

12 Ecology and Nature Conservation

12.1 Introduction

- 12.1.1 This chapter details the findings of the ecological assessment undertaken for the proposed 3Rs Facility. The existing baseline ecological conditions at the site are described with reference to the surrounding area. The effects arising from the proposed development are described, taking into account the measures that have been incorporated into the design and identifying any additional measures required to avoid, reduce, mitigate or compensate for adverse effects. The predicted significance of the effects is set out.
- 12.1.2 Ecological function has been considered in relation to other environmental factors (including landscape and hydrology) and operational requirements (lighting and construction). The ecological assessment draws on the findings of the other discipline areas where relevant, and aims to provide an objective understanding of the effect of this project on the ecology of the site and surrounding area, with reference to legislation, planning policy and biodiversity obligations.

12.2 Legislation and Policy Context

- 12.2.1 This section summarises relevant legislation and policy that is directly relevant to ecology and nature conservation issues.

National Policy and Guidance

National Policy Statement for Energy (NPS) EN-1, EN-3 and EN-5

- 12.2.2 Whilst the National Policy Statements (NPSs) are at the heart of the planning regime for Nationally Significant Infrastructure Projects, they are also recognised as a material consideration in decisions on planning applications. Therefore, where relevant, the policy set out within the Overarching National Policy Statement (NPS) for Energy (EN-1) (Department of Energy and Climate Change (DECC), 2011a), the NPS for Renewable Energy Infrastructure EN-3 (DECC, 2011b) and the NPS for Electricity Networks Infrastructure EN-5 (DECC, 2011c) in relation to ecology and nature conservation has been considered.
- 12.2.3 Paragraph 2.4.2 (NPS EN-3) specifically identifies that applicants should demonstrate good design in respect of landscape and visual amenity and in the design of the project to mitigate impacts such as noise and effects on ecology.
- #### National Planning Policy Framework
- 12.2.4 The National Planning Policy Framework (NPPF) published on 27 March 2012 sets out the Government's planning policies in England and how these are expected to be applied (DCLG, 2012).
- 12.2.5 The principle of sustainable development enshrined in the NPPF acknowledges the environmental role of planning in protecting and enhancing the natural environment, and helping to improve biodiversity. The NPPF recognises that achieving sustainable development involves pursuing positive improvements in the natural environment including: *'...moving from a net-loss of biodiversity to achieving net gains for nature'*
- 12.2.6 Chapter 11 of the NPPF 'Conserving and enhancing the natural environment' contains provisions for ensuring that planning can be sustainable from an environmental perspective. Specifically, Chapter 11 states that: *'...the planning system should contribute to and enhance the natural and local environment by:*
- *Protecting and enhancing valued landscapes, geological conservation interests and soils;*

- *Recognising the wider benefits of ecosystem services; minimising impacts on biodiversity and providing net gains in biodiversity where possible, contributing to the Government's commitment to halt the overall decline in biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressure;*
- *Preventing both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of soil, air, water or noise pollution or land instability; and,*
- *Remediating and mitigating despoiled, degraded, derelict, contaminated and unstable land, where appropriate.'*

12.2.7 The NPPF encourages planning authorities to develop criteria based policies for development affecting protected sites, taking into consideration the geographical hierarchy of nature conservation designations. Such policies should aim to conserve and enhance biodiversity when considering planning applications, and to encourage opportunities to incorporate biodiversity in and around developments.

12.2.8 Further guidance is provided in the National Planning Practice Guidance (NPPG) (DCLG, 2014a). Paragraph 016 of the NPPG sets out guidance in relation to taking biodiversity into account in planning applications. This states that *'Local planning authorities should only require ecological surveys where clearly justified, for example if they consider there is a reasonable likelihood of a protected species being present and affected by development. Assessments should be proportionate to the nature and scale of development proposed and the likely impact on biodiversity.'*

12.2.9 Paragraph 018 relates to mitigation, with reference to the preference for avoidance of impacts before mitigation. Where significant effects cannot be avoided, paragraph 019 states that mitigation or compensation measures can be secured through planning conditions or obligations.

12.2.10 The NPPF is also supported by the Government Circular: Biodiversity and Geological Conservation – Statutory Obligations and their Effect within the Planning System, jointly issued by the Office of the Deputy Prime Minister and the Department of Food and Rural Affairs (ODPM & DEFRA, 2005). This joint circular aims to provide 'guidance on the application of the law in relation to planning and nature conservation as it applies in England'.

12.2.11 The Government Circular makes reference to the UK Biodiversity Action Plan (BAP), England Biodiversity Strategy and Local Biodiversity Partnerships.

National Planning Policy for Waste

12.2.12 The National Planning Policy for Waste (DCLG, 2014b) was published in October 2014 and provides a simplified and streamlined single document to work towards a more sustainable and efficient approach to resource use and management. It is aimed at local waste planning authorities, providing guidance and information on how to deliver the country's waste ambitions, through several main objectives:

- Delivery of sustainable development and resource efficiency, including provision of modern infrastructure, local employment opportunities and wider climate change benefits, by driving waste management up the waste hierarchy;
- Ensuring that waste management is considered alongside other spatial planning concerns, such as housing and transport, recognising the positive contribution that waste management can make to the development of sustainable communities;
- Providing a framework in which communities and businesses are engaged with and take more responsibility for their own waste, including by enabling waste to be disposed of or, in the case of mixed municipal waste from households;
- Helping to secure the re-use, recovery or disposal of waste without endangering human health and without harming the environment; and

- Ensuring the design and layout of new residential and commercial development and other infrastructure (such as safe and reliable transport links) complements sustainable waste management, including the provision of appropriate storage and segregation facilities to facilitate high quality collections of waste.

12.2.13 In testing the suitability of sites and areas in the preparation of Local Plans and in determining planning applications, waste planning authorities should consider (in reference to ecology and nature conservation) (Appendix B) any adverse effect on a site of international importance for nature conservation (Special Protection Areas, Special Areas of Conservation and Ramsar Sites), a site with a nationally recognised designation (Sites of Special Scientific Interest, National Nature Reserves), Nature Improvement Areas and ecological networks and protected species.

Local Planning Policy

West Sussex Waste Local Plan

12.2.14 The West Sussex Waste Local Plan (West Sussex County Council and South Downs National Park Authority, 2014) was adopted in 2014 and covers the period up until 2031. The Plan provides strategies on waste planning and, within this, specific policies in order to achieve such strategies. Broadly, the plan is based upon promoting sustainable development, following the principles of the NPPF and the National Planning Policy for Waste.

12.2.15 The plan addresses the need for an increase in waste management facilities, in line with an expected population growth of 60,000 residents by 2026. Further to this, in order to achieve the objectives of 'net self-sufficiency' and 'zero waste to landfill' by 2031 (Policy W1), non-inert landfill options will need to be explored, and to that end, several new sites have been allocated for development; and the re-development of older sites is also encouraged. To this end, the Wealden site has been allocated within the Waste Local Plan (Policy W10) as a strategic site for waste management, which is potentially rail linked. This is the only available site in the north of West Sussex.

Horsham District Planning Framework (2015)

12.2.16 The Horsham District Planning Framework (Horsham District Council, 2015) was adopted in 2015 and sets out the planning policies up to 2031. The HDPF contains several policies relating to ecology and biodiversity:

Policy 25 – The Natural Environment and Landscape Character:

"Maintains and enhances the existing network of geological sites and biodiversity, including safeguarding existing designated sites and species, and ensures no net loss of wider biodiversity and provides net gains in biodiversity where possible."

Policy 31 – Green Infrastructure and Biodiversity:

Policy 31 (1)

"Development will be supported where it can demonstrate that it maintains or enhances the existing network of green infrastructure. Proposals that would result in the loss of existing green infrastructure will be resisted unless it can be demonstrated that new opportunities will be provided that mitigates or compensates for this loss, and ensures that the ecosystem services of the area are retained."

Policy 31 (2)

"Development proposals will be required to contribute to the enhancement of existing biodiversity, and should create and manage new habitats where appropriate. The Council will support new development which retains and /or enhances significant features of nature conservation on development sites. The Council will

also support development which makes a positive contribution to biodiversity through the creation of green spaces, and linkages between habitats to create local and regional ecological networks.”

