12.4.12 The nearest statutory designated site is the Huntspill River National Nature Reserve (NNR), which is located immediately to the north of the Site, with a small section (c.0.7ha of a total 148.98ha) within the Site boundary itself. The 2017 Planning Consent concluded that the area within the Site that falls within the Huntspill River NNR would not be adversely affected. Indeed, ecological enhancements are to be delivered and are reflected within the 2032 Baseline.
- 12.4.13 The assessments for the 2017 Planning Consent did not identify any significant effects on any Sites of Special Scientific Interest (SSSI), SACs, SPAs and Ramsar Sites .
- 12.4.14 There are ten non-statutory designated Local Wildlife Sites (LWS) within or adjacent to the Site. Assessments for the 2017 Planning Consent identified that, impacts arise on several of these sites in the form of land take and/or changes to habitat type, some of which have been implemented as part of the remediation of the Site. In addition, ecological mitigation and enhancement measures are to be delivered at several of these sites. The 2032 Baseline will include the full implementation of these measures.
- 12.4.15 In considering the timeframe of the 2032 Baseline, it is anticipated that the LWSs onsite will be subject to review as part of the LDO and by the Local Wildlife Sites Panel over this period and changes that have arisen as part of the 2017 Consent will be reflected with revised LWS boundaries and/or qualifying features. The landowner will be expected to be consulted on this process
- 12.4.16 Where parts of LWSs are proposed to be affected or impacted by the development, it can be expected that these parts will be considered and integrated within the design code for the enterprise zone site. Where changes to habitat types or quality are delivered these will be reflected within revised citations. The 2032 Baseline will take account of these anticipated changes where appropriate.

Sensitive Receptors

- 12.4.17 Sensitive receptors are considered to be those that have been identified as ecologically important features. These consist of statutory and non-statutory designated sites within the Site, connected to the Site or in proximity to the Site, habitats within the Site and species that utilise the Site.
- 12.4.18 •Consideration is given to the following sensitive receptors:
- Statutory designated sites
- Somerset Levels and Moors SPA / Ramsar, Severn Estuary SPA / SAC / Ramsar, Mendip Woodlands SAC, Mendip Limestone Grasslands SAC, Bat SACs (North Somerset and Mendip Bat SAC, Hestercombe House SAC and Exmoor and Quantocks SAC) and Huntspill River NNR. This includes any unpinning designations such as SSSIs (as appropriate). It should be noted that the Habitats Regulations Assessment has proceeded on a precautionary basis, with screening being undertaken based upon a 20km radius from the Site.

- Non-statutory designated sites

Puriton Rhyne and Ponds Local Wildlife Site (LWS), Borrow Pit LWS, Stoning Pound Field and Rhyne LWS, Woolavington Road and Fields North LWS, Puriton Cowslip Field LWS, Puriton Ash Ground LWS, Northmead Drove Fields LWS, Puriton Meadows and Rail Spur LWS, New Ground Covert LWS, South Hills Wood LWS

- Habitats

Improved Grassland, Semi-Improved Grassland, Amenity Grassland, Marshy Grassland, Plantation Woodland, Orchard, Trees / Scrub, Hedgerows, Ephemeral / Short Perennial Vegetation, Standing Water, Reed Bed and Buildings and Hardstanding.

- Species

Bats, Badgers, breeding birds, reptiles, Water Vole, GCN and invertebrates.

Assessment of Significance

12.4.19 Identification and assessment of likely significant ecology effects of the proposed development uses the following well established models and standard procedures, alongside professional judgement.

12.4.20 The evaluation and impact assessment method is based on the guidelines produced by the Chartered Institute of Ecology and Environmental Management (CIEEM), which relies on an approach that involves professional judgement and the use of available guidance and information, rather than the provision of definitions to assign habitats and species different levels of value.

12.4.21 The value of each resource has been determined within a defined geographical context:

- International;
- National (England/Northern Ireland/Scotland/Wales);
- Regional (e.g. County);
- Local (within the District); or
- Within Zone of Influence (i.e. Neighbourhood) only.

12.4.22 A number of other key aspects require consideration when determining the value of any identified receptor. These include:

- Designated Sites and Features (e.g. SPA, SSSI, important hedgerows, etc.);
- Biodiversity Value (e.g. consideration of UK Priority Species and Habitats, Local Biodiversity Action Plan (BAP) targets, development plans and other published documents);
- Potential Value;
- Secondary or Supporting Value;
- Social or Economic Value; and
- Legal Issues.

- 12.4.23 For example, where local biodiversity action plans have not been adopted the Wild Somerset – The Somerset Biodiversity Strategy 2008 – 2018, has been used to assist in valuing features and developing mitigation strategies, where necessary. However as indicated this is now expired, though remains a source of local information regarding the biodiversity value associated with the area. Consideration has also been given to the Sedgemoor Local Plan.
- 12.4.24 Having identified the ecologically important features likely to be affected by the Proposed Development, the guidance promotes a transparent approach in which an impact is determined to be significant or not on the basis of a discussion of the factors that categorise it. This includes characterising the nature of the likely impacts on each important feature in terms of ecological structure and function, by considering the following parameters:
- Beneficial or adverse;
 - Extent;
 - Magnitude
 - Duration;
 - Reversibility; and
 - Timing and frequency.
- 12.4.25 Where it is concluded that there would be an impact (beneficial or adverse) on a defined site or ecosystem(s) or habitats or species within a given geographical area, it can often be further described as significant in the following terms; substantial, major, moderate, minor and negligible (no effect). However, given the subjective nature of these criteria, CIEEM consider that this approach should only be applied where consistency is required across chapters or where the specific subjective nature of the evaluation is explained. In order to maintain consistency across the Environmental Statement, when applying these criteria within this chapter, it has been necessary to make a clear distinction between evidence-based and value-based judgements to clarify the level of subjective evaluation that has been applied.
- 12.4.26 The assessment also gives specific consideration to the concept of biodiversity net gain. This process involves the quantitative comparison of the baseline situation with the proposed development. With the use of a relevant metric (e.g., the DEFRA metric) a biodiversity impact assessment can be undertaken, that both informs the design of proposed development and assists with quantifying the apparent loss or gain in biodiversity that will result from the proposed development.

Limitations

- 12.4.27 All of the species that occur in each habitat would not necessarily be detected during survey work carried out at any given time of the year, since different species are apparent at different seasons. However, given the habitats present and the level of historic and up to date survey work that has been conducted, it is considered that an accurate and robust assessment of the ecological value of the habitats present within the Site has been made. Therefore, it is considered that the survey information available forms a robust basis on which to undertake an ecological impact assessment.
- 12.4.28 Limitations exist with respect to predicting the 2032 Baseline scenario in relation to the type and condition of the habitats and species that are considered to be present at the Site. However, retained habitats are well understood, and the proposed habitat creation and enhancements proposed have regard to industry standards and follow recognised methodologies. Therefore, the condition of these habitats as part of the 2032 Baseline can be reasonably predicted.

- 12.4.29 Given the relatively short period of time, in ecological terms, over which changes need to be predicted it is considered highly unlikely that any new protected/notable species will colonise that in this time period. Equally, based on the mitigation measures prescribed as part of the 2017 Consent, it is considered that no protected/notable species will be lost to the Site over this period.

12.5 Baseline Conditions

Current State of the Environment

- 12.5.1 From an ecological perspective the Current State of the Environment is well understood as a comprehensive suite of survey work has been undertaken in 2020 with further specific survey / monitoring work undertaken in 2021. The majority of the Site has been subject to extensive land remediation and most recently, the removal of infrastructure below the surface of the Site which has resulted in large tracts of the Site be subject to active construction activity.
- 12.5.2 Habitat surveys were undertaken throughout 2020 to ascertain the general ecological value of the Site and to identify the main habitats and associated plant species.
- 12.5.3 The Site was surveyed based around extended Phase 1 survey methodology, as recommended by Natural England, whereby the habitat types present are identified and mapped, together with an assessment of the species composition of each habitat. This technique provides an inventory of the basic habitat types present and allows identification of areas of greater potential which require further survey. Any such areas identified can then be examined in more detail.
- 12.5.4 The following main habitat / vegetation types were identified on parts of the site:
- Improved Grassland;
 - Semi-Improved Grassland;
 - Amenity / Rough Grassland;
 - Marshy Grassland;
 - Plantation Woodland / Orchard;
 - Trees;
 - Scrub;
 - Hedgerows;
 - Tall Ruderal Vegetation;
 - Ephemeral / Short Perennial Vegetation;
 - Standing Water;
 - Reed Bed;
 - Bare Ground;
 - Seasonal Wet Ditches / Dry Ditches; and
 - Buildings and Hardstanding.

- 12.5.5 The vegetation present enabled the habitat types to be satisfactorily identified and an accurate assessment of the ecological interest of the habitats to be undertaken.
- 12.5.6 The habitats present and their current condition has been influenced by the part implementation of the 2012 Remediation Consent (planning reference: 42/11/00017) and the 2017 Planning Consent (planning reference 42/13/00010). Large areas of the Site have been subject to remediation works that have resulted in disturbance to habitats and features. Other areas have been safeguarded for habitat creation and enhancement.
- 12.5.7 General faunal activity observed during the course of the 2020 surveys was recorded, whether visually or by call (aurally). Specific attention was paid to the potential presence of any protected, rare, notable or Priority Species. In addition, specific surveys were undertaken for bats, Badgers, breeding birds, reptiles, Water Vole, GCN and invertebrates. Methodologies for the survey work employed have been developed with regards to recognised guidance and standards specific to each species / species group. These are detailed specifically with the survey reports included at **Appendix 12.2 to 12.9** of this ES Chapter.
- 12.5.8 The faunal survey results are summarised below. Detailed survey results are included within the survey reports included at **Appendix 12.2 to 12.9** of this ES Chapter.
- 12.5.9 Bat activity has been recorded across the Site, including a number of roost sites located within buildings within the south of the Site. Furthermore, bespoke bat roosts have also been created within the east of the Site as part of the licenced mitigation strategy related to the loss of onsite roosts as part of the site remediation. Species recorded include Common Pipistrelle *Pipistrellus pipistrellus*, Soprano Pipistrelle *Pipistrellus pygmaeus*, Nathusius' Pipistrelle *Pipistrellus nathusii*, Serotine *Eptesicus serotinus*, Brown Long-eared Bat *Plecotus auritus*, *Nyctalus* sp. and *Myotis* sp. In addition, rarer bat species have been recorded: Greater Horseshoe Bat *Rhinolophus ferrumequinum*, Lesser Horseshoe *Rhinolophus hipposideros* and Barbastelle *Barbastella barbastellus*.
- 12.5.10 Evidence of Badgers using the Site has been consistently recorded, including several setts, one of which is an artificial sett created as part of a licenced sett closure. That artificial sett is currently not in use; however a new sett has been created in close proximity and this is considered to be a main sett for the social group. Additional active setts of lesser significance are associated with the rail spur within the northwest of the Site.
- 12.5.11 A variety of bird species have been recorded utilising the Site. In total 47 species were recorded during the 2020 surveys with 28 of these species showing signs of breeding including singing, nest construction and territory displays. A further three species were recorded that were likely to be breeding however no signs of this were recorded during the surveys. The survey identified a number of species listed on Schedule 1 of the Wildlife and Countryside Act, the UK and Somerset BAPs and/or on the Red and Amber Lists of Species of High Conservation Concern. Such species include Cetti's Warbler *Cettia cetti*, Marsh Harrier *Circus aeruginosus* and Kingfisher *Alcedo atthis*.
- 12.5.12 Grass Snake *Natrix helvetica* are present in relatively low numbers and have been principally recorded in locations in the north of the Site, in association with the reed bed / rhynes habitats.
- 12.5.13 The system of rhynes and reedbed onsite are known to hold a small yet dispersed population of Water Vole. American Mink *Neovison vison* are also known to be present onsite and in conjunction with poor habitat condition (which is commonplace) are considered to be contributing to the low numbers and dispersed nature of Water Vole. American Mink populations will be subject to control as part of any licenced Water Vole strategy.
- 12.5.14 Translocations of Great Crested Newts have been undertaken onsite. The central part of the Site was cleared of GCNs in 2017 as part of the onsite remediation process and a separate licenced exclusion was undertaken in 2014 within the southeast of the Site as part of

drainage works. As part of this process, receptor sites have been created within the northwest and southeast of the Site. Their presence has been confirmed within these receptor areas through update survey work in 2020. The reed bed and adjacent rhynes to the north of the Site were also sampled for eDNA in 2020 and returned negative results for the presence of this species. The central areas within the ROF fence are considered to be cleared of GCN.

- 12.5.15 Detailed update invertebrate surveys were completed in 2020 across the Site. Habitat assessments were completed in early 2020, with sample collection undertaken thereafter. Initial findings have noted a number of nationally scarce species, such as a Horsefly *Atylotus rusticus*, that are associated with habitat features within the Site.

Priority Habitats

- 12.5.16 Of the several habitats identified during survey work a number fulfil criteria for UK priority habitats. The following Priority habitats are identified on Natural England spatial datasets:
- Traditional Orchard;
 - Lowland Mixed Deciduous Woodland;
 - Coastal and Floodplain Grazing Marsh; and
 - Lowland Calcareous Grassland.
- 12.5.17 The distributions of these habitats are illustrated within [Appendix 12.1](#).
- 12.5.18 Traditional Orchard is characterised by fruiting trees set within herbaceous vegetation. Trees are grown in low intensity for fruit or nut production rather than timber. Given the presence of fruiting trees and the lack of apparent intensive management it is considered that this Priority Habitat is present in the form of the orchard habitat.
- 12.5.19 Lowland Mix Deciduous Woodland include most semi-natural woodland in lowland England. The woods tend to be small and vary greatly in species composition and can include both primary and secondary woodland. Given the broad nature of the Priority Habitat description and the characteristics of the onsite woodlands, it is considered that this Prior Habitat is present onsite in the form of plantation woodland.
- 12.5.20 Coastal and Floodplain Grazing Marsh is defined as periodically inundated pasture, or meadow with ditches which maintain the water levels, containing standing brackish or fresh water. The ditches are especially rich in plants and invertebrates. Almost all areas are grazed, and some are cut for hay or silage. Seasonal water-filled hollows and permanent ponds with emergent swamp communities, but not extensive areas of tall fen species like reeds. It is considered that this description fits with some areas of semi-improved grassland onsite, although the majority of the improved fields lack the presence of species rich rhynes or emergent swamp vegetation.
- 12.5.21 Lowland Calcareous Grassland is defined by the presence of calcareous plant communities with agricultural enclosures as well as other locations such as roadside verges. However, the small area identified within the Puriton Cowslip Field LWS is considered to support semi-improved neutral grassland and it is considered that this Priority Habitat is not present onsite.
- 12.5.22 The Natural England spatial datasets also identify areas of good quality semi-improved grassland (a Non-Priority Habitat) in association with the fields to the northwest of the Site. However, areas of semi-improved grassland at the Site may be classified under Lowland Meadow, which shares a crossover with good quality semi-improved grassland.
- 12.5.23 In addition to the above, other habitats within the Site that may fall within Priority Habitat descriptions include:

- Reed bed;
- Ponds;
- Hedgerows; and
- Open Mosaic Habitats on Previously Developed Land (OMHPDL)

12.5.24 Reedbeds, as defined by UK BAP priority habitat descriptions, are wetlands dominated by stands of the Common Reed that maintain water for the majority of the year. Areas of open water, ditches, wet grassland and carr woodland may be associated with them. Areas of Reedbed were recorded, namely to the north of the Site.

