

**Proposed Energy Recovery
Facility, Buttington Quarry**
Shadow Habitats Regulations
Assessment (sHRA)

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Contents

1	Introduction.....	2
2	Habitats Regulations Assessment.....	5
3	Scope of the Assessment.....	8
4	Information on the Relevant European Sites	10
5	Identification of any Likely Significant Effects	15
6	In-Combination Assessment	23
7	Conclusion.....	27
8	References	28
9	Figures.....	29

1 Introduction

Overview

- 1.1 Broad Energy (Wales) intends to submit a planning application to Welsh Ministers for an Energy Recovery Facility (abbreviated to 'ERF' in this document) and ancillary infrastructure to be located at Buttington Quarry, Buttington, Welshpool, Powys, SY21 8SZ (the Site). A location plan is provided in Section 9 (Figure 1).
- 1.2 BSG Ecology was appointed by Environmental Compliance Limited on 31 May 2018 to undertake an ecological impact assessment for the proposed development, the results of which are presented in the Environmental Statement for the development (ECL, 2020). This assessment revealed that there are two Special Areas of Conservation (SACs) within 10 km of the likely location of the flue gas discharge stack at the Site. These are the Montgomery Canal SAC and Granllyn SAC, which are approximately 1.8 km and 4.3 km from the proposed stack respectively. In addition, Midland Meres and Mosses – Phase 1 Ramsar site is approximately 7.4 km from the proposed stack.
- 1.3 This document presents the results of a shadow Habitat Regulations Assessment¹ (HRA), which will provide information that will help Welsh Ministers to discharge their duties as the 'competent authority' as defined under Regulation 63(1) of the Conservation of Habitats and Species Regulations 2017 (hereafter referred to as the 'Habitats Regulations').

Site description

- 1.4 The development area in the floor of the quarry is mainly bare ground. Scattered short-lived annual and ruderal plant species are present around the fringes of the quarry, and reedmace *Typha latifolia* occurs in the pools that are present. The access track to the development area is also bare ground (compacted quarried material).
- 1.5 Within the southern part of the Site there is a network of tracks through remnant areas of semi-improved neutral grassland (pasture), ruderal habitats and scattered scrub. Fragments of hedgerows are present, but these are not linked to a wider hedgerow network due to a network of tracks and areas of former quarrying activity which have resulted in habitat fragmentation.
- 1.6 A strip of secondary broadleaved woodland associated with a small stream runs along the south-western land ownership boundary and falls partly within the development area. Further areas of woodland border the Development Area to the north and west including an area of Planted Ancient Woodland Site (PAWS) along the northern edge of the existing quarry void and a smaller area of broadleaved woodland (Restored Ancient Woodland Site - RAWS) to the west of this.
- 1.7 A strong linear habitat feature extends along the line of a dismantled railway between the woodland and the A453 approximately 2.5 km to the north; it is dominated by scrub and developing woodland and is likely to provide a commuting / dispersal corridor through the area for various species. Otherwise, the landscape around the site is dominated by mixed farmland.

The proposed works

- 1.8 It is proposed to construct and operate a plant capable of generating around 12.8MWe of low carbon and renewable energy through the thermal treatment of up to 167,000 tonnes per annum of residual wastes sourced from Powys and surrounding areas as a feedstock. Such feedstock would be derived from municipal, industrial and commercial sources and would consist of material having passed through recovery centres for reuse and recycling and so deemed to have no further use.

¹ Under the Conservation of Habitats and Species Regulations 2017 the 'competent authority' is responsible for completing a Habitats Regulations Assessment (HRA). The applicant is required under Regulation 63(2) to provide the competent authority with such information as the competent authority may reasonably require to discharge its duties. This report is provided for that purpose. Where a HRA is carried out by an applicant with the objective of it being adopted by the competent authority, this is often referred to as a shadow HRA.

- 1.9 The ERF would be capable of generating both electrical and heat energy from the process and so would be classed as a Combined Heat and Power plant (CHP plant).
- 1.10 The ERF will use proven, highly regulated technology provided by HZI. Through the combustion of residual waste, it will generate energy in the form of steam to drive a turbine to generate electricity.
- 1.11 The proposed development will include the following elements:
- waste reception area including tipping hall;
 - storage bunker;
 - waste feed hopper;
 - combustion line;
 - boiler and water steam cycle;
 - flue gas treatment;
 - a single stack – 70m in height;
 - bottom ash extraction and storage;
 - steam turbine and generator;
 - electrical transformers;
 - air cooled condensers;
 - and associated utilities infrastructure.
- 1.12 It is anticipated that, following the grant of planning permission, construction would last for approximately 36 months, which includes a 2-3 month commissioning period.

Consultation

- 1.13 In its EIA Scoping Direction dated 3 October 2018, The Planning Inspectorate advised that *'It is noted that the Applicant intends to submit a Habitats Regulations Report (HRA) in order to address the requirements of the Conservation of Habitats and Species Regulations 2017' and 'The Conservation of Habitats and Species Regulations 2017 require competent authorities, before granting consent for a plan or project, to carry out an appropriate assessment (AA) in circumstances where the plan or project is likely to have a significant effect on a European site (either alone or in combination with other plans or projects)'.*
- 1.14 It is also noted that *'When considering whether or not significant effects are likely, applicants should ensure that their rationale is consistent with the CJEU finding that mitigation measures (referred to in the judgment as measures which are intended to avoid or reduce effects) should be assessed within the framework of an AA and that it is not permissible to take account of measures intended to avoid or reduce the harmful effects of the plan or project on a European site when determining whether an AA is required'.*
- 1.15 The requirement to undertake a Habitats Regulations Assessment is described in Section 2.
- 1.16 Consultation comments received from Natural Resources Wales (NRW) dated 26 October 2020 (reference CAS-124842-Y2D7) have been taken into account within the updated HRA. The updated HRA includes the following amendments:
- Sections 1.6-1.7: The baseline description of the woodland extent within and around the Site has been updated.
 - Section 1.16: Text has been added to acknowledge that comments have been received from NRW and have been considered within the report.
 - Section 3.9: Text has been added to provide clarification regarding potential impact mechanisms for the Tanat and Vyrnwy Bat Sites SAC, and then scopes out potential impacts.
 - Sections 4.6-4.10: Text has been added to provide further context for the baseline assessment (additional sources of information are referenced).
 - Sections 6.3-6.16: Text has been added regarding the assessment of the results of additional modelling completed in response to NRW comments.

- Section 7.3: A sentence has been added regarding the in-combination assessment.
- References: A new reference has been added – Anon (2018).

2 Habitats Regulations Assessment

Legislation

- 2.1 The Conservation of Habitats and Species Regulations 2017 (the 'Habitats Regulations') transpose the requirements of two European Directives in to UK legislation:
- i. Council Directive on the conservation of natural habitats and of wild fauna and flora of 21st May 1992 (92/43/EEC) (the 'Habitats Directive'); and
 - ii. Council Directive on the conservation of wild birds of 2nd April 1979 (70/409/EEC) consolidated by Council Directive on the conservation of wild birds 2009 (2009/147/EC (the 'Birds Directive').
- 2.2 The Habitats Directive aims to protect plants, habitats and animals other than birds, and this is achieved in part through the creation of Special Areas of Conservation (SACs).
- 2.3 The Birds Directive aims to protect rare and vulnerable birds and the habitats that they depend upon and this is achieved in part through the classification of Special Protection Areas (SPAs).
- 2.4 The measures in the Directives required to protect these sites are transposed in to UK legislation as the assessment process set out in the Habitats Regulations (see below).
- 2.5 The UK is also a contracting party to the Convention on wetlands of international importance especially as waterfowl habitat, Ramsar, Iran, 1971 (the 'Ramsar Convention') which seeks to protect wetlands of international importance, especially those wetlands utilised as waterfowl habitat. It is UK Government policy (in Wales this is identified in paragraph 6.4.18 of Planning Policy Wales, 2018) that all competent authorities should treat Ramsar sites in their decision making processes as if they are SACs or SPAs. This policy also brings candidate SACs (cSACs) and potential SPAs (pSPAs) within the requirement for HRA.
- 2.6 In this report the term 'European Sites' is used to refer collectively to SACs, SPAs and Ramsar sites.

