

Intertissue Biomass Boiler, Briton Ferry

Ecological Impact Assessment

Version 3.0

Prepared for Intertissue Ltd.

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Intertissue Biomass Boiler, Briton Ferry

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1 Introduction

This document provides an Ecological Impact Assessment (EcIA) of the proposed 9.1MW Biomass Boiler at the Sofidel, Briton Ferry site (the 'Proposed Development'), undertaken for Intertissue Ltd. The Proposed Development would occupy an area of 0.26ha (the 'Site') centred on OS grid reference 273140, 192810. It currently comprises unvegetated hard standing, located within the curtilage of the Sofidel paper mill.

The biomass boiler is designed to displace an existing gas-fired boiler, which would be retained solely for back-up purposes. Further details are provided in the Planning Statement.

The EcIA should be read in conjunction with the Preliminary Ecological Appraisal (PEA) which includes the results of a data search, and considers potential ecological impacts based on the nature, scale and location of the Proposed Development.

As the Proposed Development lies wholly within the curtilage of the Sofidel site, and does not involve any loss of natural habitats, the PEA scoped out the need for any site-based ecology. However, two potential indirect, off-site ecological impacts were identified which require further consideration:

- Air quality impacts on statutory and locally designated sites within 1.5km of the emission source, in accordance with Natural Resources Wales (NRW) permitting guidance, and relevant guidance for planning applications; and
- Noise impacts on birds, which are qualifying features of a nearby Site of Importance for Nature Conservation (SINC), Baglan Bay.

In order to inform the air quality assessment (AQA), an assessment of sensitivity of notified SSSI features and qualifying SINC features was undertaken. An assessment of sensitivity of Baglan Bay SINC qualifying birds, and of other listed bird species to noise was also undertaken.

The assessment provides further ecological interpretation of the results of the AQA and Noise Assessments, focussing on any effects on sensitive ecological receptors which cannot be screened out as insignificant, in accordance with Natural Resources Wales (NRW), Institute of Air Quality Management (IAQM), and other relevant criteria.

This analysis is based on dispersion and deposition modelling undertaken by Fichtner Consulting Engineers, and reported in the Air Quality Assessment (AQA); and on the Noise Impact Assessment undertaken by NVC Ltd¹.

The EcIA also considers ecological enhancement measures in accordance with current Welsh planning policy, setting these out in an appended Green Infrastructure Statement.

The structure and content of the EcIA is based on CIEEM guidance, modified as necessary to reflect the nature and scale of the Proposed Development, and the requirements of the local planning authority (Neath and Port Talbot Borough Council), and of Welsh planning policy. It includes the following elements:

- Summary of relevant policy and legislation;
- Scope and methodology;
- Assessment of receptor sensitivity to air quality and noise impacts;
- Assessment of air quality and noise impacts;
- Mitigation and enhancement requirements; and
- Green Infrastructure Statement.

¹ Noise and Vibration Consultants Ltd. (2024). *Noise Impact Assessment for Proposed Biomass Boiler, Intertissue Briton Ferry Site*. Report no. R24.0303/DRK, 22/03/2024

2 Legislation and planning policy

2.1 Legislative and Policy Considerations - Planning Policy Wales

The Biodiversity and Resilience of Ecosystems Duty in Section 6 of Environment Act (Wales) 2016 has been implemented through Planning Policy Wales (PPW)², which integrates considerations of biodiversity and ecosystem resilience throughout its policies. The Section 6 Duty is explicitly referenced in **paragraph 6.4.5**, which states:

'Planning authorities must seek to maintain and enhance biodiversity in the exercise of their functions. This means development should not cause any significant loss of habitats or populations of species, locally or nationally and must provide a net benefit for biodiversity and improve, or enable the improvement, of the resilience of ecosystems. A net benefit for biodiversity is the concept that development should leave biodiversity and the resilience of ecosystems in a significantly better state than before, through securing immediate and long-term, measurable and demonstrable benefit, primarily on or immediately adjacent to the site. The step-wise approach outlined below is the means of demonstrating the steps which have been taken towards securing a net benefit for biodiversity. In doing so, planning authorities must also take account of and promote the resilience of ecosystems, in particular the following attributes, known as the DECCA Framework:

- *diversity between and within ecosystems;*
- *the extent or scale of ecosystems*
- *the condition of ecosystems including their structure and functioning*
- *the connections between and within ecosystems; and*
- *the adaptability of ecosystems including their ability to adapt to, resist and recover from a range of pressures likely to be placed on them through climate change for example.'*

The Section 6 duty is a holistic, rather than quantified approach to promoting ecosystem resilience.

In addition to the Section 6 Duty, PPW sets out the levels of protection applied to international, national, and locally designated sites. For SSSIs, the presumption is to avoid development likely to damage the notified features (para. 6.4.26). For locally designated sites such as SINCs, a step-wise approach in accordance with DECCA

² Welsh Government (2024). *Planning Policy Wales*. Edition 12, February 2024.

principles to seek to ensure there is no reduction in overall conservation value is recommended (para. 6.4.33).

Assessment against DECCA Framework

Assessment of development impacts against the DECCA framework requires consideration of whether the following attributes and their contribution to ecosystem resilience are likely to be affected (summarised below from more extensive explanation in PPW p.146-147):

- **Diversity** - preventing further loss of species and allowing recolonisation of former range where possible, thereby achieving greater resilience. Policy states development should not cause any significant loss of habitats or populations of species, locally or nationally and must provide a net benefit for biodiversity;
- **Extent** - maintaining existing habitats, creating and restoring green networks and linkages between habitats;
- **Condition** - ensuring planning decisions do not compromise the condition of ecosystems, consider both direct and wider impacts and benefits, and plan for long-term management of retained habitats;
- **Connectivity** - building functional habitat and ecological networks within and between ecosystems and across landscapes; and
- **Adaptability to Change** - achieved through protection of the extent, condition and connectivity of habitats, features and ecological networks.

2.2 Local Development Plan Policies

Two policies in the Neath Port Talbot Borough Council Local Development Plan are of relevance in assessing the impacts of the Proposed Development.