12.5.25 Ponds, as defined within the UK BAP priority habitat descriptions, are seasonal standing water bodies up to 2 ha in size and which meet at least one of the following criteria:

- Pond habitat is of international importance;
- Is host to floral and faunal species of high conservation importance;
- Exceptional assemblages of key biotic groups;
- Ponds of high ecological quality; and
- Individual ponds or groups of ponds with a limited geographic distribution recognised as important because of their age, rarity of type or landscape context.

12.5.26 Ponds of recognised for supporting Great Crested Newts (a species of high conservation importance) are considered to meet this criterion.

12.5.27 All hedgerows consisting predominantly (i.e. 80% or more cover) of at least one woody UK native species are covered by the Priority Habitat. On this basis the Priority Habitat is considered to be present onsite in the hedgerow sections containing native species.

12.5.28 To identify OMHPDL all the following criteria set out in the UK BAP priority habitat descriptions must be met. The area of open mosaic habitat is at least 0.25 ha in size.

- a) There must be a known history of disturbance at the site or evidence that soil has been removed or severely modified by previous use(s) of the site. Extraneous materials/substrates such as industrial spoil may have been added.
- b) The site contains some vegetation. This will comprise early successional communities consisting mainly of stress-tolerant species (e.g. indicative of low nutrient status or drought).
- c) The site contains unvegetated, loose bare substrate and pools may be present.
- d) The site shows spatial variation, forming a mosaic of one or more of the early successional communities plus bare substrate, within 0.25ha.

12.5.29 By applying the above criteria, it is considered that some parts of the Site would qualify. This is considered to be limited to areas of sparsely vegetated ephemeral / short perennial vegetation present in the south west of the Site, in association with the Puriton Ash Grounds LWS. It is noted that given the Site has been subject to remediation and active construction works are taking place, other parts of the Site may superficially fit with this description. However, this is in large part related to the recent / continuing activities onsite pursuant to remediation and other site management works.

2032 Baseline

Designated Sites

Statutory sites

- 12.5.30 The nearest statutory designated site is the Huntspill River NNR, which is located immediately to the north of the Site, with a small section (c.0.7ha of a total 148.98ha) within the Site boundary itself. The Huntspill River NNR consists of open water, lowland grassland and small areas of woodland. It supports populations of Otter *Lutra lutra* and Barn Owl *Tyto alba*. It is also designated due to its supporting and connecting habitat between the Severn Estuary SPA and the Somerset Levels and Moors SPA. The 2017 Planning Consent concluded that the area within the Site that falls within the Huntspill River NNR would not be adversely affected. Indeed, ecological enhancements are to be delivered and will be reflected within the 2032 Baseline.
- 12.5.31 The enhancements proposed within the reed bed are to provide a greater depth of water for the reeds to grow in and prevent the establishment of more terrestrial species within it. This will be delivered as part of the drainage scheme for the 2017 Consent.
- 12.5.32 The reed bed will be managed with a cutting regime aimed at reducing the speed at which the reed bed becomes choked with mature reeds and reed detritus. This will be undertaken as part of a rotational program of reed cutting, where only sections of the reeds are cleared every 7-15 years. The reedbed will also need to be dug out at times to alleviate the build-up of sediment and prevent terrestrial species to establish. The current state of the environment would indicate that this is required in the short term, but it is otherwise expected that this will only be required very infrequently. As part of the 2032 Baseline, this management is considered to be initiated.
- 12.5.33 The next nearest statutory designated site is Bridgwater Bay SSSI which is situated approximately 2.2km to the west of the Site at its closest point. The SSSI forms part of the Severn Estuary SPA, SAC and Ramsar Site (approximately 2.2km to the west of the Site). This area is designated for its internationally important populations of wildfowl and waders, its coastal habitats and three annex II species of fish. Further detailed information regarding the qualifying interest features associated with the Severn Estuary SPA, SAC and Ramsar site is included within the sHRA at **Appendix 12.12**.
- 12.5.34 Catcott, Edington and Chilton Moors SSSI is situated 3.2km to the east of the Site. This SSSI forms part of the Somerset Levels and Moors SPA and Ramsar site. The Somerset Levels and Moors SPA and Ramsar site is designated for its important assemblages of wintering wildfowl and waders including four Annex I species. Further detailed information regarding the qualifying interest features associated with the Somerset Levels and Moors SPA / Ramsar site is included within the sHRA at **Appendix 12.12**.
- 12.5.35 Other relevant statutory sites considered include three Bat SACs known as North Somerset and Mendip Bat SAC (located approximately 16km northeast of the Site at its closest point), Hestercombe House SAC (approximately 14.7km southwest of the Site) and Exmoor and Quantocks SAC (approximately 14.3km west of the Site). In addition, Mendip Limestone Grasslands SAC is located approximately 13km northeast and Mendip Woodlands SAC is located approximately 15.2km northeast.
- 12.5.36 The 2017 Planning Consent is not considered to materially affect the current status of any of the above designated sites. Furthermore, given the level of protection afforded to such designations it can be expected that they will remain present and maintaining their favourable condition as part of the 2032 Baseline. A summary of the unit conditions for all SSSIs underpinning relevant European sites is included at **Appendix 12.10**.

Non-statutory Sites.

- 12.5.37 There are ten non-statutory designated sites within or adjacent to the Site. Assessment for the 2017 Planning Consent identified that impacts would arise on several of these sites in the form of land take and/or changes to habitat type, some of which have been implemented as part of the remediation of the Site. In addition, ecological mitigation and enhancement measures are to be delivered at several of these sites. The 2032 Baseline includes the full implementation of these measures. The retained LWSs will be considered and integrated into the LDO process and managed to enhance their biodiversity and retain their designating features where possible within the smart campus. The management regime for each LWS is informed by the habitats and features present within them although follows the general principles of initiating a long-term sensitive maintenance program. In some instances, habitat creation is also proposed, and these are detailed further below.
- 12.5.38 In the northeast corner of the Site lies Puriton Rhyne and Ponds LWS, which includes an area of reed bed that is present within the north of the Site and leads towards the Huntspill River. It is designated for its notable plant species within the rhynes and because it supports Otter and the nationally scarce Hairy Dragonfly *Brachytron pratense*. Under the 2017 Planning Consent, the majority of the LWS will be retained and enhanced, although areas to the south of the LWS would be lost to development. It is considered that these losses will reduce the overall extent of the LWS, although the areas containing qualifying features will remain and thus the LWS will remain as part of the 2032 Baseline.
- 12.5.39 Borrow Pit LWS is situated in the east of the Site. It is designated for its breeding population of Cetti's Warbler. This area will not be affected as part of the 2017 Planning Consent and will therefore remain as part of the 2032 Baseline.
- 12.5.40 Stoning Pound Field and Rhyne LWS is situated to the east of the Site and to the south of the Borrow Pit LWS. It is designated for its notable plant species and on account of it previously supporting Otter. The LWS only partially falls within the 2017 Planning Consent (but falls fully within the Site boundary) and the proposals include screen planting within areas of improved grassland. By 2032, it is considered that such planting will have matured but not to its full extent. Overall, it is considered that the LWS would remain unchanged in respect of its qualifying features and extent as part of the 2032 Baseline.
- 12.5.41 Woolavington Road and Fields North LWS is situated within the south of the Site. It is designated for the mire habitats that it supports. The LWS only partially falls within the 2017 Planning Consent and the proposals include woodland planting within this area. Sections of the approved village enhancement scheme will pass through this LWS and in order to avoid effects on the LWS a wooden boardwalk will be installed over wetland habitats. By 2032, it is considered that such planting will have matured but not to its full extent. Overall, it is considered that the LWS would remain, for the most part, unchanged in respect of its qualifying features and extent as part of the 2032 Baseline.
- 12.5.42 Puriton Cowslip Field LWS is situated within the Site to the north of the Woolavington Road and Fields North LWS. It is designated for the grassland habitat and the plant species it supports. Under the 2017 Planning Consent, part of this LWS would be lost to development with other features enhanced. The areas to be lost are considered to be of limited value overall being at the periphery of the LWS boundary. The most notable feature is limited to an area of unimproved grassland within its centre that is retained and enhanced as part of the 2017 Planning Consent. The extent of the LWS will be reduced within the 2032 Baseline although the qualifying features are considered to remain.
- 12.5.43 Puriton Ash Ground LWS is situated within the western part of the Site and is designated for notable plant species that it supports. It is a species rich re-colonising waste ground with areas of scrub. The area was used as a tip for rubble and ash associated with the ROF. This has provided a basic nutrient poor substrate that has allowed the plant species to establish at a reduced rate. Part of the LWS has been capped under a landscape feature as part of remediation works. Within the 2032 baseline the LWS will remain, and the landscape mound

will have established a meadow grassland with areas of scrub and woodland planting that will be maturing. In light of the establishment of the grassland and scrub management, it is considered that the ecological value of this LWS will have increased from the current state of the environment.

- 12.5.44 Northmead Drove Fields LWS is situated within the northwest of the Site. It is designated for its mosaic habitats of grassland and rhynes. This LWS falls outside the 2017 Planning Consent boundary and is therefore considered to remain unchanged as part of the 2032 Baseline.
- 12.5.45 Puriton Meadows and Rail Spur LWS is situated within the northwest of the Site and then continues along the railway spur to the northwest outside of the ROF Site where it bisects the Northmead Drove Fields LWS. It is designated for the notable species that it supports and an area of semi natural grassland. Given that this LWS includes the rail spur, it falls within safeguarded land associated with the reinstatement of the rail connection, and no changes are considered to arise as part of the 2017 Planning Consent on the 2032 Baseline.
- 12.5.46 New Ground Covert LWS is situated outside of the Site boundary, to the south of the route of the Gravity Link Road that will be operational as part of the 2032 Baseline. It is designated for the ancient semi-natural broadleaved woodland habitat that it supports. However, the woodland is not classified as ancient woodland under the ancient woodland inventory. The LWS is considered to remain unchanged in relation to the 2032 Baseline.
- 12.5.47 South Hills Wood LWS is situated outside of the Site boundary, to the south-west of the route of the Gravity Link Road. It is designated for the ancient semi-natural broadleaved woodland and species rich grasslands that it supports. However, the woodland is not classified as ancient woodland under the ancient woodland inventory. The LWS is considered to remain unchanged in relation to the 2032 Baseline.

Habitats

- 12.5.48 The habitats present within the 2032 Baseline have been defined with consideration of the proposed habitat retention, losses, creation and enhancements that result from the implementation of the 2017 Planning Consent. Consideration has been given to the likely condition and maturation of such habitats and features with respect to the time it will take them to establish (e.g., woodlands and trees will mature more slowly than grasslands). Further consideration has been given to the expected habitat management strategies employed.
- 12.5.49 The following main habitat / vegetation types were identified:
- Improved Grassland;
 - Semi-Improved Grassland;
 - Amenity Grassland / Planting;
 - Marshy Grassland;
 - Plantation Woodland
 - Orchard;
 - Trees and Scrub;
 - Hedgerows;
 - Ephemeral / Short Perennial Vegetation;

- Standing Water;
- Reed Bed; and
- Buildings and Hardstanding.

12.5.50 The extent and condition of these habitats in the context 2032 Baseline is considered further below.

Improved Grassland

12.5.51 Improved grassland is present in fields at the peripheries of the Site boundary including the fields in the south and northwest of the Site. These fields fall outside the 2017 Planning Consent boundary and are cattle, sheep or horse grazed pastures. This reflects the main land use of the wider landscape within which the Site is located. This habitat is typically intensively managed, either as grazing or as a combination of grazing and forage harvesting. It is expected that this management regime will continue as part of the 2032 Baseline. The implementation of the approved village enhancement scheme will result in the loss of improved grassland, these losses will be realised as part of the 2032 Baseline.

Semi-Improved Grassland

12.5.52 As part of the 2017 Planning Consent mitigation strategy areas of semi-improved grassland are to be retained and enhanced or created within the retained elements of the LWSs present within the Site. This includes the landscape features to the west, the unimproved grassland within the Puriton Cowslip Field LWS, the meadow grassland associated with the rail spur and the grassland within the Puriton Rhynes and Ponds LWS. Some of these enhancement measures are already in place within the Current State of the Environment and will have matured as part of the 2032 Baseline.

12.5.53 Areas of safeguarded land associated with energy production will be treated as managed grasslands as part of the 2017 Planning Consent. As reflected within the Current State of the Environment, it is considered that the grasslands in these areas will be a species poor semi improved grassland subject to regular management as part of the 2032 Baseline.

12.5.54 Path side verges along the approved village enhancements scheme will deliver new areas of species rich grassland that will be considered to have matured as part of the 2032 Baseline.

Amenity Grassland / Planting

12.5.55 The 2017 Planning Consent included the creation or maintenance of areas of more formal planting, the design of which is informed by the Design Guide. These habitats will be created and well managed as part of the 2032 Baseline. The implementation of the approved village enhancement scheme will result in the loss of amenity grassland, these losses will be realised as part of the 2032 Baseline.

Marshy Grassland

12.5.56 The most extensive area of this habitat is present to the north and west of the 37 Club. The majority of this falls outside the 2017 Planning Consent boundary. An area of marshy grassland was also created as part of the GCN mitigation area in the northwest of the Site. This is already well established as part of the Current State of the Environment. Further marshy grassland is to be created in association with the northern section of the Gravity Link Road, which will be included in the 2032 Baseline. Furthermore, the implementation of the approved village enhancement scheme will pass through areas of marshy grassland, over which sections of wooden boardwalks will be installed, these changes will be included as part of the 2032 Baseline.

Plantation Woodland

- 12.5.57 There are discrete blocks of plantation woodland present throughout the Site, with larger areas present in the northwest and southeast and smaller isolated blocks scattered elsewhere within the Site. Given the nature of the plantation, the woodlands lack structural, age and species diversity.
- 12.5.58 As part of the Current State of the Environment the woodlands are present and subject to management to improve their condition. All woodland is considered to be retained as part of the 2032 Baseline.
- 12.5.59 New areas of woodland planting will be delivered as part of the 2017 Planning Consent, which will not be in a mature condition as part of the 2032 Baseline.

Orchard

- 12.5.60 Remnant orchard is located in the east and southeast of the Site. These areas contain relatively few orchard trees (*Malus* sp.) being dominated in large part by a mix of scrub, tall ruderal, and semi-improved grassland. These orchards fall outside the 2017 Planning Consent boundary and no enhancement or management is considered to take place as part of the 2032 Baseline, aside from grassland mowing. The condition of the orchard trees as part of the Current State of the Environment is generally poor and considered to continue to decline.