Habitats Regulations Assessment process

- 2.7 The requirements of the Habitats Regulations with regard to the implications of plans or projects are set out within Regulation 63. The step-based approach implicit within this regulation is referred to as a 'Habitats Regulations Assessment', which is the term that has been used throughout this report.
- 2.8 It is a requirement of any public body (referred to as a competent authority within the Habitats Regulations) to carry out a Habitats Regulations Assessment when they are proposing to carry out a project, implement a plan or authorise another party to carry out a plan or project. Competent authorities are required to record the process undertaken, ensuring that there will be no adverse effects on the integrity of any European Site as a result of a plan or project whether alone or in combination with other plans or projects.

Assessment stages

- 2.9 The assessment of a plan or project goes through a number of stages, with guidance having been published to aid competent authorities fulfil their responsibilities (e.g. European Commission 2001; DCLG, 2006). Those stages are summarised in Table 1 below.

Table 1: Stages in the Habitats Regulations Assessment process

Stage	Description	Legislative Context
Purpose	Determines if the purpose of the plan or project is directly connected with, or necessary, to the management of a European Site. If it is, then no further assessment is necessary	Regulation 63(1)(b)
Scoping	The identification of any European Site that might be within scope of a HRA, i.e. those European Sites should be taken forward to the screening stage based on a wide consideration of spatial and ecological factors. Such European Sites may be located within the plan or project area but may also include sites located in neighbouring authority areas.	
Screening	<p>Assessment of whether a plan or project, either alone or in combination with other plans or projects, is likely to have a significant effect on any European Sites' qualifying features (habitats and species) and the achievement of the European Site's conservation objectives.</p> <p>This is also known as the 'test of likely significant effect' (ToLSE). If significant effects can be ruled out at the screening stage (with no reasonable scientific doubt remaining) then there is no requirement to proceed to the next "Appropriate Assessment" stage or subsequent stages</p>	Regulation 63(1)(a)
Appropriate Assessment	<p>Consideration of the impacts of the proposals to determine whether or not it is possible to conclude with certainty that the development will not result in any adverse effect on the integrity of any European Site, either alone or in combination with other plans or projects and with reference to the European Site's conservation objectives.</p> <p>This is also known as the test of 'adverse effect on integrity' (AEol).</p> <p>At this stage consent may be granted for the plan or project if it is possible to conclude with certainty that the proposal will not result in any adverse effect on the integrity of any European Site, either alone or in combination with other plans or projects.</p>	Regulation 63(5)
If it cannot be concluded with certainty that the proposal will not result in any adverse effect on the integrity of any European Site then proceed to:		
Assessment of alternative solutions	<p>Assess whether there is an alternative solution to the plan or project, i.e. one that better respects European Sites whilst achieving the primary objective of the plan or project.</p> <p>If no such alternative solution exists, the process continues to an assessment of whether there are 'imperative reasons of overriding public interest' (IROPI) for the plan or project to proceed.</p>	Regulation 64(1)
Assessment of IROPI	Assess whether a plan or project can be justified as being needed for 'imperative reasons of overriding public interest' (IROPI).	Regulation 64(1)

Stage	Description	Legislative Context
Compensatory measures	Identify and secure any necessary compensatory measures to ensure that the overall coherence of the European Site network is protected.	Regulation 68

Case law on the HRA process

- 2.10 The Court of Justice of the European Union (CJEU) and UK Court judgments have identified that in the HRA process the assessment may not have lacunae (gaps or omissions) and must contain complete, precise and definitive findings capable of removing all reasonable scientific doubt as to the effects of the proposed works on the European Site concerned. Court judgments have identified that in the HRA process all aspects of the plan or project which can, by themselves or in combination with other plans or projects, affect the conservation objectives of European Sites concerned must be identified in the light of the best scientific knowledge available in the field.
- 2.11 A CJEU judgment (People Over Wind and Sweetman, 12 April 2018, C-323/17) has provided clarification as to when avoidance or reduction (i.e. mitigation) measures can be considered within the HRA process. The headline for the case is:
- “In the light of all the foregoing considerations, the answer to the question referred is that Article 6(3) of the Habitats Directive must be interpreted as meaning that, in order to determine whether it is necessary to carry out, subsequently, an appropriate assessment of the implications, for a site concerned, of a plan or project, it is not appropriate, at the screening stage, to take account of the measures intended to avoid or reduce the harmful effects of the plan or project on that site”.*
- 2.12 This case means that a competent authority cannot rely on avoidance or reduction measures at the screening stage that allow a conclusion of ‘no likely significant effect’ to be reached: instead it is necessary to accept that there is a ‘likely significant effect’ in the absence of these measures, and move to the next stage, i.e. appropriate assessment, at which point such mitigation measures can be considered. This judgment is accounted for in this report.
- 2.13 A further CJEU judgment (Holohan & Ors. v An Bord Pleanála, 7 November 2018, C - 461/17) provides further clarification about the HRA process, requiring that all habitats and species associated with a European Site (irrespective of whether or not they are qualifying features) must be considered in the assessment of impacts on those non-qualifying habitats or species are liable to affect the conservation objectives of the European Site through, for instance, effects on ecological processes or food chains. This recent judgment is also accounted for in this report.

3 Scope of the Assessment

- 3.1 The Zone of Influence (Zoi) for the proposed development is the area over which ecological features may be affected by biophysical changes as a result of the proposed project and associated activities. This may extend beyond the Site boundary. The Zoi has been used to determine the extent of the desk study and baseline ecological surveys.
- 3.2 During the construction stage of the Development the Zoi is considered to be the area around the Site where impacts might arise during the construction, operation and decommissioning phases of the development. The extent of the Zoi necessarily varies depending upon the sensitivity of the ecological receptors and the impact mechanism being considered. In this assessment the following Zois have been adopted:
- Habitat loss and disturbance will be limited to the Site itself, with dust related impacts potentially extending to 50 m beyond the Site boundary (see below). Excavations and ruts caused by vehicles may have hydrological impacts that are wider ranging, but such impacts are unlikely to extend as far as the nearest European site (the Montgomery Canal is 1.8 km away).
 - Disturbance related impacts on mobile species, such as birds, are potentially wider ranging. Nevertheless, disturbance related impacts on birds are unlikely to extend as far as the nearest European site where the qualifying features includes species that may be vulnerable to disturbance, i.e. the Midland Meres and Mosses - Phase 1 Ramsar, which is 7.4 km away (Ruddock & Whitfield, 2007; Laursen, Kahlert & Frikke, 2005).
 - Airborne pollution has the potential to be dispersed over far greater distances and so for this reason a Zoi of 10 km has been adopted based on UK Gov guidance with regard to aerial deposition on sensitive ecological features².
- 3.3 Current guidance (Holman *et al*, 2014) advises that construction related dust impacts only need to be considered for important ecological features within 50 m of the development boundary. As the nearest European site is considerably further away than this, dust arising from the construction and decommissioning phases of the development is not likely to migrate as far as any European site.
- 3.4 Consideration also needs to be given to land that is not subject to a European designation but which may be 'functionally linked' to a European site if it serves a function for the interest features of that site. Functionally linked land has been defined as follows (Chapman & Tyldesley, 2016):
- 3.5 *'the term 'functional linkage' refers to the role or 'function' that land or sea beyond the boundary of a European site might fulfil in terms of ecologically supporting the populations for which the site was designated or classified. Such land is therefore 'linked' to the European site in question because it provides an important role in maintaining or restoring the population of qualifying species at favourable conservation status.'*
- 3.6 In summary, the following potential types of adverse effect have been considered in this assessment:
- Physical habitat loss – land take by the works;
 - Physical habitat damage – from on-site activities;
 - Physical habitat damage – from off-site activities (affecting functionally-linked land);
 - Pollution related impacts – airborne pollution in particular;
 - Disturbance – e.g. noise from working machinery or visible presence of people.

