Technical Appendix 5.7: Shadow Habitat Regulation Appraisal

Kirknewton Solar & BESS EIA Report

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Basis of Report

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Acronyms and Abbreviations

AA	Appropriate Assessment
AEOI	Adverse Effect on Integrity
ALSE	Assessment of Likely Significant Effect
AWI	Ancient Woodland Inventory
BTO	British Trust for Ornithology
CIEEM	Chartered Institute of Ecology and Environmental Management
EC	European Commission
WLC	West Lothian Council
EU	European Union
GWDTE	Groundwater Dependant Terrestrial Ecosystem
HRA	Habitat Regulations Appraisal
INNS	Invasive Non-native Species
JNCC	Joint Nature Conservation Committee
LSE	Likely Significant Effect
MAGIC	Multi-Agency Geographic Information for the Countryside
MWp	Megawatt-peak
OS	Ordnance Survey
PEA	Preliminary Ecological Appraisal
PV	Photovoltaic
SAC	Special Area of Conservation
SBL	Scottish Biodiversity List
SEPA	Scottish Environmental Protection Agency
SLR	SLR Consulting Ltd
SNH	NatureScot (previously Scottish Natural Heritage)
SPA	Special Protection Area
SSSI	Site of Special Scientific Interest
UKHab	UK Habitat Classification
WeBS	Wetland Bird Survey
ZOI	Zone of Influence

1. Introduction

1.1 Background

SLR Consulting was appointed by Trio Power Limited to undertake a Shadow Habitat Regulations Appraisal (HRA) for a proposed Battery Energy Storage System (BESS) and Solar photovoltaic (PV) development near Kirknewton (hereafter referred to as the 'Proposed Development'), West Lothian, Scotland (central National Grid Reference: NT 10783 65217), hereafter referred to as 'the Site', as shown on **Figure 1**.

The purpose of this shadow HRA is to provide the information for the Competent Authority, in this case the West Lothian Council (WLC, "the Authority"), to carry out a screening assessment for likely significant effects on European and Ramsar sites and, if it concludes necessary, an Appropriate Assessment (AA) of the Project, in accordance with and fulfilment of the requirements of the Conservation (Natural Habitats &c) Regulations, 1994, as amended[1] (see **Section 1.4** for more information).

This report is informed by, and should be read in conjunction with, the following reports:

- Preliminary Ecological Appraisal (**Technical Appendix 5.2** of the EIA Report);[2]
- Protected species monitoring report (**Confidential Technical Appendix 5.3** of the EIA Report[3]);
- Baseline ornithology report (**Technical Appendix 5.5** of the EIA Report);[4]
- Aerial bat survey report (**Technical Appendix 5.4** of the EIA Report)[5]; and
- Formal screening request to WLC[6].

1.2 Project Overview

The Proposed Development consists of a solar array, BESS and associated infrastructure, with an export capacity of up to 40 MW and 9 MW of battery storage, covering an area of approx. 76 hectares (ha). The panels will have a maximum height of approximately 2.87m above ground level.

1.3 Site Description

The Site is comprised predominantly of cropland, and grassland used for agriculture, with livestock grazing in areas to the north-east of the Site. Native hedgerows and lines of mature broadleaved trees border grassland and cropland areas. There are several areas of woodland listed on the Ancient Woodland Inventory (AWI), all categorised 2b; long-establish of plantation origin. These woodlands are located at the centre, south-east, north-east and north-west sections of the Site. Several ditches and watercourses cross the Site, including a small, modified stream within the east part of the Site. The immediate surroundings are

[1] https://www.legislation.gov.uk/uksi/1994/2716/regulation/48 [Accessed: September 2025]

[2] SLR Consulting, 2025. Kirknewton Solar and Battery Energy Storage System, Preliminary Ecological Appraisal Report.

[3] SLR Consulting, 2025. Kirknewton Solar and Battery Energy Storage System, Confidential Appendix B.

[4] SLR Consulting, 2025. Kirknewton Solar and Battery Energy Storage System, Baseline ornithology report- Breeding Bird surveys 2025

[5] R & D Ecology, 2025. Kirknewton Solar and Battery Energy Storage System, Arial Bat Survey Report.

[6] SLR Consulting, 2025. Kirknewton Solar and Battery Energy Storage System, Formal screening request to West Lothian Council

comprised of similar habitats and land use types, with the ancient woodland plantations and Kirknewton Estate Local Biodiversity Site within a 2 km radius from the Site boundary.

1.4 Relevant Legislation, Policy and Guidance

1.4.1 Legislation

The Habitats Directive (92/43/EEC) on the Conservation of Natural Habitats and of Wild Fauna and Flora (the 'Habitats Directive')[7] protects habitats and species of European conservation importance. The Habitats Directive combines with the Council Directive (2009/147/EC) on the conservation of wild birds (the 'Birds Directive')[8], which protects rare, vulnerable and migratory bird species, to create the 'Natura 2000' network of European protected sites. European sites designated under the Habitats Directive are Special Areas of Conservation (SACs), and those designated under the Birds Directive are Special Protection Areas (SPAs).

In Scotland, these Directives were implemented through the Conservation (Natural Habitats &c.) Regulations 1994 (the 'Habitats Regulations'), which cover terrestrial areas and territorial waters out to 12 nautical miles (nm)[9]. Waters beyond 12 nm, up to the extent of the British Fishery Limits and UK Continental Shelf Designated Area, are covered by the Offshore Marine Conservation (Natural Habitats, &c.) Regulations 2017 (the 'Offshore Habitats Regulations')[10].

Regulation 48 of the Habitats Regulations sets out the steps for assessing plans and projects which may affect European/ International sites (in the National Network). Although this legislation derives from the EC Habitats Directive, the Regulations still apply in Scotland following the UK's exit from the EU. The Regulations have been subject to further minor technical amendments to deal with the UK's exit from the EU, however the process for assessment remains largely unaltered.

Additionally, the Convention on Wetlands of International Importance especially as Waterfowl Habitat 1971 (the 'Ramsar Convention')[11] designates wetland sites for protection ('Ramsar sites'). The Scottish Government reiterated its policy on the protection of Ramsar sites in 2019[12], specifically stating that 'where Ramsar interests coincide with Natura qualifying interests protected under an SPA or an SAC, as the case may be, the interests are thereby given the same level of (legal) protection as Natura sites'.

Post-EU Exit, The Habitats Regulations, S36 Habitats Regulations, and the Offshore Habitats Regulations remain in force, with the same protections retained, but UK sites are no longer part of the EU's Natura 2000 network, instead forming a national network of protected sites. Key terminology is primarily unchanged, with the terms 'European site', 'European marine site', 'European offshore marine site', 'SAC' and 'SPA' all being retained[13].

[7] https://www.legislation.gov.uk/eudr/1992/43/contents [Accessed: September 2025]

[8] https://www.legislation.gov.uk/eudr/2009/147/contents [Accessed: September 2025]

[9] One nautical mile is equivalent to 1.151 statute miles or 1,853 metres

[10] https://www.legislation.gov.uk/uksi/2017/1013/contents/made [Accessed: September 2025]

[11] https://jncc.gov.uk/our-work/ramsar-convention/ [Accessed: September 2025]

[12] https://www.gov.scot/publications/implementation-of-scottish-government-policy-on-protecting-ramsar-sites/ [Accessed: Accessed: September 2025]

[13] https://www.gov.scot/publications/eu-exit-habitats-regulations-scotland-2/documents/ [Accessed: September 2025]

1.4.2 Policy

The National Planning Policy Framework (NPPF) 4 reiterates the legal requirement for AA, in Policy 4. It states that

"b) Development proposals that are likely to have a significant effect on an existing or proposed European site (Special Area of Conservation or Special Protection Areas) and are not directly connected with or necessary to their conservation management are required to be subject to an "appropriate assessment" of the implications for the conservation objectives.

West Lothian Local Development Plan[14] has been assessed for adverse effects on integrity in Habitats Regulations Appraisal Statement[15].

1.4.3 Case Law

Case law made prior to the UK's exit from the EU also still applies and is relevant here. This includes the 'People over Wind' Judgement which made clear that mitigation measures cannot be considered at screening stage (see below for an explanation of the stages) and therefore any project requiring mitigation to avoid Likely Significant Effects (LSE), or to make certain that there are no such effects, needs to be assessed under AA.

Relevant case law is included in **Annex A**.

1.4.4 Guidance Documents

Several guidance documents have been consulted in preparation of this shadow HRA:

- NatureScot guidance "Habitats Regulations Appraisal"[16];
- Habitats Regulations Appraisal (HRA) on the Firth of Forth - A Guide for developers and regulators[17];
- EC (2013) Interpretation Manual of European Union Habitats EUR28. Brussels: European Commission[18];
- EC (2018) Managing Natura 2000 sites: The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC. Brussels: European Commission[19];
- Commission notice Assessment of plans and projects in relation to Natura 2000 sites – Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC 2021/C 437/01[20];

[14] https://www.westlothian.gov.uk/media/38765/West-Lothian-Local-Development-Plan-Adopted-2018/pdf/West_Lothian_Local_Development_Plan_-_Adopted_final_Web_Version_Amended_-_2020-01-08.pdf [Accessed: September 2025]

[15] https://www.westlothian.gov.uk/media/9833/Habitats-Regulations-Appraisal/pdf/Habitats_Regulations_Appraisal_Statement_FINAL.pdf [Accessed: September 2025]

[16] https://www.nature.scot/professional-advice/planning-and-development/environmental-assessment/habitats-regulations-appraisal-hra [Accessed: September 2025]

[17] https://www.nature.scot/doc/habitats-regulations-appraisal-hra-firth-forth-guide-developers-and-regulators [Accessed September 2025]

[18] https://www.mase.gov.it/sites/default/files/archivio/allegati/rete_natura_2000/int_manual_eu28.pdf [Accessed: September 2025]

[19] https://op.europa.eu/en/publication-detail/-/publication/2c9f4a14-8f97-43ac-a274-4946c142b541 [Accessed: September 2025]

[20] https://op.europa.eu/en/publication-detail/-/publication/99a99e59-3789-11ec-8daf-01aa75ed71a1/language-en [Accessed September 2025]

- David Tyldesley and Associates (2015) HRA of Plans. Guidance for Plan-making Bodies in Scotland. Version 3.0, January 2015 SNH Ref 1739[21]; and
- DTA (2021) Habitat Regulations Assessment Handbook. DTA Publications Limited[22].