Policy **ENV 6** (Important Biodiversity and Geodiversity Sites) states:

'Development proposals that would affect Regionally Important Geodiversity Sites (RIGS), Local Nature Reserves (LNRs), Sites of Interest for Nature Conservation (SINCs), sites meeting SINC criteria or sites supporting Local Biodiversity Action Plan (LBAP) or S42 habitats or species will only be permitted where:

- 1. They conserve and where possible enhance the natural heritage importance of the site; or*
- 2. The development could not reasonably be located elsewhere, and the benefits of the development outweigh the natural heritage importance of the site.*

Mitigation and/or compensation measures will need to be agreed where adverse effects are unavoidable.'

Policy **ENV7** (Important Natural Features) states:

'Development proposals that would adversely affect ecologically or visually important natural features such as trees, woodlands, hedgerows / field boundaries, watercourses or ponds will only be permitted where:

Full account has been taken of the relevant features in the design of the development, with measures put in place to ensure that they are retained and protected wherever possible; or

The biodiversity value and role of the relevant feature has been taken into account and where removal is unavoidable, mitigation measures are agreed.'

3 Scope and Methodology

3.1 Scope of Assessment

Scope of ecological assessment

The scope of assessment has been informed by pre-application consultation advice from the local planning authority. This is set out in the PEA, and reproduced here to avoid the need to cross-reference with that document:

Table 3.1: Required scope - local authority consultation response

Requirement	Response
Provide PEA report identifying the need for any further species surveys	PEA has done this, and did not identify the need for any species surveys
Results of further surveys presented in an Ecological Impact Assessment (EcIA)	No further surveys required
Identify ecological impacts which may arise from the Proposed Development.	EcIA assesses potential impacts of Proposed Development with a focus on air quality and noise impacts
Assess the impacts of air quality changes at sensitive receptors	Air Quality Assessment (AQA) includes dispersion and deposition modelling at sensitive receptors; ecological interpretation of AQA and impact assessment included in EcIA
Consider if a Habitats Regulations Assessment (HRA) is required	EcIA considers whether there is any risk of impacts on the nearest European conservation site, Crymlyn Bog SAC
Prepare Green Infrastructure Statement to comply with step-wise approach to biodiversity enhancement	Green Infrastructure Statement (GIS) has been produced, setting out enhancement proposals and policy compliance

Geographic Scope of Assessment

Air quality

The geographic scope of assessment is based on NRW guidance for Medium Combustion Plants for a 5-10 MWth plant firing woody solid biomass³. This requires a

³ Natural Resources Wales Permits and Permissions. Medium Combustion Plants and Specified Generators Web page. <https://naturalresources.wales/permits-and-permissions/medium-combustion->

1.5km screening radius from emission source to nationally designated sites, including any Sites of Special Scientific Interest (SSSI) or Marine Conservation Zones (MCZs). A 1.5km screening radius is also required for European and internationally designated sites, including Special Areas of Conservation (SAC), Special Protection Areas (SPAs) and Ramsar Sites.

It should be noted that NRW Medium Combustion Plant guidance does not require consideration of locally designated conservation sites. However, for planning purposes, having regard for the level of protection applied to locally designated sites in paragraph 6.4.33 of PPW, these have been considered in the AQA.

As a conservative measure the AQA extended the screening distance for the assessment to include the nearest European conservation site, Crymlyn Bog Special Area of Conservation (SAC), located 1.87km north-west of the nearest boundary of the Proposed Development, and outside the 1.5km screening radius.

Noise

The geographic scope of assessment is based on the results of noise modelling, in accordance with screening thresholds set out below.

In the first instance, proximal sensitive receptors were identified in the form of statutory or locally designated conservation sites which were notified or designated due to the presence of noise-sensitive features. Exceedance of screening thresholds at these sites would then be followed up with more detailed noise contour modelling to determine extent of potential effect, and determine any requirement to consider further more distant receptors.

Screening Thresholds - Air Quality

Screening thresholds used in the AQA for statutory designated sites are based on NRW guidance, and can be summarised as follows:

- For Ramsar, Natura 2000 sites and SSSIs, predicted process contributions (PCs) below 1% of the relevant long-term (annual) Critical Level and Critical Load or 10% of the relevant short-term (24-hour) Critical Level are screened out.

- For Ramsar, European sites and SSSIs, PCs above 1%, where the predicted environmental concentration (PEC; PC plus background) is <70% of the Critical Level and Critical Load are screened out.

For Natura 2000 sites the 1% PC has been regarded as a *de minimis* threshold, below which effects can be considered inconsequential. The English and Welsh agencies which make up the Air Quality Technical Advisory Group (AQTAG) clarified that projects below the 1% PC do not have to be considered in an in-combination assessment⁴, although this has been subject to further revision (with respect in particular to cumulative vehicle emissions) through UK and European case law.

IAQM Guidance

The Institute of Air Quality Management (IAQM) published guidance on the assessment of air quality impacts on designated sites in June 2019 and revised in May 2020⁵. This confirmed the use of the 1% long-term / 10% short-term thresholds for industrial point source emissions, with some important clarifications:

- *'The 1% screening criterion is not a threshold of harm and exceeding this threshold does not, of itself, imply damage to a habitat'* (IAQM 2020, para. 5.5.1.8); and
- The 70% PEC threshold *'was intended to be a trigger for detailed dispersion modelling. It is not intended to be a damage threshold.'* (5.5.3.2).

Screening Thresholds - Noise Impacts

Proximal noise-sensitive receptors include bird species of coastal wetland habitats; guidance published in the Institute of Estuarine and Coastal Studies' *Waterbird Disturbance Mitigation Toolkit*⁶ is therefore appropriate to define screening thresholds.

Taking the most sensitive species listed in the guidance, a sound pressure level of 55dB(A) at target can be regarded as a precautionary threshold for both sudden impulsive noise events (e.g. during construction or certain operational phase events) as a peak value, and for average (dB(A)eq) values during the operational phase. This is a precautionary threshold, and is subject to modification following consideration of

⁴ Environment Agency (2015). *AQTAG position. In-combination guidance and assessment*. Response to PINS, March 2015.

⁵ Holman et al (2020). *A guide to the assessment of air quality impacts on designated nature conservation sites* – version 1.1, Institute of Air Quality Management, London.

⁶ Cutts, N, Hemingway, K and Spencer, J (2013). *Waterbird Disturbance Mitigation Toolkit Informing Estuarine Planning and Construction Projects*. Institute of Estuarine & Coastal Studies (IECS) University of Hull. Version 3.2.

factors such as the noise sensitivity of the species for which the site is designated, and the existing background noise environment and consequent likelihood of habituation.