² <https://www.gov.uk/guidance/air-emissions-risk-assessment-for-your-environmental-permit#steps-to-complete-this-risk-assessment>.

- 3.7 Taking into account these impact mechanisms and the Zols that have been adopted for the assessment, the HRA has only considered impacts on the following European sites:
- Montgomery Canal SAC (1.8 km to the west of the Site);
 - Granllyn SAC (4.3 km to the west of the Site); and
 - Midland Meres and Mosses - Phase 1 Ramsar (7.4 km to the south of the Site)
- 3.8 The locations of these sites relative to the proposed development Site are shown on Figure 2 in Section 9.
- 3.9 Other than the above sites, the nearest European site is Tanat and Vyrnwy Bat Sites SAC, which is approximately 10.5 km to the north-west of the Site. This site contains a good mixture of lesser horseshoe bat *Rhinolophus hipposideros* maternity and hibernation sites. No impact mechanism has been identified whereby the development of the ERF could impact on this European site and so it has been scoped out of this assessment. The SAC is currently reported to be in favourable condition. The population of bats using the SAC (and any functionally linked land) could be impacted upon by: direct disturbance; deterioration of the external condition or changes in the internal characteristics of the buildings they use; measures to prevent access to the buildings and mines (which provide a complex of hibernation and maternity roost sites); and changes to the surrounding habitats on which the bats rely for foraging. The development of the ERF will not lead to any of these impacts.

4 Information on the Relevant European Sites

4.1 Set out below in Tables 2-4 is information relating to the following parameters for each of the European Sites within the scope of the assessment:

- Site name
- Site code
- Year classified/designated/listed
- Area
- Qualifying interest features
- Conservation objectives
- Distance between nearest component of European Site and the proposed development
- Sources of information

4.2 The European Sites that have been considered are the Montgomery Canal SAC, Granllyn SAC and Midland Meres and Mosses – Phase 1 Ramsar site.

Table 2

Site name: Montgomery Canal SAC
Site code: UK0030213
Year designated: 2015
Area: 51.46 ha
<p>Qualifying interest features:</p> <ul style="list-style-type: none"> • Annex II species that are a primary reason for selection of this site: Floating water-plantain <i>Luronium natans</i>
<p>Conservation objectives:</p> <p>The vision is to maintain the extent and distribution of <i>L. natans</i> within the Montgomery Canal at favourable conservation status, where all of the following conditions are satisfied:</p> <ul style="list-style-type: none"> • The <i>L. natans</i> population in favourable condition will reflect the natural carrying capacity of the canal habitat and will be limited principally by species ability to spread or be relocated (vegetative or otherwise), the suitability of the rooting medium and competition between species as part of habitat succession. • Recreation pressure, principally through boat movements and fisheries management, will not significantly affect the maintenance of the species, or its ability to disperse throughout the canal network and any associated off-line reserves. • The ecological status of the water environment, including elements of water quality and physical habitat quality, will be sufficient to support the population of <i>L. natans</i> in favourable condition. • All factors affecting the achievement of the above conditions are under control.
Distance: The SAC is 1.8 km from the proposed development site.

Site name: Montgomery Canal SAC
Sources of information: Site citation - https://sac.jncc.gov.uk/site/UK0030213 JNCC Natura 2000 Data Form - https://jncc.gov.uk/jncc-assets/SAC-N2K/UK0030222.pdf Conservation Objectives - https://naturalresources.wales/media/672802/Montgomery%20Canal%20SAC%20Management%20Plan%20_English_.pdf Supplementary advice on conserving and restoring site features - https://naturalresources.wales/media/672802/Montgomery%20Canal%20SAC%20Management%20Plan%20_English_.pdf (Management Plan) Site Improvement Plan - https://sac.jncc.gov.uk/site/UK0030213 (Management Plan)

Table 3

Site name: Granllyn SAC
Site code: UK0030158
Year listed: 2015
Area: 20.84 ha
Qualifying interest features: <ul style="list-style-type: none"> Annex II species that are a primary reason for selection of this site: great crested newt <i>Triturus cristatus</i>
Conservation objectives: <p>The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:</p> <ul style="list-style-type: none"> No less than 100 great crested newts are present on the site. At least 2 display/breeding ponds are to be found throughout the entire site. Great crested newt larvae are found in Granllyn Pool breeding ponds in at least one out of every two years. The newt display/breeding ponds have a water depth of 10cm or more during the summer months. Native macrophytes cover no more than 75% of pond/water body surfaces. Aquatic marginal vegetation is present around the pond edges. Breeding/display ponds are not be heavily shaded by surrounding bank-side vegetation. Algal blooms and surface sheens are absent from display/breeding ponds. Fish are not present in breeding/display ponds supporting great crested newts. Only small numbers of water and wildfowl can be seen on the ponds. The terrestrial habitat surrounding breeding ponds comprise of refuge areas, foraging areas, hibernacula and corridors that aid the dispersal of great crested newts. If these features are not present the conservation management aim will be to provide them. Off site habitats that function as stepping stone or corridors located between SAC compartments are maintained for migration, dispersal; foraging and genetic exchange purposes. All factors affecting the achievement of the above conditions are under control.
Distance: Approximately 4.3 km from the proposed development site

Site name: Granllyn SAC
Sources of information: Site Citation - https://sac.jncc.gov.uk/site/UK0030158 Conservation Objectives – https://naturalresources.wales/media/672352/Granllyn%20SAC%20Management%20Plan%202021.4.08%20English.pdf Supplementary advice on conserving and restoring site features – https://naturalresources.wales/media/672352/Granllyn%20SAC%20Management%20Plan%202021.4.08%20English.pdf (Management Plan) Site Improvement Plan – https://naturalresources.wales/media/672352/Granllyn%20SAC%20Management%20Plan%202021.4.08%20English.pdf (Management Plan)

Table 4

Site name: Midland Meres and Mosses – Phase 1 Ramsar site
Site code: UK11043
Year designated: 1994
Area: 510.88 ha
Qualifying interest features: Ramsar criterion 1: <ul style="list-style-type: none"> The site comprises a diverse range of habitats from open water to raised bog. Ramsar criterion 2 <ul style="list-style-type: none"> Supports a number of rare species of plants associated with wetlands including five nationally scarce species together with an assemblage of rare wetland invertebrates (three endangered insects and five other British Red Data Book species of invertebrates).
Conservation objectives: There are no specific conservation objectives for the Ramsar site.
Distance: The Ramsar site is 7.4 km from the proposed development site.
Sources of information: Site citation - http://archive.jncc.gov.uk/pdf/RIS/UK11043.pdf JNCC Information Sheet - http://archive.jncc.gov.uk/pdf/RIS/UK11043.pdf Conservation Objectives – n/a Supplementary advice on conserving and restoring site features – n/a Site Improvement Plan – n/a