1.5 Evidence of Technical Competence and Experience

The HRA report was prepared by Daniel Piec, SLR Senior Ornithologist with over 20 years' experience in managing large conservation and ecology projects in the UK and abroad. He has contributed to the development of a number of EIA documents such as HRA screening reports, ornithology chapters and technical appendices, and reports to inform AA (RIAA).

This shadow HRA has been reviewed by Technical Director Richard King. Richard is an experienced ecologist and ornithologist, who has worked in environmental consultancy for over 17 years. Richard's role ranges from baseline ecological and ornithological surveys, data analysis and technical reporting duties, production and review of technical reporting (including EIAs, HRAs) as well as supporting post-planning project stages, including discipline expert witness. He has worked on a wide range of projects and developments across a variety of sectors, including renewable energy schemes and infrastructure (onshore wind, cable routes, hydro, BESS, and solar), highways, residential and commercial property schemes, ports and harbours, minerals/quarries as well as for regulatory agencies and private estates.

2 Consultation

In undertaking the ecology and ornithology baseline and impact assessments, consideration has been given to the EIA Screening Opinion issued by West Lothian Council, and direct consultation with NatureScot and West Lothian Council. **Table 2-1** below provides a summary of the key responses which are relevant to ecology and ornithology and outlines how they have been addressed.

Table 2-1: Consultation Responses

Consultee	Summary of Consultation Response	Ecological Response
NatureScot email consultation (07/08/2025)	Guidance for protected species, and biodiversity enhancement requirements detailed on NatureScot website	NatureScot guidance, in addition to legislative requirements provided in **Section 1.4,** has been incorporated into survey and assessment methodologies
	A HRA is required for Firth of Forth SPA and possibly Westwater SPA, for pink footed geese, with the arable land offering potential for foraging habitat. No winter bird surveys or observations have been undertaken to establish whether geese use the site or not. Therefore, it should be assumed they are, even if in small numbers, with some kind of assessment of the loss of the fields/supporting habitat in the context of other similar habitat that may be	This Shadow HRA has been appended to the EIA report as **Technical Appendix 5.7: Shadow Habitats Regulations Assessment**

[21] https://www.nature.scot/sites/default/files/2019-07/Habitats%20Regulations%20Appraisal%20of%20Plans%20-%20plan-making%20bodies%20in%20Scotland%20-%20Jan%202015.pdf [Accessed: September 2025]

[22] https://www.dtapublications.co.uk/ [Accessed: September 2025]

Consultee	Summary of Consultation Response	Ecological Response
	around/abundance of other supporting habitat in the area.	
West Lothian Council email consultation following screening request (09/09/2025)	Ecological Impact Assessment (EcIA) including all necessary protected species survey reports, and an Outline Biodiversity Enhancement Management Plan (OBEMP).	Ecological Impact Assessment has been prepared with the following Protected Species Survey Reports: • Preliminary Ecological Appraisal (PEA) (**Technical Appendix 5.2**) • Confidential Protected Species Report (**Technical Confidential Appendix 5.3**) • Bat Survey Reports (**Technical Appendix 5.4**) • Ornithology Baseline Report (**Technical Appendix 5.5**) • An OBEMP is provided within **Technical Appendix 5.6**
	HRA screening report and wintering bird survey required. The Site is within 15 km of the Firth of Forth SPA and there's potential for Pink Footed Geese up to 20 km from the SPA and towards the Pentland Hills.	This Shadow HRA has been appended to the EIA report as **Technical Appendix 5.7: Shadow Habitats Regulations Assessment**. Wintering bird surveys have not been undertaken. Based on the scale of the development, the Applicant proposed that a desk-based assessment would be sufficient to inform the EIA and shadow HRA. This approach was consulted with NatureScot who advised on 7 August 2025 that in the absence of winter bird surveys the assessment should be carried out based on an assumption of presence and the loss of habitat relative to availability of alternative foraging areas (see above). This approach was also discussed with WLC and the ecology officer in a meeting held on the 8 October 2025. The Applicant therefore proposed to carry out the assessment based on the above approach and the results of the desk study.
West Lothian Council Screening Determination (09/10/2025)	EIA required for the Proposed Development	EIA chapter provided

3 Methodology

3.1 General Approach

According to NatureScot's guidance[23], "the appraisal process should be **proportionate, practical, realistic and effective**".

All competent authorities must consider whether any plan or project could affect a European or Ramsar[24] site before it can be authorised or carried out. NatureScot guidance[16] describes a series of stages which should be completed when carrying out the assessment and these are followed here with the addition of sub-headings for further clarity (see **Section 3.2**). The assessment applies only to European and Ramsar sites. More specifically, it only applies to the qualifying interest features of such sites i.e., the features which are the reason that the site was designated. The aim of the assessment is to consider whether a project or plan will have a 'likely significant effect' (LSE) on qualifying features of a European or Ramsar site (screening stage), and if so, to ascertain if the LSE will have an adverse effect on the integrity (AEOI) of a European or Ramsar site (AA). This process is known as HRA and is summarised in **Plate 3-1**.

[23] https://www.nature.scot/doc/habitats-regulations-appraisal-hra-local-development-plans-ldps-guidance-planning-authorities [Accessed January 2025]

[24] When a Ramsar site overlaps with a European site.

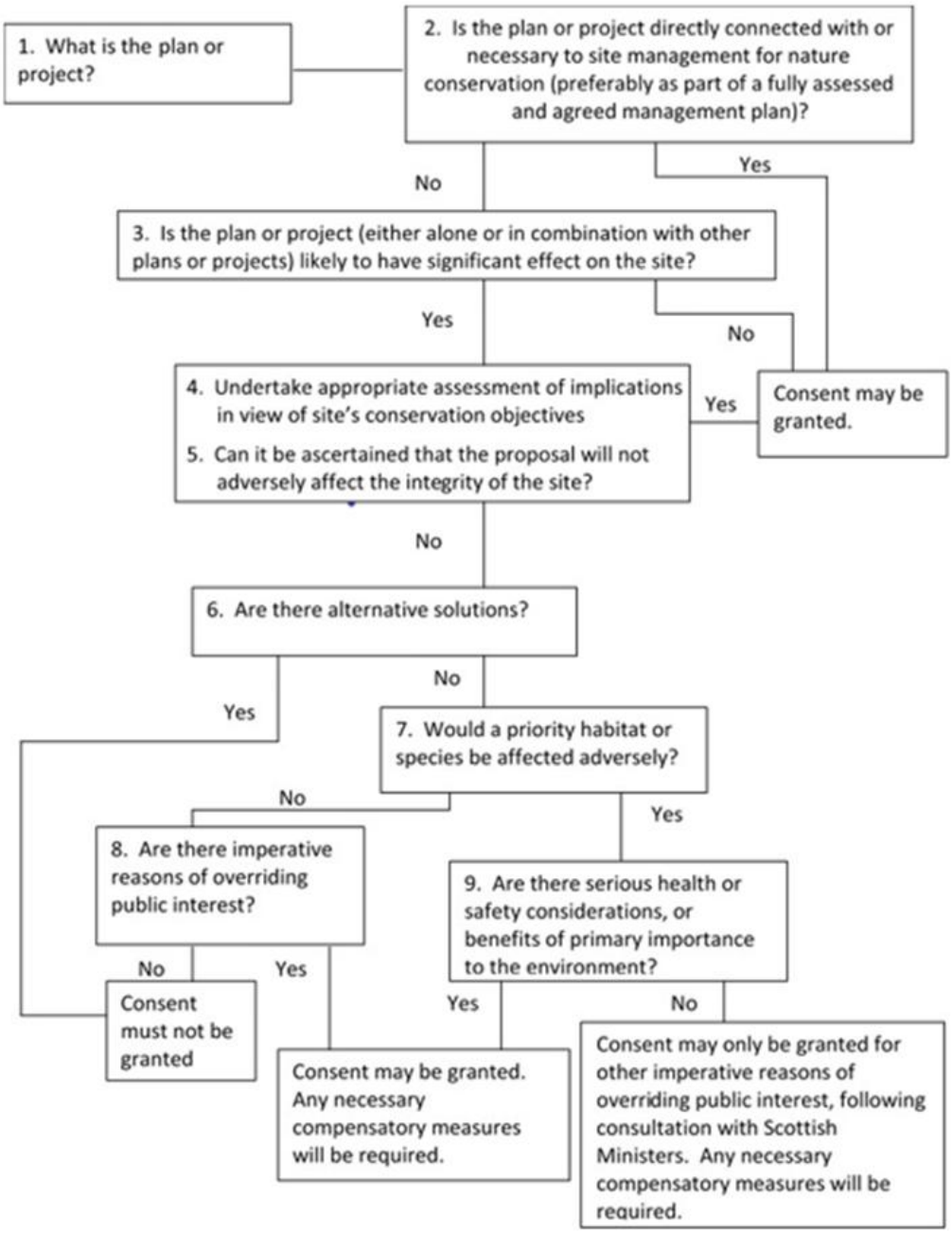

Plate 3-1: Logical framework for the assessment of plans and projects that could affect European sites (SPAs and SACs) and Ramsar sites[16].