Receptors and Impacts Considered in Assessment

European / Internationally Designated Sites

There are no European (e.g. Special Area of Conservation (SAC); Special Protection Area (SPA) or internationally designated (e.g. Ramsar sites) located within the 1.5km screening radius for consideration of air quality impacts.

The nearest European site is Crymlyn Bog SAC, located 1.86km north-west of the emission source at its closest point, and therefore outside of the relevant 1.5km screening radius. Its location relative to the emission source is shown on Figure 1.

UK Statutory Designated Sites

There are two Sites of Special Scientific Interest (SSSI) within the screening radius, and are illustrated on Figure 1:

- Crymlyn Burrows SSSI; and
- Earlswood Road Cutting and Ferryboat Inn Quarries SSSI.

The latter site is a geological (earth science) SSSI, and does not require further consideration in the ecological assessment. **Crymlyn Burrows SSSI** is considered further as a sensitive receptor with respect to air quality impacts.

Locally Designated Sites

A number of locally designated sites (Sites of Importance for Nature Conservation (SINC)) occur in the vicinity of the Site, and could potentially be considered as sensitive receptors for noise impacts. However, following consideration of site citations supplied by the biological records centre (see below), **Baglan Bay SINC** is the only site designated for noise-sensitive features (birds) located in close proximity to the Proposed Development. The location of all SINC sites considered is shown in Figure 1.

3.2 Assessment Methodology

Data Search

The location and boundaries of statutory designated sites were found using the Data Map Wales viewer. Digital boundary shapefiles were also downloaded for use in the

ecological constraints plan (Figure 1). Individual SSSI Citations were also downloaded via the NRW Designated Sites Search web page⁷.

A data search for locally designated sites within 2km radius of the Proposed Development was undertaken by South East Wales Biological Records Centre (SEWBReC). This included boundary data and individual site citations; the latter were reviewed to identify reasons for designation, but are not reproduced in this report due to copyright / data supply restrictions.

Identification of Appropriate Habitats and Environmental Quality Standards

The Air Pollution Information Service (APIS) GIS map tool⁸ was used to identify site-relevant critical loads for nitrogen and acid deposition. However, for Crymlyn Burrows SSSI, this did not identify all of the relevant notified features, or assign a critical load, potentially leading to an underestimation of site sensitivity. This was likely due to difficulties of interpreting the Site Citation in terms of notified features.

Further identification of appropriate habitats was therefore undertaken with reference to the NRW *Protected Sites Baseline Assessment 2020*⁹. This includes data in spreadsheet format listing the notified features of all Welsh SSSIs, and (where available) their condition. These were translated into European Nature Information System (EUNIS) habitat class using the recent (2022) European Environment Agency updated spreadsheet, incorporating crosswalks to the earlier classification and Annex I habitats¹⁰. Translation between EUNIS and British habitat classifications, including the National Vegetation Classification (NVC) was achieved with reference to Strachan (2015)¹¹.

Sensitivity of qualifying and notified features of designated sites was assessed with reference to advice on relevant habitats on the Air Pollution Information Service (APIS) website, modified in accordance with a recently adopted revision of nitrogen critical

⁷ NRW Designated Sites Search. <https://naturalresources.wales/guidance-and-advice/environmental-topics/wildlife-and-biodiversity/protected-areas-of-land-and-seas/find-protected-areas-of-land-and-sea/?lang=en> (accessed 15/03/2024)

⁸ APIS GIS Map Tool. <https://www.apis.ac.uk/app> (accessed 15/03/2024)

⁹ NRW Protected Sites Baseline Assessment 2020. <https://naturalresources.wales/evidence-and-data/research-and-reports/protected-sites-baseline-assessment-2020/?lang=en> (accessed 15/03/2024)

¹⁰ <https://www.eea.europa.eu/data-and-maps/data/eunis-habitat-classification-1/eunis-terrestrial-habitat-classification-review-2021/eunis-terrestrial-habitat-classification-2021-1> (accessed 21/08/2023)

¹¹ Strachan, I.M. (2015). *Manual of terrestrial EUNIS habitats in Scotland*. Scottish Natural Heritage Commissioned Report No. 766.

loads (Bobbink *et al*, 2022¹²), which in the case of any lack of data on APIS was able to provide a definitive authority on appropriate critical loads for nitrogen deposition.

Identification of Sensitivity to Noise Impacts

The Institute of Estuarine and Coastal Studies' *Waterbird Disturbance Mitigation Toolkit* (see reference 4 above) provides guidance on noise disturbance thresholds for a range of coastal and wetland bird species.

The assessment of sensitivity of other species requires reference to other literature sources as appropriate, based on the notified or qualifying species present in proximal designated sites.

Assessment of Effect Magnitude and Significance

Air Quality

There are no currently accepted thresholds for assessing the **magnitude** of air quality effects on ecological receptors (i.e. the degree of change from baseline conditions, relative to the relevant environmental quality standard). Neither IAQM (2020) guidance or the Chartered Institute of Ecology and Environmental Management (CIEEM, 2021)¹³ Air Quality Advice Note provide any guidance on effect magnitude or ecological significance thresholds. In the absence of guidance for ecological receptors, Environmental Protection UK (EPUK, 2010)¹⁴ advice can be applied with caution; although this was developed for assessment of nitrogen dioxide and particulate emissions on human health in a development control context, it provides a useful descriptor to express impact magnitude as a percentage of the relevant assessment level (see Table 2.1 below). This has now been superseded by revised advice, which is now explicitly reserved for application in a human health assessment context, leaving this as the most recent characterisation of effect magnitude applicable to habitats.

With respect to assessing **significance** of ecological effects, it is important to note that the 1% screening threshold is not an effect threshold. The magnitude of impact which might result in a significant ecological effect is likely to depend on baseline conditions and sensitivity of the receiving environment.

¹² Bobbink R, Loran C, Tomassen H, eds. (2022). *Review and revision of empirical critical loads of nitrogen for Europe*. Dessau-Rosslau: German Environment Agency.

¹³ CIEEM (2021). *Advice on Ecological Assessment of Air Quality Impacts*. Chartered Institute of Ecology and Environmental Management. Winchester, UK

¹⁴ Environmental Protection UK (2010). *Development Control: Planning For Air Quality (2010 Update)*. EPUK, April 2010.