Site condition

Montgomery Canal SAC

- 4.3 The condition assessment by Countryside Council for Wales (CCW, now Natural Resources Wales; CCW, 2008) is based on the results of a comprehensive survey completed in 2001. The results of this survey showed that floating water-plantain was widespread along the length of the canal, although there were some lengths where there were no records because of its very low density, recent dredging activity or its local absence. This information led to the conclusion that the population of floating water-plantain was healthy and that this warranted an assessment of favourable condition.
- 4.4 Concerns were raised by CCW, however, about water quality that may account for the current lack of species richness in some parts of the canal. This resulted in the feature being re-assessed as being in unfavourable condition, pending further discussion and investigation with the Environment Agency. It was also noted that some areas of the canal were dominated by *Elodea* spp, which can out-compete the more sensitive species (including *L. natans*).
- 4.5 The Management Plan (CCW, 2008) concluded that (in November 2007) the population of floating water plantain was large and abundant at that time in management units 2 (Vyrnwy Aqueduct to Pentrehelin) and 15 (Red House to Glanhafren).
- 4.6 No recent condition assessment has been completed and no recent water quality data have been sourced for the canal. The Management Plan (CCW, 2008) advises that the upper limit total phosphorus target for the whole canal is $<40\mu\text{g L}^{-1}$; however, no data have been found that indicate what the actual phosphorus levels are within the canal in relation to this target.
- 4.7 The Fourth Report by the United Kingdom under Article 17 of the Habitats Directive (Anon, 2018) identifies the following threats to floating water-plantain:
- Agricultural activities generating diffuse pollution to surface or ground waters (Medium)
 - Land, water and air transport activities generating pollution to surface or ground waters (Medium)
 - Management of fishing stocks and game (Medium)
 - Invasive alien species of Union concern (High)
 - Other invasive alien species (other than species of Union concern) (High)
 - Problematic native species (Medium)
 - Development and operation of dams (Medium)
 - Modification of hydrological flow (Medium)
 - Natural succession resulting in species composition change (other than by direct changes of agricultural or forestry practices) (Medium)
- 4.8 This identifies surface water quality as being the main threat (in relation to water quality and nutrient input). Aerial deposition is not identified as a threat.
- 4.9 The Article 17 report (Anon, 2018) further qualifies this by stating: "In general, pressures on *L. natans* are not considered to be particularly serious in comparison with those affecting many other aquatic habitats and species. The majority of these have therefore been ranked as Moderate or Low importance." The report goes on to say that "*Nutrient enrichment from agriculture and other sources such as storm drains and sewage works damages Luronium habitat by promoting excessive growth of competitor plants, filamentous algae and phytoplankton.*" This has resulted in the following conservation measures being proposed to address water quality issues:
- "*Reduce diffuse pollution to surface or ground waters from agricultural activities;*
 - "*Reduce/eliminate point pollution to surface or ground waters from agricultural activities.*"
- 4.10 This indicates that the focus for corrective action is surface water inputs to the canal and not aerial deposition.

Granllyn SAC

- 4.11 The condition of the SAC, as demonstrated by the most recent torch survey counts carried out on the site in 2007, was assessed as unfavourable but recovering. During this survey 91 newts were counted in the Granllyn Pool (unit 1) and 5 newts were counted in The Moat (unit 2) water body making 96 in total. The lower limit (target – refer to Conservation Objectives) for the site is 100 individuals. Evidence of egg laying was recorded at this time confirming breeding in Granllyn Pool.
- 4.12 The Core Management Plan (CCW, 2008) reports that the ‘unfavourable recovering’ status was due to the result of pond restoration work at Granllyn Pool in 2005, which fully restored the display/breeding habitat. Whilst this seems like a reasonable analysis, caution needs to be applied to these data as they are now 12 years old.

Midland Meres and Mosses – Phase 1 Ramsar site

- 4.13 There is no specific information available for the Ramsar site; however, condition assessments have been completed for the component SSSIs that collectively make up the Ramsar site (15 in total). Only one component SSSI is present within the 10 km Zol: Marton Pool, Chirbury SSSI.
- 4.14 The condition assessment for Marton Pool, Chirbury SSSI indicates that this site is ‘unfavourable recovering’ due to the past effects of water pollution and agricultural runoff; however, this needs to be treated with caution as the assessment was completed in 2011.

5 Identification of any Likely Significant Effects

- 5.1 This section carries out the screening of likely significant effects. This fulfils the requirement of Regulation 63 of the Habitats Regulations that a proposed project is to be assessed to determine whether or not it is likely to have a significant effect on any European Site or any qualifying features (species and habitats) of any European Site, either alone or in combination with other plans or projects.
- 5.2 As part of the screening process it is noted that the proposed development is not directly connected with or necessary to the management of any European Site.
- 5.3 The following European Sites are screened for any likely significant effects:
- Montgomery Canal SAC;
 - Granllyn SAC; and
 - Midland Meres and Mosses – Phase 1 Ramsar site.
- 5.4 The following types of potentially adverse activity are screened as a source of any likely significant effects in accordance with the requirements of Regulation 63 of the Habitats Regulations:
- Changes in air quality resulting in impacts on water quality through deposition.
- 5.5 The following types of potentially adverse activity are screened out as a source of any likely significant effects for the reasons stated:
- Physical habitat loss: The nearest European site is the Montgomery Canal SAC, the nearest part of which is approximately 1.8 km to the west of the Site. The two locations are separated by a road, a railway, farmland and the River Severn, which collectively will buffer the SAC from any direct or indirect impacts on habitats.
 - Physical habitat damage: See above rationale regarding physical habitat loss.
- 5.6 Each European Site is taken in turn and assessed with reference to the potentially adverse activity, first considering the site alone and then, if necessary, considering the site in-combination with other plans and projects.

Testing for likely significant effects of the project alone

- 5.7 The screening of each European Site against each potentially adverse activity is set out below in a standard tabulated format (Tables 5, 6 and 7).

Table 5: Assessment of likely significant effects on the Montgomery Canal SAC

Site:	Interest features:
Montgomery Canal SAC	<ul style="list-style-type: none"> • Annex II species that are a primary reason for selection of this site: Floating water-plantain <i>Luronium natans</i>
Potentially adverse activity:	Assessment:
Changes in air quality resulting in impacts on water quality through deposition – nitrogen deposition	<p>The Montgomery Canal SAC is described as ‘permanent oligotrophic water’ with a Critical Load (CL) for Nitrogen deposition of 3-10 kg N/ha/yr (http://www.apis.ac.uk, accessed 22 May 2020). Levels within the SAC are reported to be 12.2 kg N/ha/yr (average), with a range of 10.8 kg N/ha/yr (minimum) to 14.5 kg N/ha/yr (maximum), which indicates that the upper Critical Load is already being exceeded for nitrogen (http://www.apis.ac.uk, accessed 22 May 2020).</p> <p>APIS (http://www.apis.ac.uk, accessed 22 May 2020) advises that the application of the CL for Nitrogen in any assessment should be</p>

	<p>subject to the following considerations:</p> <p><i>'Important Note: Seek site specific advice for site value. This critical load only applies if the interest feature is associated with softwater oligotrophic or dystrophic lakes at the site. If the feature is not depending on these lake types, there is no comparable critical load available. The critical load for C1.1 and C1.4³ is 3-10 kgNha-1yr-1. The lower end of the range is intended for boreal and alpine lakes, and the higher end of the range for Atlantic softwaters. Site specific advice should be sought from the conservation agencies as to which part of the range is relevant. Note that the critical load should only be applied to oligotrophic waters with low alkalinity with no significant agricultural or other human inputs.'</i></p> <p>The conservation objectives for the component SSSI include an interim total phosphorus target for the whole canal of <math>40\mu\text{g L}^{-1}</math> total phosphorus. No target is required for other elements, which suggests that P is considered to be the rate-limiting nutrient. The interim total phosphorus target for the whole canal of <math>40\mu\text{g L}^{-1}</math> suggests that it should be treated as being at the upper end of the mesotrophic⁴ range (the proposed development will not be a significant source of phosphorus).</p> <p>Source attribution data (http://www.apis.ac.uk/, accessed 22 May 2020) indicate that the current baseline exceedance is heavily influenced by agricultural sources. The APIS data (total Nitrogen deposition expressed as Kg N/ha/yr from sources by Region) indicate that the main sources are livestock 45.80% (Wales and England combined), road transport 8.91%, fertiliser 6.95% (Wales and England combined), shipping 5.28%, and European sources 14.35% (total 81.29%).</p> <p>Air quality modelling carried out by ECL⁵ has calculated that the process contribution (PC) from the ERF will be 0.09 kg N/ha/yr, which is not significant in terms of the overall levels of nitrogen compared to the current levels. When the PC is compared to the CL for Nitrogen deposition it is equivalent to 2.96% of the lower CL and 0.89% of the upper CL. As noted above, the lower CL is intended for boreal and alpine lakes; the PC when compared to the upper CL falls below 1%⁶ of the long-term environmental standard and so can be screened out.</p>
<p>Changes in air quality resulting in impacts on water quality through deposition – ammonia (NH₃)</p>	<p>The Critical Level for ammonia is 3 (2-4) $\mu\text{g NH}_3/\text{m}^3$ (annual mean). Site levels are reported to be 2.1 $\mu\text{g NH}_3/\text{m}^3$ (average), ranging from 1.47 $\mu\text{g NH}_3/\text{m}^3$ (minimum) to 2.64 $\mu\text{g NH}_3/\text{m}^3$ (maximum), which is within the Critical Level range of 2-4 $\mu\text{g NH}_3/\text{m}^3$ (this has been applied to reflect the sensitivities of different vegetation types). As noted above, source attribution data for nitrogen (which also considers NH₃ inputs) indicate that agricultural, road transport, fertilizer and European sources collectively contribute 81.29%.</p>