Trees and Scrub

- 12.5.61 Outside of the woodland, orchard and hedgerow treelines, there are relatively few mature trees within the Site. Within the ROF site and along the approach roads, there are tree lined avenues consisting primarily of Horse Chestnut *Aesculus hippocastanum* that are to be retained.
- 12.5.62 New tree planting is also to take place as part of the 2017 Planning Consent within plots as part of the amenity areas and as structure / screening planting. This will not be considered to be mature as part of the 2032 Baseline.
- 12.5.63 Whilst extensive scrub is present as part of the Current State of the Environment, this will be significantly reduced and controlled as part of the 2017 Planning Consent.
- 12.5.64 The railway corridor to the north-west of the Site has also been subject to extensive encroachment by scrub. As this is safeguarded land, the scrub is considered to remain present and continue to encroach on the railway as part of the 2032 Baseline.
- 12.5.65 The implementation of the approved village enhancement scheme will result in the loss of trees and scrub, these losses will be realised as part of the 2032 Baseline.

Hedgerows

- 12.5.66 As part of the 2017 Planning Consent hedgerows will be reduced within the Site, with sections retained in the northeast and northwest and new hedgerow planted as boundary features. Any new sections of hedgerow will be considered as not fully mature as part of the 2032 Baseline.
- 12.5.67 Areas outside of the 2017 Planning Consent boundary but within the Site boundary, namely in the south of the Site, contain additional hedgerow habitat. Given the type of habitat and their typical management, it is considered that these will remain unchanged from the Current State of the Environment in the 2032 Baseline.

- 12.5.68 However, construction activity related to the Hinkley Point C Connection Project in the southeast of the Site has required the removal of several hedgerows along the corridor of the connection route. Where any replanting is required, these sections will be considered to be immature.
- 12.5.69 The implementation of the approved village enhancement scheme will result in the removal of short lengths of hedgerow and creation and widening of gaps in hedgerows to facilitate the access route adjacent to Woolavington Road. By way of mitigation new hedgerow planting will be provided in adjacent areas that will be considered to be immature. These changes will be included as part of the 2032 Baseline.

Ephemeral / Short Perennial Vegetation

- 12.5.70 As part of the 2017 Planning Consent the Puriton Ash Grounds LWS will be retained in part, with elements of ephemeral / short perennial vegetation present. The LWS will be managed to maintain the conditions that allow this vegetation type to persist. This habitat type is considered to be limited to this area within the 2032 Baseline.

Standing Water

- 12.5.71 The most prominent water feature is the Borrow Pit located in the east of the Site. The fishing ponds are not subject to any change as part of the 2017 Planning Consent and are subject to management as part of the angling club's usage of the Site. The condition of the Borrow Pit is considered to remain unchanged as part of the 2032 Baseline.
- 12.5.72 A number of small seasonal ponds are located to the south east of the Site associated with grasslands, hedgerows and orchard that fall outside the 2017 Planning Consent boundary. As such, their condition is considered to remain unchanged as part of the 2032 Baseline.
- 12.5.73 Four ponds (designed to deliver six waterbodies overall, in periods when water levels drop) have been created in the northwest of the Site as part of the GCN mitigation area. These ponds have become well established and are considered to be in good condition. As such, their condition is considered to remain unchanged as part of the 2032 Baseline.
- 12.5.74 New SuDS features and ponds are included within the 2017 Planning Consent, including within the northern section of the Gravity Link Road. This feature will be considered to be fully installed as part of the 2032 Baseline.
- 12.5.75 Significant proportions of the rhyme network will be disturbed or lost as part of the 2017 Planning Consent with on-plot rhynes provided as necessary as informed by the Design Guide, although the areas of greater value including the permanent rhyme to the northeast of the Site will be retained and enhanced. The rhyme system will be considered to be fully implemented as part of the 2032 Baseline, although the areas of value will be considered to remain as highlighted within the Current State of the Environment. It should be noted that this does not apply to areas of safeguarded land.

Reed Bed

- 12.5.76 A substantial corridor of reed bed is present to the north of the Site which connects to the River Huntspill to the north. A specific management plan has been developed to enhance the area as part of the 2017 Planning Consent (see above in relation to the Puriton Rhynes and Ponds LWS). The 2032 Baseline will consider that this management has been implemented and is ongoing.
- 12.5.77 The invasive species Himalayan Balsam *Impatiens glandulifera* has been recorded within smaller areas of reed bed present associated with the fishing ponds within the Borrow Pit to the east of the Site. The species is to be controlled, with the aim of eradicating it from the Site, although it may recolonise the Borrow Pit or other wetland features at any time and will therefore require continued monitoring.

Buildings and Hardstanding

- 12.5.78 Buildings associated with the 2017 Planning Consent will be considered to be in good condition as part of the 2032 Baseline. Any retained buildings that remain in use (e.g. the 37 Club) will be considered to be maintained in the current condition.
- 12.5.79 Areas of hardstanding associated with roads, access and parking will be considered to be in well maintained condition as part of the 2032 Baseline.

Priority Habitats within the 2032 Baseline

- 12.5.80 Several priority habitats are present within the Site as part of the Current State of the Environment. Each of them are discussed below with respect of the 2032 Baseline.
- 12.5.81 Areas of Traditional Orchard are located outside of the 2017 Consent boundary and will not be directly affected. Although as noted above the orchards are in poor condition and this deterioration is considered to continue as part of the 2032 Baseline
- 12.5.82 Lowland Mix Deciduous Woodland in the form of plantation woodland will be retained. New woodland planting is also proposed, although it would not be fully mature as part of the 2032 Baseline.
- 12.5.83 Coastal and Floodplain Grazing Marsh is present in some areas of semi-improved grassland onsite. Furthermore, the majority of the Priority Habitat falls outside of the 2017 Consent boundary. Coastal and Floodplain Grazing Marsh will be retained as part of the 2032 Boundary within the northeast of the Site.
- 12.5.84 Good quality semi-improved grassland (a Non-Priority Habitat) is highlighted within the fields to the northwest of the Site. However, areas of semi-improved grassland at the Site may be classified under Lowland Meadow, which shares a crossover with good quality semi-improved grassland. These areas are retained as part of the 2032 Baseline.
- 12.5.85 Areas of Reedbed to the north of the Site will be retained as part of the 2032 Baseline.
- 12.5.86 Ponds that fit the criteria for this Priority Habitat will be retained as part of the 2032 Baseline.
- 12.5.87 Hedgerows will be, in the main, as part of the 2032 Baseline. Lengths will be lost in the central areas of the Site to facilitate the 2017 Consent. However, new hedgerow planting is also to be delivered at the Site boundaries and along internal roads and paths.
- 12.5.88 OMHPDL is considered to be limited to areas of sparsely vegetated ephemeral / short perennial vegetation within the Puriton Ash Grounds LWS. This habitat will be retained as part of the 2032 Baseline.

Fauna

- 12.5.89 Consideration is given below to the use of the Site by protected and notable species within the 2032 Baseline as informed by survey work detailing the Current State of Environment and the 2017 Planning Consent.

Bats

- 12.5.90 Bat roosts are present within the bat lofts created as part of the remediation consent, with evidence of use by Brown Long-eared bats having been recorded. Additional roosts are known to be present within the 37 club (Common Pipistrelle maternity roost) and the derelict dwelling on Woolavington Road (non-maternity Brown Long-eared bat roost) and within pill boxes to the south of the site. The 2017 Planning Consent retains these features, and they

are considered as active bat roosts within the 2032 Baseline. Further detail of roosting bats is included as **Appendix 12.3**.

- 12.5.91 In respect of the 2017 Planning Consent, the majority of the interest for commuting bats is limited to the periphery of the Site where navigational features such as hedgerow, woodland and rhynes are present. The 2017 Planning Consent sought to retain these areas as 'dark corridors'. The Internal part of the Site will be subject to greater levels of light spill and newly created amenity habitats and buildings are considered unlikely to be attractive to bats as part of the 2032 Baseline. The Site within the 2032 Baseline is considered to be utilised by the same species identified as part of the survey work that informs the Current State of the Environment.

Badger

- 12.5.92 The majority of Badger activity is associated with the railway spur as part of the Current State of the Environment. Indeed, setts (including the artificial sett) are present within this area and considered to remain as part of the 2032 Baseline. Habitats outside the railway spur offer navigating corridors throughout the Site, although the most suitable habitat for foraging and sett building is limited to the woodlands onsite. More central areas will be subject to increased lighting which will reduce its suitability to the species as part of the 2032 Baseline.

Birds

- 12.5.93 As recorded as part of the Current State of the Environment, the greatest interest for bird species onsite is the woodland, hedgerow, permanent rhynes and the reed bed. These are in the main, restricted to the periphery of the Site and as the 2017 Planning Consent seeks to retain these areas as 'dark corridors', they are considered as retained and enhanced features in the 2032 Baseline.
- 12.5.94 Barn Owl are considered to continue to remain present at the Site as part of the 2032 Baseline. Barn Owl boxes will be retained onsite and habitats such as long grasslands and hedgerow / tree lines will provide suitable foraging areas.
- 12.5.95 The Site within the 2032 Baseline is considered to be utilised by the same species identified as part of the survey work that informed the Current State of the Environment. Historic survey work has shown that the Site is of little interest to notable wintering bird species and is considered that the Site will not support a notable wintering bird population as part of the 2032 Baseline. With regard to breeding birds, the 2032 Baseline will retain areas of greatest value to the breeding population, including the reed bed, hedgerows and trees. As such, the 2032 Baseline is considered to support a similar assemblage of breeding birds as the Current State of the Environment.

Reptiles

- 12.5.96 Survey to inform the Current State of the Environment identified a small population of Grass Snake onsite, although their distribution is limited, and they were only recorded near to the reed bed in the north. As part of the 2017 Planning Consent, no specific mitigation for reptiles was considered necessary. The 2032 Baseline will consider that the populations and distribution of Grass Snake remains similar to the Current State of the Environment.

Water Vole

- 12.5.97 As part of the 2017 Planning Consent, Water Vole would be excluded from the parts of the Site subject to development and allowed to recolonise the Site once works were complete. Whilst some aspects of the rhyme network would be created to provide suitable habitat for the species, other sections (namely on plot ditches) would be less suitable.

- 12.5.98 As part of the 2032 Baseline, Water Vole are considered to be present within the Site within the retained and enhanced permanent rhynes.

Great Crested Newts

- 12.5.99 As part of the remediation works a GCN mitigation area was constructed within the northwest of the Site. The ponds created and associated habitats have been subject to management and are well established. As part of the 2032 Baseline, the area is considered to be in good condition for the species.
- 12.5.100 Other known GCN breeding ponds are located to the southeast of the Site (outside of the ROF fence). As part of the 2032 Baseline, they will also be considered to hold GCN.
- 12.5.101 Habitats within the plots of the 2017 Planning Consent are unlikely to be suitable for this species and it is unlikely that the populations will have colonised other parts of the Site within the time spans of the 2032 Baseline.

Invertebrates

- 12.5.102 As part of the 2017 Planning Consent, habitats of value to terrestrial and aquatic Invertebrates recorded onsite as part of the Current State of the Environment are largely retained and enhanced. These habitats being the reed bed, rhynes, orchard and nectar rich wildflowers associated with the more species rich grassland onsite. As part of the 2032 Baseline, these habitats are considered to remain as offering the most suitable habitat for the invertebrate population with the development, amenity areas and managed grasslands being of lesser value.

Other Species

- 12.5.103 It is noted that Otter are referenced as features for the Huntspill River NNR and other LWSs within the Site. However, the specific EPI survey work of 2008 / 2009 recorded no presence of Otter. During detailed survey work undertaken of potentially suitable habitat including the rhynes, reed bed, fishing ponds and areas of dense scrub over many years since, no evidence of Otter has been recorded onsite. Potential holt building habitat is very limited onsite, considered to be limited to the very north of the reed bed near the Huntspill River NNR and this will be unaffected by the 2017 Consent. Survey work in this area as part of the 2020 re-survey did not show any use by Otters. This species is not considered to be currently present at the Site.
- 12.5.104 Invasive American Mink are known to be present within the Site. This species will be controlled as part of the licenced Water Vole mitigation strategy. However, as they are likely present in the wider area it is considered that individuals will continue to access the Site as part of the future baseline where suitable habitat is available, in the absence of any sustained control.
- 12.5.105 As part of the survey work for GCN and the translocation works undertaken at the Site in respect of GCN other amphibian species have been recorded. These include Smooth Newt *Lissotriton vulgaris*, Common Frog *Rana temporaria* and Common Toad *Bufo bufo*. The habitats within the development plots associated with the 2017 Planning Consent are unlikely to be suitable for these species although they may remain present within suitable aquatic / terrestrial habitat (e.g. ponds and the reed bed) retained as part of the 2032 Baseline.

Consideration of Approved Developments

- 12.5.106 Approved developments and sites allocated in the Sedgemoor Local Plan 2011-2032 with the potential to give rise to significant cumulative effects have been identified in the wider area surrounding the Site. The EMMS in close proximity to the Site are limited to residential development that generally include their own elements of public open space including blue

and green infrastructure. None of which are positioned in very close proximity to the proposed open space within the Site and therefore any 'edge effects' associated with these developments will be of negligible significance. Furthermore, they are not considered to inhibit the aims of the enhancements or any species-specific mitigation to be delivered as part of the Proposed Development.

Biodiversity Net Gain

- 12.5.107 To further inform this impact assessment a Biodiversity Impact Assessment (BIA) has been undertaken that identifies and evaluates the potential effects the Development proposals may have on ecology. The process involves the use of a metric as a proxy for recognising the negative impacts on habitats arising from a development and calculating how much new or restored habitat, and of what types is required to deliver sufficient net gain. The metric approach provides a useful guide to demonstrate, on a quantitative basis, whether a net gain in biodiversity can be achieved. The approach involves comparing the baseline scenario to that of the proposed Development.
- 12.5.108 It should be noted that the BIA metric (DEFRA 3.0) shows that the Development will result in a loss of -62.97% habitat units, -32.83% hedgerow units and -32.16% river units. The full calculations are shown at **Appendix 12.11**. It is also important to note that the BIA metric used does not account for other forms of mitigation beyond those related to habitats. As such, other ecological betterments such as the provision of bat roost sites (e.g. bat boxes or lofts), log piles / hibernacula and bird boxes are not accounted for within the metric and therefore need to be considered in addition to the demonstrated net gain. The results of the BIA metric has been used to inform the quantum and type of habitat mitigation required to ensure a 10% net gain can be achieved through an appropriate offsetting scheme.

12.6 Embedded Mitigation

Demolition and Construction Phase

- 12.6.1 A Framework Demolition and Construction Environmental Management Plan (FDCEMP) is provided with this ES at **Appendix 4.1**. The aims of the plan are to avoid adverse effects on retained features onsite during the demolition and construction phase. This includes pollution prevention of aquatic and terrestrial habitats, prevention of encroachment of construction works onto retained habitat of value (including designated sites) and the control of noise and light disturbance on retained features such as badger setts or bat roosts. This is secured through the Compliance Form.

Landscape Strategy and Design

- 12.6.2 The landscape strategy is considered to be inherent to the scheme design and the provision of structural and screening planting, as well as the overall provision of open space. Ecological mitigation is directly linked to the landscape proposals, set out in the Design Guide. The provision of soft landscaping across the Site serves a dual purpose as the proposed planting will directly affect the floral diversity within the Site (with the planting or seeding of areas). Planting will provide foraging and sheltering resources as well as linking corridors in and around the Site for species to utilise. This will help mitigate for losses of, and impacts to, retained habitats and features that support protected / notable species.
- 12.6.3 The strategic landscape parameters plan included at **Appendix 3.1f** shows the extent of open space that is proposed as part of the LDO Development.
- 12.6.4 This includes green space that will feature areas of wildflower grassland and shrub / tree planting of native origins. The green space will provide opportunities to mitigate for losses to existing grasslands and losses of scrub and woodland.