Table 3.1: EPUK (2010) Guidance on Impact Magnitude

Magnitude of Change	Annual Mean Value Increase / Decrease (as Percentage of Assessment Level)
Large	>10%
Medium	5 – 10%
Small	1 – 5%
Imperceptible	<1%

With respect to effect **significance**, CIEEM (2018¹⁵) define a significant ecological effect as “an impact on the integrity of a defined site or ecosystem and/or the conservation status of habitats or species within a given geographical area”. The guidelines do not favour a matrix approach to the assessment of significance, because these can downplay impacts on features of local importance, and the ecological meaning of the resulting terms is often poorly defined. Instead, significance is defined at the geographic scale at which it occurs.

Environment Agency (EA) guidance¹⁶, at the time applicable to permit applications in England and Wales, addressed whether it is possible to conclude no adverse effect on site integrity (for European sites) or to conclude no likelihood of damage (SSSIs). It distinguished between circumstances when:

- the background concentration is less than the appropriate environmental criterion but a small process contribution leads to an exceedance; or
- the background concentration is currently exceeding the appropriate environmental criterion and the new process contribution will cause an additional **small** increase; and
- the background concentration is less than the appropriate environmental criterion, but the process contribution is significant (*i.e. of higher magnitude*) and leads to an exceedance; or
- the background concentration is more than the appropriate environmental criterion, and the process contribution is **large**.

¹⁵ CIEEM (2018). *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater and Coastal, 2nd edition*. Chartered Institute of Ecology and Environmental Management, Winchester

¹⁶ Environment Agency (2012). *Detailed assessment of the impact of aerial emissions from new or expanding IPPC regulated industry for impacts on nature conservation*. Operational Instruction 67_12, Issued 08/05/12

In the first two circumstances, the EA recommend that a decision is based on local circumstances, based on factors set out in guidance (such as spatial disposition of sensitive habitats relative to predicted effects); in the latter two circumstances, the EA state that it is not possible to conclude no adverse effect.

Noise impacts

The assessment of significance of noise impacts on birds requires a case-by-case approach, related to the nature of the predicted impact (e.g. impulsive construction noise causing disturbance, or acoustic masking affecting breeding / foraging activity), the sensitivity of the species involved, the spatial extent of predicted impacts, and seasonality of occurrence of sensitive species.

Background noise levels are a significant factor in the assessment of significance, particularly with respect to disturbance effects, where significant habituation may occur in noisier environments. In this context the 3dB significance / perception threshold applied to impacts of noise on human populations can be applied with caution to birds; for most species it can in fact be regarded as precautionary, as birds have a higher hearing threshold over a shorter frequency range than humans (Dooling and Popper, 2007¹⁷). The A-weighting applied to match human perception of sound is considered appropriate for birds, but is somewhat precautionary due to their lower hearing threshold at higher frequencies.

¹⁷ Dooling, R.J. & Popper, A.N. *The Effect of Highway Noise on Birds*. Environmental BioAcoustics LLC for California Department of Transportation

4 Sensitivity of Statutory and Locally Designated Sites

4.1 Crymlyn Burrows SSSI

Notified Features

Notified features listed by Natural Resources Wales (NRW) are set out in the PEA.

Sensitivity to Air Quality Impacts

The APIS GIS App currently lists five features. These comprise three species: *Artemisia campestris*, *Matthiola sinuata*, and *Eurynebria complanata*; and two assemblage features: Assemblage of Red Data Book and / or Nationally Rare vascular plants, and Dune Invertebrate Assemblage. It does not list sand dunes as a habitat feature, and only considers one notified feature (sea stock, *Matthiola sinuata*) in the nutrient nitrogen and acid deposition information. Its sensitivity to nitrogen and acid deposition is stated as 'not assessed', and it therefore does not assign a critical load for nitrogen or acid deposition, with a recommendation to seek site-specific advice.

This is clearly an error in the transposition of notified features from NRW data to the APIS App, as sand-dune habitat is both a notified feature, and is recognised as sensitive to nitrogen and acid deposition, with critical load ranges assigned by APIS and other relevant guidance. The Site Citation identifies a number of component sand-dune habitats, while the SEWBReC data included Phase 1 Habitat Survey information for the SSSI. This could be converted from Phase 1 to EUNIS habitats in order to determine the correct nitrogen deposition critical load range in accordance with current advice in Bobbinck *et al*, 2022 (see footnote 10 above).

It should be further noted that the NRW 'Your Special Site and Its Future' document states the site has three 'special features', then lists four: sand dune, saltmarsh, field wormwood *Artemisia campestris*¹⁸, and the invertebrate assemblage of sand dune and strand-line habitats. Saltmarsh habitats have therefore been included in the table below.

¹⁸ NRW Crymlyn Burrows SSSI - Your Special Site and Its Future.

https://naturalresources.wales/media/659284/SSSI_1092_SMS_EN0015f6b.pdf (accessed 20/03/2024)

Table 4.1: Habitats and critical loads at Crymlyn Burrows SSSI

Phase 1 habitat	EUNIS habitat	N deposition critical load range (kgN/ha/yr)
H6.8 Open dune	N13: Atlantic and Baltic shifting coastal dune	10 - 20
H6.5 Dune grassland	N15: Atlantic and Baltic coastal dune grassland	5 - 15
H6.4 Dune slack	N1H: Atlantic and Baltic moist and wet dune slack	5 - 15
H6.4 Dune slack (aquatic vegetation of pools)	N1H1: Atlantic and Baltic dune-slack pools	10 - 20
H2.6 Salt marsh	MA223: Atlantic upper-mid salt marshes	10 - 20
H2.6 Salt marsh	MA224: Atlantic mid-lower salt marshes	10 - 20
H2.6 Salt marsh	MA225: Atlantic pioneer salt marshes	20 - 30

The SSSI Citation indicates that appropriate supporting habitat for notified species would be as follows:

- Beetle *Eurynebria complanata*: strand-line (EUNIS N13);
- Field wormwood *Artemisia campestris*: dune grassland (EUNIS N15); and
- Sea stock *Matthiola sinuata*: strand-line and open dunes (EUNIS N13).