12.2.17 Policy 31 (4)

“a) Particular consideration will be given to the hierarchy of sites and habitats in the district as follows:

- *Special Protection Area (SPA) and Special Areas of Conservation (SAC);*
- *Sites of Special Scientific Interest (SSSIs) and National Nature Reserves (NNRs);*
- *Sites of Nature Conservation Importance (SNCIs), Local Nature Reserves (LNRs) and any areas of Ancient woodland, local geodiversity or other irreplaceable habitats not already identified in i & ii above.*

b) Where development is anticipated to have a direct or indirect adverse impact on sites or features for biodiversity, development will be refused unless it can be demonstrated that:

- *The reason for the development clearly outweighs the need to protect the value of the site; and,*
- *That appropriate mitigation and compensation measures are provided.”*

Wildlife Legislation

Wildlife and Countryside Act 1981 (as amended)

12.2.18 The Wildlife and Countryside Act (WCA) 1981 (as amended) consolidated and amended earlier national legislation to implement the European Directive 2009/147/EC on the conservation of wild birds (The Birds Directive) in the UK. Individual species receive different levels of protection under the act. Special Protection Areas (SPAs) were designated under the WCA 1981 where sites support significant numbers of wild birds and their habitats.

Conservation of Habitats and Species Regulations 2017

12.2.19 The WCA 1981 is complemented by the Conservation of Habitats and Species Regulations 2017 (hereafter referred to as The Habitat Regulations). This is the most recent legislation to implement in law the European Directive 92/43/EEC on the Conservation of natural habitats and of wild fauna and flora (Habitats Directive) adopted in 1992.

12.2.20 Individual species (such as otter *Lutra lutra* and dormouse *Muscardinus avellanarius*) and species groups (all native UK bat *Chiroptera* species) receive a high level of protection under the Habitat Regulations.

12.2.21 The regulations require the potential effects on European Protected Habitats to be a key consideration in planning decisions. If it is likely that the designated features have the potential to be impacted then an appropriate assessment is required under Article 6(3) of the Habitats Directive with consideration of mitigation options to avoid adverse effects. If uncertainty remains over a potentially significant effect, then alternative solutions need to be considered.

Countryside and Rights of Way Act 2000

12.2.22 The WCA 1981 has been amended and reinforced in England and Wales by the Countryside and Rights of Way Act (CRoW) Act 2000 (as amended). The CRoW Act increases protection for Sites of Special Scientific Interest (SSSIs) as well as strengthening wildlife enforcement legislation.

12.2.23 The CRoW Act places a duty on the Government to have regard for the conservation of biodiversity and to maintain lists of species and habitats for which conservation action should be taken or promoted, in accordance with the Convention on Biological Diversity. Schedule 9 of the CRoW Act amends the WCA 1981 by altering the notification procedures for SSSIs and providing increased powers for their protection and management.

Natural Environment and Rural Communities Act 2006

- 12.2.24 The Natural Environment and Rural Communities (NERC) Act 2006 places a duty on all public authorities to have regard to the purpose of conserving biodiversity.
- 12.2.25 Section 40 of the NERC Act 2006 imposes a duty on all public bodies including local and national government to have regard to biodiversity in the exercise of all of their functions, with particular regard to the species of conservation priority and is often referred to as 'the biodiversity duty'.
- 12.2.26 In England, Section 41 (S41) of the Act lists the species and habitats of highest importance for conserving biodiversity (derived from the original UK BAP priorities). The S41 list is a definitive reference for all public bodies in England (statutory and non-statutory) and is a guide for decision-makers when implementing their statutory duties to have regard to the conservation of biodiversity. This 'biodiversity duty' includes taking steps to promote the restoration and enhancement of the populations of S41 species.
- 12.2.27 Section 41 species include a number of native bat species (including greater horseshoe bat *Rhinolophus ferrumequinum* and lesser horseshoe bat *Rhinolophus hipposideros*, noctule *Nyctalus noctula*, soprano pipistrelle *Pipistrellus pygmaeus*, and brown long-eared bat *Plecotus auritus*), dormouse, hedgehog *Erinaceus europaeus*, brown hare *Lepus europaeus*, a number of bird species associated with grassland and woodland habitats, and slow-worm *Anguis fragilis*, and great crested newt amongst others. All these species are of conservation concern and have suffered long-term population declines.

The Hedgerows Regulations 1997

- 12.2.28 The Hedgerows Regulations 1997 provided a framework against which hedgerows can be assessed to determine whether they qualify as "important". A hedgerow is defined as important if it has existed for 30 years or more and satisfies at least one of the criteria listed in Part II of Schedule 1 of the act. Part II of schedule 1 contains criteria in the categories of "Archaeology and history" and "Wildlife and landscape". The Wildlife and landscape criteria relate to the diversity of woody and herbaceous species within the hedgerow, the size and structure of the hedgerow and its' association with other landscape features that can contribute to ecological function.
- 12.2.29 For the purpose of ecological assessment, hedgerows are only considered in relation to the wildlife and landscape criteria of the regulations.

Biodiversity Action Plans

- 12.2.30 The UK Biodiversity Action Plan (BAP) was published in 1994 in response to the 1992 Convention on Biological Diversity. Within the UKBAP, habitats and species were identified that should be the target of conservation action and, as such, were made the focus of Habitat Action Plans (HAPs) and Species Action Plans (SAPs) respectively.
- 12.2.31 The NERC Act Section 41 (S41) lists of species and habitats of highest importance for conserving biodiversity are based on the UKBAP species and habitats and now supersede the UKBAP priorities.
- 12.2.32 The Sussex BAP was adopted in 2010 and lists species and habitat that are identified as priorities for action within Sussex. The following species and habitats covered in this assessment are listed as priorities in the Sussex BAP:
- Great crested newt.

Local Nature Partnerships

- 12.2.33 Following the Nagoya UN Biodiversity Summit in October 2010 the UK Government published the white paper 'The Natural Choice: Securing the Value of Nature' (HM Government, 2011) which introduced the institutional framework for the enhancement of the benefits of nature through Local Nature Partnerships

(LNPs). The Government's strategy for the delivery of Biodiversity in England 'Biodiversity 2020' including specific actions and targets was subsequently published in 2011 (Defra, 2011).

12.2.34 Following the publication of the white paper in 2011 the Sussex LNP was established and officially recognised by Defra in July 2012. The LNP covers East Sussex, West Sussex, Brighton and Hove.

12.2.35 The LNP has two high-level objectives:

- Conserve, enhance and expand Sussex's Natural Capital; and
- Ensure that Sussex residents have access to and share in the benefits provided by healthy, well-functioning ecosystems.

Species Legal Protection and Conservation Status

Bats

12.2.36 All bats, their breeding and nesting sites (roosts) are protected under the Habitats Regulations 2017 and Section 9(4)(b), (c) and (5) of the Wildlife and Countryside Act 1981 with an amendment in the Countryside and Rights of Way Act 2000 to include both intentional and reckless disturbance.

12.2.37 In summary, these pieces of legislation make it an offence if: a bat is deliberately captured, injured or killed; a bat is intentionally or recklessly disturbed in its roost or a group of bats is deliberately disturbed; a bat roosting place is damaged or destroyed (even if bats are not occupying the roost at the time); or access to a bat roost is intentionally or recklessly obstructed.

12.2.38 Any disturbance of a roost due to development must be licensed. The legislation protects roost sites and consideration needs to be given to circumstances where loss of foraging habitat could indirectly result in the loss of the roost.

Badger

12.2.39 Under the Protection of Badgers Act 1992, badgers (*Meles meles*) are protected from being killed, injured or disturbed, while occupying a sett, and their setts are protected from obstruction, damage or destruction.

Nesting Birds

12.2.40 Nesting birds are protected under the Wildlife and Countryside Act 1981, which makes it an offence to intentionally kill, injure or take any wild bird or take, damage or destroy its nest whilst in use or being built, or take or destroy its eggs. In addition to this, for some rarer species (listed on Schedule 1 of the Act), it is an offence to intentionally or recklessly disturb them while they are nest building or at or near a nest with eggs or young, or to disturb the dependent young of such a bird.