3.1.1 Meaning of Likely Significant Effect

For HRAs, a 'likely' effect is one that 'may reasonably be predicted and cannot be excluded (or ruled out) without further assessment or mitigation.

A 'significant' effect is one where the Proposed Development undermines one or more conservation objectives of one or more of the qualifying features of a European (or Ramsar) site.

3.1.2 Meaning of Significant Disturbance

Disturbance should be judged as significant if an action (alone or in combination with other effects) impacts on (water)birds in such a way as to be likely to cause impacts on populations of a species through either (i) changed local distribution on a continuing basis; and/or (ii) changed local abundance on a sustained basis; and/or (iii) the reduction of ability of any significant group of birds to survive, breed, or rear their young[25]. Significant disturbance affecting one or more qualifying features of a European or Ramsar site would undermine conservation objectives defined for this site and features.

3.1.3 Source-Pathway-Receptor Model

The relevant designated sites and their primary and secondary designated features are the 'receptors' in this model. The 'pathway' is the route or means through which the 'receptors' could be positively or negatively impacted by the 'source.' The 'source' is the proposed Project, i.e., activities planned during construction, operation and decommissioning. If no pathway exists between the receptor and the source, then impacts on the receptor can be screened out. If a pathway does exist, then the impact on the receptor must be quantified, and it must be determined whether it will undermine conservation objectives of the receptor site.

Regarding the Project assessed 'in-combination', the search area for in-combination plans and projects is related to the specific features of the designated sites and pathways of effect; for example, yet not limited to, water quality impacts on bird species in relation to their core foraging ranges.

3.2 Assessment Methodology

The stages of HRA process described by NatureScot in their guidelines[16] are:

Stage 1: Project Description

Stage 1 is an outline description of the Project, including construction, operation and decommissioning, containing enough information for potential impact pathways to be understood, and the Project site and its surroundings, focussing on the habitats and species that may form part of the qualifying interest of a European or Ramsar site.

Stage 2: Management of the Site

Stage 2 is to ascertain whether the Project is directly connected with or necessary to the management of a European or Ramsar site. Typically, this applies only to a management plan, or parts thereof, which has the purpose of maintaining or restoring the conservation interest of a European or Ramsar site, and which would not have a negative effect on any other European or Ramsar site.

Stage 3: Screening for Likely Significant Effects

This stage aims to ascertain if the Project might have a significant effect on the European and Ramsar sites. In order to determine those effects, it is necessary to:

(a) identify potential sources of impact either alone or in combination with other projects or plans;

(b) generate a list and compile basic information on the European and Ramsar sites potentially connected via an impact pathway to the Project;

[25] Fox, A.D. and Madsen, J. (1997) Behavioural and distributional effects of hunting disturbance on waterbirds in Europe: implications for refuge design. *Journal of applied ecology*, pp.1-13.

(c) assess and conclude whether likely significant effects arising from the Project, alone and in-combination with projects and plans, on European and Ramsar sites can be excluded, and if they cannot, which qualifying interest features/special conservation interest are at risk from significant effects, and the relevant impact sources and pathways. If the latter, an AA will be required. The conclusion will not consider any mitigation measures designed to avoid likely significant effects on a European or Ramsar site.

Stage 4: Appropriate Assessment (AA)

This stage aims to undertake a scientific assessment of the potential effects of the Project on the qualifying interest features of the European and Ramsar sites, based on the impact factors and pathways identified at Stage 3. This is done for the Project alone and in combination with other plans and projects.

For any effect that could have an adverse effect on the integrity of a European or Ramsar site, avoidance and mitigation measures are identified with the aim of removing the risk to the integrity of the identified European and Ramsar sites, including in combination effects with other projects and plans. Measures to compensate for adverse effects must not be considered at this Stage, and neither are actions designed to enhance biodiversity.

Stage 5: Conclusion on site Integrity

Considering the mitigation identified at Stage 4, this stage aims to determine whether the risk to the conservation objectives have been reduced or removed such that they will not be undermined, and adverse effects on the integrity of all European and Ramsar sites can be excluded.

3.3 Baseline Information

3.3.1 Ecological Desk Study

An ecological desk study was undertaken, comprising a search for:

- European and Ramsar sites within 10 km of the Project Site, extended in the case of SPAs within 20 km which support goose or swan qualifying features; and
- Annex I habitats and Annex II species (of the Habitats Directive), and Annex I bird species (of the Bird Directives) within 2 km from the Site;

Online resources included ecology data held on Defra's Multi-Agency Geographic Information for the Countryside (MAGIC)[26], NatureScot's Site Link[27], Habitat Map of Scotland (HabMoS)[28], Wetland Bird Survey (WeBS)[29] and Site Condition Monitoring (SCM) database[30].

A data request was sent to The Wildlife Information Centre (TWIC) on 14 April 2025 for records within 2 km of the Site boundary. For the purposes of ensuring that information is up to date and relevant, only records from the last 15 years were considered.

[26] https://magic.defra.gov.uk/home.htm [Accessed: September 2025]

[27] https://sitelink.nature.scot/home [Accessed: September 2025]

[28] https://www.nature.scot/landscapes-and-habitats/habitat-data-and-habitat-map-scotland [Accessed: September 2025]

[29] Calbrade, N.A., Birtles, G.A., Woodward, I.D., Feather, A., Hiza, B., Caulfield, E., Balmer, D.E., Peck, K., WShaw, J.M., Shaw, J.M., and Frost, T.M. (2025). Waterbirds in the UK 2023/24: The Wetland Bird Survey and Goose & Swan Monitoring Programme. BTO/RSPB/JNCC/NatureScot. Thetford.

[30] https://informatics.sepa.org.uk/ProtectedNatureSites/ [Accessed: September 2025]

Additional data for European protected species within 2 km of the Site (within the last 15 years) was obtained from the National Biodiversity Network Atlas (NBN)[31]. Only records available for commercial use have been reported, with the data owner(s) cited or acknowledged as required[32].

Mitchel (2012)[33] was consulted to check for core feeding areas of pink-footed goose.

3.3.2 Projects for the assessment of cumulative impacts

A review of the area, including recent planning history and through consultation with WLC has identified two developments within 5km of the Proposed Development, either in operation or in planning at the time of assessment (October 2025) (**Table 3-1**).

Table 3-1: Potential Developments within 5 km

Site Name	Development Type	Reference and Status	Approximate Distance and Direction from Site
Selms Muir Solar and BESS Farm	18 MW solar PV installation and BESS and associated works	0442/FUL/22 Consented	1.4 km north
Drumshoreland Road BESS	Installation of 49.9 MW BESS and associated works	0255/FUL/22 Operational	3.6 km north-west

3.3.3 Plans

West Lothian Local Development Plan[14] and HRA[15] was consulted.

3.3.4 Field Surveys and Assessments

UK Habitat Survey was undertaken on 7 and 8 April 2025, with subsequent visits on the 24 June and 16 August 2025. During the walkover survey, habitats on Site were mapped in accordance with the UK Habitat Classification (UKHab) methodology[34]. The Survey Area comprised of a buffer of 50 m from the Site boundary, which was extended to 200 m for watercourses (i.e. the Survey Area).

Furthermore, the following surveys were conducted for European protected species:

- Otter on all suitable watercourses within the Survey Area and within 20 m of either bankside. Overhanging banks, cavities, bankside vegetation and riparian features, such as boulders and mud, were searched for signs of otter presence such as

[31] NBN Atlas, Available at: https://docs.nbnatlas.org/ [Accessed: September 2025]

[32] https://docs.nbnatlas.org/data-licenses/ [Accessed September 2025]

[33] Mitchell, C. (2012) Mapping the distribution of feeding Pink-footed and Iceland Greylag Geese in Scotland. Wildfowl & Wetlands Trust / Scottish Natural Heritage Report, Slimbridge

[34] UKHab Ltd, 2023, Uk habitat classification version 2.0. Available at: https://ukhab.org/ (Accessed 01/09/2025)

feeding remains, footprints, slides, resting places and potential holt / natal den sites, following survey methodology described by NatureScot[35] and Chanin[36].

- A Great Crested Newt Habitat Suitability Index (HSI) assessment of standing water bodies was carried out within a 500 m radius of the Site[37]. This was reduced to 250 m where barriers to movement was evidence between ponds and the Site. Ponds were not accessible or not suitable for Environmental DNA (eDNA) therefore further survey work was not carried out.
- A Ground Level Tree Assessment (GLTA) was carried out on 16 August 2025 for trees on Site and within a 20 m buffer of the Proposed Development infrastructure (Survey Area) which had damage / decay features (e.g. hazard beams, lifting bark, knot holes) with the potential to support roosting bats. Additionally, physical evidence of presence was searched for (e.g., bat corpses, droppings, feeding remains, scratch marks, and urine and grease staining). The GLTA also included an assessment of buildings and structures with features with the potential to support roosting bats (e.g. raised slates, gaps under flashing, cracks and crevices in stonework).
- An aerial assessment of the single tree was undertaken on 22 August 2025 by qualified climbers (Dawn Thompson BSC (Hons) MCIEEM MECW (NatureScot Bat Survey Licence Number: 292142) and Rhys Newell ACIEEM). Surveyors used an endoscope and a high-powered torch where necessary for signs of bat presence and suitable roosting features. All survey works and assessment has been undertaken in accordance with best practice guidance.[38]
- Breeding bird surveys followed an adapted version of the Common Birds Census (CBC) methodology[39] and the Breeding Bird Survey Guidelines[40], which involved the surveyor walking a transect at a slow pace, ensuring all accessible land within the site plus a 100 m buffer was covered.
- Wintering Bird Surveys were not carried out.