Appropriate Critical Loads and Levels for Screening Purposes

The most sensitive notified features of the SSSI are dune grassland (also known as fixed or grey dunes) and dune slack communities, with an appropriate lower critical load of 5kg N/ha/yr to use for screening purposes. Field wormwood *Artemisia campestris* utilises dune grassland as supporting habitat, and can therefore be regarded as having the same sensitivity. It should be noted that on sites where APIS do consider sand dune sensitivity, they apply a 10kg minimum critical load to calcareous dunes, with the lowest 5kg value retained for acid (decalcified) dunes only. Application of this value here can therefore be regarded as precautionary.

Other SSSI features, whether notified or 'special features', have a minimum critical load of 10kg N/ha/yr.

The acid deposition critical load used in the AQA is based on APIS Search by Location function of 2.008keq/ha/yr.

The long-term (annual mean) oxides of nitrogen value of 30µg/m³ for protection of ecosystems, and short term (24 hour mean) value of 75µg/m³ are appropriate, and have been used in the AQA.

4.2 Locally Designated Sites - sensitivity to air quality impacts

Qualifying features

Locally designated sites are not assigned site-relevant critical loads by APIS, and require assessment in terms of qualifying habitats. Some of these (e.g. open mosaic habitat on previously developed land) do not conform precisely to EUNIS habitats and nitrogen deposition critical load classes. However, it is possible to identify the most sensitive habitat feature on each site to use for screening purposes, based on the qualifying feature information supplied by SEWBRc, and advice in Bobbinck *et al* (2022). These are tabulated below, for the sites within 1.5km of the Proposed Development, as shown on Figure 1.

Table 4.2: Nitrogen deposition critical loads - locally designated sites

Site	Most sensitive qualifying feature	EUNIS habitat	N dep. critical load range (kgN/ha/yr)
Baglan Bay	Coastal sand dune	N15 / N1H: Atlantic and Baltic coastal dune grassland / dune slacks	5 - 15
Baglan Brownfield Slack	Coastal sand dune	N1H: Atlantic and Baltic coastal dune slacks	5 - 15
Baglan Panhandle	Coastal sand dune	N15: Atlantic and Baltic coastal dune grassland	5 - 15
Briton Ferry Waste Ground	Open mosaic habitat	No single equivalent - based on SINC description R22 Low and medium altitude hay meadows most sensitive	10 - 20
Brunel Dock Grasslands	Lowland meadows	R22 Low and medium altitude hay meadows	10 - 20
Brunel Dock Reedbeds	Reedbeds	Q5 reed marshes and sedge beds	not sensitive
Crymlyn Burrows (east of SSSI)	Coastal sand dune	N15 / N1H: Atlantic and Baltic coastal dune grassland / dune slacks	5 - 15
Earlswood Area	Coastal sand dune / heathland	N15: Atlantic and Baltic coastal dune grassland / S42: Dry heaths	5 - 15
Earlswood Grasslands	Heathland	S42 Dry heaths	5 - 15
Fabian Way Wildflower Verge	Lowland meadows	R22 Low and medium altitude hay meadows	10 - 20
Jaffa Land Baglan	Vascular plants	Q4 Base-rich fens (supporting habitat for rare sedge spp.)	15 - 25
Marden Park Grassland	Open mosaic habitat	No single equivalent habitat - R1P Inland sand grassland on dry acid and neutral soils most sensitive	5 - 15
Neath Canal	Standing open waters and canals	Eutrophic standing waters not listed as sensitive in Bobbinck <i>et al</i> (2022)	n/a

Site	Most sensitive qualifying feature	EUNIS habitat	N dep. critical load range (kgN/ha/yr)
Neath Estuary	Coastal saltmarsh	MA223 / MA224: Atlantic upper-mid / mid-lower salt marshes	10 - 20
The Quays Car Park Bunds	Calcareous grassland	R1A Semi-dry perennial calcareous grassland	10 - 20
Triangular Pond	Ponds	Eutrophic standing waters not listed as sensitive in Bobbinck <i>et al</i> (2022)	n/a

43.3 Baglan Bay SINC - noise sensitivity

Qualifying Features

Baglan Bay contains four features described as reasons for selection:

- Coastal sand dune;
- Coastal salt marsh;
- Birds (short-eared owl (*Asio flammeus*)); and
- Vascular plants (sea stock (*Matthiola sinuata*)).

It is also described as supporting the largest populations of lapwing (*Vanellus vanellus*) in South Wales.

Sensitivity to Noise Impacts

The only qualifying feature with potential sensitivity to noise impacts is short-eared owl, although lapwing should be included as an important ecological feature in the assessment due to their regional level of importance on the site.

Short-eared owl are not listed in respect of disturbance sensitivity in the *Waterbird Disturbance Mitigation Toolkit*, but a literature search indicates that they are sensitive to acoustic masking when using auditory cues to hunt their small mammal prey. As may be expected, owls have a relatively high auditory sensitivity, with a barn owl (*Tyto alba*) exceeding human sensitivity over the 500Hz - 7kHz frequency range¹⁹. Short-eared owls are diurnal and crepuscular hunters, using visual as well as aural cues, so may not necessarily attain the same auditory sensitivity of a barn owl, but the principle of higher sensitivity than other bird species is likely to apply. A controlled field experiment (including short-eared owls and two other species) with artificial traffic

¹⁹ Konishi, M. (1973). How the Owl Tracks Its Prey. *American Scientist*, **61**, 414-424. Available at: <https://www.americanscientist.org/article/how-the-owl-tracks-its-prey> (accessed 20/03/2024)

noise generation and artificial prey rustling sounds found some reduction in hunting efficiency with as low as 40dB(A) of simulated traffic noise, compared to ambient (<35dB(A)) field conditions²⁰. This is comparable to a captive owl prey detection experiment on northern saw-whet owl (*Aegolius acadicus*) using industrial noise, which recorded a reduction in detection ability at 46dB(A)²¹. The short-eared owl field experiment did caution that the omnidirectional nature of the artificial traffic noise (necessary to achieve an even spatial distribution of sound pressure levels) did not correspond to the directional nature of traffic noise from a linear feature. This potentially increased the masking effect by making it harder to differentiate between the two sounds (i.e. in a real-world situation an owl could detect the difference between a proximal prey rustling noise, and more distant industrial or traffic noise).

Lapwing are listed in the *Waterbird Disturbance Mitigation Toolkit* as 'moderately sensitive' to disturbance effects of noise stimuli. This translates to levels of up to 72dB sudden noise acceptable at the bird, but with caution advised at >55dB, or >60dB in highly disturbed areas (i.e. lower sensitivity where baseline levels are already elevated).