Reptiles

12.2.41 All native British reptiles are protected under the Wildlife and Countryside Act 1981 (as amended). The four most widespread reptile species (grass snake *Natrix natrix*, slow worm *Anguis fragilis*, common lizard *Zootoca vivipara* and adder *Vipera berus*) are protected from intentional killing or injury.

Great Crested Newt

12.2.42 The great crested newt *Triturus cristatus* is a European Protected Species (EPS) and as such is afforded full protection under the Conservation of Habitats and Species Regulations 2017. It is also fully protected under the Wildlife and Countryside Act 1981 (as amended), which makes it an offence to intentionally kill, injure or take great crested newts and to damage, destroy or obstruct access to any structure or place used for shelter or protection. In addition to this, it is an offence to intentionally or recklessly disturb them while they are occupying a structure or place used for that purpose.

12.3 Assessment Methodology

Baseline Survey Methodology

- 12.3.1 The baseline ecological surveys that underpin this assessment have, as matter of best practice, been undertaken following published guidance from the relevant body. Full details of the survey methods are provided in the Ecological Appraisal Report and Ecology Survey Report in Appendices 12.1 and 12.2. A brief summary is given below.

Ecological Appraisal (Preliminary)

- 12.3.2 The Ecology Appraisal was undertaken following the Guidelines for Preliminary Ecological Appraisal (CIEEM 2012) and guidance on Phase 1 habitat survey from the Joint Nature Conservation Committee (JNCC, 2003). It is noted that the CIEEM guidelines were updated in December 2017, after the preliminary appraisal was completed. However, application of the updated guidelines would not affect the conclusions of the appraisal.
- 12.3.3 Information was collated on local and national nature conservation designations within 2 km, and international designations within 10 km. The local biological record centre supplied records of protected species and other species of conservation interest within 2 km of the site, and records of bat species form up to 4 km from the site boundary.
- 12.3.4 The site walkover was undertaken on 7th March 2016, including an extended Phase 1 habitat survey, during which all habitats within the site were classified, mapped and described. The habitats within the site were also assessed for their potential to support legally protected or otherwise notable flora. No changes have occurred at the site since the site walkover that would affect the results of this appraisal.
- 12.3.5 Targeted searches were also made in areas of suitable habitat and where appropriate for evidence of legally protected fauna or faunas of conservation interest.
- 12.3.6 The findings of the Preliminary Ecological Appraisal are set out in Appendix 12.1.

eDNA Survey for Great Crested Newt

- 12.3.7 Water samples from ponds within 500 m were collected on the 17th May 2016 and 2nd June 2016 for eDNA analysis, as per the methodology set out in Biggs *et al.* (2014). Twenty water samples were collected from around the perimeter of the pond. All samples were then pooled into a single bag, which was then shaken for 15 seconds to thoroughly mix. Six aliquots were then pipetted into separate test tubes and sent off for final analysis by SureScreen Scientifics. Appendix 12.2 sets out further details of the methodology and results of this survey.

Bat Daytime Inspection and Emergence Surveys

- 12.3.8 A daytime inspection of one of the buildings was undertaken on the 26th October 2016 with respect to its potential to support a bat roost. The building had been previously highlighted as having a low potential to support roosting bats due to substantial cracking along one corner. This followed the methods set out in Collins (2016) and involved the use of an endoscope to check the crack for evidence of bat usage by a licensed bat ecologist.
- 12.3.9 One follow-up dusk emergence survey was carried out on the 26th October 2016. Two surveyors observed the building from where it was considered bats might emerge. The dusk survey commenced 15 minutes before sunset, and finished up to two hours after sunset. Full details and results can be found in Appendix 12.2.

12.3.10 Time-expansion bat detectors (Pettersson D 240x, and Elkon Batlogger) and frequency division bat detectors (Batbox Duet) were used to record bat echolocation calls of any emerging bats and identify species, where possible. Recordings were made using Edirol recording devices (R-09HR and R-05) and built in recorders within the detectors, which were later analysed using the computer software 'BatSound'.

Assessment Methodology

12.3.11 The chapter follows the most recent published guidance from The Chartered Institute of Ecology and Environmental Management (CIEEM, 2017). The updated guidance aims to promote good practice in the assessment of ecological impacts in terrestrial, freshwater and marine environments in the UK.

12.3.12 The stages in the assessment process are:

- Identifying the baseline conditions and ecological features through desk study and site surveys, taking into account potential changes in condition between the time of the assessment and the commencement of the development;
- Identifying the ecological features likely to be affected by the development, including sites designated for their nature conservation or biodiversity value;
- Evaluating the ecological/biodiversity importance of ecological features at the geographical scale;
- Identifying the impacts on important ecological features as a result of the construction or operational phases of the development;
- Assessing the anticipated effect of the identified impacts of the development on important ecological features;
- Identifying appropriate mitigation to avoid, mitigate, compensate or off-set anticipated effects; and
- Evaluating anticipated effects as a result of the development after appropriate avoidance, mitigation, compensation and offsetting measures have been implemented.

Assessing the Value of Ecological Features

12.3.13 Several factors are taken into consideration when assessing the value of an ecological feature and whether it is considered important and therefore requires detailed assessment.

12.3.14 In assessing the value of habitats or species populations, a subjective assessment is made, based on a range of factors that influence overall ecological value. Amongst other factors, a series of criteria are considered for habitats and populations of species (Ratcliffe, 1977), including: fragility, rarity, extent, diversity, position in the landscape, naturalness, and recorded history.

12.3.15 Other resources that are used to inform the assessment of value and importance include but are not limited to:

- EU Directives;
- Habitats and Species of Principal Importance (Section 41);
- Birds of Conservation Concern (BoCC) Red and Amber lists (RSPB, 2015); and
- National and County Red Data Book species.

12.3.16 The resources used to assess the value and importance of features also helps to define the importance in the context of geographical scale. The CIEEM guidelines state that significance of effects of ecological features should be qualified with reference to the appropriate geographic scale. Therefore, to provide a framework that is consistent for both assessing the importance of ecological features and determining the significance of effects, the importance of ecological features is described at one of the following geographic scales.

- National (high);
- Regional (medium);
- County (medium);
- Local (low);
- Site (and immediate surroundings) (negligible).

12.3.17 Where ecological features are considered important, then potential impacts on such features will be considered in the impact assessment. This process is described in more detailed below.

Characterising Ecological Impacts

12.3.18 Impacts may be described in terms of changes to the structure or function of ecological resource and are characterised according to a number of parameters where these are relevant to understanding ecological effect. These parameters include:

- Beneficial or adverse – impacts may be either, depending on the nature of the impact.
- Extent- the geographical range over which the impact occurs.
- Magnitude - the size of the impact in terms of amount of a feature affected.
- Duration and timing – when the effect will occur and how long it will last.
- Frequency – whether the effect will be a single event or multiple events.
- Reversibility – the effect may be permanent, or may naturally reverse without mitigation, or may be reversible with appropriate mitigation.

Cumulative Impacts

12.3.19 Other proposed developments that could result in cumulative impacts have been identified (Appendix 4.4). Cumulative impacts have been addressed through consideration of the potential for other proposed developments to result in impacts on ecological features identified in the assessment, and which could contribute to the impacts likely to arise from the 3Rs Facility.

Assessing Significance of Ecological Effects

12.3.20 Significance is considered taking into account the importance of the ecological feature (at the geographical scale) and the characterisation of the impact (such as magnitude, extent, reversibility etc).

12.3.21 Broadly, effects are considered significant where they affect the structure of sites, habitats and ecosystems or the conservation status of habitats and species.

12.3.22 Several impacts of varying magnitudes could act on a receptor simultaneously. Therefore, for each receptor, a single overall level of significance of effect is presented for the construction, operation and decommissioning phases based on the most significant effect identified for that receptor.

12.3.23 For consistency between disciplines the overall significance of an effect is expressed as Negligible, Minor, Moderate, Major or substantial, based on the definitions below.