3.3.5 Habitat cover analyses

Scotland Habitat and Land Cover Map – 2022[41] available under the Open Government Licence v3.0[42] was used to assess habitat availability within 20 km radius from SPA roosts. Habitat and land cover map was created by Space Intelligence[43] in partnership with

[35] NatureScot, 2024. Standing advice for planning consultations – Otters. Available at: www.nature.scot: https://www.nature.scot/doc/standing-advice-planning-consultations-otters [Accessed September 2025]

[36] Chanin, 2003. Conserving Natura 2000 Rivers Monitoring Series no. 10. Monitoring the Otter. Peterborough: English Nature. Available at: cieem.net: https://cieem.net/resource/monitoring-the-otter/ [Accessed: September 2025]

[37] Oldham RS, Keeble J, Swan MJS and Jeffcote M (2000) Evaluating the suitability of habitat for the great crested newt (Triturus cristatus). Herpetological Journal. 10: 143-155. Available at: https://www.thebhs.org/publications/the-herpetological-journal/volume-10-number-4-october-2000/1617-03-evaluating-the-suitability-of-habitat-for-the-great-crested-newt-triturus-cristatus/file [Accessed: September 2025]

[38] Collins, J. (ed) (2023). Bat Surveys for Professional Ecologists: Good Practice Guidelines (4th edition). Bat Conservation Trust

[39] Gilbert, G., Gibbons, D.W. and Evans, J. (1998). Bird Monitoring Methods. RSPB, Sandy.

[40] Bird Survey and Assessment Steering Group. 2025. Bird Survey Guidelines for assessing ecological impacts, https://birdsurveyguidelines.org/ [Accessed: September 2025]

[41] https://spatialdata.gov.scot/geonetwork/srv/eng/catalog.search#/metadata/8462f345-6e9c-45de-b1d2-665a55b9d74a [Accessed: October 2025]

[42] http://www.nationalarchives.gov.uk/doc/open-government-licence/version/3/ [Accessed: October 2025]

[43] https://www.space-intelligence.com/ [Accessed: October 2025]

NatureScot using Artificial Intelligence (AI) to classify satellite data to EUNIS Level 2[44] habitat classification which uses 28 different classes[45].

The map was converted from GeoTIFF raster layer to vector shapefile to enable analyses of area coverage of habitat classes, which are key for foraging pink-footed goose, i.e., arable land and three types of grassland: mesic, dry and seasonally wet.

4 Stage 1: Project Description

4.1 The Project

4.1.1 Overview

The Proposed Development will consist of ground mounted solar PV modules with an export capacity of up to 40 MW, 9MW BESS, substation, associated electrical equipment, drainage, access, landscaping, underground cabling, fencing and other ancillary infrastructure. The BESS will store excess energy generated by the solar PV array and release it during periods of high demand or low generation.

4.1.2 Construction

Construction of the Proposed Development is expected to be completed within approximately eight to twelve months. Normal construction hours are likely to be between 07:00 and 18:00 Monday to Friday and 08:00 and 13:00 on Saturdays.

The infrastructure associated with the Proposed Development will include:

- PV module mounting frames with a minimum height of approximately 1 m Above Ground Level (AGL)
- Battery units housed in containers;
- Substation;
- Inverter cabins to convert direct current (DC) electricity into usable alternating current (AC) power;
- Transformers;
- Underground cabling;
- Internal access tracks;
- Temporary construction compound anticipated to be approximately 3,600 m^2 (0.36 ha) and the construction compound will incorporate a laydown area, welfare facilities, storage containers, on-site office and vehicle parking area;
- Customer station compound;
- Spares container;
- CCTV cameras mounted on posts;
- Perimeter fencing;

[44] https://ogc.nature.scot/geoserver/www/maps/naturescot-data-viewer.html?layer=habitatsandspecies:HLCM_2022_EUNIS_LEVEL2 [Accessed: October 2025]

[45] https://eunis.eea.europa.eu/habitats.jsp [Accessed: October 2025]

- Site drainage, including a Sustainable Drainage System (SuDS) pond and underground pipe discharging to the Green Burn at greenfield rates; and
- Biodiversity and landscaping enhancements.

4.1.3 Operation

Once the solar PV array and BESS are fully operational, it will require minimal maintenance. Maintenance is expected to consist mostly of routine Site inspections by technicians, as well as some unscheduled visits when required. Site traffic will be limited to maintenance vehicles and is unlikely to comprise of several cars at any one period. As there is no permanent staff or office facilities on Site it is anticipated that no waste will be generated; any waste generated by maintenance works will be removed and disposed of offsite.

4.1.4 Decommissioning

At the end of the Proposed Development's operational lifetime of 40 years, it will be decommissioned (unless an extension is consented). Decommissioning is a relatively straightforward process and similar to the construction process, with the majority of structures and equipment able to be disassembled and removed in a straightforward manner (with battery units, inverters etc being containerised and simply able to be detached from the piles they are placed on, and the solar arrays disassembled, and piles pulled up).

4.2 The Project Site

The following section summarises the results of the field surveys undertaken as part of the Preliminary Ecological Appraisal (PEA). Summary is provided here of qualifying features considered relevant for European Sites (i.e. Annex I habitats and species of birds, and Annex II species of animal and plant). For full details of the field survey results, please refer to the PEA report (**Technical Appendix 5.2**)[2], Baseline Ornithology Report (**Technical Appendix 5.5**)[4] and Confidential Annex B of the PEA (**Confidential Technical Appendix 5.3**)[3].

4.2.1 Habitats (Annex I of Habitat Directive) Summary

There are no Annex I habitats within the Site.

Review of the Carbon and Peatland 2016 Map of Scotland[46] indicates that the entirety of the Site occurs on non-peaty soils.

4.2.2 Species (Annex I bird Annex II non-avian) Summary

The data search identified four Annex I bird species:

- Golden plover *Pluvialis apricaria* (three records with a peak count of 280 birds);
- Merlin *Falco columbarius* (one records of single bird);
- Short-eared owl *Asio flammeus* (three records); and
- Whooper swan *Cygnus cygnus* (one record of two birds).

There were five records of pink-footed goose within 2 km from the Site recorded in 2013 with a peak count of 1,200 birds.

[46] https://soils.environment.gov.scot/maps/thematic-maps/carbon-and-peatland-2016-map/ [Accessed: October 2025]

Table 4-1: TWIC records of pink-footed goose within two 10km^2 national grid squares within 2 km from the Site. All records are from 2013

10km^2 National Grid Square	Count
NT06Y	500 Count of present
NT06X	1,200 Count of present
NT16B	148 Count of present
NT16C	20 Count of present
NT16G	205 Count of present

Mitchell (2012)[33] provides an overview of wintering pink-footed geese distribution around SPAs designated for this species based on data from 2007-08 to 2011-12. Areas of medium to highest sensitivity index for foraging pink-footed geese of Westwater SPA and the Firth of Forth SPA are located approx. 4 km south-east of the Site on fields south-west of Balerno within NT16 10 km^2 grid square. This means that geese can utilise this area for foraging on a regular basis.

The WeBS results[29] from Threipmuir and Harlaw Reservoirs including Bevelaw Marsh (located ca. 6 km from the Site) show a five-year average (2019-20 – 2023-24) of 605 pink-footed geese with a peak count of 941 in 2019-20[47]. The 5-year mean for the same period at Harperrig Reservoir, which is located ca. 9.5 km from the Site, was 206 birds with a peak count of 530 in 2023-24[48].

No Annex I species were identified during the breeding bird survey.

Winter bird surveys were not carried out; however based on the desk study results, the presence of pink-footed goose utilising the site for foraging is assumed in the HRA.

4.2.2.1.1 Great Crested Newt

Surveys were not granted access to a pond located 155 m south-east of the Site and therefore the presence of GCN cannot be ruled out.

4.2.2.1.2 Otter

The TWIC data search returned 1 record of otter *Lutra lutra,* within 2 km of the Site within the last 15 years.

Field surveys confirmed presence of otter cohabiting with badger within the Site. It is considered that the feature is being used as a resting location for otter. Given the infrequent use, once in 36 days, and use by a single individual, it is not considered to be used for breeding purposes. This resting location will form one of several within the otter territory.

4.2.2.1.3 Bats

The TWIC data search returned no records of bat *Chiroptera*, within 2 km of the Site within the last 15 years.

Field surveys had not found any Annex II bat species.

[47] https://app.bto.org/webs-reporting/numbers.jsp?locid=LOC656965 [Accessed: October 2025]

[48] https://app.bto.org/webs-reporting/numbers.jsp?locid=LOC649361 [Accessed: October 2025]

4.2.2.1.4 Ecological Connections

There are ecological connections through foraging opportunities, i.e., Functionally Linked Land (FLL) for pink-footed geese of Wastewater and the Firth of Forth SPAs/ Ramsar sites.

4.2.2.1.5 Environmental connections

There is one watercourse running through the Site – the Green Burn – which rises in the eastern land parcel and flows in a northeasterly direction before discharging into the Gogar Burn approximately 3.5 km from the Site. Gogar Burn discharges to River Almond in the near Edinburgh Airport, approximately 6.5 km from the river month to the Firth of Forth SPA.

5 Stage 2: Management of the Site

No part of the Project is connected with, or necessary for management of any European or Ramsar sites for achieving their conservation objectives.

6 Stage 3: Likely Significant Effects

No statutory sites are located within the Project Site. LSEs of the Project alone and in-combination with other developments are outlined in **Section 6.1**. For the purposes of this assessment, it has been determined that decommissioning phase effects will be less than, or equal to effects caused by the construction phase and have thus been considered together.

6.1 Step 1: Sources of Impact

Potential sources of impact from the Project on the selected European and international sites are listed below in relation to differences phases over the Project lifetime (construction, operation, decommission) alone or in-combination with other plans/ projects. **Section 6.3** provides the assessment of risks relevant to statutory sites and identified specific sources of impact.