³ C1.1 and C1.4 refers to the EUNIS ecosystem class. C1.1 is 'Permanent oligotrophic lakes, ponds and pools'; C1.4 is 'Permanent dystrophic lakes, ponds and pools'.

⁴ OECD (1982) defines freshwater trophic categories as follows: oligotrophic = mean total P $10\mu\text{g l}^{-1}$; mesotrophic = mean total P 10-35 $\mu\text{g l}^{-1}</math>; eutrophic mean total P >35 $\mu\text{g l}^{-1}</math>.$$

⁵ Please see ECL Report ECL.001.01.02/ADMS which may be found as Technical Appendix 6-1 of the Environmental Statement submitted with the DNS Application.

⁶ The Environment Agency has set a precautionary threshold of 1% of the Process Contribution (PC) below which the effects of aerial pollutants are considered to be insignificant (<https://www.gov.uk/guidance/air-emissions-risk-assessment-for-your-environmental-permit>).

	<p>Air quality modelling carried out by ECL⁷ has calculated that the process contribution (PC) from the ERF will be 0.005 ug/m³, which is 0.03% of the Critical Level. This is not significant in terms of the overall levels of NH₃ (it is equivalent to 0.19% of the maximum level of 2.64 kg μg NH₃/m³ reported for the site).</p>
<p>Changes in air quality resulting in impacts on water quality through deposition – Nitrogen Oxides (NOx)</p>	<p>The Critical Level for nitrogen oxide is 30 μg NOx/m³ (annual mean). Site levels are reported to be 10.78 μg NOx/m³ (average), ranging from 4.75 μg NOx/m³ (minimum) to 10.78 μg NOx/m³ (maximum), which is well below the Critical Level. As noted above, source attribution data for nitrogen (which also considers NOx) indicate that agricultural, road transport, fertilizer and European sources collectively contribute 81.29%.</p> <p>Air quality modelling carried out by ECL has calculated that the process contribution (PC) from the ERF will be 0.062 ug/m³, which is 0.21% of the Critical Level. This is not significant in terms of the overall levels of NOx as levels will still fall well below the Critical Level.</p>
<p>Changes in air quality resulting in impacts on water quality through deposition – Sulphur Dioxide (SO₂)</p>	<p>The Critical Level for sulphur dioxide is 10-20 μg SO₂/m³ (annual mean). Site levels are reported to be 0.88 μg μg SO₂/m³ (average), ranging from 0.74 μg SO₂/m³ (minimum) to 1.58 μg SO₂/m³ (maximum), which is well below the Critical Level.</p> <p>Source attribution data indicate that most SO₂ is derived from existing industrial sources and shipping (more than 72%).</p> <p>Air quality modelling carried out by ECL has calculated that the process contribution (PC) from the ERF will be 0.026 ug/m³, which is 0.13% of the Critical Level. This is not significant in terms of the overall levels of SO₂, as levels will still fall well below the Critical Level.</p>
<p>Conclusion</p>	<p>No likely significant effect arising from changes in N-deposition, ammonia, NOx and SO₂.</p>
<p>Overall conclusion</p>	<p>The proposed development alone will not have a likely significant effect on this European Site and its interest features and no reasonable scientific doubt remains in reaching this conclusion. In light of this it is necessary to carry out an 'in combination' assessment to ascertain whether the project will have a likely significant effect in combination with other projects (see Section 6).</p>

⁷ Please see ECL Report ECL.001.01.02/ADMS which may be found as Technical Appendix 6-1 of the Environmental Statement submitted with the DNS Application.

Table 6: Assessment of likely significant effects on the Granllyn SAC

Site:	Interest features:
Granllyn SAC	<ul style="list-style-type: none"> Annex II species that are a primary reason for selection of this site: great crested newt <i>Triturus cristatus</i>
Potentially adverse activity:	Assessment:
Changes in air quality resulting in impacts on water quality through deposition – N-deposition	<p>The Granllyn SAC is described as ‘standing open water’ where no Empirical Critical Load value is available for the supporting habitat or for the species (http://www.apis.ac.uk, accessed 18 September 2019). Site levels for Nitrogen deposition are reported by APIS to be 12.2 kg N/ha/yr.</p> <p>Source attribution data indicate that 29% of nitrogen is derived locally from Welsh livestock sources, with a further 18% derived from English livestock sources. Further contributions come from international shipping (6%), road transport (5%), fertiliser (3%), and a 16% contribution comes from European sources. In summary, current nitrogen levels are primarily due to agricultural and transport related sources which collectively contribute 77% of nitrogen deposition.</p> <p>Air quality modelling carried out by ECL has calculated that the process contribution (PC) from the ERF will be 0.0048 kg N/ha/yr, which is not significant in terms of the overall levels of nitrogen compared to the current levels (the PC is less than 0.04% of current baseline levels).</p>
Changes in air quality resulting in impacts on water quality through deposition – ammonia (NH ₃)	<p>The Critical Level for ammonia is 3 (2-4) µg NH₃/m³ (annual mean). Site levels are reported to be 2.05 µg NH₃/m³, which is just within the Critical Level range of 2-4 µg NH₃/m³ (this has been applied to reflect the sensitivities of different vegetation types). As noted above, source attribution data for nitrogen (which also considers NH₃ inputs) indicate that agricultural and transport related sources collectively contribute 77%.</p> <p>Air quality modelling carried out by ECL has calculated that the process contribution (PC) from the ERF will be 0.002 ug/m³, which is 0.01% of the Critical Level. This is not significant in terms of the overall levels of NH₃ (it is equivalent less than 0.1% of the maximum level of 2.26 kg µg NH₃/m³ reported for the site).</p>
Changes in air quality resulting in impacts on water quality through deposition – Nitrogen Oxides (NOx)	<p>The Critical Level for nitrogen oxides is 30 µg NOx/m³ (annual mean). Site levels are reported to be 5.09 µg NOx/m³, which is well below the Critical Level. As noted above, source attribution data for nitrogen (which also considers NOx) indicate that agricultural and transport related sources collectively contribute 77%.</p> <p>Air quality modelling carried out by ECL has calculated that the process contribution (PC) from the ERF will be 0.019 NOx ug/m³, which is 0.06% of the Critical Level. This is not significant in terms of the overall levels of NOx as levels will still fall well below the Critical Level.</p>