Appropriate Sound Pressure Level Thresholds for Screening Purposes

Available data on owls suggests that a very low threshold for operational phase noise in the range of 40 - 46dB(A) may produce some impairment of hunting efficiency, and the 40dB(A)eq value could therefore be regarded as an appropriate screening threshold. However, this should be qualified by consideration of the existing baseline noise environment; if it already exceeds this threshold then the most important parameter is the magnitude of any predicted increase. Although the 3dB value applied to human populations can be regarded as precautionary for birds (see above), for short-eared owl it is likely to be an appropriate value.

With respect to construction phase noise effects on lapwing, this is again very dependent on the existing noise environment, with the 'caution' values either 55dB or 60dB depending on existing disturbance levels. Where existing peak values frequently exceed 60dB(A), then a significant level of habituation is likely, and the 72dB value given as an 'acceptable' value in the *Toolkit* can be safely applied.

²⁰ Senzaki, M., Yamaura, Y., Francis, C.D., and Nakamura, F. (2016). Traffic noise reduces foraging efficiency in wild owls. *Scientific Reports*, **6**, 30602.

²¹ Mason, J.T., McClure, C.J.W. & Baber, J. (2016). Anthropogenic noise impairs owl hunting behaviour. *Biological Conservation*, **199**, 2023-2031.

5 Assessment of Predicted Air Quality Impacts

5.1 Dispersion and Deposition Modelling Results

Predicted impacts at Crymlyn Burrows SSSI

As set out in the AQA, the change in impact due to the Proposed Development is less than the 1% long-term and 10% short-term screening thresholds. The table below summarises results in the AQA for all parameters:

Table 4.1: Summary of AQA results - Crymlyn Burrows SSSI

Pollutant	Units	Critical Level / Load	Max change in impact at Crymlyn Burrows SSSI	Change in Impact as % of CL
Annual mean oxides of nitrogen	µg/m ³	30	0.27	0.91%
Daily mean oxides of nitrogen	µg/m ³	75	3.89	5.19%
Nitrogen deposition	kgN/ha/yr	5	0.027	0.54%
Acid deposition	keq/ha/yr	2.008	Screened out with reference to contour plot – refer to AQA	

Nitrogen deposition is well below 1% of critical load for the most sensitive dune grassland and dune-slack vegetation, and can therefore be regarded as inconsequential. This also takes a precautionary assumption that decalcified dune habitats (with a lower critical load of 5kg N/ha/yr) are present, instead of using the calcareous dune critical load of 10kg, which would give a process contribution of 0.27%.

Daily mean NO_x is well below the 10% screening threshold for short-term emissions, and also screens out, whilst acid deposition rates are also well below the screening threshold.

Therefore, the change in the process contribution for all pollutants can be screened out as inconsequential.

5.2 Predicted effects on Crymlyn Burrows SSSI

All predicted air quality impacts at Crymlyn Burrows SSSI are below screening thresholds, and can be regarded as inconsequential, with no predicted effect on notified features.

5.3 Predicted effects on locally designated sites

Long-term (annual mean) NO_x

The change in long-term NO_x is predicted to exceed the 1% screening threshold at several SINC sites; however, for all of these the predicted environmental concentration (PEC) is less than 70% of the 30µg/m³ critical level, and the process contribution can be screened out as not significant.

Daily mean (24-hour) NO_x

The change in daily mean NO_x exceeds the 10% screening threshold at one site, the Baglan Bay SINC; however, the PEC remains well below the 75µg/m³ critical level at 52.2µg/m³ (69.6%) at Baglan Bay; as the critical level is not exceeded, no significant impacts are predicted.

Nitrogen deposition

Figure 1 shows modelled nitrogen deposition contours for Baglan Bay SINC, expressed as a percentage of the most precautionary and lowest critical load for the site, 5kg N/ha/yr for decalcified dune habitat. The 1% contour extends over the area to the west of the wider Sofidel site, which according to aerial photography interpretation and the NRW Phase 1 Habitat Survey data supports a mix of saltmarsh and intertidal mud habitats. It does not extend to the nearest boundary of sand dune vegetation, located in the area to the west of the pipeline visible on the aerial photograph. The only sensitive component habitat in this area, saltmarsh, has a lower critical load of 10kg N/ha/yr. The maximum change in deposition rate predicted is 0.25kg N/ha/yr, a low magnitude exceedance of the 1% screening threshold for saltmarsh vegetation.

The background nitrogen deposition rate for the relevant 1km grid-square is modelled at 8.8kg N/ha/yr. Including the total contribution from Proposed Operation, the maximum PEC for saltmarsh habitat is 91.4%, so no exceedance of the critical load is predicted. Nitrogen deposition trends (from APIS) are stable or declining, so there is a negligible risk of exceedance during the lifespan of the Proposed Development.

Acid deposition

All acid deposition impacts are less than 1% of the lowest applicable Critical Load and can be screened out as 'insignificant', except at the eastern edge of the Baglan Bay SINC. However, as noted above, the habitat in this area comprises saltmarsh and intertidal mud, so is not sensitive to acid deposition. Therefore, all acid deposition impacts can be screened out as insignificant.

5.4 Predicted effects on European Sites

As detailed in the AQA, the air quality impacts at the nearest European Sites, Crymlyn Bog SAC, is lower than at Crymlyn Burrows SSSI and can be screened out as 'insignificant', based on the most precautionary critical load of 5kg N/ha/yr for habitats present on this site.

6 Assessment of Predicted Noise Impacts

6.1 Noise monitoring and modelling results

Background levels

The Noise Assessment provides full background level monitoring data, and should be referred to for detailed results and their interpretation. The following provides an interpretation with respect to potential bird disturbance.

Diurnal and overnight noise monitoring at a point within the SINC located 400m recorded LAeq values of 55.6dB between 13:15 - 23:00, and 54.3dB overnight between 23:00 - 07:00. Peak values measured within 15 minute periods ranged from 55-81 dB(A).

In terms of utilisation of the site by short-eared owls, there is currently potential for impairment of hunting efficiency, with all dB(A)eq values within the 15 minute monitoring periods exceeding 50dB. Given the directional nature of the noise from the existing plant, this may not be as significant as suggested by field experiments, but does suggest some habituation is likely, and sensitivity to increased levels consequently lower.