Construction and Decommissioning:

- Direct or indirect habitat loss habitat.
- Disturbance of bird species due to construction (noise, light, vibration, construction worker presence).

Operation:

- Disturbance resulting from increased operation noise and maintenance works.

6.2 European and Ramsar Sites

Information on the three European Sites considered is provided in **Table 6-1**. The table details qualifying interests, conservation objectives, condition, distance and orientation from the Site and any connections to the Site.

The Proposed Development is located within 11 km from Westwater SPA/ Ramsar and 13 km from the Firth of Forth SPA/ Ramsar designated for pink-footed goose. The Site is withing a foraging range of this species and can be functionally linked with these European and international sites (**Figure 2**).

Table 6-1: European and Ramsar sites initially considered for Source – Pathway – Receptor links

Site name and Code	Qualifying Interest	Distance from Site	Connections (Source-Pathway-Receptor)	Considered further in screening Yes/ No
River Tweed SAC	• Atlantic salmon *Salmo salar* (Favourable) • Brook lamprey *Lampetra planeri* (Favourable) • Otter *Lutra lutra* (Favourable) • River lamprey *Lampetra fluviatilis* (Favourable) • Rivers with floating vegetation often dominated by water-crowfoot (Unfavourable) • Sea lamprey *Petromyzon marinus* (Unfavourable)	9.8 km SE	No ecological or environmental connection to the Site	No
Westwater SPA UK9004251	• Pink-footed goose *Anser brachyrhynchus*, non-breeding (Favourable) • Waterfowl assemblage, non-breeding (not functionally linked at this distance) (Favourable)	11.8k m S	Functionally Linked Land (pink-footed goose)	Yes
Westwater Ramsar UK13060	• As above	As above	As above	As above
Firth of Forth SPA UK9004411	**Qualifying Interests and latest condition assessment (Last assessed in 2015):** • Bar-tailed godwit *Limosa lapponica*, non-breeding (Favourable) • Common scoter *Melanitta nigra*, non-breeding (Unfavourable) • Cormorant *Phalacrocorax carbo*, non-breeding (Favourable) • Curlew *Numenius Arquata*, non-breeding (Favourable) • Dunlin *Calidris alpina alpina*, non-breeding (Favourable) • Eider *Somateria mollissima*, non-breeding (Favourable) • Golden plover *Pluvialis apricaria*, non-breeding (Unfavourable) • Goldeneye *Bucephala clangula*, non-breeding (Unfavourable) • Great crested grebe *Podiceps cristatus*, non-breeding (Unfavourable) • Grey plover *Pluvialis squatarola*, non-breeding (Favourable)	13 km N	Functionally Linked Land (pink-footed goose). Winter movements of golden plover are up to 10-12 km[49] and therefore beyond foraging range of the birds associated with the SPA – hence the species is screen out from further assessments.	Yes

[49] Gillings, S., & Fuller, R.J. (1999). Winter ecology of Golden Plovers and Lapwings: a review and consideration of recent research findings. BTO Research Report No. 224. British Trust for Ornithology, Thetford.

Site name and Code	Qualifying Interest	Distance from Site	Connections (Source-Pathway-Receptor)	Considered further in screening Yes/ No
	• Knot *Calidris canutus,* non-breeding (Unfavourable) • Lapwing *Vanellus vanellus*, non-breeding (Favourable) • Long-tailed duck *Clangula hyemalis*, non-breeding (Unfavourable) • Mallard *Anas platyrhynchos*, non-breeding (Favourable) • Oystercatcher *Haematopus ostralegus*, non-breeding (Favourable) • Pink-footed goose *Anser brachyrhynchus*, non-breeding (Favourable) • Red-breasted merganser *Mergus serrator,* non-breeding (Unfavourable) • Red-throated diver *Gavia stellata*, non-breeding (Favourable) • Redshank *Tringa totanus*, non-breeding (Favourable) • Ringed plover *Charadrius hiaticula,* non-breeding (Favourable) • Sandwich tern *Sterna sandvicensis*, passage (Favourable) • Scaup *Aythya marila,* non-breeding (Unfavourable) • Shelduck *Tadorna tadorna*, non-breeding (Favourable) • Slavonian grebe *Podiceps auritus*, non-breeding (Unfavourable) • Turnstone *Arenaria interpres,* non-breeding (Favourable) • Velvet scoter *Melanitta fusca*, non-breeding (Favourable) • Wigeon *Mareca penelope,* non-breeding (Favourable) • Waterfowl assemblage, non-breeding (Favourable)			
Firth of Forth Ramsar UK13017	As above.	As above	As above	As above

6.3 Assessment of Likely Significant Effects (ALSE)

This section identifies the potential effect pathways through which the Project could impact the qualifying features of the European and Ramsar sites. Specifically, the aim is to establish if a particular potential impact is likely to have a significant impact and undermine conservation objectives.

6.3.1 For the Project Alone

Table 6-2: ALSE during operation for identified European and Ramsar sites

Designated Site	Qualifying Feature(s) and Feature Condition	Conservation Objectives for the Site	Potential Impacts on Qualifying Interest Features	Justification	Determination of Potential LSE
Westwater SPA and Ramsar	Pink-footed goose (favourable, maintained, 2016)	To avoid deterioration of the habitats of the qualifying species or significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained. To ensure for the qualifying species that the following are maintained in the long term: • Population of the species as a viable component of the site. • Distribution of the species within site. • Distribution and extent of habitats supporting the species. • Structure, function and supporting processes of habitats supporting the species.	Direct or indirect habitat loss habitat due to construction.	There are foraging habitats of pink-footed goose within the Site, which will be permanently lost through construction. Therefore, there is a risk undermining Conservation Objectives for this feature with regards to avoiding and maintaining structure, function and processes of habitats supporting the species.	**Potential LSEs for pink-footed goose**

Designated Site	Qualifying Feature(s) and Feature Condition	Conservation Objectives for the Site	Potential Impacts on Qualifying Interest Features	Justification	Determination of Potential LSE
		• No significant disturbance of the species Ramsar site objectives are not set.			
			Disturbance of bird species due to construction (noise, light, vibration, construction worker presence).	There are records of pink-footed geese within 5 km from the Site and therefore a risk of disturbance through construction activities leading to undermining Conservation Objectives with regards to avoiding significant disturbance.	**Potential LSEs for pink-footed goose**
			Disturbance resulting from increased operation noise and maintenance works.	Maintenance is expected to consist mostly of routine Site inspections by technicians, as well as some unscheduled visits when required. Site traffic will be limited to maintenance vehicles and is unlikely to comprise of several cars at any one period. Maintenance activities will be similar to a baseline level of agriculture and other types of activities taking place in the vicinity of the Site. Therefore, disturbance during the operational phase development is not considered significant.	**No potential LSEs**
Firth of Forth SPA and Ramsar	Pink-footed goose (favourable, maintained, 2015)	As above for Westwater SPA/ Ramsar	Direct or indirect habitat loss habitat due to construction.	There are foraging habitats of pink-footed goose within the Site, which will be permanently lost through construction. Therefore, there is a risk undermining Conservation Objectives for this feature with regards to avoiding and maintaining structure, function and processes of habitats supporting the species.	**Potential LSEs for pink-footed goose**

Designated Site	Qualifying Feature(s) and Feature Condition	Conservation Objectives for the Site	Potential Impacts on Qualifying Interest Features	Justification	Determination of Potential LSE
			Disturbance of bird species due to construction (noise, light, vibration, construction worker presence).	There are records of pink-footed geese within 5 km from the Site and therefore a risk of disturbance through construction activities leading to undermining Conservation Objectives with regards to avoiding significant disturbance.	**Potential LSEs for pink-footed goose**
			Disturbance resulting from increased operation noise and maintenance works.	Maintenance is expected to consist mostly of routine Site inspections by technicians, as well as some unscheduled visits when required. Site traffic will be limited to maintenance vehicles and is unlikely to comprise of several cars at any one period. Maintenance activities will be similar to a baseline level of agriculture and other types of activities taking place in the vicinity of the Site. Therefore, disturbance during the operational phase development is not considered significant.	**No potential LSEs**

6.3.2 For the project in Combination

The consented Selms Muir Solar and BESS Farm and operational Drumshoreland Road BESS have been considered for in combination ALSE and discussed in **Section 7.2**.

6.4 Stage 3 Conclusion

The HRA test is whether the Project will have an adverse effect on the integrity of any European or Ramsar site in the light of the conservation objectives for the qualifying interest features detailed within this screening assessment.

The screening assessment highlighted that, in the absence of mitigation, LSEs to habitats, individuals and populations of qualifying interest species could not yet be completely ruled out without further assessment and/or mitigation. Further assessment is required for pink-footed geese of Westwater and the Firth of Forth SPAs and Ramsar sites in relation to habitat loss and disturbance during construction.

7 Stage 4 Appropriate Assessment

7.1 Effects of the Project Alone

7.1.1 Pink-footed goose - Westwater SPA

Condition assessment

Westwater SPA qualifies under Article 4.2 by regularly supporting a population of European importance of the migratory species: pink-footed goose (1986/87 to 1990/91, an average peak winter count of 29,600 individuals, 15% of the Eastern Greenland/Iceland/UK population).

The pink-footed goose qualifying feature of the Westwater SPA was last assessed in February 2017 and considered to be in Favourable (maintained) condition.

The national wintering population of pink-footed goose has increased significantly since the 1950s and is currently estimated at 510,000 birds[50]. However, more recent WeBS data suggest a slight decline since mid-2010s[51].

The average five-year WeBS peak count for 2019/20 – 2023/24 was 5,772 individuals with a subsequent peak count of 7,450 birds in the winter of 2020/21[52].