- 12.6.5 Landscape corridors that include lines of trees and rhynes will provide links through the Site for use by faunal species as well as provide opportunities to deliver new / replacement habitat of ecological value.
- 12.6.6 The indicative extents of structural and woodland planting are also shown that will provide foraging and sheltering opportunities for a range of species.
- 12.6.7 This green space will also serve as amenity space for recreational use and as such will also include areas of short grassland and more regularly managed areas that will form part of a larger matrix of connected habitats. In addition to being of ecological value as part of an overall habitat matrix, areas where amenity use is a key objective are key components of the mitigation / avoidance strategy associated with the nearby Severn Estuary SPA / Ramsar (and SAC). New housing associated with the proposals could lead to an increased level of recreational pressure at the Severn Estuary SPA / Ramsar in the absence of mitigation. The delivery of good quality, accessible recreation / amenity space on the door step of any new residents (and workers) will help to avoid residents (and workers) seeking such opportunities at more sensitive locations, such as the Severn Estuary SPA / Ramsar. Further detail is presented in the sHRA at [Appendix 12.12](#).
- 12.6.8 Overall, the strategic landscape parameters plan shows that broad areas of land are available at the Site's periphery that can be utilised to deliver a diverse and interconnected matrix of habitat types of ecological value.
- 12.6.9 The southwestern corner of the Site provides a mix of aquatic and terrestrial habitat that connects across the frontage of the Site with landscaped tree lines and rhynes as well as wider areas of open space that can serve as stepping-stones through the corridor. These connect again into the Gravity Park that will include retained orchards, hedgerows, and grasslands all of which can be subject to ecological betterment.
- 12.6.10 Along the eastern boundary of the Site, structural tree and woodland planting will be established that will provide sheltered connections through the Site for species in a north-south direction. Structural tree planting provides screening from surrounding areas as well as delivering commuting routes, foraging resources and places of refuge and shelter of value to a range of faunal species / groups.
- 12.6.11 Eastern boundary planting connects with the retained fishing ponds to the east of the Site and further north and west, to the mix of grasslands, trees and scrub, rhynes and water attenuation features that provides a significant opportunity to deliver biodiversity betterment. The northern boundary of the Site provides a strong ecological link in an east-west direction, providing commuting routes as well as sheltering and foraging areas for a range of species. Furthermore, the northern part of the Site provides a link through the retained reedbed and rhynes system to the Huntspill NNR and wider landscape. The western boundary adds further diversity to the matrix of habitats which can be delivered, with areas of woodland, scrub, grasslands, and ephemeral habitats (associated with the rail infrastructure and landscape mound, with a connection to the mix of aquatic and terrestrial habitat in the southwest of the Site.

Surface Water Management Strategy

- 12.6.12 Similarly, the surface water management strategy is closely linked to ecological mitigation requirements. The existing aquatic features within the Site (e.g. rhynes) are considered to be of ecological value, supporting a range of faunal species.
- 12.6.13 New open drainage infrastructure will be designed to support a vegetation structure and species complement which will be of ecological value.
- 12.6.14 The surface water management strategy will also allow for the monitoring of water levels to ensure that fluctuations in water levels remain within acceptable limits, an important factor for many species where flooding and drying are detrimental to long term population viability.

Lighting and Noise

- 12.6.15 Mitigation relating to lighting is also of relevance to the required ecological mitigation. Light can affect the behaviour of protected / notable species such as bats and to an extent Badgers and birds. Mitigation that reduces unnecessary light spill and focuses lighting to where it is needed for security and safety reasons will also reduce potential disturbance impacts on species using the Site.
- 12.6.16 Regarding noise, whilst any measures to limit increased noise levels are to be viewed positively, given the specific mitigation strategies detailed in subsequent sections, the distances involved in relation to nearby statutory designated sites and the level of habituation which would be expected occur in relation to birds, for example, noise effects (insofar as ecological receptors are concerned) are not considered to be significant.

12.7 Assessment of Likely Effects

- 12.7.1 This section identifies the likely significant effects of the Proposed Development, both during demolition / construction and operation, such that any further mitigation can be identified where necessary. To avoid repetition the demolition / construction and operation effects are considered together by receptor.

The Principles of Site Evaluation

- 12.7.2 The methods and standards for site evaluation within the British Isles are defined in 'A Nature Conservation Review' by Ratcliffe (1977). These are broadly used across the United Kingdom to rank sites, so that priorities for nature conservation can be ascertained. The current SSSI designation maintains a system of data analysis which is roughly tested against Ratcliffe's criteria.
- 12.7.3 In general terms, these criteria are identified as size, diversity, naturalness, rarity and fragility.
- 12.7.4 Additional secondary criteria includes: typicalness, potential value, intrinsic appeal, recorded history and the position within ecological/geographical units are also incorporated into the ranking procedure.
- 12.7.5 Any assessment should not judge sites in isolation from others since several habitats may combine to make it worthy of importance to nature conservation.
- 12.7.6 Furthermore, relying on the national criteria would undoubtedly distort the local variation in assessment and, therefore, additional factors need to be taken into account (e.g., a woodland type with comparatively poor species diversity, common in the south of England, may be of importance at its northern limits, say in the border county).
- 12.7.7 In addition, habitats of local importance are often highlighted within a local Biodiversity Action Plan (BAP). The Sedgemoor BAP highlights a number of habitats. Where these occur within the application site, they are highlighted below.
- 12.7.8 Levels of importance can be graded at the international, national, regional, county or local level and in terms of low, medium or high value.

Designated Sites

Statutory Designated Sites

- 12.7.9 There are no sites of international or national importance such as SPAs, SACs or SSSIs within the Site boundary. The statutory designated Huntspill River NNR is located in the north of the Site and a small section is included within the Site. It is notable as connecting

habitat of the Somerset Levels and Moors SPA/Ramsar and the Severn Estuary SPA/Ramsar.

- 12.7.10 In addition, Mendip Limestone Grasslands SAC is located approximately 13km northeast and Mendip Woodlands SAC is located approximately 15.2km northeast.
- 12.7.11 The Severn Estuary SPA/Ramsar is located approximately 2.2km at its nearest point to the west of the Site, and the Somerset Levels and Moors SPA/Ramsar is located approximately 3.2km to the east of the Site. The Severn Estuary is also designated as an SAC.
- 12.7.12 Other statutory sites considered include three Bat SACs known as North Somerset and Mendip Bat SAC (located approximately 16km northeast of the Site at its closest point), Hestercombe House SAC (approximately 14.7km southwest of the Site) and Exmoor and Quantocks SAC (approximately 14.3km west of the Site). In addition, Mendip Limestone Grasslands SAC is located approximately 13km northeast and Mendip Woodlands SAC is located approximately 15.2km northeast.
- 12.7.13 The Conservation of Habitats and Species Regulations 2017, referred to as the "Habitats Regulations" aim to protect a network of sites in the UK that have rare or important habitats and species in order to safeguard biodiversity.
- 12.7.14 In particular, the UK is required to designate the most suitable sites as SACs or SPAs. All such SACs and SPAs will form part of the National Sites Network under the Habitats Regulations.
- 12.7.15 Under the Habitats Regulations, competent authorities have a duty to ensure that all activities which they regulate have no adverse effect on the integrity of any of the European sites in the UK.
- 12.7.16 In this case, the proximity of the international designations has required consideration to be given to potential impacts on these European sites in line with the above legislative context.
- 12.7.17 As such a standalone shadow Habitats Regulation Assessment (sHRA) has been prepared in parallel with this Biodiversity ES Chapter that considers all of the relevant information in respect of the Proposed Development. This is included at **Appendix 12.12**.
- 12.7.18 Although part of the Huntspill River NNR lies within the Site this will not be directly affected by the Proposed Development through land take.

Demolition / Construction Phase

- 12.7.19 The area of the NNR within the Site will be retained as woodland and reedbed. At its nearest point the NNR is approximately 0.8km from any area where development is proposed. There is a minor risk that the NNR could be affected by dust deposition during the construction phase, however, as the majority of earth works have already been carried out as part of the consented remediation works this is not considered to be significant. Furthermore, embedded mitigation through the FDCEMP is in place as part of the construction phase to manage dust.
- 12.7.20 With reference to the sHRA at **Appendix 12.12**, no likely significant construction effects have been identified in relation to any of the relevant designated sites (including the underpinning SSSIs) and no specific mitigation is considered to be required.
- 12.7.21 Demolition / construction related effects on Statutory Designated Sites are considered to be of **negligible** significance.

Operational Phase

- 12.7.22 Given that areas where development is proposed are significantly distant from the nearest point of the NNR potentially significant effects are considered to be limited to those relating to hydrology. The drainage strategy associated with the proposals includes water attenuation, treatment of grey water (at a water treatment plant) and further polishing through the reedbed system, such that 'clean' water will be discharged into the Huntspill NNR. It is important to recognise that whilst the Site is in the surface water catchment for the Somerset Levels and Moors SPA / Ramsar, it has been demonstrated that the hydraulic regime is such that discharged water would not reach this designated site, providing a further comfort in relation to water quality issues (a cited issue for this SPA / Ramsar and SSSI).
- 12.7.23 It should also be noted that the Site already has an extant licence for the abstraction of water from the Huntspill River NNR. Should any changes to the required levels of abstraction be necessary in the future, this will be subject to a new licence application and any effects will be considered as part of the licencing process.
- 12.7.24 No additional mitigation is considered to be required in respect of the Huntspill NNR.
- 12.7.25 Noting the connection between the NNR and the Severn Estuary SPA / SAC / Ramsar and the Somerset Levels and Moors SPA / Ramsar, the above conclusions regarding hydrological matters are equally relevant in respect of these designated sites and the SSSIs which underpin them.
- 12.7.26 Insofar as other statutory designated sites are concerned, in undertaking a precautionary assessment, the sHRA has concluded that with the exception of recreational pressure on the Severn Estuary, all other relevant designated sites and impact pathways can be screened out at the first assessment stage (likely significant effect).
- 12.7.27 Regarding recreational pressure on the Severn Estuary, specific mitigation is put forward, such that the Competent Authority can be certain beyond all reasonable doubt that no adverse effect on integrity will arise.
- 12.7.28 Operation related effects on Statutory Designated Sites other than the Severn Estuary are considered to be of **negligible** significance.
- 12.7.29 Operation related effects on Statutory Designated Sites other than the Severn Estuary are considered to be of **negligible** significance.
- 12.7.30 Operation related effects on the Severn Estuary SPA / SAC / Ramsar / SSSI are considered to be **indirect, permanent, adverse** at the **national to international** level and of **moderate** significance.

Non-Statutory Designated Sites

Demolition / Construction Phase

- 12.7.31 The site was approved as an enterprise zone in 2017 and the focus is now on delivery to create sustainable employment for communities. The proposed development of the enterprise zone will require the complete loss of Puriton Cowslip Field LWS and Woolavington Road and Fields North LWS. Whilst these LWS are to be lost, the features for which they are designated will be retained and integrated onsite as part of compensation measures secured through the design code.
- 12.7.32 Partial land take will occur on Puriton Rhyne and Ponds LWS, Stoning Pound Field and Rhyne LWS and Puriton Meadows and Rail Spur LWS. Subject to the proposed rail alignment and associated infrastructure, additional land take may arise on Puriton Meadows and Rail Spur LWS and Puriton Ash Ground LWS.

- 12.7.33 The areas of land take associated with the Puriton Rhyne and Ponds LWS contains no significant rhynes and is limited to areas of grassland and hedgerow. There will be a loss of part of the LWS due to the Proposed Development, but the part of the LWS that will be lost does not meet the qualifying criteria for the designation.
- 12.7.34 Land take associated with the Puriton Meadows and Rail Spur LWS occurs on the eastern edge of the LWS that consists of existing plantation woodland. The meadows themselves will be retained in part, subject to the details of reinstating the rail alignment. In the event that the meadows are lost completely to the rail alignment, this would result in a loss of one of the qualifying features for the LWS. However, as with other losses of LWS features, the habitat types for which they are designated will be retained elsewhere onsite with betterment delivered to these areas.
- 12.7.35 The rhynes within the Stoning Pound Field and Rhyne LWS will be largely unaffected by the land take on this LWS. The field would be lost; however this is of no significant ecological value.
- 12.7.36 The remaining part of the Puriton Ash Ground LWS (following remediation activities undertaken) will likely, be retained, although the extent of the retainment is subject to the details of reinstating the rail alignment. However, it should be noted that the rail alignment will most likely fall to the east of the LWS where previous remediation work has taken place. As such, the habitats present that may be lost or disturbed have only recently established.
- 12.7.37 Given the proximity of the LWSs to the built form, there is potential for indirect effects to arise, such as dust deposition, noise, lighting, or pollution events.
- 12.7.38 Whilst impacts arise on the LWSs, context is important, and it is the quality of the features for which such sites are designated that holds the real ecological value and not the label of LWS. In many instances the ecological value of the areas lost is limited and therefore the impact of their loss is equally limited, although it is recognised that some more notable features are also affected. These include the areas of more species diverse grasslands present within the Puriton Cowslip Field LWS and Puriton Meadows and Rail Spur LWS. In order to offset these effects, the features of value will be replicated within the open space provisions within the Site. This will include measures such as soil translocations or seed collection and dispersal to maintain the qualities of features lost. As such, the ecological value is retained onsite, although it will take time for these habitat features to fully establish.
- 12.7.39 Furthermore, the Proposed Development provides ecological benefits with the opportunity to link these features more robustly with other habitats of value onsite and offsite, thereby providing larger, better-connected networks of ecological assets within the Site and wider landscape. This can be achieved through the provision of linear habitat links between features of interest as well as other open space that acts as stepping-stones through the Site that are informed by the Design Guide.
- 12.7.40 Demolition / construction related effects on non-statutory sites are considered to be **direct and indirect, permanent, and temporary, adverse and beneficial** at the **regional** level and of **minor** significance.
- 12.7.41 While the focus is on delivering a smart campus, embedded mitigation and the LDO design code will seek to assure and communicate on mitigation. Compensatory measures through the locality investment plan can be considered to reinvest in LWS to ensure delivery.

Operational Phase

- 12.7.42 Artificial external lighting has the potential to disturb species that utilise the sites that may result in adverse effects on the qualifying species of the LWSs. However, sensitive qualifying species are limited to Otter that have not been recorded during specific survey work within the Site. The LWSs that they are cited on are to be retained as part of the proposals. As such, the effects are considered to be of no significance.

- 12.7.43 The buildings and additional structural planting within the Proposed Development may result in overshadowing of qualifying features such as vegetation which may affect the structure, condition and composition of the habitats present. The grasslands within the Puriton Meadows and Rail Spur LWS are already subject to overshadowing due to the woodlands present onsite, therefore no further adverse effect is considered to arise. The Puriton Ash Grounds LWS may experience greater levels of overshadowing as a result of the Proposed Development, although the level of change from the baseline conditions is not considered to be significant. The southern parts of the Puriton Rhynes and Ponds LWS and western side of Borrow Pit LWS and Stoning Pound Rhyme LWS, will also experience greater overshadowing, although the features of greatest interest (the rhynes and open water) are already shaded by existing hedgerows and tree lines that serve as screen planting, therefore any change is considered of minor significance.
- 12.7.44 Some recreational use of the Site by the workforce and community is potentially to be promoted including mixed use green open space. This may increase a degree of trampling effects on sensitive habitat where there is a focus on re-wilding within the Site, although this is limited to habitats such as unimproved grasslands which are limited in extent within the Proposed Development.
- 12.7.45 Further mitigation is proposed in respect of the sensitive management of the habitats and features to be retained and created within the Site.
- 12.7.46 Operation related effects on non-statutory sites are considered to be **direct and indirect**, permanent, **adverse** at the **regional** level and of **minor** significance.