With respect to lapwing, the daytime (13:15-18:15) peak mean value extracted from the monitoring data is 70.1dB(A)max, suggesting likely habituation to sudden noise around the 72dB(A) value given in the *Waterbird Disturbance Mitigation Toolkit*. This indicates a low sensitivity to noise impacts, relative to the introduction of construction noise into a previously undeveloped environment.

Noise Modelling Results

Operational noise

Operational phase noise modelling predicts a maximum sound pressure level of 52dB(A) from the Proposed Development alone at points 20m from the Site boundary fence, at the boundary of Baglan Bay SINC. The predicted >40dB(A) daytime and night-time contours extends over saltmarsh habitat to the south-west of the Sofidel site, which forms the north-western arm of the SINC.

When background levels are taken into account, predicted noise from the Proposed Development alone accounts for a maximum 1dB(A) increase on part of the SINC boundary (see Noise Impact Assessment, Table 5.8). This is below the 3dB screening threshold appropriate for the most sensitive bird species, and does not result in

exceedance of any screening thresholds. It can therefore be regarded as inconsequential.

Construction noise

The Noise Impact Assessment predicts maximum levels (L_{Amax}) of construction noise (e.g. piling activities) to range between 42dB and 65dB at the nearest point to Baglan Bay SINC, 20m from the site's western boundary. This is in the context of measured baseline L_{Amax} values over a 10 minute period of between 67 - 69dB (see Noise Impact Assessment, paragraph 6.11).

Given the existing noise environment, potential construction phase noise impacts on lapwing can also be regarded as very unlikely to occur. Predicted maximum values are below 72dB(A) for birds at the proximal edge of the SINC, and therefore very unlikely to result in any disturbance response.

6.2 Predicted effects on Baglan Bay SINC

Predicted noise impacts at Baglan Bay SINC can be regarded as inconsequential, and will not inhibit site utilisation by short-eared owl or lapwing.

7 Conclusions

7.1 Air quality impacts

One statutory designated site, Crymlyn Burrows SSSI, is located within the screening radius for medium combustion plants of the planned output of the Proposed Development. Sand-dune habitats with a high sensitivity to nitrogen deposition were confirmed as a notified feature of this site, and defined the lowest critical load to use in the impact assessment.

Air quality impacts predicted by the AQA on the SSSI can be regarded as inconsequential, being well below screening thresholds. This conclusion is based on precautionary assumptions, including the presence of the most sensitive notified features at the point of maximum impact. There is therefore no risk of damage to the SSSI as a consequence of the Proposed Development.

The AQA does not predict any significant impacts on locally designated sites as a consequence of the Proposed Development.

7.2 Noise impacts

Potential noise impacts on short-eared owl, a qualifying bird species of a nearby locally designated site, Baglan Bay SINC, were assessed.

The Noise Assessment predicts maximum increases in operational phase sound pressure levels of 1dB(A) at the SINC boundary, 20m from the existing Sofidel Site boundary. These values can be safely regarded as inconsequential.

Baseline measurement of peak sound levels indicates significant habituation is likely in lapwing, a regionally important bird species present in the SINC. Construction noise peaks are not predicted to exceed baseline values, and will remain below the 72dB(A) threshold value at the bird. Disturbance due to sudden construction-phase noise is therefore very unlikely to occur.

7.3 Planning policy considerations

Impacts on statutory designated sites

The Proposed Development accords with the legislative and policy protection afforded to SSSIs, in not causing any harm to the notified features of Crymlyn Burrows SSSI. In addition, no significant harm is predicted to locally designated sites.

Section 6 Duty

In terms of the Section 6 Biodiversity and Resilience of Ecosystems Duty, the Proposed Development fully accords with DECCA principles:

- **Diversity** - no loss of habitats or populations of species is predicted;
- **Extent** - no change in habitat extent is predicted;
- **Condition** - no negative impact on habitat condition is predicted;
- **Connectivity** - no negative impact on functional habitat and ecological networks is predicted;
- **Adaptability to Change** - through avoiding any impact on extent, condition and connectivity of habitats, features and ecological networks, no impact on adaptability to change is predicted.

There is therefore no requirement for ecological mitigation, as the Proposed Development avoids any damage to habitats or to the connectivity of ecological networks, and would not result in any indirect impacts on habitats in the wider vicinity.

The requirement for ecological enhancement in accordance with the Section 6 Duty is implemented in the Green Infrastructure Strategy (Appendix 1). This proposes a proportionate enhancement of bird habitat on the boundary of the Sofidel site and Baglan Bay SINC, through construction of two pole mounted barn owl nest / roosting boxes.

Local planning policy

The Proposed Development is fully compliant with policy ENV6 (Important Biodiversity and Geodiversity Sites), in that it does not affect any SINC site or other local designation, either directly or indirectly.

It is fully compliant with policy ENV7 (Important Natural Features) in avoiding any adverse effects on ecologically important natural features, through siting on hard standing within the curtilage of an existing industrial site.

Appendix 1: Green Infrastructure Statement

1. As part of the pre-application advice process, Neath and Port Talbot County Borough Council (NPTCBC) advised, consistent with Planning Policy Wales (PPW) 12, that the planning application should be supported by a Green Infrastructure Statement - GIS (refer to Appendix B to the Planning Statement).
2. PPW and the pre-application advice both explicitly state the GIS will be proportionate to the scale and nature of the development proposed and will describe how green infrastructure has been incorporated into the proposal. PPW goes on to describe that the GIS should be an effective way of demonstrating positive multi-functional outcomes which are appropriate to the site in question and must be used for demonstrating how the step-wise approach has been applied. Further, that there are multiple ways of incorporating green infrastructure, depending on the needs and opportunities a site presents.
3. In terms of 'green infrastructure', the development proposal itself is fundamentally driven by environmental legislation and policy targeted at combatting climate change with all of the associated environmental and ecological benefits that would ensue from delivering net zero.
4. In short, the new biomass boiler would displace the emission of circa 11,000 tonnes of fossil fuel derived CO₂ equivalent per annum. This represents a significant and tangible environmental benefit.
5. Further, as the Preliminary Ecological Appraisal (PEA) and EclA set out:
 - a. The development has been sited and designed to avoid direct damage to any habit and biodiversity in its widest sense. It is entirely contained on a long established area of permanent hardstanding adjacent to the existing paper mill.
 - b. All surrounding habitats are retained and continue to be connected as at present.
6. In terms of off-site effects from aerial emissions, the Ecological Impact Assessment (EclA) report and Air Quality Assessment only identify one relevant statutory designated site, Crymlyn Burrows SSSI. The air quality impacts predicted on the SSSI can be regarded as inconsequential, being well below screening thresholds. This conclusion is based on precautionary assumptions, including the presence of the most sensitive notified features at the point of maximum impact, and the operation of the biomass boiler in combination with the gas-fired boiler it is essentially designed to replace. There is therefore no risk of damage to the SSSI as a consequence of the proposed development.
7. The EclA, AQA and Noise Assessment do not predict any significant effects on locally designated Sites of Importance for Nature Conservation (SINCs). This conclusion is also based on precautionary assumptions, including operation of the biomass boiler in conjunction with