Direct or indirect habitat loss habitat

Pink-footed geese wintering in Scotland forage mostly on stubble fields consuming the spilt grain in autumn and predominantly on grass and newly sown cereal fields in spring, but will also feed on extensive areas of saltmarsh in estuaries[33,53].

Analyses of the Scotland Habitat and Land Cover Map – 2022 revealed that three EUNIS grassland categories (mesic, dry and seasonally wet grasslands) covered almost 66,324 ha, which constitutes 54% of a total of 123,688 ha of all classified habitats within 20 km radius

[50] Woodward, I., Aebischer, N., Burnell, D., Eaton, M., Frost, T., Hall, C., Stroud, D.A. & Noble, D. (2020). Population estimates of birds in Great Britain and the United Kingdom. British Birds 113: 69–104.

[51] https://www.bto.org/learn/about-birds/birdfacts/pink-footed-goose [Accessed: October 2025]

[52] https://app.bto.org/webs-reporting/numbers.jsp?locid=LOC645836 [Accessed: October 2025]

[53] Goodship, N.M. and Furness, R.W. (MacArthur Green) (2022). Disturbance Distances Review: An updated literature review of disturbance distances of selected bird species. NatureScot Research Report 1283.

from the Westwater SPA/ Ramsar site. Arable land category constitutes a further 8.26% (8,198 ha) of the total area (**Table 7-1**, **Plate 7-1**).

Table 7-1: Area and % coverage of key pink-footed goose habitats in EUNIS classification within 20 km radius from Westwater SPA/ Ramsar

EUNIS Habitat Category	Area [Ha]	% cover of the total assessed area
Mesic grasslands	37,020.63	29.93%
Dry grasslands	15,767.9	12.75%
Seasonally wet and wet grasslands	13,535.87	10.94%
Arable land and market gardens	8,198	6.63%

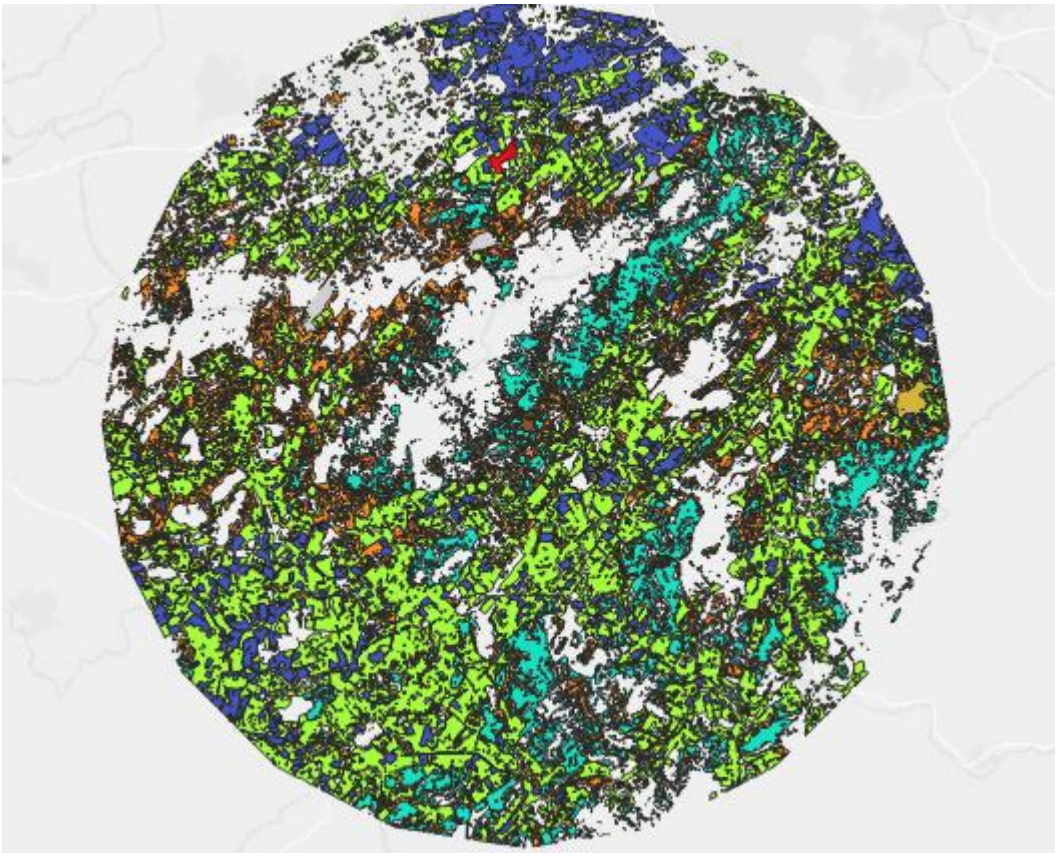

Plate 7-1: Distribution of key pink-footed foraging habitats in EUNIS classification within 20 km radius from Westwater SPA. Arable land (blue), dry grassland (teal), mesic grassland (green) and seasonally wet grassland (orange). The Site is marked in red.

At a smaller scale, within the wider 5 km from the Site, there are 2,506 ha of mesic grassland (25% of a total of 9,960 ha assessed), 1,467 ha or arable land (15%), 1,207 ha of seasonally wet grassland (12%) and 607 ha of dry grassland (6%). This total suitable habitat within the wider 5 km area from the Site is 7.77% of the available foraging habitat within 20 km of the SPA (**Plate 7-2**).

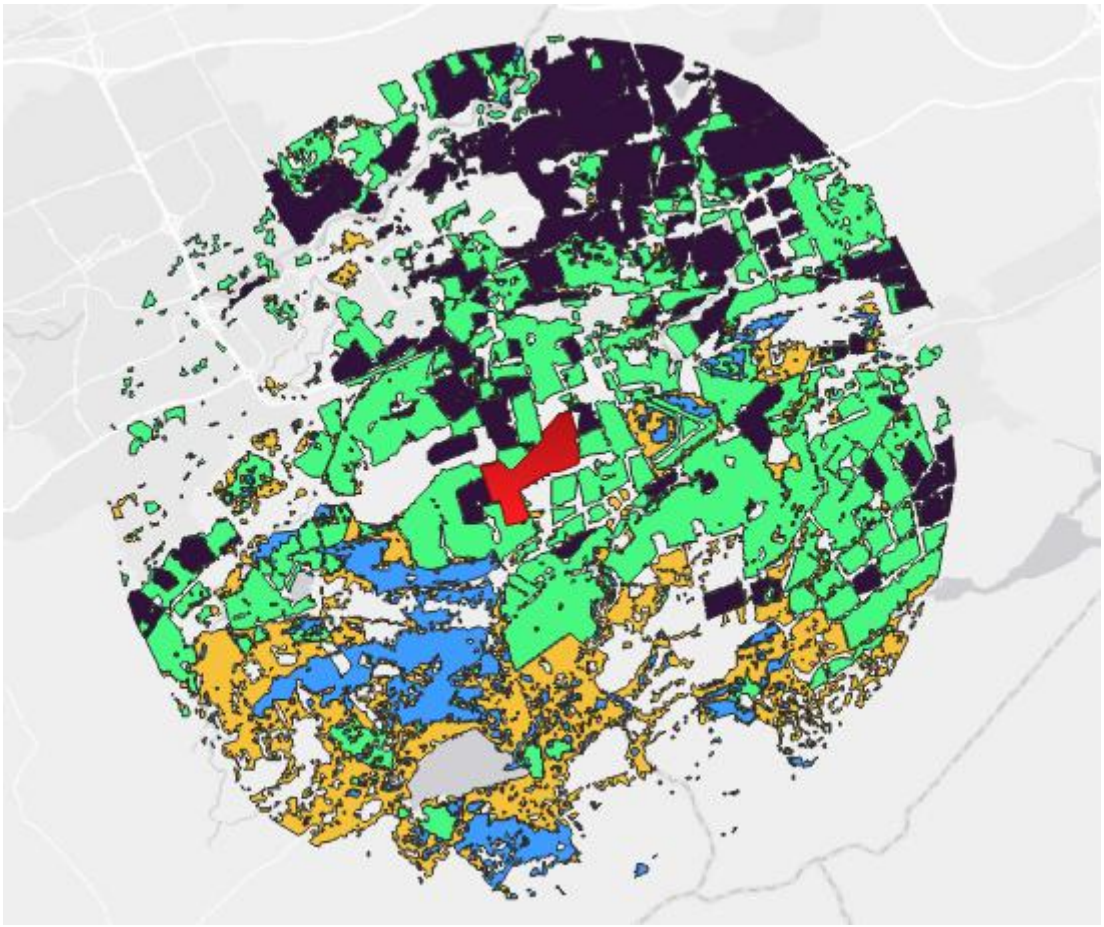

Plate 7-2: Distribution of key pink-footed foraging habitats in EUNIS classification within 5 km radius from the Site. Arable land (dark blue), dry grassland (blue), mesic grassland (green) and seasonally wet grassland (orange). The Site is marked in red.

The area of approximately 76 ha (0.74 km^2) lost to the Proposed Development represents approx. 0.10% of a total of 74,522 ha of suitable foraging habitats within 20 km radius from the SPA and it is also a relatively small area compared to the existing alternative habitats locally within 5 km from the Site (i.e. 1.31% of the total 5,787 ha available suitable habitat).

Moreover, the pink-footed geese of Westwater SPA/ Ramsar have therefore vast availability of foraging habitats during autumn and spring and are less likely utilising the Site as most of them forage in areas to the east at West Linton and to the south-west in the Biggar area[33].

Therefore, **a permanent loss of habitat from the Project alone will not undermine conservation objectives in relation to avoiding habitat loss and maintaining population of pink-footed goose of Westwater SPA/ Ramsar.**

Disturbance of bird species due to construction (noise, light, vibration, construction worker presence)

Pink-footed geese are known to forage within 5 km from the Site. The construction of the Proposed Development has the potential to disturb or displace geese due to noise and movement of construction machinery and plant.