Habitats

Improved Grassland

Demolition / Construction Phase

- 12.7.47 The extent of improved grassland will be reduced as part of the Proposed Development. Improved grassland fields are present outside the 2017 Planning Consent, but within the Site and will be lost to development or through the provision of new planting or more ecologically valuable habitat.
- 12.7.48 The improved grassland holds relatively little ecological value in its own right being relatively species poor and subject to a more intensive management regime than other grasslands of greater ecological value.
- 12.7.49 Demolition / construction related effects on improved grassland are considered to be of **negligible** significance.

Operational Phase

- 12.7.50 Improved grassland is not considered sensitive to any potential operational effect. Therefore, operational related effects on improved grassland are considered to be of **negligible** significance.

Semi-Improved Grassland

Demolition / Construction Phase

- 12.7.51 Semi-improved grassland within the Site will be lost as part of the Proposed Development in areas where safeguarded land energy production was proposed by the 2017 Planning Consent. These grasslands have been subject to significant disturbance as part of the remediation process, they are not considered to be species rich grasslands and therefore have limited ecological value.

- 12.7.52 The areas of more valuable semi-improved grassland within the Site are outside of the development plots. Areas will be lost to development as part of the losses to some of the LWSs (Puriton Cowslip Field LWS, Puriton Rhynes and Ponds LWS and subject to the rail alignment, Puriton Ash Ground and Puriton Meadows and Rail Spur) with other areas retained and enhanced (e.g. Puriton Rhyme and Ponds LWS, North Mead Drove Fields and subject to the rail alignment, Puriton Ash Ground and Puriton Meadows and Rail Spur).
- 12.7.53 The landscape strategy will be designed such that areas of new grassland provision will be of a higher value to biodiversity than the habitat lost. Areas of existing improved grassland in the southeast, southwest and northwest will be enhanced to increase species richness with overseeding with native seed mixes. There are opportunities to contribute to compensatory and restoration schemes through the locality investment plan.
- 12.7.54 Demolition / construction related effects are assessed to be **direct and indirect, permanent, and temporary, adverse and beneficial** at the **local** level and of **minor** significance.

Operational Phase

- 12.7.55 Given the proximity of some areas of semi-improved grassland to the built form, there is potential for indirect effects to arise including overshadowing. Overshadowing will occur primarily in the northern areas of the Proposed Development where the buildings are tallest. Such effects are likely to be more pronounced on the immediately adjacent road, rail and hardstanding, however on a precautionary basis, it has been assumed that at least some shading of grassland over and above baseline will occur. The effect of overshadowing can lead to changes in the species composition of grasslands and potentially reduce their overall floral diversity, with knock on effects for those invertebrates which rely on warm sunny conditions. The magnitude of any effect is however likely to be not significant, given the large extent of grassland in the north of the Site and additional habitat delivery elsewhere.
- 12.7.56 Further mitigation is proposed in respect of the sensitive management of the habitats and features to be retained and created within the Site.
- 12.7.57 Operation related effects on semi-improved grassland are considered to be **indirect and direct, permanent, adverse** at the **local** level and of **minor** significance.

Amenity Grassland / Planting

Demolition / Construction Phase

- 12.7.58 Amenity grassland / planting holds relatively little ecological value in its own right being relatively species poor and subject to a more intensive management regime as well as containing non-native species. Therefore, any losses or replacement to this habitat is considered not significant overall.
- 12.7.59 Demolition / construction related effects on amenity grassland / planting is considered to be of **negligible** significance.

Operational Phase

- 12.7.60 Amenity grassland / planting is not considered sensitive to any potential operational effect. Therefore, operational related effects on improved grassland are considered to be of **negligible** significance.

Marshy Grassland

Demolition / Construction Phase

- 12.7.61 Areas of marshy grassland will be lost to the Proposed Development with the losses to the Woolavington Road and Fields North LWS and the grasslands within the plantation woodland to the northwest of the Site. However, it is important to note that southern half of the marshy grassland within the Woolavington Road and Fields North LWS falls outside of the 2017 Consent boundary and is considered to be of diminishing value due to the development of scrub and tall ruderal / swamp vegetation that is reducing the extent and quality of the marshy grassland.
- 12.7.62 Areas of marshy grassland will be retained and expanded in areas near the northern section of the Gravity Link Road and new areas will be created as part of the surface water management strategy around new ponds and SuDS features, in line with the Design Guide. Any such areas will be utilised to deliver species rich wet habitats and allow for a greater connectivity of such habitat through the Site.
- 12.7.63 Demolition / construction related effects on marshy grassland are **direct, permanent, adverse**, and **beneficial** at the **local** level and of **minor** significance.

Operational Phase

- 12.7.64 Overshadowing effects on marshy grasslands will be very limited as such habitats are typically located away from the taller buildings onsite, any areas of marshy grasslands that are subject to overshadowing are considered to be insignificant.
- 12.7.65 Some workforce, recreational use of the Site is to be potentially promoted including mixed use green open space. This may increase trampling effects on sensitive habitat within the Site. Marshy grassland can be sensitive to such pressures, although with the provision of suitable pathways and proper management of the areas such effects are considered to be minimal and can be secured as part of further mitigation (discussed further below). Therefore, operational related effects on marshy grassland are considered to be of **negligible** significance.
- 12.7.66 Operation related effects on marshy grassland are **direct, permanent, adverse** at the **local** level and of **minor** significance.

Plantation Woodland

Demolition / Construction Phase

- 12.7.67 Some areas of plantation woodland within the Site are being retained within the Proposed Development, while others will be lost. There is a risk of accidental damage to these habitats during the construction phase of accidental encroachment by construction traffic, this can be controlled as part of the FDCEMP.
- 12.7.68 Retained woodland will be protected by fencing to prevent accidental damage to the trees and encroachment of vehicles into the root protection zones. These will be kept in place during the construction phase to ensure that no accidental damage is caused. Measures to protect trees during the construction phase are set out in the arboriculture report in **Appendix 14.4**.
- 12.7.69 Significant areas of new woodland structure and screen planting are proposed as part of the landscape strategy for the Proposed Development. This will offset losses to plantation woodland and allow for new wooded areas to be created of greater species diversity with management that promotes better structural diversity.

- 12.7.70 Demolition / construction related effects on plantation woodland are considered to be **direct**, **permanent**, **adverse**, and **beneficial** at the **local** level and of **minor** significance.

Operational Phase

- 12.7.71 Overshadowing is not considered to significantly affect the woodland habitats.
- 12.7.72 Recreational use of the woodland within the Site is potentially to be promoted including mixed use green open space. This may increase trampling effects on sensitive habitat within the Site including ground flora within woodlands. However, not all proposed woodland areas will be open for access within the Site.
- 12.7.73 Where access is provided, areas will be managed to ensure that no significant disturbance or permissive pathways are established. Indeed, effective management of these sites will result in habitats of greater value as they mature. This is considered as part of further mitigation.
- 12.7.74 Operation related effects on plantation woodlands are considered to be **direct**, permanent, **adverse** at the **local** level and of **minor** significance.

Orchard

Demolition / Construction Phase

- 12.7.75 Some areas of orchard within the Site are being retained within the Proposed Development with others lost. Whilst features of the orchards are present, the majority of the trees present are in poor condition and require significant interventions or complete replacement.
- 12.7.76 There is a risk of accidental damage to these habitats during the construction phase of accidental encroachment by construction traffic, this can be controlled as part of the FDCEMP.
- 12.7.77 Retained orchard will be protected by fencing to prevent accidental damage to the trees and encroachment of vehicles into the root protection zones. These will be kept in place during the construction phase to ensure that no accidental damage is caused. Measures to protect trees during the construction phase are set out in the arboriculture report in **Appendix 14.4**.
- 12.7.78 Significant areas of open space are proposed as part of the landscape strategy that will include planting of fruit bearing trees. This offset losses to orchard trees and allows for new habitat to be created with proper management that promotes better fruit growth.
- 12.7.79 In addition, retained areas of orchard can be subject to further betterment through the propagation of new trees from grafted material taken from existing trees. This will help to preserve the existing cultivars at the site, noting that orchard fruit trees are very often extremely localised in terms of provenance. This is viewed as a significant benefit from a cultural, amenity and ecological perspective (preserving and restoring old orchards is of particular value to invertebrates).
- 12.7.80 Demolition / construction related effects on orchards are considered to be **direct**, **permanent**, **adverse**, and **beneficial** at the **local** level and of **minor** significance.

Operational Phase

- 12.7.81 Overshadowing is not considered to significantly effect orchard habitat on Site due to the lack of taller built form in the areas to the southeast of the Site where it is to be retained.
- 12.7.82 Operation related effects on orchard are considered to be of **negligible** significance.

12.7.83 Orchard management is considered as part of further mitigation.

Trees and Scrub

Demolition / Construction Phase

- 12.7.84 Trees are generally restricted to roadsides and boundary features that will be lost in some areas with some being able to be retained. The majority are Horse Chestnut *Aesculus hippocastanum* and other non-native trees. Losses are therefore considered to be of negligible significance.
- 12.7.85 The extent of scrub is limited and is present in areas in the west of the Site. The scrub that covers the railway embankments will be retained wherever possible, along with other areas of scrub surrounding the retained woodland blocks. When the railway line is re-opened most of the scrub on the embankments will be able to be retained, with only the top of the track being cleared to make way for the new track.
- 12.7.86 Significant areas of new screen planting and trees are proposed as part of the landscape strategy for the Proposed Development. This will offset losses to trees and scrub and allow for new areas to be created of greater native species diversity with management that promotes better structural diversity.
- 12.7.87 Demolition / construction related effects on trees and scrub are considered to be **direct**, **permanent**, **adverse**, and **beneficial** at the **local** level and of **minor** significance.

Operational Phase

- 12.7.88 Overshadowing is not considered to significantly effect tree and scrub habitats.
- 12.7.89 Operation related effects on trees and scrub are considered to be of **negligible** significance.
- 12.7.90 Tree and scrub management is considered as part of further mitigation below at section 12.9.

Hedgerows

Demolition / Construction Phase

- 12.7.91 Hedgerows within the Site will be lost, with retained elements located to the southeast of the Site as part of the open space and in the northwest within the Puriton Meadows and Rail Spur LWS. The majority of the hedgerows to be lost are species poor and have limited ecological value. A few of the hedgerows are more species rich and provide good connective habitat.
- 12.7.92 There are significant stretches of structure and screen planting as indicated on the strategic landscape parameters plan. This structure screen planting will be a linear and will act as a similar function to the hedgerows lost providing good connective habitat along the route of the Gravity Link Road and Site boundaries. Hedgerow planting will also be a component of on plot planting as informed by the Design Guide. This will provide significant connectivity through the Site. New hedgerow planting will contain native species and be species rich and therefore of significantly greater value than the majority of hedgerows present currently.
- 12.7.93 The retained hedgerows within the Site could be damaged during the construction phase by encroachment by construction traffic. Such impacts can be controlled as part of the FDCEMP.
- 12.7.94 Demolition / construction related effects on hedgerows are considered to be **direct**, **permanent**, **adverse**, and **beneficial** at the **local** level and of **minor** significance.

Operational Phase

- 12.7.95 Overshadowing is not considered to significantly effect hedgerow type habitats.
- 12.7.96 Operation related effects on hedgerows are considered to be of **negligible** significance.
- 12.7.97 The retained hedgerows within the Site will be managed to improve their structure and diversity that has been lost due to lack of management. This will involve a more regular cutting regime and bolster planting where necessary. This is considered as part of further mitigation.

Ephemeral / Short Perennial Vegetation

Demolition / Construction Phase

- 12.7.98 The ephemeral / short perennial habitat present within the Puriton Ash Grounds LWS will be retained within the Proposed Development. New areas of ephemeral habitat will also be created within the Site to provide pockets of invertebrate habitat that act as stepping-stone habitats connections.
- 12.7.99 There is potential for damage to this habitat to occur from encroachment by construction traffic and storage of materials, although some level of habitat disturbance is beneficial to the maintenance of the habitat. Such impacts can be controlled as part of the FDCEMP.
- 12.7.100 Demolition / construction related effects on ephemeral / short perennial vegetation are considered to be of **direct, permanent, beneficial at the local level and of minor significance**

Operational Phase

- 12.7.101 As the main component of ephemeral / short perennial habitat is to be retained within the Puriton Ash Grounds LWS, which is set away from the taller elements of built form, overshadowing is considered to be of negligible significance.
- 12.7.102 Operation related effects on hedgerows are considered to be of **negligible** significance.

Standing Water

Demolition / Construction Phase

- 12.7.103 The ponds situated to the northwest and southeast of the Site will be lost as part of the Proposed Development as will other artificial water bodies (e.g., ditches). The Borrow Pit, the SuDS features associated with the Gravity Link Road and rhynes within the Puriton Rhynes and Ponds LWS will not be affected by the Proposed Development.
- 12.7.104 New water attenuation features will be created in the northeast of the Site as part of the surface water management strategy. Any such waterbody will also be utilised to deliver ecological benefits.
- 12.7.105 The newly created ponds will be fenced off during the construction phase to ensure that there is no accidental damage within these areas.
- 12.7.106 The FDCEMP will ensure that surface water contamination and dust deposition will be controlled to prevent any contamination of the water bodies within the site. It also details regulations about storing hazardous materials away from these ponds to prevent a potential pollution event.

12.7.107 Demolition / construction related effects on standing water are considered to be **direct**, permanent, **adverse** at the **local** level and of **minor** significance.

Operational Phase

12.7.108 Overshadowing can adversely affect the development of aquatic plants and localised effects of shading of rhynes will reduce floral diversity. However, given the extensive areas of standing water that are retained onsite that will not be subject to overshadowing, the effects are considered to be insignificant.

12.7.109 Operation related effects on standing water are considered to be of **negligible** significance.

12.7.110 The management of standing water is included as part of further mitigation within section 12.9 below.

Reed Bed

Demolition / Construction Phase

12.7.111 The reed beds to the north of the Site and those surrounding the Borrow Pit will not be directly affected by the Proposed Development.

12.7.112 There is the potential for contaminated runoff entering the water system that will flow through the reed beds, this will be controlled through the FDCEMP.

12.7.113 Demolition / construction related effects on reed beds are considered to be of **negligible** significance.

Operational Phase

12.7.114 Operation related effects on standing water are considered to be of **negligible** significance.

Fauna

Bats

12.7.115 All bats are protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and included on Schedule 2 of the Conservation of Habitats and Species Regulations 2017 ("the Habitats Regulations"). These include provisions making it an offence to:

- Deliberately kill, injure, or take (capture) bats;
- Deliberately disturb bats in such a way as to be likely to significantly affect:-
 - (i) the ability of any significant group of bats to survive, breed or rear or nurture their young; or to hibernate; or
 - (ii) to significantly affect the local distribution or abundance of the species concerned;
- Damage or destroy any breeding or resting place used by bats;
- Intentionally or recklessly obstruct access to any place used by bats for shelter or protection (even if bats are not in residence).