<p>Changes in air quality resulting in impacts on water quality through deposition – Sulphur Dioxide (SO₂)</p>	<p>The Critical Level for sulphur dioxide is 10-20 µg SO₂/m³ (annual mean). Site levels are reported to be 0.94 µg µg SO₂/m³, which is well below the Critical Level.</p> <p>Source attribution data indicate that most SO₂ is derived from existing industrial sources, European sources and shipping (more than 73%).</p> <p>Air quality modelling carried out by ECL has calculated that the process contribution (PC) from the ERF will be 0.008 ug/m³, which is 0.04% of the Critical Level. This is not significant in terms of the overall levels of SO₂, as levels will still fall well below the Critical Level.</p>
<p>Conclusion</p>	<p>No likely significant effect arising from changes in N-deposition, ammonia, NO_x and SO₂.</p>
<p>Overall conclusion</p>	<p>The development of the Site alone will not have a likely significant effect on this European Site and its interest features and no reasonable scientific doubt remains in reaching this conclusion. In light of this it is necessary to carry out an 'in combination' assessment to ascertain whether the project will have a likely significant effect in combination with other projects (see Section 6).</p>

Table 7: Assessment of likely significant effects on the Midland Meres and Mosses – Phase 1 Ramsar site

<p>Site:</p>	<p>Interest features:</p>
<p>Midland Meres and Mosses – Phase 1 Ramsar site</p>	<ul style="list-style-type: none"> • The site comprises a diverse range of habitats from open water to raised bog. • The site supports a number of rare species of plants associated with wetlands including five nationally scarce species. • The site supports an assemblage of rare wetland invertebrates.

Potentially adverse activity:	Assessment:
<p>Changes in air quality resulting in impacts on water quality through deposition – N-deposition</p>	<p>No air quality data are available for the Ramsar site; however, data are available for Marton Pool, Chirbury SSSI, which is a component SSSI of the SAC that is located within 10 km of the Site (all other component SSSIs are located more than 10 km from the Site). Empirical Critical Load values for Nitrogen deposition are provided by APIS for:</p> <ul style="list-style-type: none"> • Broad-leaved, mixed and yew woodland (<i>Alnus glutinosa</i> - <i>Urtica dioica</i> woodland) – 10-20 kg N/ha/yr; • Fen, marsh and swamp (<i>Phragmites australis</i> swamp and reed-beds) – 15-30 kg N/ha/yr; • Fen, marsh and swamp (<i>Scirpus lacustris</i> ssp. <i>lacustris</i> swamp) – habitat is not sensitive to nitrogen; • Fen, marsh and swamp (<i>Typha angustifolia</i> swamp) – habitat is not sensitive to nitrogen. <p>(source: http://www.apis.ac.uk, accessed 22 May 2020).</p> <p>Published data (source: http://www.apis.ac.uk, accessed 22 May 2020) indicate that the current nitrogen level in the woodland is 32.9 kg N/ha/yr, which indicates that the Critical Load for this habitat is currently exceeded (in the absence of development).</p> <p>Published data also indicate that the current nitrogen level in the fen, marsh and swamp habitat is 19.5 kg N/ha/yr, which is at the lower end of the Critical Load range for this habitat.</p> <p>Source attribution data (source: http://www.apis.ac.uk, accessed 22 May 2020) indicate that 31% of nitrogen is derived locally from English livestock sources, with a further 18% derived from Welsh livestock sources. Further contributions come from fertiliser inputs (6%), and a 15% contribution comes from European sources. In summary, current nitrogen levels are primarily due to agricultural and European sources which collectively contribute 70% of nitrogen deposition.</p> <p>Air quality modelling carried out by ECL has calculated that the process contribution (PC) from the ERF will be 0.086 kg N/ha/yr (total nitrogen), which is not significant in terms of the overall levels of nitrogen compared to the current levels. The PC is equivalent to 0.86% of the lower critical load and 0.43% of the upper critical load for 'Broad-leaved, mixed and yew woodland'. The PC is also equivalent to 0.57% of the lower critical load and 0.29% of the upper critical load for 'Fen, marsh and swamp'. The PC therefore falls below 1%⁸ of the long-term environmental standard and so can be screened out.</p>

⁸ The Environment Agency has set a precautionary threshold of 1% of the Process Contribution (PC) below which the effects of aerial pollutants are considered to be not significant (<https://www.gov.uk/guidance/air-emissions-risk-assessment-for-your-environmental-permit>). In addition EA Operational Instruction 67_12 – 'Detailed assessment of the impact of aerial emissions from new or expanding IPPC regulated industry for impact on nature conservation', states that if the background concentration is currently exceeding the appropriate environmental criterion and the new process contribution will cause an additional small increase then a decision will have to be made based on the individual circumstances, taking account of the information within the operational instruction.

<p>Changes in air quality resulting in impacts on water quality through deposition – ammonia (NH₃)</p>	<p>The Critical Level for ammonia is 3 (2-4) µg NH₃/m³ (annual mean). Current site levels (in the absence of development) are reported to be 2.23 µg NH₃/m³, which is just within the range of 2-4 µg NH₃/m³ (that has been applied to reflect the sensitivities of different vegetation types). As noted above, source attribution data for nitrogen (which also considers NH₃ inputs) indicate that agricultural and European sources collectively contribute 70%.</p> <p>Air quality modelling carried out by ECL has calculated that the process contribution (PC) from the ERF will be 9.29E-05 ug/m³, which is 0.01% of the Critical Level. This is not significant in terms of the overall levels of NH₃ (it is equivalent to less than 0.1% of the maximum level of 2.23 kg µg NH₃/m³ reported for the site and falls below 1% of the long-term environmental standard and so can be screened out).</p>
<p>Changes in air quality resulting in impacts on water quality through deposition – Nitrogen Oxide (NO_x)</p>	<p>The Critical Level for nitrogen oxide is 30 µg NO_x/m³ (annual mean). Current site levels are reported to be 4.39 µg NO_x/m³, which is well below the Critical Level. As noted above, source attribution data for nitrogen (which also considers NO_x) indicate that agricultural and European sources collectively contribute 70%.</p> <p>Air quality modelling carried out by ECL has calculated that the process contribution (PC) from the ERF will be less than 0.1% of the Critical Level. This is not significant in terms of the overall levels of NO_x, i.e. it falls below 1% of the long-term environmental standard and so can be screened out.</p>
<p>Changes in air quality resulting in impacts on water quality through deposition – Sulphur Dioxide (SO₂)</p>	<p>The Critical Level for sulphur dioxide is 10-20 µg SO₂/m³ (annual mean) for all vegetation. Current site levels are reported to be 0.78 µg µg SO₂/m³, which is well below the Critical Level.</p> <p>Source attribution data indicate that most SO₂ is derived from existing industrial sources, shipping and European sources (more than 76%).</p> <p>Air quality modelling carried out by ECL has calculated that the process contribution (PC) from the ERF will be in the region of 0.1% of the Critical Level (lower limit). This is not significant in terms of the overall levels of SO₂, i.e. it falls below 1% of the long-term environmental standard and so can be screened out.</p>
<p>Conclusion</p>	<p>No likely significant effect arising from changes on N-deposition, ammonia, NO_x and SO₂.</p>
<p>Overall conclusion</p>	<p>The development of the Site alone will not have a likely significant effect on this European Site and its interest features and no reasonable scientific doubt remains in reaching this conclusion. In light of this it is necessary to carry out an 'in combination' assessment to ascertain whether the project will have a likely significant effect in combination with other projects.</p>

Summary of Likely Significant Effects

- 5.1 The assessment of the project alone has concluded that the proposed ERF plant is not likely to have a significant effect on the following European sites (Figure 2, Section 9):
- Montgomery Canal SAC;
 - Granllyn SAC; and
 - Midland Meres and Mosses – Phase 1 Ramsar site.
- 5.2 Whilst the proposed development will result in the generation of aerial pollutants, modelling shows that these will be at very low levels compared to the current baseline conditions. Agriculture is currently the main contributor to elevated levels of nitrogen deposition, ammonia and NO_x. Industrial sources and shipping are the main contributors of SO₂.