Goodship & Furness (2022)[53] carried out a review of disturbance distances and reported 350-500 m flight initiation distance during hunting in Denmark in the migration and non-

breeding season (two studies). NatureScot recommends 200-600 m disturbance buffer[54] during construction activities.

Disturbance should be judged as significant if an action cause impacts on populations of a species through either (i) changed local distribution on a continuing basis; and/or (ii) changed local abundance on a sustained basis; and/or (iii) the reduction of ability of any significant group of birds to survive, breed, or rear their young (see **Section 3.1.2**[25]).

Any construction-related disturbance effects will be short in duration (within maximum two non-breeding seasons during the development) and also limited to a relatively small area compared to alternative habitats available locally. Any disturbance effect presented is also considered to likely affect only a small proportion of the total SPA population.

It is considered that construction related disturbance effects do not constitute significant disturbance as they are relatively minor in magnitude, short term in duration and limited in extent. Thus, the project alone **will not undermine conservation objectives in relations to avoiding significant disturbance and maintaining population of pink-footed geese of Westwater SPA/ Ramsar**.

7.1.2 Pink-footed goose - Firth of Forth SPA/ Ramsar

Condition assessment

The Firth of Forth SPA qualifies under Article 4.2 by regularly supporting populations of European importance of pink-footed goose with a winter peak means (1993/94 to 1997/98) of 10,852 individuals, 6% of the Eastern Greenland/Iceland/UK biogeographic population.

The pink-footed goose qualifying feature of the Firth of Forth SPA was last assessed in June 2018 and considered to be in Favourable (maintained) condition.

The national wintering population of pink-footed goose has increased significantly since the 1950s and is currently estimated at 510,000 birds[55]. However, more recent WeBS data suggest a slight decline since mid-2010s[56].

The average five-year WeBS peak count for at Forth Estuary for 2019/20 – 2023/24 was 14,693 individuals with a peak count of 22,125 birds in the winter of 2020/21[57].

Direct or indirect habitat loss

Analyses of the Scotland Habitat and Land Cover Map – 2022 revealed that three EUNIS grassland categories (mesic, dry and seasonally wet grasslands) covered almost 40% (47,304 ha) of a total of 119,527 ha of classified habitats within 20 km radius from the nearest located Skinflats roost[33,58] within Firth of Forth SPA / Ramsar. Arable land category contributed 12.70% (15,185 ha) of the total area assessed within 20 km radius (**Table 7-2**, **Plate 7-3**).

[54] NatureScot (2022) Disturbance Distances in selected Scottish Bird Species – NatureScot Guidance. Available online: https://www.nature.scot/doc/disturbance-distances-selected-scottish-bird-species-naturescot-guidance [Accessed: October 2025]

[55] Woodward, I., Aebischer, N., Burnell, D., Eaton, M., Frost, T., Hall, C., Stroud, D.A. & Noble, D. (2020). Population estimates of birds in Great Britain and the United Kingdom. British Birds 113: 69–104.

[56] https://www.bto.org/learn/about-birds/birdfacts/pink-footed-goose [Accessed: October 2025]

[57] https://app.bto.org/webs-reporting/numbers.jsp?locid=LOC645836 [Accessed: October 2025]

[58] https://www.bto.org/sites/default/files/u18/downloads/publications/ewlt_section3.pdf [Accessed: October 2025]

Table 7-2: Area and % coverage of key pink-footed habitats in EUNIS classification within 20 km radius from Westwater SPA/ Ramsar

EUNIS Habitat Category	Area [Ha]	% cover of the total assessed area
Mesic grasslands	29,426.69	24.62%
Arable land and market gardens	15,184.86	12.70%
Seasonally wet and wet grasslands	10,178.45	8.52%
Dry grasslands	7,698.95	6.44%

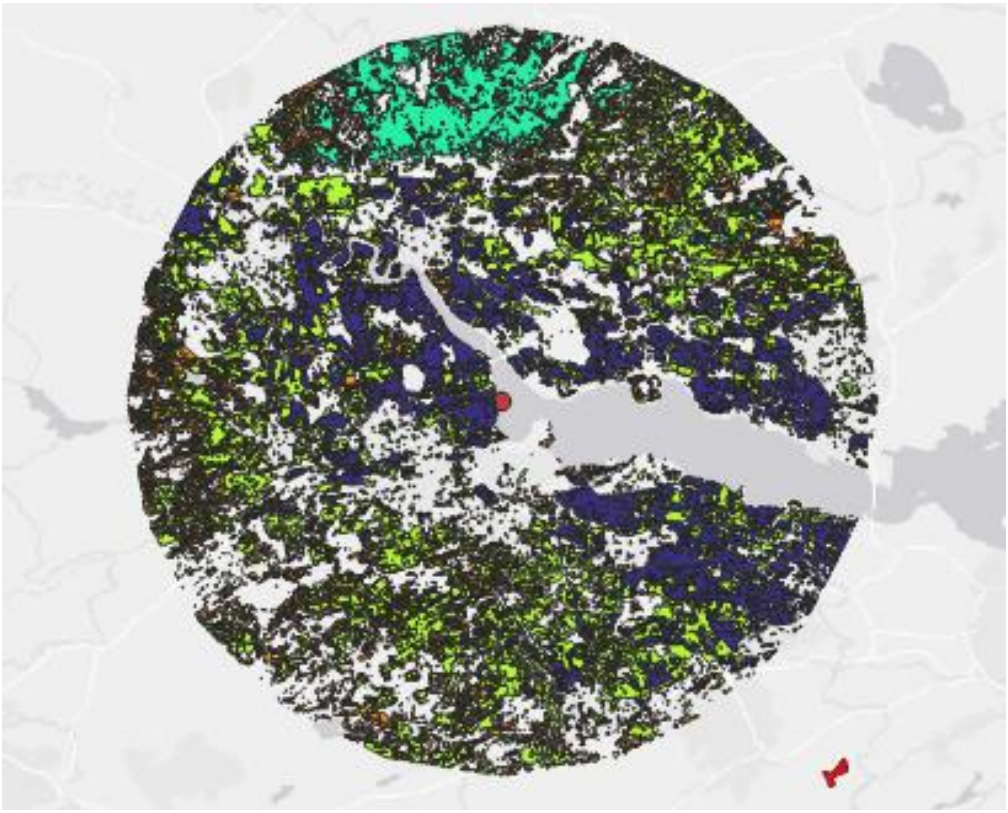

Plate 7-3: Distribution of key pink-footed foraging habitats in EUNIS classification within 20 km radius from Skinflats roost within Firth of Forth SPA. Arable land (blue), dry grassland (teal), mesic grassland (green) and seasonally wet grassland (orange). The Site is marked in red (outside of the 20 km radius).

These birds would also have a good availability of alternative foraging habitats within 5 km from the Site (see above assessment of Westwater SPA and **Plate 7-2**).

The 76 ha lost to the development is approximately 0.12% of a total of 62,489 ha of suitable habitat with 20 km radius from the Skinflats roost. Therefore, the pink-footed geese roosting within the Firth of Forth SPA / Ramsar have a significant resource available in the wider region during winter within 20 km foraging range and locally within 5 km from the development (**Plate 7-3**). Moreover, pink-footed geese potentially utilising the Site are considered unlikely to be of Firth of Forth SPA provenance as the Skinflats roost is located approximately 25 km from the Site[33]. Therefore, **a permanent loss of habitat from the Project alone will not undermine conservation objectives in relation to avoiding**

habitat loss and maintaining population of pink-footed goose of the Firth of Forth SPA/ Ramsar.

Disturbance of bird species due to construction (noise, light, vibration, construction worker presence)

As the resulting pressure pathways are the same, please see the assessment of pink-footed goose disturbance sensitivity as discussed in relation to the Westwater SPA / Ramsar above.

As with the case of Westwater SPA and Ramsar site, any construction-related disturbance will be short term in duration (consisting of a maximum of one non-breeding season), limited to a relatively small area compared to alternative habitats available locally, and affecting a small proportion of the SPA population. Furthermore, the presence of birds of Firth of Forth SPA provenance within the Site and wider area is low, as the nearest roost (Skinflats, 25 km away) is located beyond the foraging range of pink-footed geese roosting in the inner estuary (i.e. up to 20 km) (**Plate 7-3**). It is therefore considered that there will be no significant disturbance able to affect local distribution, abundance and/or ability of this population to survive or breed and therefore the project alone **will not undermine conservation objectives in relations to avoiding significant disturbance and maintaining population of pink-footed geese of the Firth of Forth SPA/ Ramsar**.

7.2 Effects of the Project in Combination

Projects or plans which can have LSEs contributing to the discussed source-pathway-receptor model of habitat loss and disturbance during to construction and decommissioning (**Table 3-1**).

Both solar farms and BESS project identified within 5 km from the Site were granted planning permission based on Preliminary Ecological Assessments (PEA) and standard mitigation against killing and injuring of birds and their nesting sites during breeding season. No considerations of foraging pink-footed geese were made, however in the light of the availability of alternative foraging habitats within the 5 km radius (**Plate 7-3**), **in-combination effect of the development projects will not undermine conservation objectives in relation to avoiding deterioration of habitats and maintaining populations of qualifying features of the Westwater and the Firth of Forth SPA/ Ramsar.**

7.3 Mitigation Measures

No mitigation measures are required as there is no risk of undermining the conservation objectives of any qualifying interest of any European/ Ramsar sites.

8 Stage 5: Effect on Integrity

The following is the final statement of the assessment to ascertain if there are any adverse effects on the integrity of the European and Ramsar sites and their conservation objectives.