12.7.116 While the legislation is deemed to apply even when bats are not in residence, Natural England guidance suggests that certain activities such as re-roofing can be completed

outside sensitive periods when bats are not in residence provided these do not damage or destroy the roost.

- 12.7.117 The words ‘deliberately’ and ‘intentionally’ include actions where a court can infer that the defendant knew ‘the action taken would almost inevitably result in an offence, even if that was not the primary purpose of the act.
- 12.7.118 The offence of damaging (making it worse for the bat) or destroying a breeding site or resting place is an absolute offence. Such actions do not have to be deliberate for an offence to be committed.
- 12.7.119 Licences can be granted for development purposes by an ‘appropriate authority’ under Regulation 55 (e) of the Habitats Regulations. In England, the ‘appropriate authority’ is Natural England (the government’s statutory advisors on nature conservation). European Protected Species licences permit activities that would otherwise be considered an offence.
- 12.7.120 In accordance with the Habitats Regulations the licensing authority (Natural England) must apply the three derogation tests as part of the process of considering a licence application. These tests are that:
1. The activity to be licensed must be for imperative reasons of overriding public interest or for public health and safety;
 2. There must be no satisfactory alternative; and
 3. The favourable conservation status of the species concerned must be maintained.
- 12.7.121 Licences can usually only be granted if the development is in receipt of full planning permission (and relevant conditions, if any, discharged).
- 12.7.122 Seven species of bat are Priority Species, these are Barbastelle, Bechstein’s Myotis *bechsteinii*, Noctule, Soprano Pipistrelle, Brown Long-eared, Greater Horseshoe, and Lesser Horseshoe.
- Demolition / Construction Phase
- 12.7.123 The three mitigation bat buildings (all known to support Brown Long-eared Bats) are being fully retained as part of the Proposed Development. They are located in an area of proposed structural planting that connects the field and hedgerow network in the southeast of the Site and the Puriton Rhynes and Ponds LWS to the north.
- 12.7.124 Other roosts are present within the 37 Club (a maternity Common Pipistrelle roost), the derelict dwelling on Woolavington Road (minor Brown Long-eared Bat roost) and two pill boxes (minor / transitory occasional Lesser Horseshoe roosts of singleton bats) to the south of the Site. These will be lost to the Proposed Development. This represents direct adverse impacts to bats using the Site. In order to remove the roosts a Natural England licence will be required that will require alternative roost sites to be provided within the Site. This is discussed further within section 12.9.
- 12.7.125 The loss of other habitats of value including hedgerows and woodland edge habitat will reduce the commuting and foraging habitat within the Site. However, the increased vegetation planting, creation of wetland features, greater connectivity of ecological features (both within the Site and wider landscape) and habitat management around the Site will provide further foraging opportunities for bats.
- 12.7.126 Structure planting around the mitigation roosts and adjacent to the development plots will also limit the light spill into these areas.

12.7.127 Demolition / construction related effects on bats are considered to be **direct, permanent, adverse** at the **National** level and of **moderate** significance.

Operational Phase

12.7.128 The lighting strategy seeks to limit light spill into areas of potential bat foraging and commuting habitat (such as retained woodland, hedgerows and Local Wildlife Sites) and the mitigation roosts provided. This will involve using directional and hooded lighting wherever possible, within the vicinity of these areas to direct light towards the highways and development loading bays or similar.

12.7.129 The lighting strategy has been developed to mitigate potential effects to foraging and commuting bats on the Lighting Constraints Plan (**Appendix 14.5**). This shows 'low energy corridors' where detailed lighting scheme design will be sensitive to the need to minimise lighting levels and the illumination of habitat features, such that they hold value for bat foraging and movement.

12.7.130 As part of this strategy, additional measures to mitigate potential adverse effects to bats using the 'low energy corridors' have been put forward and a range of such measures will be implemented along primary roads, secondary access points and vehicle crossings that come into conflict with the bat foraging and movement corridors. Such measures will be of benefit to bats and also dovetail with the concepts of sustainability and lower energy consumption.

12.7.131 This includes providing, where possible, gaps in lighting columns a variable lighting regime that reduces lighting intensity at certain times, use of LED lighting, use of shields to restrict spillage and providing a central control system.

12.7.132 As part of the detailed lighting strategy, a plan showing horizontal lux contour lines of the proposed development will be produced (a predicted post-development light distribution plan), that would demonstrate that light levels will not deter use by bats within key bat foraging and movement corridors, remaining under 1 lux where possible, or not exceed current baseline levels.

12.7.133 Public access, if provided, through the Site may provide access to the new bat roosts and there is a possibility of vandalism or damage to these structures.

12.7.134 A post and rail fence will be erected around the structures to discourage people from getting access to the buildings. However, the bat mitigation structures have been designed to ensure that there is limited possibility of vandalism occurring. The underside of these structures have been clad in steel sheet to prevent the risk of fire and prevent damage.

12.7.135 Operation related effects on bats are considered to be both **indirect** and **direct, permanent, adverse** at the **National** level and of **minor** significance.

Badgers

12.7.136 The Protection of Badgers Act 1992 consolidates the previous Badgers Acts of 1973 and 1991. The legislation aims to protect the species from persecution, rather than being made in response to an unfavourable conservation status.

12.7.137 As well as protecting the animal itself, the 1992 Act also states that the intentional or reckless destruction, damage or obstruction of a Badger sett would be an offence. A sett is defined as 'any structure or place, which displays signs indicating current use, by a Badger'. 'Current use' is defined by Natural England as a use which may have taken place within the preceding 12 months.

12.7.138 In addition, the intentional elimination of sufficient foraging areas within which to support a known social group of Badgers may, in certain circumstances, be construed as an offence by constituting the 'cruel ill treatment' of a Badger.

12.7.139 Local Authorities are therefore obliged to consult Natural England over any application that is likely to adversely affect Badgers.

12.7.140 Any work that disturbs Badgers is illegal without a prior approval licence having been granted by Natural England. Unlike the general conservation legislation, the Badgers Act 1992 makes specific provision for the granting of licences for development purposes, including for the destruction of setts.

Demolition / Construction Phase

12.7.141 Existing badger setts in the west of the Site associated with the railway spur will require closure in order to facilitate development. Furthermore, given the mobile nature of the species, throughout the construction period, new setts may be created as badgers explore new habitats and will require subsequent closure. Monitoring will be required, or areas made unsuitable to avoid this. As part of any sett closures new artificial setts may be required.

12.7.142 There is potential for Badgers to be harmed during the construction phase through physical harm if a Badger should become trapped within a trench or works associated with the development. Any pits or trenches that are dug on Site during the construction phase should be securely covered during night periods or a ramp provided to ensure that Badgers cannot get trapped within them. Further detail is included within the FDCEMP.

12.7.143 There will be some loss of foraging habitat as a result of the Proposed Development through the loss of woodland, semi-improved grassland and amenity grassland. The landscaping strategy has included large areas of retained grassland, along with nutrient poor grasslands, amenity grassland, structure and screen planting, wet grasslands and swales that will all offer good foraging habitats for Badgers in the future.

12.7.144 There is the potential for lighting to disturb foraging Badgers from the development plots and the associated roads during the construction phase.

12.7.145 As a general rule any active setts will have an appropriate exclusion / sensitivity area demarked on the ground where no storage or construction activity (excavation) can take place. Such areas will be determined using professional judgement based on the location, type and orientation of the sett. It is envisaged that in some instances the exclusion zones will extend to around 30m, while in other circumstances a reduced exclusion zone could be appropriate.

12.7.146 Demolition / construction related effects on badgers are considered to be **direct, temporary, and permanent, adverse** at the **local** level and of **moderate** significance.

Operational Phase

12.7.147 The lighting strategy will be designed to reduce light spill onto sensitive habitats which are integral to the ecological mitigation package in order to reduce and potential disturbance events. Similarly, effects of noise disturbance will need to be considered in respect of activities onsite to prevent disturbance in close proximity to known badger setts. However, any newly created artificial setts will be located at a significant distance from active development areas (such as in the far west) to avoid such effects.

12.7.148 The potential for increased public access across the Site may increase the potential for Badger setts to be identified and disturbed. However, the preferred locations for any artificial setts and associated tree group / scrub planting are sited away from direct access and cover is provided by dense woody vegetation.

12.7.149 There is the potential for future conflict between Badgers and amenity (and other) site uses, such as Badgers causing damage to these areas and also potential for Badgers being killed / injured in collisions with vehicles. In both instances, the main element of the mitigation

strategy is to ensure a sufficient quantity of good quality, sheltered foraging and sett building habitat in a location removed from the main operational part of the development.

- 12.7.150 Operation related effects on badgers are considered to be both **indirect** and **direct**, **permanent**, **adverse** at the **local** level and of **minor** significance.

Birds

- 12.7.151 Section 1 of the Wildlife & Countryside Act is concerned with the protection of wild birds. With certain exceptions all wild birds and their eggs are protected from intentional killing, injuring and taking; and their nests, whilst being built or in use, cannot be taken, damaged or destroyed.

- 12.7.152 Schedule 1 of the Wildlife & Countryside Act 1981 is a list of the nationally rarer and uncommon breeding birds for which all offences carry special (i.e. greater) penalties. These species also enjoy additional protection whilst breeding, as it is also an offence to disturb adults or their dependant young when at the nest.

Demolition / Construction Phase

- 12.7.153 Direct impacts on nesting birds during site clearance can occur through loss of foraging and nesting habitats and the potential to destroy nests. Wherever possible, no vegetation clearance will be undertaken during the bird nesting season, from March to August inclusive. If vegetation removal is required, then a check must be undertaken by a suitably qualified ecologist to check for evidence of nesting birds. If a nest is discovered, then a 5m cordon around that nest should be established and no clearance should take place within this cordon before the chicks have fledged the nest.

- 12.7.154 Bird species listed on schedule 1 of the Wildlife and Countryside Act 1981 such as Cetti's Warbler and Marsh Harrier are known to be present within the reed bed, rhynes and fishing ponds to the northeast of the Site. These species are afforded additional protection from disturbance during the breeding season. Given that the habitats these birds utilise are, in the main, to be retained and set away from the development, it is considered that any disturbance effects are of negligible significance.

- 12.7.155 A number of red listed bird species on the Birds of Conservation Concern list are present within the Site. These include Cuckoo *Cuculus canorus*, Herring Gull *Larus argentatus*, House Sparrow *Passer domesticus*, Linnet *Linaria cannabina*, Mistle Thrush *Turdus viscivorus*, Song Thrush *Turdus philomelos* and Starling *Sturnus vulgaris*. None of these species are considered to be reliant on the Site and furthermore, these species were generally recorded at the Site's periphery where habitats are to be retained and subject to betterment.

- 12.7.156 The extensive landscape and structure planting will provide foraging and nesting opportunities for birds known to utilise the Site, subject to appropriate design.

- 12.7.157 Demolition / construction related effects on birds are considered to be **direct**, **temporary**, **adverse** and **beneficial** at the **local** level and of **minor** significance.

Operational Phase

- 12.7.158 There is the potential for disturbance of foraging Barn Owl from light spillage from the Proposed Development and road network. However, Barn Owl are known to benefit from a level of lighting as this assists night-time foraging. The lighting strategy will be designed to minimise light spill into areas managed for nature conservation and will provide low energy corridors where possible. Barn Owl boxes proposed to be installed will be situated in areas within suitable foraging habitat such as areas of retained and enhanced grassland.

- 12.7.159 Operation related effects on birds are considered to be of **negligible** significance.

Reptiles

Demolition / Construction Phase

- 12.7.160 Only Grass Snake have been recorded as present and distribution is considered to be limited within areas affected by the Proposed Development.
- 12.7.161 Grass Snake are protected from killing injury under the Wildlife and Countryside Act 1981 (as amended). Their habitat is not protected. It will be necessary to instigate a mitigation strategy which prevents harm to individuals during site clearance works, although the species will persist in the local area including retained habitat outside of the development footprint.
- 12.7.162 Construction related effects on reptiles are considered to be **direct and indirect, permanent, adverse** at the **local** level and of **minor** significance

Operational Phase

- 12.7.163 The surface water management strategy and enhancement to grasslands in the north of the Site and the reed bed rehabilitation provide betterment for this species within the Site. Further, the creation of habitat / log piles in close proximity to water bodies will provide enhanced hibernation opportunities.
- 12.7.164 Operation related effects on reptiles are considered to be **indirect, permanent, beneficial** at the **local** level and of **minor** significance.

Water Voles

- 12.7.165 Water Vole received limited legal protection in April 1998 through its inclusion in Schedule 5 of the Wildlife & Countryside Act 1981 (as amended) for some offences. This protection was extended in April 2008 so the Water Vole is now fully protected under Section 9 of the Act.
- 12.7.166 Legal protection makes it an offence to:
- Intentionally kill, injure, or take (capture) a Water Vole;
 - Possess or control a live or dead Water Vole, or any part of a Water Vole;
 - Intentionally or recklessly damage, destroy or obstruct access to any structure or place which Water Voles use for shelter or protection or disturb Water Voles while they are using such a place; and
 - Sell, offer for sale or advertise for live or dead Water Voles.
- 12.7.167 The law only applies to wild animals, so the possession of captive-bred Voles is not an offence.
- 12.7.168 Water Vole is a UK Priority species.
- 12.7.169 Licences are available from Natural England to allow activities that would otherwise be offences for:
- Scientific or educational purposes;
 - The purpose of ringing or marking;
 - Conserving wild animals or introducing them to particular areas;

- Preserving public health or public safety;
- Preventing the spread of disease; and
- Preventing serious damage to any form of property or to fisheries.

12.7.170 There is no express provision under the Wildlife & Countryside Act 1981 for licensing what would be classed as offences for the purpose of development, maintenance or land management (such as is applicable for other e.g. European protected species). If a proposed development or maintenance work would impact upon Water Voles then (as far as is reasonable) appropriate action should be taken to safeguard the animals and the places they use for shelter and protection.

12.7.171 Where a developer considers that the best outcome for Water Voles is capture and translocation to a different location there may be grounds for issuing a translocation licence for the purpose of 'conservation'. Whilst Natural England will consider applications on their individual merits, licences to trap and remove Water Voles from a development site for the purpose of conservation will only be granted where the applicant can show that:

- The activity proposed is lawful, i.e. for development, the work has been granted planning permission or is subject to other lawful authority;
- The development and the likely impacts on Water Voles could not reasonably have been avoided, i.e. all reasonable efforts should be made to retain the Water Voles on Site and alternatives that would have a lesser impact on the Voles should have been considered; and
- The translocation of the Water Voles would produce a conservation benefit, i.e. any Water Voles were translocated to a suitable site using an appropriate methodology, as described in the Water Vole Conservation Handbook.

Demolition / Construction Phase

12.7.172 Water Vole habitat within the Site will be lost to the Proposed Development. This includes all known aquatic habitats that cannot be retained or require realignment.

12.7.173 The population is considered small and dispersed due to the varying suitability of habitat onsite and presence of American Mink.