6 In-Combination Assessment

- 6.1 There is a requirement under Regulation 63(1)a to complete an assessment of whether a plan or project, either alone or in combination with other plans or projects, is likely to have a significant effect on any European Sites' qualifying features (habitats and species) and the achievement of the European Site's conservation objectives. An assessment has been completed of the development alone, but a further assessment is therefore required of the Development in combination with other plans and projects.
- 6.2 In the absence of a searchable map facility on the Powys County Council planning portal, the following approach has been adopted for the in-combination assessment:
- The Defra MAGIC database was used to identify Community boundaries within 10 km of the Site;
 - Ordnance Survey maps were used to identify likely centres of industrial activity and this was cross-checked against the Powys Local Plan Proposals Maps, the Powys Local Development Plan 2011 – 2026 Written Statement, and the C39 Economic Development Strategy Appendix D;
 - The Welshpool Community area was identified as being a potential location of applications for industrial processes that could result in an 'in-combination' effect with the ERF (all other Community areas comprise small scattered developments where significant aerial pollution sources are unlikely);
 - The monthly planning lists were interrogated using the Powys County Council planning portal to identify industrial processes that need to be considered in the 'in-combination' assessment (monthly lists were available for the period July 2019 to May 2020).
- 6.3 Consultation comments received from Natural Resources Wales (NRW) dated 26 October 2020 (reference CAS-124842-Y2D7) indicate that the proposed development should be considered in combination with a proposed Intensive Livestock Unit (ILU) located 3.5 km to the south of the Site (see Section 1.3).
- 6.4 The ILU relates to planning application P/2018/0474, which is an application for proposed free range egg laying chicken houses at Trelystan, near Leighton in Powys. Included in the application submission documents for P/2018/0474 is "A Report on the Modelling of the Dispersion and Deposition of Ammonia from the Existing and Proposed Free Range Egg Laying Chicken Houses at Trelystan, near Leighton in Powys" produced by AS Modelling & Data Limited in August 2017. The data contained within this report has been used by Environmental Compliance Ltd to inform the cumulative air quality assessment.
- 6.5 It was not possible to obtain the input modelling files for this study, and so the cumulative assessment has therefore been based on the information contained within the AS Modelling & Data Limited report. It is therefore restricted to relevant specified receptors and process contributions obtained from isopleths (which are approximate) contained within the AS Modelling & Data report.
- 6.6 The in-combination assessment by Environmental Compliance Ltd notes that the concentration of ammonia from the ILU at the Buttington Brickworks varies from $0.068\mu\text{g}/\text{m}^3$ to $0.022\mu\text{g}/\text{m}^3$, or 0.04 – 0.01% of the AQS for ammonia. The concentration of ammonia at the maximum ground level concentration (GLC) for the ERF is $0.1053\mu\text{g}/\text{m}^3$ or 0.06% of the AQS. A worst case in-combination concentration at the point of maximum GLC would be around $0.1733\mu\text{g}/\text{m}^3$ or 0.096% of the AQS for ammonia. Consequently, it is considered that there is no significant impact from the cumulative impacts of both the ILU and the ERF at the maximum point of impact for the ERF.
- 6.7 Although the input modelling files were not available (for the AS Modelling & Data Limited report), the report does provide the maximum annual mean ammonia concentrations, and maximum annual nitrogen deposition rates at a number of points within the Montgomery Canal SAC. Therefore these points were added to the ECL modelling studies to allow process concentrations at a common location to be combined.

6.8 A summary of maximum predicted GLCs of ammonia at locations within the Montgomery Canal are presented in Table 9 for the ERF, the ILU and the total. Table 8 provides details of the assessment locations.

Table 8: Montgomery Canal assessment locations

ADMS Ref.	Location	Easting (X)	Northing (Y)	Distance from Source (m)	Heading (Degrees)
MC36	Montgomery Canal from AS Modelling	323643	308242	3662	240
MC37		324192	309027	2821	248
MC38		324865	310242	1948	275
MC39		322294	306086	6031	228
MC40		325683	311762	2018	326

Table 9: Maximum predicted ammonia ground level concentrations (PCs) from the ERF and ILU at the Montgomery Canal

Location		PC from ERF (µg/m ³)	PC from ILU ⁽¹⁾ (µg/m ³)	Total PC (µg/m ³)
MC36	Montgomery Canal from AS Modelling	0.0030	0.024	0.0270
MC37		0.0036	0.020	0.0236
MC38		0.0048	0.013	0.0178
MC39		0.0018	0.018	0.0198
MC40		0.0036	0.011	0.0146

Note to Table

(1) Obtained from AS Modelling & Data Limited Report – Table 6a

6.9 For ammonia concentrations the critical level for higher plants is 3µg/m³ as an annual mean and for floating water plantain the level is 3µg/m³ as an annual mean. A comparison with these critical levels is provided in Table 10.

Table 10: Comparison of maximum predicted ammonia ground level concentrations (PCs) with Critical Levels at the Montgomery Canal for the EFR in-combination with the ILU

Location		Maximum PC (µg/m ³)	Critical Level	Max PC as % of Critical Level
MC36	Montgomery Canal from AS Modelling	0.0270	3	0.90%
MC37		0.0236		0.79%
MC38		0.0178		0.59%
MC39		0.0198		0.66%
MC40		0.0146		0.49%

6.10 It can be seen from the data in Table 10 that the in-combination impacts for the higher vegetation can be considered not significant at all of the assessment points that have been considered. Consequently, in-combination effects from both the ERF and the ILU on the Montgomery Canal can be considered insignificant.

6.11 A summary of maximum predicted nutrient nitrogen deposition rates at locations identified within the Montgomery Canal are presented in Table 11 for the ERF, the ILU and the total. A comparison with the Critical Loads is provided in Tables 12 and 13.

Table 11: Maximum predicted nitrogen deposition from the ERF and ILU at the Montgomery Canal

Location	PC from ERF (kgN/ha/yr)	PC from ILU ⁽¹⁾ (kgN/ha/yr)	Total PC (kgN/ha/yr)
MC36	0.020	0.190	0.210
MC37	0.029	0.150	0.179
MC38	0.046	0.100	0.146
MC39	0.012	0.140	0.152
MC40	0.044	0.080	0.124

Note to Table

(1) Obtained from AS Modelling & Data Limited Report – Table 6a

Table 12: Comparison of maximum predicted nutrient nitrogen deposition rates with lower Critical Load

ADMS Ref.	Habitat Interest	Lower Critical Load (kgN/ha/yr)	Process Contribution (kgN/ha/yr)	PC as a % of Lower Critical Load	Background Conc (kgN/ha/yr)	PEC (kgN/ha/yr)	PEC as % of Lower Critical Load
MC36	Floating Water Plantain	3	0.210	7.02%	14.5 ⁽¹⁾	14.71	490%
MC37			0.179	5.98%		14.68	489%
MC38			0.146	4.87%		14.65	488%
MC39			0.152	5.07%		14.65	488%

Notes to Table: 1. Obtained from APIS 23.11.2020

Table 13: Comparison of maximum predicted nutrient nitrogen deposition rates with upper Critical Load

ADMS Ref.	Habitat Interest	Upper Critical Load (kgN/ha/yr)	Process Contribution (kgN/ha/yr)	PC as a % of Upper Critical Load	Background Conc (kgN/ha/yr)	PEC (kgN/ha/yr)	PEC as a % of Upper Critical Load
MC36	Floating Water Plantain	10	0.210	2.10%	14.5 ⁽¹⁾	14.71	147%
MC37			0.179	1.79%		14.68	147%
MC38			0.146	1.46%		14.65	146%
MC39			0.152	1.52%		14.65	147%