- Substantial: Only adverse effects are normally assigned this level of significance. They represent key factors in the decision-making process. These effects are generally, but not exclusively, associated with sites or features of international, national or regional importance that are likely to suffer a most damaging impact and loss of resource integrity. However, a major change in a site or feature of local importance may also enter this category.

- Major: These beneficial or adverse effects are considered to be very important considerations and are likely to be material in the decision-making process.
- Moderate: These beneficial or adverse effects may be important, but are not likely to be key decision-making factors. The cumulative effects of such factors may influence decision-making if they lead to an increase in the overall adverse effect on a particular resource or receptor.
- Minor: These beneficial or adverse effects may be raised as local factors. They are unlikely to be critical in the decision-making process, but are important in enhancing the subsequent design of the project.
- Negligible: No effects or those that are beneath levels of perception, within normal bounds of variation or within the margin of forecasting error.

12.3.24 Effects of moderate significance or above are considered to be significant in terms of the EIA Regulations.

12.3.25 In addition, the geographical scale at which the effect would be significant is described, using the same framework as is used in determining the ecological value of features.

Consultation

12.3.26 Table 12.1 sets out the results of consultation undertaken in relation to ecology and nature conservation. A full copy of the scoping opinion is contained in Appendix 4.2.

Table 12.1: Consultation Responses Relevant to Ecology and Nature Conservation.

Date/Source	Consultee and Issues Raised	How/ Where Addressed
November 2015 Scoping Opinion	West Sussex County Council. Agreed with proposed approach with respect to ecology.	Proposed approach adopted throughout chapter.
Response to previous application at the site	WSCC Ecology: No objection. A bat sensitive lighting scheme is required via condition.	N/A.

12.4 Limitations of the Assessment

12.4.1 The Preliminary Ecological Appraisal was carried out at an appropriate time of year, and by an experienced ecologist, and therefore, there are no perceived limitations to this survey.

12.4.2 The bat emergence surveys were undertaken at a time of year, that, if bats were present, they would have been observed by the surveyors. Therefore, there are no perceived limitations to this survey.

12.4.3 The eDNA surveys were carried out at an appropriate time of year, and following the correct guidelines (Biggs, 2014, Appendix 12.2). However, the discrepancies between the results of Pond 5 (eDNA reporting a negative result, but great crested newt eggs being present), point to there being some limitations of the eDNA work. Biggs (2014) discusses these in more depth, Table 12.2 summarises the potential causes of false negative results.

Table 12.2: eDNA, Explanations for False Negative Results

Risk Factor	Mitigation
Field -Based	
Low numbers of newts	This risk is minimised by following good field protocol. Note that at present the minimum number of newts that can be detected in different waterbodies is not known. However, ponds with torch counts of zero animals in the breeding season, where newts were known to be present, have provided positive eDNA results in the breeding season.
Very wide, shallow draw down zones may increase the likelihood of collecting water samples in areas where there has been no newt activity even though the pond is currently occupied.	To access deeper water areas it is possible that the water sampler could be added to a long pole. It is important not to enter the water as sediments will be disturbed which may contain historical great crested newt DNA. Further research data on sediment DNA is likely to be available within 6-12 months to refine understanding of this issue. In all water depths it is necessary to gently stir the water throughout its depth, without disturbing sediments, as eDNA is believed to sink. It is advisable to avoid sampling very shallow water (less than 5-10 cm deep) as it may be difficult to avoid stirring up sediment in these areas.
There is evidence that DNA is less likely to be detected in water taken from densely packed mats of vegetation; either because of a lack of newt activity or because of the difficulty of sample collection in these areas.	Avoid sampling in these areas: sample from water in areas where vegetation is suitable for egg-laying and open water areas suitable for displaying.
There is evidence that eDNA is less likely to be detected if the whole pond perimeter is not sampled.	Every effort should be made to access 20 sites around the pond for sampling. Sites where 80-90% of pond margins were accessed achieved 99.3% detection rates. Attaching the sampling ladle to an extension pole may be an option for reaching a wider range of areas. Effective cleaning of the extension pole between sites is essential. The pole must be kept separate from any equipment that is in contact with newts.
Laboratory-based	
Very low eDNA concentrations.	Samples with DNA amounts below the Limit of Detection will generate false negatives. It is not currently possible to mitigate this risk.

- 12.4.4 Given this, it is possible that Pond 5 has very low numbers of GCN present, and therefore, the potential lack of DNA within the pond meant that the water samples did not pick up enough DNA to return a positive result from the analysis.

12.5 Baseline Conditions

- 12.5.1 The findings of the Preliminary Ecological Appraisal, including extended Phase 1 Habitat Survey, and desk study results are provided in Appendix 12.1.

Nature Conservation Designations

- 12.5.2 There are two statutory designated sites (Local Nature Reserve (LNR) and Site of Special Scientific Interest (SSSI) within 10km of the site boundary, and four non-statutory sites, including sites of nature conservation interest (SNCI). These are described briefly below in Table 12.3 and shown on Figure 12.1. For records of protected species and more in depth descriptions of the designated sites refer to Appendix 12.1.

Table 12.3: Statutory and Non-statutory Designated Sites within 2 km of the Site

Designated Site	Designation	Distance from Development Site	Description
Warnham Mill Pond	Local Nature Reserve	0.9km south	A 40ha site comprising freshwater marsh and broadleaved plantation. The reserve is of ornithological interest and supports breeding great crested grebes <i>Podiceps cristatus</i> .
Warnham	Site of Special Scientific Interest	0.7km north east	Designated for geological reasons and therefore not considered further in this assessment.
-	Ancient Semi Natural Woodland	0.2km to the south and east of the site	Woodland composed of native trees and shrubs that do not obviously originate from planting.
Brookhurst Wood & Gill & Morris's Wood	Site of Nature Conservation Importance (SNCI)	0.4km north-east	30ha of semi-natural woodland dominated by hornbeam <i>Carpinus betulus</i> . It is situated on and around stream valley sides, with a sparse but occasionally species-rich ground flora.
Two sections of road verge	Notable Road Verges	1.1km and 1.6km north-east of the site	Road verges designated for their wildlife interest, often supporting diverse, protected, uncommon or declining habitat or flora.
-	Wood Pasture and Parkland	1.2km south-west	Typically veteran trees in a matrix of grazed grassland or heathland, often providing habitat for roosting bats, birds and invertebrates.

Habitats

Buildings

- 12.5.3 Eight buildings were present on site, of differing ages and constructions. Refer to the full Preliminary Ecological Appraisal (Appendix 12.1) for detailed individual descriptions.

Tall Ruderal and Ephemeral / Short Perennial Mosaic

- 12.5.4 A tall ruderal and ephemeral / short perennial mosaic had colonised open areas within the site. This was most extensive to the north-east of the site where ruderal vegetation had established on a large bank.
- 12.5.5 Mosses dominated the ground cover in these areas, interspersed with herbs such as colt's-foot *Tussilago farfara*, barren strawberry *Potentilla sterilis* and creeping buttercup *Ranunculus repens*. Frequent strands of dead tall ruderal vegetation were present, including teasel *Dipsacus fullonum*, common ragwort *Jacobaea vulgaris* and dock *Rumex* species.
- 12.5.6 This ruderal vegetation on site was small in extent, and comprised species common within the wider landscape. However, given this habitat's proximity to the off-site ponds that have been identified as supporting great crested newt, it will form part of this species' core terrestrial habitat and is therefore considered to be of value at the local level.

Scrub and Trees

- 12.5.7 Butterfly bush *Buddleja davidii*, bramble *Rubus fruticosus* sp., grey willow *Salix cinerea* and silver birch *Betula pendula* scrub have self-seeded in places, forming denser stands to the north and north-east of the site. Rose *Rosa* sp., hawthorn *Crataegus mongyna* and pedunculate oak *Quercus robur* saplings were additionally present along the eastern bank.
- 12.5.8 Along the access road to the site were lines of mature Lombardy poplar *Populus nigra Italica*, hawthorn hedge and large-leaved lime trees *Tilia platyphyllos*.
- 12.5.9 There are several large blocks of mature broad-leaved woodland and mature hedgerows with trees in the wider local area. In this context, the on-site trees/scrub are a negligible proportion of the local tree resource. However, they will form part of the terrestrial habitat for the population of great crested newts identified using the off-site ponds. As such, they are considered to be of value at the local level.