the gas-fired boiler, and presence of noise-sensitive bird species at the nearest boundary of Baglan Bay SINC.

8. Notwithstanding this conclusion, the Applicant proposes to install 2no. pole-mounted barn owl boxes on the western boundary of the paper mill site, in order to provide day roosting and possible breeding locations for this species (see Figure A1 overleaf for location). Although barn owls are not a qualifying feature of the SINC, there are records in the wider Port Talbot and Briton Ferry area²², and habitat suitability is high. They frequently occur in similar coastal locations to short-eared owl, although short-eared owls are more diurnal in habit, and seasonal in occurrence.
9. The owl box location adjoins an extensive area of open coastal habitats, which provides high quality foraging habitat, but have few opportunities for shelter or suitable breeding sites. The proposed location is 1.1km from the M4, outside the minimum 1km distance from major roads recommended for owl boxes by the Barn Owl Trust, and separated from the motorway by industrial development. There is therefore little risk to barn owls by attracting them into this area.
10. A specification for the owl boxes is given below, although it is anticipated that their detailed design and installation would be subject to a planning condition. Owl boxes should conform to Barn Owl Trust²³ or comparable specification, and be mounted on top of a 6m x 150mm diameter pole, 4.5m above ground with 1.5m buried below ground (see example photograph overleaf).
11. The owl boxes would increase the potential biodiversity interest of the wider Sofidel site. As such, they will deliver an on-site biodiversity gain, which coupled with the significant reduction in fossil fuel derived greenhouse gas emissions, is a positive multi-functional outcome.
12. Based on the foregoing, it is concluded that the proposal would deliver green infrastructure and demonstrably follows the step-wise approach.

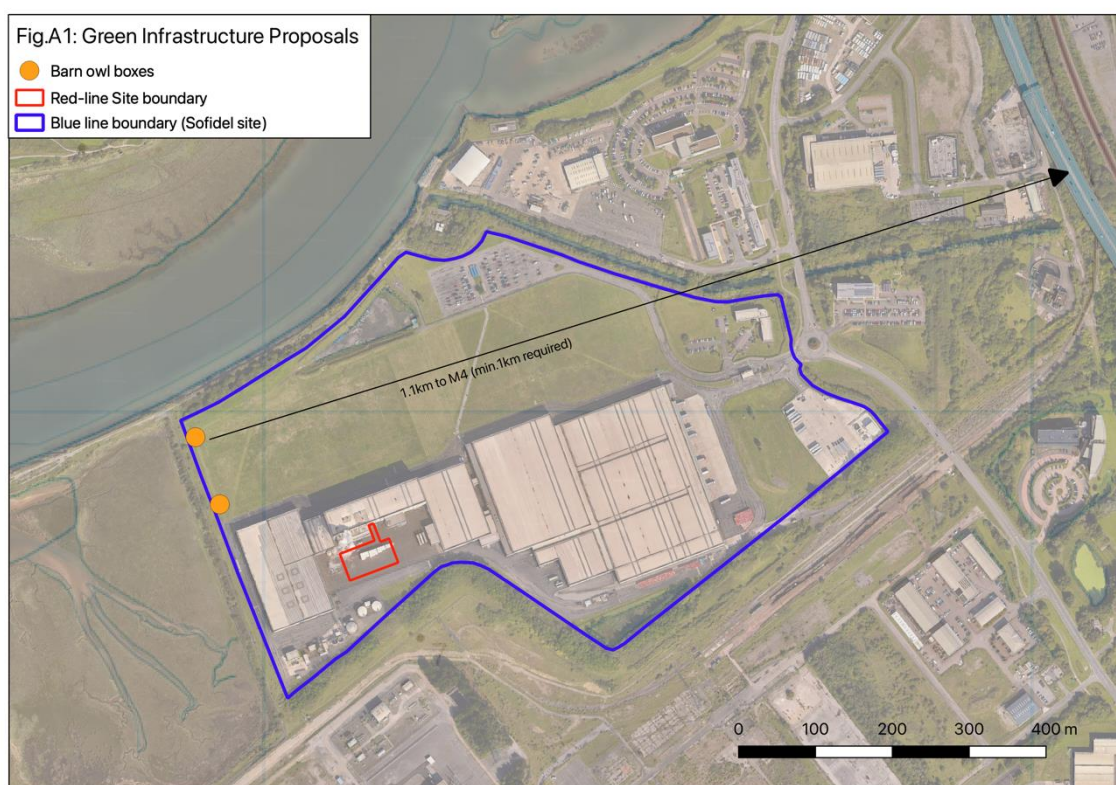
²² eBird: <https://ebird.org/map/brnowl?env.minX=-179.99999999291&env.minY=-62.771325856409&env.maxX=179.99999999291&env.maxY=61.6817322059907>

NBN Atlas: <https://species.nbnatlas.org/species/NHMSYS0000530685>

²³ <https://www.barnowltrust.org.uk/barn-owl-nestbox/barn-owl-pole-nest-box/#pole-box-criteria>



Pole-mounted nest box (Barn Owl Trust design)



Appendix 2: Figures

Fig.1: Nitrogen Deposition Contour Plan

Extract of deposition rate contour plot from Fichtner Consulting Engineers shows 1% change in process contribution at a precautionary 5kg N/ha/yr value for decalcified sand dune habitat. Contours do not extend beyond saltmarsh and intertidal mud habitats to west of Sofidel site (see PEA, Figure 2 for local habitats).