Notes to Table: 2. Obtained from APIS 23.11.2020

- 6.12 It can be seen from the data in Tables 12 and 13 that the maximum nutrient nitrogen deposition rates (for the ERF and the ILU combined), due to process emissions, are greater than 1% at the Montgomery Canal. Also due to the large background concentrations, all PECs are in excess of 100% of the upper and lower critical loads (in the absence of the ERF and ILU background concentrations exceed the upper critical load).
- 6.13 It is noted that the APIS website (accessed 8 December 2020) states “that the critical load should only be applied to oligotrophic waters with low alkalinity with no significant agricultural or other human inputs”. In Section 4.7 et seq reference is made to the Article 17 report (Anon, 2018), which indicates that surface water inputs to the canal are the greatest threat in relation to water quality. Agricultural activities generating diffuse pollution to surface or ground waters are identified as key source of nutrients, and not aerial deposition (the canal is a man-made feature that is supported by diverted surface water flows).
- 6.14 The canal is therefore considered to be subject to significant agricultural input, and consequently application of the critical load needs to be applied and interpreted with caution. The overall contribution of nitrogen deposition by the ERF and ILU when considered in combination is very small compared with current background levels (see Tables 12 and 13). Although water quality data are not available for the canal, it is considered likely that background levels are heavily influenced by agricultural input via surface waters. The effect of high nutrient levels appears to be exacerbated by management factors such as inadequate control of silt accumulation, which results in longer water retention.

- 6.15 Overall it is considered that the proposed development, when considered in combination with other plans and projects, is not likely to have a significant effect on the Montgomery Canal SAC.
- 6.16 No additional plans or projects have been identified that need to be considered as part of the in-combination assessment.

7 Conclusion

- 7.1 It is concluded that the development is not likely to have a significant effect on the qualifying features of the Montgomery Canal SAC, Granllyn SAC and Midland Meres and Mosses – Phase 1 Ramsar site as a result of changes in air quality that are predicted to arise during the operation of the Site.
- 7.2 There are not likely to be significant effects on the Montgomery Canal SAC, Granllyn SAC and Midland Meres and Mosses – Phase 1 Ramsar site or their qualifying features (including functionally linked land) because of the separation distance between the Development and the designated sites. The Development will result in a small increase in aerial pollutants during the operation phase; however, the predicted Process Contribution is small when compared to the relevant Critical Load or Critical Level. Baseline air quality levels are elevated in the absence of the development, with this being attributed to agricultural sources, road traffic, shipping, European sources and industrial sources.
- 7.3 This conclusion has been reached in the absence of mitigation and is therefore compliant with CJEU judgment C-323/17. This conclusion also considers the effects of the proposed development in combination with other plans and projects. No reasonable scientific doubt remains in reaching this conclusion.

8 References

Anon (2018). European Community Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora (92/43/EEC). Fourth Report by the United Kingdom under Article 17 on the implementation of the Directive from January 2013 to December 2018. Supporting documentation for the conservation status assessment for the species: S1831 - Floating water-plantain (*Luronium natans*).

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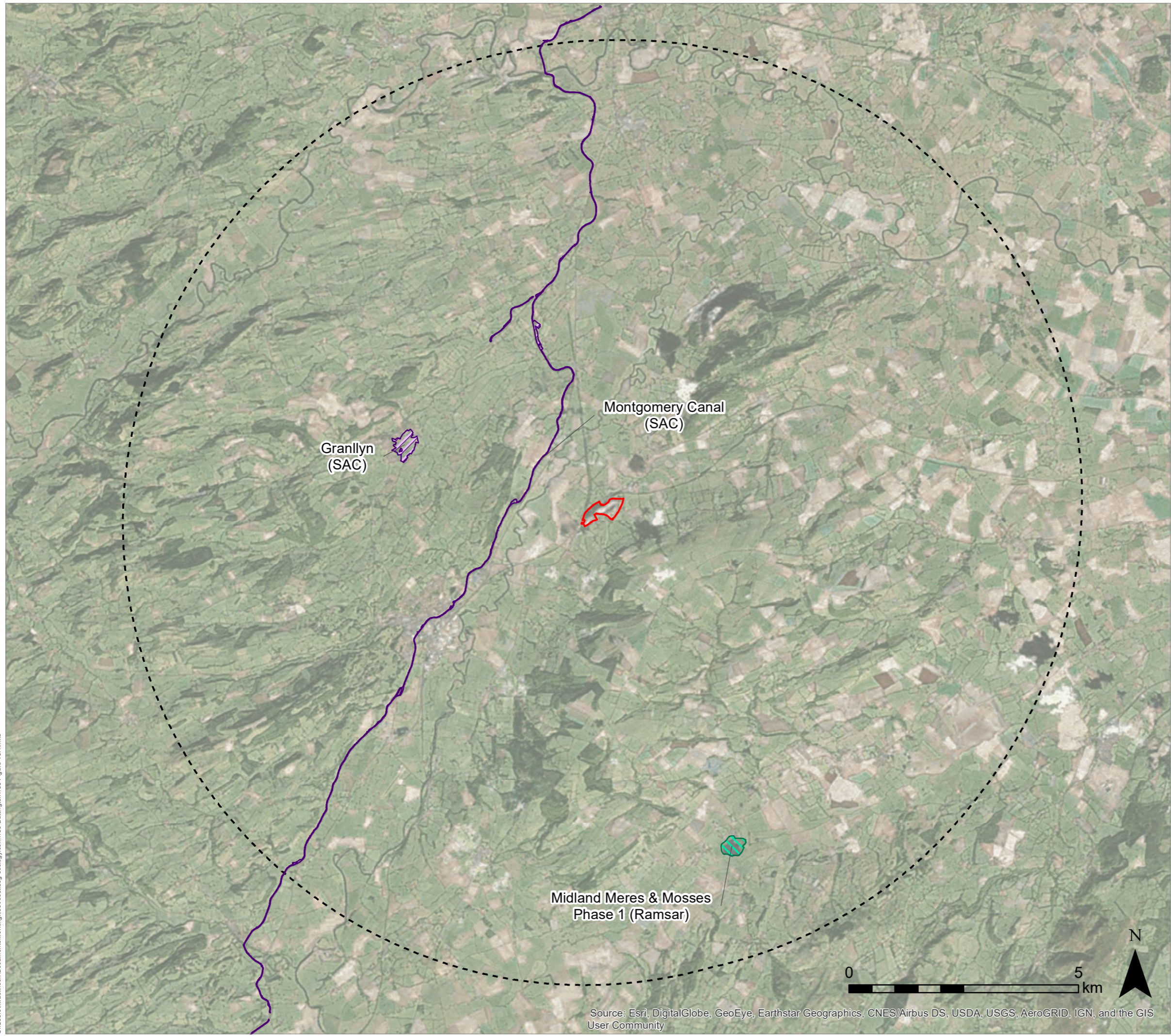
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9 Figures





Figure 1: Site location map (showing development boundary)



Figure 2: European designated sites within 10 km of the Site boundary
(overleaf)



LEGEND

-  Site boundary
-  10 km buffer around the site boundary
-  Special Area of Conservation (SAC)
-  Ramsar site

Granllyn
(SAC)

Montgomery Canal
(SAC)

Midland Meres & Mosses
Phase 1 (Ramsar)

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JOB REF: P18-456

PROJECT TITLE
BUTTINGTON QUARRY

DRAWING TITLE
Figure 2: European sites within 10 km of the Site boundary

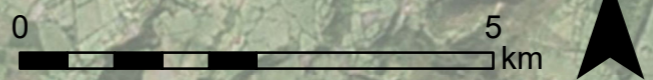
DATE: 30.10.2018 CHECKED: JGa SCALE: 1:80,000
DRAWN: KW APPROVED: OG VERSION: 1.0

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No dimensions are to be scaled from this drawing.
All dimensions are to be checked on site.
Area measurements for indicative purposes only.

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