Amenity Grassland

- 12.5.10 A narrow bank of close-mown amenity grassland bordered the main recycling area to the south-east of the site. Perennial rye-grass *Lolium perenne* was the dominant species in the grassland, with common grassland species such as ribwort plantain *Plantago lanceolata*, common daisy *Bellis perennis* and yarrow *Achillea millefolium* occasionally present. Patches of bramble occurred across the grassland.
- 12.5.11 This grassland was small in extent and close-mown. Therefore, it is not considered of ecological value and not considered further in this assessment.

Off-site Ponds

- 12.5.12 Two ponds were located within dense scrub to the immediate north of the site, surrounded by grey willow, hawthorn and blackthorn *Prunus spinosa*. While they lack the structure associated with high-quality ponds (no emergent vegetation, very little aquatic), all ponds form part of the NERC Act 2006 Section 41 Habitat 'Ponds' as being essential to the conservation of biodiversity in England.
- 12.5.13 Therefore, the ponds are considered to be of value at the local level.

Fauna

Bat Roosts

- 12.5.14 A single building on site was noted as having low potential to support roosting bats, and, therefore, in line with guidance, a detailed daytime bat inspection was completed along with a single, follow-up emergence survey (Appendix 12.2).
- 12.5.15 These surveys found no evidence of bats roosting within the building. Therefore, impacts on bat roosts are not considered further in this assessment.

Bat Activity

- 12.5.16 The site provides limited foraging/commuting habitat for bats, comprising mainly hard standing and industrial buildings. The wider landscape is rural in nature with plentiful high-quality bat foraging/commuting habitat; the railway to the immediate east of the site may also provide a more substantial, unlit corridor for bat movement. Therefore, given the rural site context, it is possible that bats periodically forage across the site (this was confirmed by the bat emergence survey (Appendix 12.2) that found that the limited bat activity that did occur was focused along the railway boundary). Consequently, given the low availability of foraging habitat on site and the abundance of such habitat in the surrounding landscape, the site is considered only of site level importance for foraging/commuting for common species of bat (common and soprano pipistrelle) due to the presence of the railway adjacent to the western site boundary.

Nesting Birds

- 12.5.17 The ruderal vegetation/scrub mosaic and some buildings provide dense cover and would have the potential to support nesting bird species. Based on the small size of the site and limited extent of such habitat within it, the number of potential nests within the site would be expected to be low. With extensive suitable habitat present locally, the site is considered to be of value at the level of the site only with respect to nesting birds.

Reptiles

- 12.5.18 Grass snake *Natrix natrix* and slow-worm *Anguis fragilis* have previously been recorded in the woodland adjoining the site to the north and east respectively. However, at present, the sparse vegetation cover within the site provides very poor quality terrestrial habitat for reptiles and therefore, it is unlikely that reptiles will be using the site. Subsequently, they are not considered any further within this assessment.

Great Crested Newt

- 12.5.19 A small breeding population of great crested newt was identified in two ponds (Ponds 5 and 6) approximately 220 m to the north of the site in 2013. Great crested newts were not found to be present in the remaining five ponds within 500 m (in 2013). Ponds 1 and 2 were recorded as having common toads and smooth newts present in 2013.
- 12.5.20 The 2013 surveys were updated in 2016, using eDNA techniques rather than conventional night-time surveys (Figure 12.2 & 12.3) due to a blanket ban on night-time access to the site for health and safety reasons by Britanniacrest Recycling Ltd. The results of the eDNA analysis returned positive great crested newt results for Ponds 1 and 2 (located immediately north of the site boundary) and negative results for the remaining ponds (Refer to Appendix 12.2 for pond locations, Appendix 12.3 for full eDNA results). Notwithstanding this negative result, Pond 5 was found to have great crested newt eggs present on vegetation surrounding the pond during water sample collection and, therefore, it is considered that great crested newts, as in 2013, are present in this pond also. It is unclear why the eDNA analysis did not return a positive result from this pond (this is considered further below). However, all recommended methods to limit false negative results occurring were observed (collecting samples from around a pond and pooling, not taking samples from areas contaminated by mud etc.). The presence of eggs confirms a breeding population of this species although not the population size.
- 12.5.21 The habitat between Pond 5 and the site is primarily close-mown grass over a capped landfill, with hardstanding and the occasional patch of ruderal vegetation also present. Therefore, the connectivity between the site and Pond 5 is very limited as these are all considered to be habitats of sub-optimal value for great crested newts. Further, Pond 5 is separated from the site (and Ponds 1 and 2) by amphibian-proof fencing erected for other development. Also, directly east and adjacent to Pond 5, there is abundant suitable great crested newt terrestrial habitat. On this basis, it is considered highly unlikely that great crested newts are moving between Pond 5 and the site; i.e. the populations of this species in the two ponds to the immediate north of the site are unlikely to form a meta population. Therefore, given the distance of Pond 5 from the site and the barriers to newt dispersal from it to the application site, impacts to Pond 5 are not considered further in this assessment.
- 12.5.22 Ponds 1 and 2 have not previously been found to support great crested newts (2013). However, they both returned a positive eDNA result for this species in 2016 (Appendix 12.2), suggesting this species has recently established themselves in these ponds. The immediate surrounds of the ponds (dense scrub/small trees, ephemeral/short perennial and tall ruderal) provide limited, but suitable terrestrial habitat.
- 12.5.23 The ponds west of the railway have never been surveyed for GCN in relation to the either the current application or that to the north, as the existing industrial buildings/processes and railway line act as barriers to dispersal in this direction.
- 12.5.24 Given this, the only terrestrial habitat available to the newts is that immediately surrounding the ponds (a small proportion of which is on the current site, the remainder to the north within the neighbouring site). The

population is likely to be rather isolated within the wider landscape, given the barriers to dispersal surrounding it (industrial facilities, railway to the west/south and the unsuitability of habitat between the ponds and Pond 5 to the east). Therefore, any impacts to this suitable terrestrial habitat (namely small amounts of vegetation removal) would have a correspondingly larger effect on the population present, even if that population is only very small. Therefore, the population of great crested newt is considered to be of local value.

12.6 Future Baseline Conditions

- 12.6.1 In the absence of the proposed development, it would be expected that the features of the existing site would remain largely unchanged (consisting of hardstanding, several derelict buildings, scrub and a waterbody). The man-made habitats that would remain unvegetated and, in the absence of management, any increase in the extent of scrub would be minor.
- 12.6.2 Climate change over the proposed development's operational lifetime could influence the ecological baseline at the site in the longer term. For example, an increase in temperatures may place increased stress on nearby ecosystems within designated sites in the local area, and potentially reduce their resilience to indirect environment effects from the development (e.g. nitrogen deposition). However, ecological change associated with climate will be gradual and long term. Consequently, within the operational lifetime of the proposed development any changes to ecosystems are predicted to be extremely small.
- 12.6.3 Changes in rainfall could potentially impact the amount of water in great crested newt breeding ponds. Modelling undertaken by UK Climate Projections (UKCP09) (which is a joint project between a number of bodies lead by Defra) calculated the change in precipitation on a 25 km by 25 km grid cell basis. Between 2020 and 2049, the average rainfall in the grid cell which includes the site, there is a predicted reduction of 0.44%, with this rising to -0.80% between 2030 and 2059. These changes are extremely small, they are unlikely to have any negative impact on the water levels in the ponds or lead to frequent drying out. The terrestrial habitats around the pond would remain unaffected. Therefore, climate change should not negatively impact upon the breeding habitat or status of the great crested newt population.

12.7 Incorporated Enhancement and Mitigation

- 12.7.1 This section describes the enhancement and mitigation features that have been incorporated into the proposed development. Identification of the key ecological features of the site, and potential presence of protected species, were considered early in the design process. Provision for the following measures has been incorporated into the design and layout to help avoid or reduce impacts on biodiversity (shown on Figure 12.4) and would be secured as part of the through the landscape strategy for the site:
- Provision for retention and enhancement of some scrub/trees toward the north of the site and planting of new trees/scrub;
 - Creation of tussocky/wildflower grassland areas; and
 - Planting of aquatic/marginal species within the areas of the ponds in applicant's ownership.