12.7.174 The mitigation strategy is based around trapping and relocation to an offsite location to ensure the population is safeguarded for the long term. The detail in relation to the methodologies and receptor location is to be agreed with the Natural England licencing team.

12.7.175 Demolition / construction related effects on Water Vole are considered to be **direct, permanent, adverse** at the **local** level and of **moderate** significance.

Operational Phase

12.7.176 Water Vole will not be present onsite post construction therefore there will be **no** effect. However, over the long term it is possible that they will recolonise suitable habitat within the Site from the surrounding areas.

Great Crested Newts

12.7.177 All British amphibian species receive a degree of protection under the 1981 Wildlife and Countryside Act (as amended). The level of protection varies from protection from sale or

trade only, as is the case with species such as Smooth Newt and Common Toad, to the more rigorous protection afforded to species such as the Great Crested Newt.

12.7.178 Although Great Crested Newts are regularly encountered locally and throughout much of England, the UK holds a large percentage of the world population of the species. As such the UK has an international obligation to conserve the species and they receive full protection under domestic and European legislation and are a material consideration as part of the NPPF.

12.7.179 More specifically, Great Crested Newts are also protected under UK law by the Habitats Regulations, which lists Great Crested Newts under Schedule 2.

12.7.180 Great Crested Newts are thus protected from deliberate killing, injury or capture with their habitat, including a breeding site, resting place or any structure or place used for 'shelter or protection' and are also protected against deliberate or reckless damage or destruction. It is also illegal to disturb Great Crested Newts and their eggs deliberately or recklessly as they are protected from taking or destroying.

Demolition / Construction Phase

12.7.181 Great Crest Newt habitat within the Site will be lost to the Proposed Development. This includes known breeding ponds in the northwest of the Site and terrestrial habitat in the northwest and southeast of the Site. Further mitigation will be provided as part of a District level Licence Scheme to secure and create offsite habitat to ensure core GCN populations are safeguarded for the long term, maintaining the favourable conservation status of the species. However, a remnant population may be retained on site where ponds known to support GCN are not lost directly to the Proposed Development.

12.7.182 Demolition / construction related effects on GCN are considered to be **direct, permanent, adverse** at the **National** level and of **major** significance.

Operational Phase

12.7.183 GCN will not be present onsite post construction therefore there will be **no effect**.

Invertebrates

Demolition / Construction Phase

12.7.184 There is potential for pollution or contaminated run off to enter the water system and potential damage the habitats that these species inhabit. Such potential effects will be managed through the provision of a FDCEMP.

12.7.185 Habitats of value to invertebrates include the orchard habitat which is to be partially lost. However, supplementary fruiting tree planting will be included within the proposed open space areas. Furthermore, extensive enhancements to the wetland features in the north of the Site will provide direct benefits to this species group.

12.7.186 Blackthorn will be planted within the structure and screening planting to specifically to provide a food source for the Brown Hairstreak butterfly that has been recorded on Site.

12.7.187 Demolition / construction related effects on invertebrates are considered to be **direct, permanent, adverse**, and **beneficial** at the **local to district** level and of **minor to moderate** significance.

Operational Phase

12.7.188 Operation related effects on invertebrates are considered to be of **negligible** significance.

12.8 Further Mitigation

- 12.8.1 An Ecological Mitigation and Management Strategy (EMMS) will be prepared for the Site. This is secured through the Mitigation Checklist submitted with the LDO. This report will include consideration of the maintenance / management measures associated with onsite ecological networks and features that are to be retained, enhanced and created within the Proposed Development. As such, the EMMS will set out the key mitigation and management strategies proposed with the aim of delivering a significant long term beneficial ecological effect at the Site. This is secured through the Compliance Form.
- 12.8.2 The overall aim for the Site is to maintain and enhance features of ecological interest retained within the Site in addition to conserving populations of protected species, whilst providing for biodiversity enhancements wherever possible. The EMMS will include a series of management objectives with details on the mitigation / betterment strategies on each of the sensitive ecological receptors that have been identified. Objectives will be set to avoid significant adverse impacts on features due to be retained within the Site.
- 12.8.3 Other species-specific mitigation is detailed below.
- 12.8.4 In addition to onsite mitigation and ecological betterment of retained and newly created habitats, the ecology strategy has a focus on off-site deliverables. These off-site measures are in part necessary to facilitate required mitigation in respect of ensuring the favourable conservation status of protected species (e.g. Great Crested Newts and Water Vole), but equally they are necessary to compensate for losses of habitats of greater ecological value (e.g. areas of more diverse grassland / LWSs) and also to ensure that the proposals meet the national policy requirements relating to providing net gains for biodiversity (paragraph 174 of the NPPF 2021).

Non-Statutory Designated Sites

Operational Phase

- 12.8.5 As part of the future management regime for the Site, a programme of betterment for habitat management is proposed within an EMMS, with the aim of maintaining the retained and enhanced features within the non-statutory designated sites and as well as the newly created features. These features will be managed to promote greater connectivity between habitats and features across a more holistic network of ecologically valuable assets compared to the existing patchwork of designated sites.
- 12.8.6 The proposals will also fund initiatives at the nearby Avalon Marshes. The funding is to be delivered through the Locality Investment Plan (LIP) / recycling of business rates generated by the Proposed Development. Funding will be directed towards land acquisition and habitat rehabilitation with the aim of buffering and connecting existing sensitive habitats and restoring natural processes across the Avalon Marshes landscape. These measures will deliver wetland and grassland habitats of significant ecological value, compensating for LWS losses at the Site. The Locality Investment Plan is secured within the S106.
- 12.8.7 With further mitigation, operation related effects on non-statutory sites are considered to be **direct, permanent, beneficial** at the **regional** level and of **minor** significance.

Habitats

Semi-Improved Grassland

Operational Phase

- 12.8.8 Management of the retained / enhanced grassland as part of the Proposed Development will ensure benefits are maintained for this habitat type in the long term, ensuring that species /

structural diversity is established, and that scrub encroachment does not result in the loss of this habitat from the Site. This will be secured within the EMMS.

- 12.8.9 Grasslands will be allowed to flower and set seed before any cutting takes place. The grassland will be cut on an annual basis with one cut in the late summer / autumn and a further cut towards the end of the growing season or in Spring, if necessary. All arisings will be removed.
- 12.8.10 The overall losses to this habitat which arise, will be more than compensated for through those measures directed at the Avalon Marshes (as described above), such that a net benefit at the local level arises.
- 12.8.11 With further mitigation, operation related effects on semi-improved grassland are considered to be **direct, permanent, beneficial** at the **local** level and of **moderate** significance.

Marshy Grassland

Operational Phase

- 12.8.12 Some recreational use of the Site by the workforce and community is being considered and could be promoted, including mixed use green open space. This may increase trampling effects on sensitive habitat within the Site. Marshy grassland can be sensitive to such pressures, although with the provision of suitable pathways and proper management of the areas such effects are considered to be minimal and can be secured within the EMMS. Therefore, operational related effects on marshy grassland are considered to be of **negligible** significance.
- 12.8.13 Furthermore, the EMMS will include measures to manage these grasslands to promote the establishment of species rich habitat. Grasslands will be allowed to flower and set seed before any cutting takes place. The grassland will be cut on an annual basis with one cut in the late summer / autumn and a further cut towards the end of the growing season or in Spring, if necessary. The management will also control the encroachment of scrub and swamp vegetation that can development in these areas.
- 12.8.14 The overall losses to this habitat which arise, will be more than compensated for through those measures directed at the Avalon Marshes (as described above), such that a net benefit at the local level arises.
- 12.8.15 With further mitigation, operation related effects on marshy grassland are considered to be **direct, permanent, beneficial** at the **local** level and of **moderate** significance.

Plantation Woodland

Demolition / Construction Phase

- 12.8.16 New tree planting should be focussed on the planting of native species of local provenance. Such provision, noting the significant potential for tree planting will mitigate losses to plantation woodland and trees in general at the Site. The proposals would allow for planting to deliver habitat connectivity in key areas which will aid development of tree groups with inherent ecological value as well as providing value to faunal species such as bats and birds.
- 12.8.17 With further mitigation, operation related effects on plantation woodland are considered to be **direct, permanent, beneficial** at the **local** level and of **minor to moderate** significance.

Operational Phase

- 12.8.18 Recreational use of the Site is potentially to be promoted including mixed use green open space. This may increase trampling effects on sensitive habitat within the Site including

ground flora within woodlands. However, not all proposed woodland areas will be open for access within the Site and where access is provided, areas will be managed to ensure that no significant disturbance or permissive pathways are established. Indeed, effective management of these sites will result in habitats of greater value as they mature. Management will be secured through the EMMS.

- 12.8.19 Following further mitigation, operation related effects on plantation woodlands are considered to be **direct, permanent, beneficial** at the **local** level and of **minor** significance.

Orchard

Operational Phase

- 12.8.20 The current orchards are in a generally poor condition with a lack of orchard trees present and remnant trees in poor condition. With the implementation of a suitable management plan through the EMMS, the restoration and enhancement of the retained areas, the orchard can be brought back to good condition.
- 12.8.21 Following further mitigation, operation related effects on orchard are considered to be **direct, permanent, beneficial** at the **local** level and of **minor to moderate** significance.

Trees and Scrub

Demolition / Construction Phase

- 12.8.22 New structural tree planting as shown on the strategic landscape parameters plan (**Appendix 3.1f**) should be focussed on the planting of native species of local provenance where possible, accepting that those of high amenity value will be required in some instances. Such provision, noting the significant potential for tree planting will mitigate losses to plantation woodland and trees in general at the Site. The proposals would allow for planting to deliver habitat connectivity in key areas which will aid development of tree groups with inherent ecological value as well as providing value to faunal species such as bats and birds.
- 12.8.23 Following further mitigation, demolition / construction related effects on trees and scrub are considered to be **direct, permanent, beneficial** at the **local** level and of **minor to moderate** significance.

Operational Phase

- 12.8.24 The trees and scrub within the Site will come under a suitable management regime through the EMMS with the aim of enhancing the ecological value of this habitat type for the long-term. This will include rotational cutting of scrub areas to promote vigorous growth and structural diversity. Trees will be subject to arboriculture works where necessary to maintain their health.
- 12.8.25 Following further mitigation, operation related effects on trees and scrub are considered to be **direct, permanent, beneficial** at the **local** level and of **minor** significance.

Hedgerows

Demolition / Construction Phase

- 12.8.26 The opportunity exists, as shown on the strategic landscape parameters plan (**Appendix 3.1f**), to create new hedgerows in order to mitigate losses which arise, and to bolster retained hedgerows with additional shrub and trees planting. Planting should be focussed on the planting of native species of local provenance where possible.

- 12.8.27 Following further mitigation, demolition / construction related effects on trees and scrub are considered to be **direct, permanent, beneficial** at the **local** level and of **minor** significance.

Operational Phase

- 12.8.28 The retained hedgerows within the Site will be managed, as detailed with an EMMS, to improve their structure and diversity which has been lost due to lack of management. This will involve a more semi-regular cutting regime and bolster planting where necessary.
- 12.8.29 Following further mitigation, operation related effects on hedgerows are considered to be **direct, permanent, beneficial** at the **local** level and of **minor** significance.

Ephemeral / Short Perennial Vegetation

Demolition / Construction Phase

- 12.8.30 Losses are to be mitigated through the creation of habitat containing nutrient poor free draining soils and stony substrates at the 'landscape mound' located in the west of the Site and also in locations along the railway corridor.
- 12.8.31 Following further mitigation, demolition / construction related effects on Ephemeral / Short Perennial Vegetation are considered to be **direct, permanent, beneficial** at the **local** level and of **minor** significance.

Operational Phase

- 12.8.32 The management of this habitat will be detailed within an EMMS in order to promote its condition and prevent it from being colonised by dense perennial species. The vegetation will be cut annually at an appropriate time of year to prevent scrub establishment and seed will be collected from the retained area of vegetation and scattered over the newly created habitat to encourage re-establishment of this plant community.
- 12.8.33 Where appropriate, vigorous species that do establish within the short period after construction will be controlled either by hand pulling or selective herbicide application.
- 12.8.34 Following further mitigation, operation related effects on hedgerows are considered to be **direct, permanent, beneficial** at the **local** level and of **minor** significance.

Standing Water

Demolition / Construction

- 12.8.35 As noted below with respect to GCN, a licencing strategy will be undertaken that seeks to deliver offsite terrestrial and aquatic habitat for this species. The process will require a significant increase in standing water with as many as four new ponds created for the loss of one known GCN pond. Therefore, there will be a significant increase in the number of ponds delivered as part of the Proposed Development.
- 12.8.36 In order to ensure that the mitigation is effective the creation of habitats as part of the GCNDLL will be secured as part of the licencing process.
- 12.8.37 Demolition / construction related effects on standing water, following further mitigation, are considered to be **direct, permanent, beneficial** at the **local** level and of **moderate** significance.

Reed Bed

Operational Phase

- 12.8.38 The reed bed will be managed via a cutting regime secured through the EMMS. The cutting regime will reduce the speed at which the reed bed becomes choked, but it is also likely that the reedbed may need to be dug out at times to prevent it becoming totally choked and allowing more terrestrial species to establish again. This will be monitored as part of an EMMS and will only be undertaken when deemed necessary. As part of a wider strategy, the ecological value of the reed bed will also be enhanced with the maintenance of open water areas and drier areas to provide a variety of ecological niches within the habitat.
- 12.8.39 Invasive species such as Himalayan Balsam will be monitored and controlled as necessary within an EMMS.
- 12.8.40 Following further mitigation, operation related effects on reed bed are considered to be **direct, permanent, beneficial** at the **local** level and of **minor** significance.

Fauna

Bats

Demolition / Construction Phase

- 12.8.41 Roosts are present within the 37 Club (a maternity Common Pipistrelle roost), the derelict dwelling on Woolavington Road (minor Brown Long-eared Bat roost) and two pill boxes (minor Lesser Horseshoe roosts) to the south of the Site. These will be lost to the Proposed Development. This represents direct adverse impacts to bats using the Site. In order to remove the roosts a Natural England licence will be required that will necessitate alternative roost sites to be provided within the Site. It is proposed that these will take the form of 10 hibernation boxes located within suitable habitat. In addition, further provisions of 30 roosting boxes will be installed across the Site within retained habitat to provide additional roosting features for the wider populations of bats utilising the Site. Mitigation for bats is secured within the S106 agreement.
- 12.8.42 No tree roosts have been identified within the Site. Trees within the Site categorised as being of low bat roost potential that are of to be lost will be subject to soft felling, with a precautionary inspection taking place by a suitably experienced ecologist immediately prior to removal. A Natural England licence could be secured if required, ahead of tree removal should bats be identified as roosting within a tree to be felled.
- 12.8.43 On-site habitat creation within the key landscape areas at the site boundary and in particular within the Gravity Park corridor (linking north south) and along the Woolavington Road frontage (east west) will mitigate the effects of losses to foraging and commuting habitats.
- 12.8.44 Off-site habitat delivery initiatives associated with the Avalon Marshes will deliver further benefits to bats through the delivery of good quality foraging areas including species rich grasslands and wetland habitats.
- 12.8.45 Following further mitigation, demolition / construction related effects on bats are considered to be **direct, permanent, beneficial** at the **National** level and of **minor** significance.