It has been ascertained that conservation objectives will not be undermined and therefore there will be no adverse effects on integrity from the project alone or in-combination for the assessed European/ Ramsar sites for the following reasons:

- The Site is located outside of the main foraging areas for the pink-footed goose of relevant SPA / Ramsar sites;
- The habitat loss will be insignificant compared to the available suitable foraging habitats within 20 km radius from known roosting sites within each of the SPAs and 5 km radius from the Site;

- Any disturbance will be temporal, localised and will not impact local distribution, abundance and ability of these populations to survive.

Figures

310000
310500
311000
311500
665500
665000

LEGEND

- Site Boundary
- Solar Photovoltaic (PV) Panel
- AUX Transformer
- CCTV
- DNO Substation
- Transformer Station
- Water Tank
- Welfare Unit
- Private Substation
- Spares Container
- Access Track
- Sustainable Drainage System (SuDS) Pipeline
- Solar Fence
- BESS Fence
- BESS Compound
- Sustainable Drainage System (SuDS) Pond
- Temporary Construction Compound

N

0 250 500
Metres

trio

SLR

KIRKNEWTON SOLAR & BESS

HABITAT REGULATIONS APPRAISAL

SITE LOCATION AND INFRASTRUCTURE DESIGN

FIGURE 1

Scale 1:6,000 @ A3

Date DECEMBER 2025

405.065786.00001.01 Breeding Bird Survey

290000 300000 310000 320000 330000

680000 670000 660000

LEGEND

- Site Boundary
- Site Boundary 20 km Buffer
- Ramsar
- Special Protection Area (SPA)
- Special Area of Conservation (SAC)

Firth of Forth Ramsar

Firth of Forth SPA

Westwater SPA

Westwater Ramsar

River Tweed SAC

Note: Ramsar, SPA, and SAC sites within 20 km of the site boundary are shown on the map.

Dundee Stirling Glasgow EDINBURGH

0 5 10 Kilometres

trio

SLR

KIRKNEWTON SOLAR & BESS

HABITAT REGULATIONS APPRAISAL

EUROPEAN AND INTERNATIONAL DESIGNATED SITES

FIGURE 2

Scale 1:160,000 @ A3

Date DECEMBER 2025

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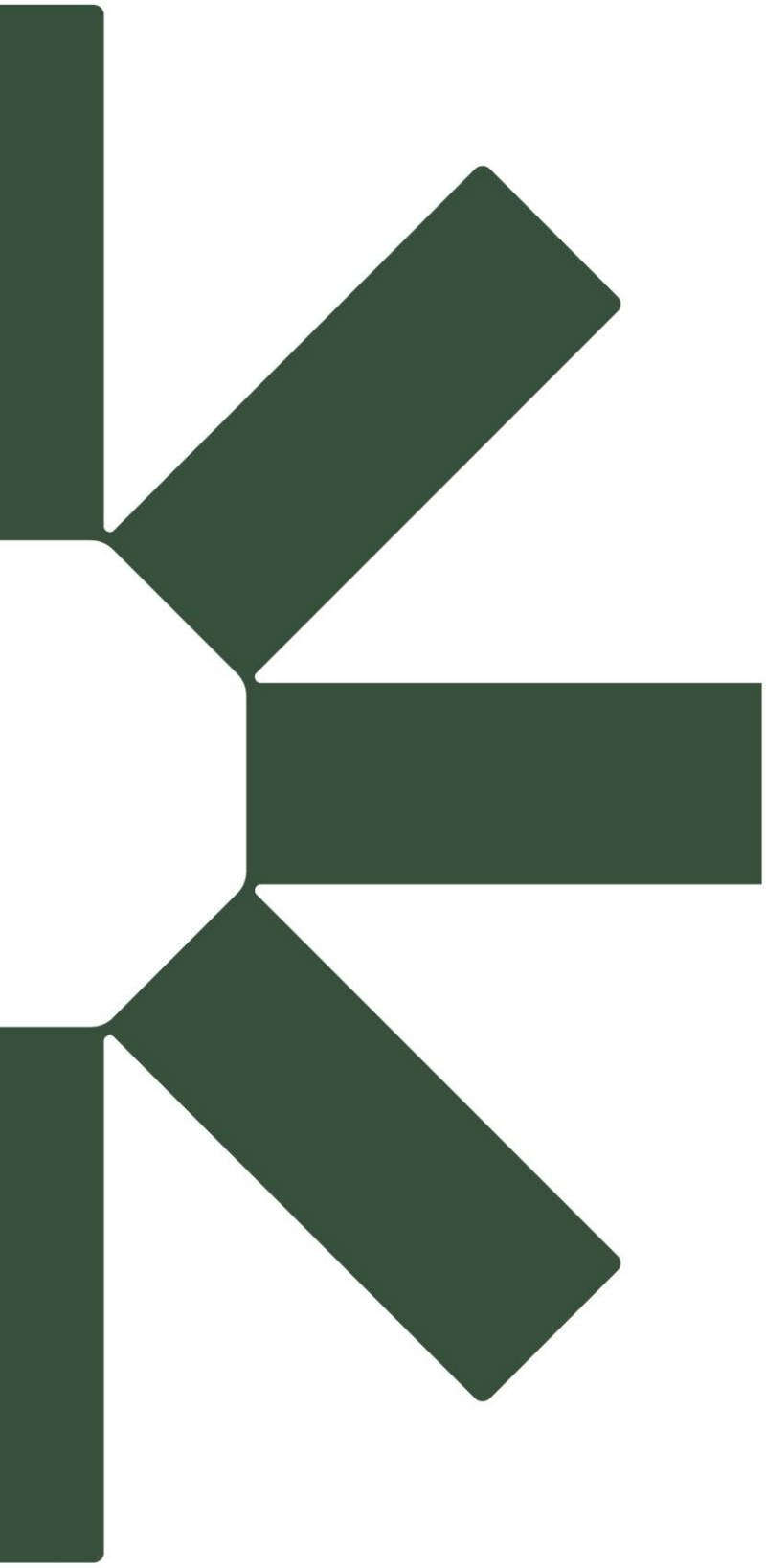
Annex A Relevant Case Law

Case Law	Ruling
People Over Wind and Sweetman Coillte Teoranta (C-323/17)	The ruling of the Court of Justice of the European Union (CJEU) requires that mitigation measures intended to avoid or reduce harmful effects of a project on a European or International site should not be taken into account at when assessing Likely Significant Effects (LSE) at screening stage.
Waddenzee (C 127/02)	This ruling provided clarity on the interpretation of a 'likely significant effect', detailing that a project should be subject to AA "if it cannot be excluded, on the basis of objective information, that it will have a significant effect on that site, either individually or in combination with other plans or projects". Therefore, 'likely', in this context, should not simply be interpreted as 'probable' or 'more likely than not', but rather whether a significant effect can objectively be ruled out. "Where such a plan or project has an effect on a site but is unlikely to undermine the conservation objectives, it cannot be considered likely to have a significant effect on the site concerned" (Para 47).
Sweetman v An Bord Pleanála (C-258/11)	Request for a preliminary ruling from the Supreme Court (Ireland). Article 6(3) of Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora must be interpreted as meaning that a plan or project not directly connected with or necessary to the management of a site will adversely affect the integrity of that site if it is liable to prevent the lasting preservation of the constitutive characteristics of the site that are connected to the presence of a priority natural habitat whose conservation was the objective justifying the designation of the site in the list of sites of Community importance, in accordance with the directive. The precautionary principle should be applied for the purposes of that appraisal.
Holohan and Others v An Bord Pleanála (C-461/17)	1. Article 6(3) of Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora must be interpreted as meaning that an 'AA' must, on the one hand, catalogue the entirety of habitat types and species for which a site is protected, and, on the other, identify and examine both the implications of the proposed project for the species present on that site, and for which that site has not been listed, and the implications for habitat types and species to be found outside the boundaries of that site, provided that those implications are liable to affect the conservation objectives of the site. 2. Article 6(3) of Directive 92/43 must be interpreted as meaning that the competent authority is permitted to grant to a plan or project consent which leaves the developer free to determine subsequently certain parameters relating to the construction phase, such as the location of the construction compound and haul routes, only if that authority is certain that the development consent granted establishes conditions that are strict enough to guarantee that those parameters will not adversely affect the integrity of the site. 3. Article 6(3) of Directive 92/43 must be interpreted as meaning that, where the competent authority rejects the findings in a scientific expert opinion recommending that additional information be obtained, the 'AA' must include an explicit and detailed statement of reasons capable of dispelling all reasonable scientific doubt concerning the effects of the work envisaged on the site concerned. 4. Article 5(1) and (3) of, and Annex IV to, Directive 2011/92/EU of the European Parliament and of the Council of 13 December 2011 on the assessment of the effects of certain public and private projects on the environment, must be interpreted as meaning that the developer

Case Law	Ruling
	is obliged to supply information that expressly addresses the significant effects of its project on all species identified in the statement that is supplied pursuant to those provisions. 5. Article 5(3)(d) of Directive 2011/92 must be interpreted as meaning that the developer must supply information in relation to the environmental impact of both the chosen option and of all the main alternatives studied by the developer, together with the reasons for his choice, taking into account at least the environmental effects, even if such an alternative was rejected at an early stage.
T.C. Briels and Others v Minister van Infrastructuur en Milieu (C-521/12).	Article 6(3) of Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora must be interpreted as meaning that a plan or project not directly connected with or necessary to the management of a site of Community importance, which has negative implications for a type of natural habitat present thereon and which provides for the creation of an area of equal or greater size of the same natural habitat type within the same site, has an effect on the integrity of that site. Such measures can be categorised as ‘compensatory measures’ within the meaning of Article 6(4) only if the conditions laid down therein are satisfied.



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