Habitats

Tree and Scrub Retention

- 12.7.2 Native trees and scrub/shrubs would be retained where possible (mainly along the northern boundary). Along with rough grassland planting along the northern boundary, this would help to ensure that at least a 20 m vegetated buffer would be present between the proposed development and the off-site ponds.

- 12.7.3 New tree planting along the eastern boundary and towards the south of the site would provide suitable foraging and nesting habitat for birds and bats.

Woodland Planting

- 12.7.4 New woodland planting is proposed along the northern site boundary, to enhance the buffer that is currently present between the development and the off-site ponds. The woodland planting would encourage birds, mammals and invertebrates onto the site and to provide new habitat for great crested newts during their terrestrial phase. The grassland would be cut annually in late summer to avoid impacts to newts.

- 12.7.5 The woodland to be created along the northern site boundary would form a link between the existing ponds and the linear corridor along the railway to the west of the site. This is an important enhancement since it would allow the population of great crested newts present in the ponds to the north of the site to disperse into the surrounding landscape along a vegetated corridor; the population is currently isolated by existing industrial development within the vegetation immediately surrounding the ponds.

Grassland Creation

- 12.7.6 The landscape strategy based on the illustrative masterplan would incorporate new meadow grassland, which would be present to the north and west of the facility.

- 12.7.7 Grassland areas would be planted with a wildflower seed mix, to encourage birds, mammals and invertebrates onto the site and to provide new habitat for great crested newts during their terrestrial phase. The grassland would be cut annually in late summer to avoid impacts to newts. A 5 m margin of uncut grassland would be maintained around the ponds. Fertilisers would not be used.

Ground Cover Planting

- 12.7.8 The landscape strategy based on the illustrative masterplan would incorporate new areas of groundcover planting, particularly along the eastern boundary of the development.

- 12.7.9 This planting along the eastern site boundary would encourage birds, mammals and invertebrates onto the site and to provide new habitat for great crested newts during their terrestrial phase.

Fauna

Nesting Birds

- 12.7.10 The scrub, ruderal vegetation and a small number of the buildings currently present on site offer suitable habitat for nesting birds. To comply with wildlife legislation, any vegetation clearance would be carried out outside of the breeding bird season (March-September inclusive), where practicable. If this is not possible, any vegetation to be removed would be checked for nesting birds by a suitably qualified ecologist immediately prior to their removal. If any nests are found, they would be left undisturbed until the chicks have fledged (usually around six weeks).

- 12.7.11 The new tree and grassland planting would provide opportunities for both foraging and nesting birds.

Great Crested Newts

- 12.7.12 The southern boundary of Pond 1 is within the ownership of Britaniacrest Recycling. Therefore, a range of aquatic/marginal species would be planted along this area to enhance its suitability for this species. In addition to this, the large amount of additional wildflower grass, groundcover planting and native woodland planting along the northern, eastern and western site boundaries would ensure that there is an overall gain both in the quantum and quality of great crested newt habitat on site.

- 12.7.13 It would be necessary to undertake a programme of trapping from within the site to move animals out of the dense scrub into areas of retained habitat. The trapping would be done via fencing the site with amphibian-proof fencing and the use of pitfall traps and artificial refugia. Full details can be found in Appendix 12.2.

Foraging Bats

- 12.7.14 Normal hours of working during construction would be:
- Monday to Friday 07.30 to 19.00 hours; and
 - Saturday 08.00 to 16.00 hours.
- 12.7.15 No construction works would take place on Sundays or Public Holidays. In the unlikely event that construction would be required outside of these hours consent would be agreed in advance with the local planning authority. However, it is envisaged that non-intrusive activities (such as electrical installations and commissioning operations etc) would be undertaken outside of these hours in order to minimise overall construction time.
- 12.7.16 Lighting outside the standard construction working hours would be restricted to that necessary for individual tasks and would be directional to avoid light spill onto areas where lighting is not required. Construction lighting would be designed to ensure there would be minimal artificial light spill to the railway corridor during the period when bats would be foraging / commuting.
- 12.7.17 An ecologically sensitive artificial lighting scheme has been designed for the site during its operational phase to minimise impacts on retained ecological features (including the adjacent railway corridor). Artificial light spill onto retained features and new grassland has been kept (where possible) to a maximum of 1 lux. Appropriate use of lighting technologies, such as direction lighting, would assist this. Where possible, the use of white LED lamps with a 'cool' colour temperature would be selected as this has lower attractiveness to insects and would be less likely to attract bats away from darker areas where they will more routinely forage (Fure, 2012).
- 12.7.18 Grassland creation along with tree/scrub planting would enhance the value of the on-site habitats as bat flight lines and foraging areas.

12.8 Assessment of Construction Effects

- 12.8.1 Effects on biodiversity would arise during construction through the disturbance and loss of habitats. Potential effects during the construction phase are listed below:
- Permanent habitat loss (adverse);
 - Temporary habitat loss (adverse);
 - Loss of connectivity (adverse);
 - Effects on retained habitats during construction (adverse); and
 - Effects on fauna during the construction through removal of habitat (adverse).

Designated Sites

- 12.8.2 There is one statutory designated site within 2 km of the application boundary, Warnham Mill Pond Local Nature Reserve (LNR), located 0.9 km south of the site (Warnham SSSI, 0.7 km north east of the site, is designated for geological reasons and therefore not considered here). The LNR is not ecologically linked to the site, and given the distances between the designated site and site boundary, there is no likelihood of direct impacts on the nature conservation designation. Further to this, there is no material ground or surface water connectivity between the statutory designated site and the 3Rs Facility site and, therefore, no scope for any indirect impacts to occur.
- 12.8.3 The nearest non-statutory site is located 0.2 km from the site, comprising an area of ancient semi-natural woodland. There is no woodland within the 3Rs Facility site and the areas of ancient semi-natural woodland

are separated from the site by Langhurstwood Road and existing development to the east, and a railway line to the west. As such, given the distance, no impact pathways between the development and the non-statutory sites are anticipated. It is therefore anticipated that there would be no impact or effect on designated sites.

Habitats

Tall Ruderal and Ephemeral / Short Perennial Mosaic

- 12.8.4 The majority of the existing ruderal and ephemeral/mosaic habitat would be removed in order to facilitate the construction of the facility. The ecological value of this habitat is related to the use of it by great crested newt in their terrestrial phase, given the relatively limited quantity of such habitat immediately surrounding the ponds where this species has been found. Of the total resource of this habitat lost, only part is considered to be suitable newt habitat, given its proximity to the ponds to the north of the site and the lack of significant hard standing barriers. The remaining areas of this habitat are to the south west of the existing buildings and hardstanding, which would prevent colonisation by newts.
- 12.8.5 The significance of the effect on great crested newts arising from the permanent loss of this habitat is considered in the section relating to great crested newts below.

Scrub and Trees

- 12.8.6 Whilst some areas of existing dense scrub/trees would be removed during construction, approximately half, particularly around the pond/along the northern boundary, would be retained. Given that these areas are relatively species poor, that new additional scrub/woodland planting is proposed, and that there are a number of larger woodland copses within the wider area, it is considered that the removal of such habitat would not be detrimental to the immediate surrounding area.
- 12.8.7 The ecological value of this habitat is related to the use of it by great crested newt in their terrestrial phase, given the relatively limited quantity of such habitat immediately surrounding the ponds where this species has been found. Therefore, the significance of the effect on great crested newts arising from the permanent loss of this habitat is considered in the section relating to great crested newts below.