Operational Phase

- 12.8.46 The EMMS will include specific provisions to maintain the artificial roosts provide as well as promote the development of natural roost features within retained and newly created habitats. This will include the retention of standing deadwood and the maintenance of commuting corridors for bats to travel along.

- 12.8.47 The open space areas will be kept as dark as possible though the design and layout of structure planting and hedgerow.
- 12.8.48 The lighting strategy (**Appendix 14.5**) has been developed to mitigate potential effects to foraging and commuting bats. 'Low energy corridors' are to be delivered where detailed lighting scheme design will be sensitive to the need to minimise lighting levels and the illumination of habitat features, such that they hold value for bat foraging and movement.
- 12.8.49 As part of this strategy, additional measures to mitigate potential adverse effects to bats using the 'low energy corridors' have been put forward and a range of such measures will be implemented along primary roads, secondary access points and vehicle crossings that come into conflict with the bat foraging and movement corridors. Such measures will be of benefit to bats and also dovetail with the concepts of sustainability and lower energy consumption.
- 12.8.50 This includes providing, where possible, gaps in lighting columns a variable lighting regime that reduces lighting intensity at certain times, use of LED lighting, use of shields to restrict spillage and providing a central control system.
- 12.8.51 As part of the detailed lighting strategy, a plan showing horizontal lux contour lines of the proposed development will be produced (a predicted post-development light distribution plan), that would demonstrate that light levels will not deter use by bats within key bat foraging and movement corridors, remaining under 1 lux where possible, or not exceed current baseline levels.
- 12.8.52 Following further mitigation, operation related effects on bats are considered to be both **indirect** and **direct, permanent, adverse** at the **National** level and of **minor** significance.

Badgers

Demolition / Construction Phase

- 12.8.53 Existing badger setts in the west of the Site associated with the railway spur will require closure under licence in order to facilitate development. In order to safeguard this species, a new artificial sett will be created in the west of the Site. This new sett will be designed to replace the current main sett located within the Site. It will be located in habitat away from the main site operations. The sett will be subject to protective fencing (post and wire or post and rail) to prevent public access and new tree / shrub planting (dense / thorny and fruiting species) will be delivered in the immediate vicinity to offer natural protection and a foraging resource.
- 12.8.54 Demolition / construction related effects on badgers are considered to be **direct**, permanent, **beneficial** at the **local** level and of **minor** significance.

Operational Phase

- 12.8.55 Habitat management, secured through the EMMS, will provide enhanced foraging and commuting routes through the regular maintenance of suitable habitats and features. It will enable that good cover vegetation is maintained, fruiting trees and shrubs are allowed to flower and produce berries and accessibility is maintained and enhanced across the Site.
- 12.8.56 Following further mitigation, operation related effects on badgers are considered to be **direct**, **permanent**, **beneficial** at the **local** level and of **minor** significance.

Birds

Demolition / Construction Phase

- 12.8.57 New alternative nesting sites will be provided within the Site. These will take the form of 100 nest boxes of varying designs located within suitable habitat for the various populations of breeding birds utilising the Site. Their installation and maintenance will be secured through the EMMS.
- 12.8.58 The inclusion of dense shrub and hedgerow planting, including some fruiting species, as part of detailed landscape proposals will provide foraging and nest building opportunities.
- 12.8.59 Following further mitigation, demolition / construction related effects on birds are considered to be **direct, permanent, beneficial** at the **local** level and of **minor** significance.

Operational Phase

- 12.8.60 Suitable habitat management, secured as part of the EMMS, will ensure that proposed planting will provide new foraging and nest building habitat for the range of species recorded, by allowing trees and shrub to bear fruit and for dense cover for shelter. Any cutting of vegetation will be timed to avoid the nesting season where possible and activities around sensitive habitats (i.e. the reed bed and fishing ponds) for Schedule 1 birds will be kept to a minimum to further avoid disturbance.
- 12.8.61 Following further mitigation, operation related effects on birds are considered to be **direct, permanent, beneficial** at the **local** level and of **minor** significance.

Water Voles

Demolition / Construction Phase

- 12.8.62 The mitigation strategy for Water Voles involves the onsite population to be captured and released to an offsite location. The detailed strategy is to be agreed with Natural England's licencing department and as part of that strategy benefits will be realised for the population. The receptor habitat will be chosen based on its suitability for the long-term maintenance of the population (habitat condition) and through a Mink monitoring and control programme which would be a requirement of any licence. This is a similar strategy to that previously licenced by Natural England in respect of the remediation works of the ROF. This is secured as an obligation within the S106 agreement.
- 12.8.63 Demolition / construction related effects on Water Vole, following further mitigation, are considered to be **direct, permanent, beneficial** at the **local** level and of **moderate** significance.

Operational Phase

- 12.8.64 Water Vole will not be present onsite post construction therefore there will be **no effect**. However, over the long term it is possible that they will recolonise suitable habitat within the Site from wider areas. The standing water areas will be managed to allow recolonisation by the species where possible with the implementation of an EMMS aimed at delivering ecological enhancements to the rhine system, of possible benefit to the species if they colonise.

Great Crested Newts

Demolition / Construction Phase

12.8.65 A Great Crested Newt District Level Licence (GCNDLL) will be sought. District level licensing schemes operate in certain parts of England (including Somerset) to better protect GCN populations. This process involves the allocation of funds, calculated on the basis of the level of impact (i.e. number of ponds to be lost and area of terrestrial habitat loss), towards a strategic project designed for the purpose of creating, enhancing and managing habitat for GCN in areas of particular significance for the species (core population areas). This approach will provide greater benefits to the species overall, as the compensation strategies are designed on the landscape level, rather than seeking to protect (often) isolated populations, typical of a bespoke onsite solution. This is secured as an obligation within the S106 agreement.

12.8.66 Not only will the GCNDLL approach deliver benefits for GCN, the provision of good quality and well managed aquatic and terrestrial habitat will have significant benefits to other faunal species.

12.8.67 Demolition / construction related effects on GCN, following further mitigation, are considered to be **direct, permanent, beneficial** at the **regional** level and of **moderate** significance.

Operational Phase

12.8.68 A remnant population may be retained and over the long term they are likely to recolonise suitable habitat within the Site where it is made available. The standing water areas will be managed to facilitate use by the species as breeding ponds where possible with the implementation of an EMMS aimed at delivering ecological betterment to ponds.

Invertebrates

Demolition / Construction Phase

12.8.69 On-site habitat creation within the key landscape areas at the site boundary and in particular within the Gravity Park corridor will mitigate the effects of losses to grassland and wetland habitat. Delivery of sparsely vegetated areas and stony substrate at the existing landscape mound and along the rail corridor will mitigate losses to ephemeral habitat and bare ground. The delivery of this mitigation will be secured through the EMMS.

12.8.70 The retention of old orchard trees and new orchard tree planting will be of direct benefit to a range of invertebrates including those reliant on dead wood (saproxylic).

12.8.71 Off-site habitat delivery initiatives associated with the Avalon Marshes will deliver further benefits to a wide range of invertebrates associated with species rich grasslands and wetland habitats in particular.

Operational Phase

12.8.72 Management of the habitats through the EMMS will aim to enhance the Site for invertebrates, such as allowing deadwood to remain within areas of woodland, creating log piles and providing rubble heaps within the landscape feature. Areas of ephemeral habitat will be subject to cutting and disturbance to maintain conditions optimal for the species group. The standing water and reed bed areas will be managed to facilitate use by invertebrates as breeding, foraging, and sheltering habitat where possible with the implementation of an EMMS aimed at delivering ecological enhancements to the rhyme and reedbed system.

12.8.73 Following further mitigation, operation related effects on invertebrates are considered to be **permanent, beneficial** at the **local to regional** level and of **minor** significance.

12.9 Residual Effects

12.9.1 Residual effects are set out below.

Draft

Non-Statutory Designated Sites

- 12.9.2 Residual effects on non-statutory designated sites are considered to be **beneficial** at the **regional** level and of **minor** significance.

Habitats

Semi-Improved Grassland

- 12.9.3 Residual effects on semi-improved grassland are considered to be **beneficial** at the **local** level and of **minor** to **moderate** significance.

Marshy Grassland

- 12.9.4 Residual effects on marshy grassland are considered to be **beneficial** at the **local** level and of **minor** to **moderate** significance.

Plantation Woodland

- 12.9.5 Residual effects on plantation woodlands are considered to be **local** level and of **negligible** significance.

Orchard

- 12.9.6 Residual effects on orchard are considered to be **beneficial** at the **local** level and of **minor** significance.

Trees and Scrub

- 12.9.7 Residual effects on trees and scrub are considered to be **local** level and of **negligible** significance.

Hedgerows

- 12.9.8 Residual effects on hedgerows are considered to be **beneficial** at the **local** level and of **minor** significance.

Ephemeral / Short Perennial Vegetation

- 12.9.9 Residual effects on ephemeral / short perennial vegetation are considered to be **beneficial** at the **local** level and of **minor** significance.

Standing Water

- 12.9.10 Residual effects on standing water are considered to be **beneficial** at the **local** level and of **minor** to **moderate** significance.

Reed Bed

- 12.9.11 Residual effects on reed bed are considered to be at the **beneficial** at the **local** level and of **minor** significance.

Fauna

Bats

- 12.9.12 Residual effects on bats are considered to be **neutral** at the **National** level.

Badgers

12.9.13 Residual effects on badgers are considered to be **neutral** at the **local** level.

Birds

12.9.14 Residual effects on birds are considered to be **neutral** at the **local** level.

12.9.15 Invertebrates

12.9.16 Residual effects on invertebrates are considered to be **neutral** at the **local** level.

Water Vole

12.9.17 Residual effects on Water Vole, are considered to be **beneficial** at the **local** level and of **minor** significance.

GCN

12.9.18 Residual effects on GCN, are considered to be **beneficial** at the **local** level and of **minor** significance.

Reptiles

12.9.19 Residual effects on reptiles, are considered to be **neutral** at the **local** level.

12.10 Monitoring

12.10.1 In light of the conclusions set out above in respect of residual effects it is considered that no monitoring is considered necessary.

12.11 Summary

12.11.1 Ecology Solutions Ltd were commissioned by Gravity in 2020 to undertake an Ecological Assessment of the current Site and to undertake a detailed assessment of the proposed development.

12.11.2 The ecological assessment is based on results from field surveys undertaken by Ecology Solutions Ltd in most recently in 2020/21, with reference made to historic survey data collected by Ecology Solutions Ltd and EPI dating back to 2007. Surveys were undertaken to ascertain the general ecological value of the Site and to identify the main habitats and associated plant species. Specific protected species surveys have been undertaken for Badgers, Bats, reptiles, birds, Water Vole, GCN and invertebrates. Further information has been obtained through consultation with the recognised bodies involved in nature conservation in the local area.

12.11.3 The current state of the environment at the Site consists of a mix of bare ground, hardstanding, grasslands, rhynes and ponds, wetlands and woodland. However, the baseline conditions for this assessment are set on a future scenario of 2032, where the 2017 Consent has been delivered.

12.11.4 The ecological features identified through both field surveys and desk-top studies has been interpreted within the context of recognised methodologies and also within the planning policy context, both on a national and local level.

12.11.5 The potential ecological impacts of the proposed development are largely focused on the Site and its immediate surroundings. However, given the sites location within a proximity of a

number of designated statutory, and non-statutory sites, consideration has also been given to the potential impacts and opportunities that arise at a landscape scale.

- 12.11.6 Following the employment of mitigation and enhancement measures as set out in this ES Chapter, there are predicted to be no significant adverse impacts on any statutory and non-statutory sites either alone or in combination with any other plans or projects. Furthermore, the bolstering of retained habitats alongside the introduction of new areas of landscaping will create improved connectivity links with surrounding habitats.
- 12.11.7 In order to facilitate the proposed development, it is expected that habitats, in the main, with relatively low ecological value are to be lost. However, some areas of greater value, within the context of the site will also be lost, namely species rich grassland. By way of mitigation, several new areas of ecologically sensitive landscaping will be introduced. New grasslands will be created with the seed banks of existing grasslands. Furthermore, habitats of relatively higher ecological value within the context of the site (including the rhynes and reed bed) will be retained and subjected to bespoke enhancement regimes. This will mitigate for loss of any habitats.
- 12.11.8 The habitat boundaries are known to support a limited amount of bat activity. Surveys undertaken during 2020 identified several species using the Site including rarer species such as Lesser and Greater Horseshoe bats and Barbastelle. Roosts for Common Pipistrelle, Lesser Horseshoe and Brown Long-eared bats are known to roost within buildings. Due to the central parts of the Site consisting of low suitability habitat for bats, activity is generally restricted to the periphery of the Site. Nonetheless, it is expected that opportunities for foraging / commuting bats are to be safeguarded and enhanced where possible, post-development. However, lighting impacts are considered to effect commuting corridors in some areas for more sensitive bat species. By way of enhancement, bat roosting boxes are to be installed across suitably retained habitat within the Site as part of enhancement measures.
- 12.11.9 In order to safeguard all other nesting bird species, any clearance of suitable vegetation will only occur outside of the nesting season, or immediately following checks from a suitable qualified ecologist. Furthermore, the implementation of an ecologically valuable planting scheme (to include berry bearing trees) , as well as the incorporation of nest boxes of various designs, will enhance opportunities for nesting birds post development in the long run.
- 12.11.10 Great Crested Newts are known to be present within several ponds within the Site, although their dispersal is limited by the due to previous trapping and translocation efforts. As part of further district level licencing, it is proposed that offsite habitats of strategic value will be created to facilitate the loss of habitats present onsite.
- 12.11.11 A similar approach will be taken with respect to Water Vole onsite, with an offsite receptor site secured to receive the population.
- 12.11.12 Badgers are present within the Site and will be retained within areas set away from the Proposed Development. An artificial sett will be created for the resident population and suitable foraging and commuting habitat will be retained and enhanced in close proximity to the sett.
- 12.11.13 As part of providing a greater matrix of habitats to support an enhanced biodiversity across the Site areas of suitable invertebrate will be created. This will include pockets of bare ground and flower rich habitat that are optimal for invertebrates.
- 12.11.14 The retention and creation of ecologically valuable habitats as part of the proposals and the implementation of long-term enhancements will ensure significant benefits to biodiversity in the long-term.

12.11.15 In addition to onsite mitigation and ecological betterment of retained and newly created habitats, the ecology strategy has a focus on off-site deliverables. These off-site measures are in part necessary to facilitate required mitigation in respect of ensuring the favourable conservation status of protected species (e.g., Great Crested Newts and Water Vole), but equally they are necessary to compensate for losses of habitats of greater ecological value (e.g., areas of more diverse grassland / LWSs) and also to ensure that the proposals meet the national policy requirements relating to providing net gains for biodiversity.

12.11.16 As such, no adverse impacts have the potential to arise and indeed the proposals would contribute positively to biodiversity and nature conservation objectives in the local area, as is clearly desired by relevant legislation and planning policy.

12.12 Referencing

- 12.12.1 CIEEM (2018) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine version 1.1. Chartered Institute of Ecology and Environmental Management, Winchester.
- 12.12.2 Ratcliffe, D A (1977). A Nature Conservation Review: the Selection of Study areas of Biological National Importance to Nature Conservation in Britain. Two Volumes. Cambridge University Press, Cambridge.