Off-site Ponds

- 12.8.8 The off-site ponds to the immediate north of the site would be retained with a buffer of at least 20 m retained/newly-planted dense scrub and woodland habitat. Site surface water drainage is currently discharged into the ponds. This would continue through construction with appropriate silt/hydrocarbon traps in line to ensure no accidental pollution events occur.
- 12.8.9 Good-practice dust suppression methods would be implemented during both demolition and construction to prevent dust generated during works impacting the ponds. Details of such measures will be set out in the suitable Construction Environment Management Plan.
- 12.8.10 Overall, therefore, direct impacts (i.e. habitat loss) and impacts arising from dust to the ponds are considered unlikely. The resulting effects would be negligible.
- 12.8.11 A number of other ponds are present within 500 m of the site, but these are not ecologically linked to the site and, therefore, no impacts or effects on these are anticipated.

Fauna

Nesting Birds

- 12.8.12 Removal of only small areas of dense scrub/small trees means that some potential nesting habitat would largely be retained. Removal of such small areas of these resources, coupled with the new tree planting, would not significantly reduce the carrying capacity of the on-site habitats. Removal of dense scrub/ruderal

vegetation/select buildings could potentially disturb or destroy active bird nests if it is carried out during the bird nesting season.

- 12.8.13 Construction activity would be spread across the site during the initial phase of site preparation works (including vegetation removal), but construction would likely then be localised within the existing hardstanding on site. Disturbance would therefore be restricted to a small proportion of the available habitats during site preparation, with the remaining habitat remaining sufficiently undisturbed not to deter nesting birds.
- 12.8.14 Taking this into account, the impact on nesting birds during construction would be low, leading to a negligible significance of effect (an effect at the level of the site and its immediate surrounds).

Foraging/Commuting Bats

- 12.8.1 The vegetation on site is not considered to be of significance for foraging bats other than the (off-site) railway corridor to the west which would continue to be protected through construction by site boundary fencing.
- 12.8.2 Given the sub-optimal nature of the remainder of the site for foraging / commuting bats, and the retention, protection and enhancement of vegetation on site, the impact on bats during construction would be low, leading to an effect of negligible significance, which would not be significant beyond the level of the site and its immediate surrounds.

Great Crested Newts

- 12.8.3 Retention of the much of the dense scrub in the design of the facility means that potential great crested newt terrestrial habitat would largely be retained. However, removal during site preparation works of some newt terrestrial habitat (in the form of dense scrub, tall ruderal and ephemeral/short perennial habitats) would be necessary to facilitate the development.
- 12.8.4 Given that part of the habitat is within 50 m of the ponds known to support great crested newts, it is considered to be 'core' terrestrial habitat, the loss of which is likely to have the biggest impact on the species (English Nature, 2001). This species and its habitat has strict legal protection and, therefore, such works would need to be completed under an appropriate European Protected Species (EPS) licence. The areas of tall ruderal and ephemeral/short perennial habitat to the south west of the site are not considered suitable newt terrestrial habitat due to the circa 100 m of hardstanding/buildings between these areas and the nearest suitable habitat creating a significant barrier to dispersal into these areas.
- 12.8.5 On a temporary basis during construction, the loss of the terrestrial habitat is likely to be of medium magnitude, leading to a minor to moderate significance of effect (at the local to County level).

12.9 Assessment of Operational Effects

- 12.9.1 Effects following construction of the facility could occur via:
- Effects on habitats during the operational phase, through site drainage, for example (adverse);
 - Effects on faunal activity during operation (adverse); and
 - Availability of new habitats created through the landscape strategy (beneficial).

Designated Sites

- 12.9.2 There is one statutory designated site within 2 km of the site, Warnham Mill Pond LNR, located 0.9 km south of the site. This is not ecologically linked to the 3Rs Facility site, and given the distance between the two, there is no likelihood of impacts on the nature conservation designation. Further to this, there is no material ground or surface water connectivity between the statutory designated site and the 3Rs Facility site.

- 12.9.3 Operational emissions from the facility (oxides of nitrogen - NO_x, ammonia – NH₃ and sulphur dioxide – SO₂, plus associated deposition of acid/nutrient nitrogen) have the potential to impact natural ecosystems both through direct phytotoxicity and through changes to soil conditions (pH and nutrient status) that can influence botanical composition. The nearest statutory designated site is 0.9 km south of the site (Warnham Mill Pond LNR). Given this is down wind of the proposed facility (i.e. the emission plume would travel north east, not south), it is highly unlikely that impacts from operational emissions would increase aerial concentrations/surface deposition within the LNR sufficiently to result in significant effects. Figure 7.4 shows that the process contribution at the LNR to the south is going to be 0.1 µg.m⁻³ or less. A conservative estimate would be that 70% of the predicted NO_x concentration is NO₂. So, if it is assumed that the process contribution across the LNR is 0.1 µg.m⁻³ NO₂, then it can be estimated that the process contribution of NO_x at the LNR is 0.1/0.7 = 0.14 µg.m⁻³. The Environment Agency's guideline is that the impacts at an LNR (or any non-statutory site such as ancient woodland) can be screened out as insignificant if the process contribution from the facility is less than 100% of the accepted critical level for NO_x of 30 µg.m⁻³. On that basis, any effects from the proposed development on nearby designated sites as a result of emissions to air are not considered significant and as such any impacts are considered to be negligible, leading to a negligible significance of effect (site level).
- 12.9.4 The nearest non-statutory site is located 0.2 km from the site, comprising an ancient semi-natural woodland. There is no woodland within the 3Rs Facility site and the woodland is separated from the site by Langhurstwood Road to the east and by a railway line to the west. As such, no impact pathways between the development and the non-statutory sites are anticipated. It is therefore anticipated that there would be no impact or effect on non-statutory designated sites.

Habitats

- 12.9.5 The areas of dense scrub to the north/north-east would largely be retained within the design, and would form a landscape buffer around the north/east/west.
- 12.9.6 The use of artificial lighting without control would not significantly affect the areas of dense scrub, especially given that the site is already well lit. Native tree, shrub and grassland planting is undertaken widely in landscape schemes, and schemes subject to artificial lighting with the planting suffer no ill effects.
- 12.9.7 The new facility would receive and process waste and would generate emissions to air. However, the stack would operate to legislative standards and effects arising from emissions on scrub and tree planting are not considered likely. Given that the nature of the site (waste facility) is not going to change, it is expected that there would be a very limited (if any) increase in other forms of pollution, such as dust deposition or litter. Some reduction in dust deposition is possible, compared to the existing situation (with some activities unenclosed) on site.
- 12.9.8 In the longer term, the planting scheme for the facility would become established and mature, resulting in some potential for low beneficial impacts in terms of new habitat provision. With effective management of the habitats in the long term, this could lead to a minor beneficial effect (site-local level).

Fauna

Nesting Birds

- 12.9.9 Retention of the majority of the dense scrub within the design means that potential nesting habitat would largely be retained.
- 12.9.10 Disturbance from human activity associated with operation of the facility is likely to be no more than the current levels of activity at the site and the surrounds. Therefore, the impact on nesting birds would be negligible, leading to an effect of negligible significance (site level).

Foraging/Commuting Bats

- 12.9.11 The majority of the bat foraging / commuting habitat within the site would be retained as part of the design.
- 12.9.12 New grassland planting between the new buildings and existing vegetation would provide a green buffer within which bats would be able to commute. The dense scrub would still be expected to support flying insects and continue to provide prey for bats. Furthermore, the railway line and associated tree lines would not be lit any more than currently.
- 12.9.13 Therefore, there is high confidence that impacts to foraging and commuting bats on the site and its immediate surrounds during operation would be negligible, leading to an effect of negligible significance (site level).

Great Crested Newts

- 12.9.14 The ponds supporting the population of great crested newt are to remain *in situ* during operation and the design would deliver a substantial increase in the quality and connectivity of newt terrestrial habitat, albeit with a slight overall loss in total area, with dense scrub retained to the north/north-east, and new grassland planting around the site, providing additional grassy foraging and sheltering areas. The link created to the north of the site with the nearby railway is particularly important in providing a corridor to facilitate newt dispersal into the wider landscape to the north and south of the site.
- 12.9.15 There is already a high level of human activity surrounding the site which would not increase with the new facility. The ponds would continue to be fenced off from the site to prevent staff access and a new, permanent newt fence would be installed around the terrestrial habitat along the site's northern boundary to prevent any newts accidentally moving onto the hard standing of the development thereby avoiding killing/injury by vehicle movement or from becoming trapped in gully pots.
- 12.9.16 The operational surface water drainage scheme would continue to discharge into the ponds at a very similar rate similar to that occurring currently as the total roof area from which rain water would be collected is almost identical. All necessary in-line traps for silt/hydrocarbons would also be in place to prevent accidental discharge into the ponds during operation and as drainage will be pumped (due to level changes on site), in the unlikely event of an accidental pollution event, all surface water discharge could be prevented by stopping the pumps to allow sufficient time for the event to be dealt with. Therefore, there would be no change in the hydrological regime of the pond to that currently experienced by the newts.
- 12.9.17 Given this, it is anticipated that operational impacts on great crested newts from the new facility would be negligible, leading to effects of negligible significance (site level).

12.10 Assessment of Cumulative Effects

- 12.10.1 A review of proposed or possible future third party projects that may have a cumulative impact with the 3Rs Facility has been undertaken and used to inform this assessment. The projects identified are summarised in Appendix 4.4.
- 12.10.2 In relation to ecology and nature conservation impacts, the following developments have been identified as having the potential to impact cumulatively with the 3Rs facility and have therefore been examined as part of the assessment:
- Land west of Brookhurst Wood landfill site (proposed facility for compaction and baling of Refuse Derived Fuel); and
 - Land north of Horsham (proposed mixed use strategic development, including up to 2,750 dwellings, business park, retail, community centre, leisure facilities, education facilities and public open space);

- 12.10.3 The 3Rs Facility site sits within the footprint of an existing development, and would only result in small amounts of habitat loss, which would ultimately be replaced with areas of new habitat creation in the long term. The habitat to be removed has ecological significance for great crested newts at the local level and is contiguous with habitat to the north of the site covered by the Brookhurst Wood Refuse Derived Fuel (RDF) application. The proposed RDF plans show the retention of all great crested newt terrestrial habitat. The ponds would be fenced on their northern elevations to prevent animal ingress into the site during construction and, longer-term, during operation. Therefore, there is no cumulative increase in loss of great crested newt terrestrial habitat or risk of mortality from construction/operational activities.
- 12.10.4 The land north of Horsham proposal has a resolution to grant consent for a large, mixed used strategic development. Great crested newt surveys were undertaken in 2015/2016, where two ponds immediately adjacent to the 3Rs site were found to have populations present. These ponds are to be retained and enhanced within the adjacent development. There would also be an overall increase in suitable terrestrial habitat for newts within the land north of Horsham masterplan. Given this, and that the 3Rs Facility would also provide an overall net increase in newt habitat, no significant adverse to the overall population are anticipated.
- 12.10.5 There are a number of other planning applications within the wider area. Due to the distance between the site and these other applications, no significant cumulative adverse effects upon ecological receptors (including great crested newts) are anticipated.
- 12.10.6 Landscape planting within the green infrastructure of other proposed developments would provide a range of ecological enhancements. Long term management of new habitat creation through management plans would secure biodiversity enhancements beyond the short term.
- 12.10.7 On this basis, given the habitat loss within the boundary is small in its extent, it is not anticipated that the 3Rs Facility would contribute to any significant cumulative effects.

12.11 Inter-relationships

- 12.11.1 The principal inter relationship with other topics considered in this ES is with air quality (Chapter 7). This interaction is described above in Section 12.9.
- 12.11.2 There are also inter-relationships between ecology and hydrology/flood risk (Chapter 10) with respect to great crested newts. This is described in Section 12.9.

12.12 Further Mitigation Measures

- 12.12.1 Several further measures are recommended in order to provide additional mitigation/enhancements for biodiversity on the site:
- Bird nest boxes – it is suggested that five bird nest boxes could be provided. These would help mitigate for the loss of breeding bird habitat from clearance of existing dense scrub in the short term while replacement planting established. A possible combination for this development includes two Schwegler 1SP sparrow terraces, and three Schwegler bird houses.

12.13 Monitoring and Management Strategies

- 12.13.1 It will be a requirement of the European Protected Species Licence for great crested newts for the site that Ponds 1 and 2 are monitored for two years post-construction. These surveys would be undertaken by licenced ecologists, and the results would be submitted to the local records centre.

12.13.2 The habitats to be created post construction (wildflower grassland and dense scrub) would be managed for biodiversity value according to an appropriate management strategy.

12.14 Residual Effects

12.14.1 Table 12.4 summarises the significance of effects for the construction and the operational phase for the project taking into account the mitigation measures incorporated into the development.

Table 12.4: Summary of Likely Environmental Effects on Ecology and Nature Conservation

Parameter	Sensitivity of receptor	Likely impact	Duration	Magnitude of impact	Significance of effect	Mitigation	Magnitude of Residual Impact	Significance of Residual Effect	Significant
Construction Phase									
Designated sites	Medium (County) (LNR)	No impact	N/A	None	None	N/A	None	None	Not significant
Ponds		Habitat loss and dust	Short-medium term	Negligible	Negligible	Dust control measures	Negligible	Negligible adverse	Not significant
Nesting birds	Negligible (site)	Loss of nesting bird habitat	Medium term	Low	Negligible	Avoidance of bird breeding season	Low	Negligible adverse	Not significant
Bats	Negligible (site)	Loss of bat foraging habitat	Medium term	Low	Negligible	Control of construction lighting	Negligible	Negligible adverse	Not significant
Great crested newts	Low (local))	Loss of great crested newt terrestrial habitat	Medium term	Medium	Minor to Moderate	Works to be undertaken under EPS license	Medium	Minor to moderate adverse	Significant (temporary)
Operation Phase									
Designated sites	Medium (County) (LNR)	No impact	Long term	Negligible	Negligible	Stack to be operated in accordance with legislation and	Negligible	Negligible	Not significant

Parameter	Sensitivity of receptor	Likely impact	Duration	Magnitude of impact	Significance of effect	Mitigation	Magnitude of Residual Impact	Significance of Residual Effect	Significant
						environmental permit			
Habitats	Negligible to Low (site/local)	Lighting, dust, creation of new habitats	Long term	Low	Negligible	Long term management of habitats for ecological benefit.	Low	Minor beneficial	Not significant
Nesting birds	Negligible (site)	Activity, lighting, drainage, creation of new habitat	Long term	Negligible	Negligible	Provision of nest boxes.	Negligible	Minor beneficial	No
Foraging bats	Negligible (site)		Long term	Negligible	Negligible	Planting on southern boundary of Pond 1 & 2, and enhancement scrub and grassland	Negligible	Minor beneficial	No
Great crested newts	Low (local))		Long term	Negligible	Negligible	Planting on southern boundary of Pond 1 & 2, and enhancement scrub and grassland planting.	Low	Minor beneficial	No

12.15 Conclusions

- 12.15.1 Ecological features of interest in the context of the site include two off-site ponds supporting a population of great crested newts and areas of dense scrub/tall ruderal vegetation forming part of the terrestrial habitat for this species.
- 12.15.2 The proposed site layout incorporates new areas of green infrastructure within the layout. Landscape planting would include the creation of grassland and scrub habitats, and new native tree planting. New and retained habitats would be managed to promote their biodiversity value. Impacts on the following habitats and species / species groups identified as ecological features have been assessed:
- Ruderal vegetation;
 - Dense scrub/small trees;
 - Bats (foraging and commuting);
 - Nesting birds;
 - Great crested newt.
- 12.15.3 Species protection measures would be implemented as best practice to minimise the risk of harm to great crested newts and nesting birds during site preparation and removal of very small areas of dense scrub.
- 12.15.4 Taking into account the overall low ecological value of the majority of the site, species protection measures to be implemented, and the proposed habitat creation and enhancement measures, there would be no long term adverse impacts with significance beyond the level of the site and its surrounds.
- 12.15.5 In the context of the low value of site, the creation of new ecologically-valuable habitats, such as the woodland planting, groundcover planting and tree group planting, would provide ecological enhancements above that which are currently present, resulting in the potential for an overall benefit to biodiversity in the long-term.

12.16 References

Legislation

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