



Llandyfaelog Substation Marsh Fritillary Survey Report



On behalf of **National Grid**
nationalgrid



Marsh Fritillary Survey Report

Llandyfaelog

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Marsh Fritillary Survey Report

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Executive Summary

Stantec UK Ltd. were commissioned by National Grid Electricity Transmission to undertake a marsh fritillary *Euphydryas aurinia* survey for land at Llandyfaelog, Carmarthenshire (hereafter 'the Site'), in support of an Ecological Impact Assessment for a proposed substation development.

The assessment comprised a desk study and field surveys. The surveys followed UK Butterfly Monitoring Scheme (UKBMS) protocols, combining a habitat suitability assessment with a larval web survey. The habitat assessment undertaken in May/June 2025 focused on the abundance of the marsh fritillary larval foodplant, devil's-bit scabious *Succisa pratensis*, sward structure, grazing intensity, and habitat connectivity. The larval web survey was conducted on 19 August 2025 under optimal weather conditions, targeting areas identified as suitable during the habitat assessment.

No recent biological records of marsh fritillary were returned within 2 km of the Site, although a historic record from 1905 was noted approximately 3.3 km to the north. Field surveys confirmed that only one field within the Site supported devil's-bit scabious, but the extent was limited and the habitat was degraded due to silage cutting, resulting in a uniform sward structure. No larval webs were recorded during the survey, indicating the likely absence of marsh fritillary at the time of assessment.

While the Site contains small patches of suitable habitat, its current condition and management significantly limit its value for marsh fritillary. The wider landscape includes areas of purple moor grass and rush pasture within dispersal range, suggesting potential connectivity to more suitable habitats. However, based on the absence of larval webs and limited foodplant availability, the Site is considered to have negligible to low potential value for supporting a viable marsh fritillary population.



1 Introduction

1.1 Overview

- 1.1.1 Stantec UK Ltd. were instructed by National Grid Electricity Transmission to undertake a marsh fritillary *Euphydryas aurinia* survey on land at Llandyfaelog, Carmarthenshire (Ordnance Survey grid reference SN 419 132).
- 1.1.2 Preliminary, desk-based assessments of the Site and the UK Habitat Assessment Survey undertaken in May and June 2025 (Stantec 2025) identified habitat on site suitable for marsh fritillary butterflies.
- 1.1.3 The purpose of this report is to inform an Ecological Impact Assessment of proposals to construct a new substation and associated infrastructure.

1.2 The Site and Survey Area

- 1.2.1 The Site for the proposed Llandyfaelog substation comprises agricultural grassland fields bound by hedgerows with an area of ancient woodland to the south of the Site.
- 1.2.2 The wider Survey Area for the field survey encompassed the Site, as well as the wider area assessed to inform the Environmental Impact Assessment Screening (Stantec 2025). In addition to agricultural grassland fields, the Survey Area comprises marshy ground to the west and an area of immature plantation forestry in the south-west. The Survey Area is bordered to the north by the C2074, to the west by the A484, the Crugan Fawr Road and farm tracks to the south, and by open countryside to the east. A tributary of the Gwendraeth Fach runs through woodland along part of the eastern boundary and the headwaters of a stream (Nant Morlais) run from the centre of the Survey Area in the form of drainage ditches.
- 1.2.3 Appendix A, Figure 1 shows the boundaries of the Site, the wider Survey Area and the Larval Web Survey Area.

1.3 Proposed Development

- 1.3.1 The proposed development is comprised of the following principal elements:
 - Construction of a single level platform (260 metres (m) by 640 m) on which an Air Insulated Substation (AIS) is sited measuring 155 m by 602 m.
 - Bellmouth access to the A484 with an operational access road to connect the platform to the A484.
 - Modification works to the existing 400kV Overhead Line (OHL) to connect the substation to the existing OHL involving the installation of two new towers (pylons) and one replacement tower (pylon) circa 18 m and 62 m.
 - Associated drainage, and hard and soft landscaping.

1.4 Legislation

- 1.4.1 Marsh fritillary receives protection under the following legislation:
 - Conservation of Habitats and Species Regulations 2017 (as amended);
 - Wildlife and Countryside Act 1981 (as amended); and
 - Environment (Wales) Act 2016.



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- 1.4.2 Please see Appendix B for a summary of the protection marsh fritillary receives under this legislation.

1.5 Aims and Objectives

- 1.5.1 The UK Butterfly Monitoring Scheme (UKBMS) protocols (provided in Appendix C) set out standard methods for determining the presence and assessing the status of marsh fritillary populations. The guidance highlights that both adult counts during the flight period and larval web surveys in late summer provide complementary information, but that larval web counts are the most reliable indicator of population status due to natural fluctuations in adult numbers.
- 1.5.2 The guidance also notes that survey data should be supported by assessment of habitat quality and connectivity, since long-term population viability is strongly dependent on the condition and extent of suitable habitat.
- 1.5.3 Accordingly, larval web surveys were undertaken across suitable areas of the Site, supported by a habitat suitability assessment, to provide robust evidence of marsh fritillary presence and potential population status.
- 1.5.4 The aim of the marsh fritillary survey, as described in this report was to:
- assess the extent and quality of suitable breeding habitat;
 - determine the presence or likely absence of marsh fritillary within the Site; and
 - provide an indication of the value of the Site for the local marsh fritillary population, with reference to UKBMS monitoring protocols.



2 Methods

2.1 Overview

- 2.1.1 Surveys were undertaken in accordance with the UK Butterfly Monitoring Scheme (UKBMS) protocols (provided as Appendix C). These methods focus on larval web counts, supported by habitat assessments, to provide reliable evidence of marsh fritillary presence and population status.

2.2 Desk Study

- 2.2.1 West Wales Biodiversity Information Centre (WWBIC) was contacted in May 2025 for records of marsh fritillary within 2 km of the Site. These records were filtered then for relevant marsh fritillary records within the past 10 years.

2.3 Habitat Suitability Assessment

- 2.3.1 The habitat suitability assessment was carried out for the Survey Area alongside the UK Habitat Assessment in May/June 2025. The following habitat features with suitability for marsh fritillary were recorded:

- abundance and distribution of devil's-bit scabious *Succisa pratensis*;
- sward structure and vegetation composition;
- grazing intensity and management practices; and
- habitat connectivity to adjacent land parcels.

2.4 Larval Web Survey

- 2.4.1 Areas of habitat suitable for marsh fritillary, that supported devil's-bit scabious in the sward, as identified during the habitat suitability assessment, were surveyed for larval webs on 19 August 2025, when webs are most conspicuous. The survey was undertaken during warm, dry conditions with minimal wind.
- 2.4.2 The surveyor walked parallel transects across all areas of suitable habitat at regular intervals, ensuring complete coverage of scabious-rich patches. Each larval web was recorded with a handheld GPS, and the number of larvae per web was noted where visible. Habitat condition and foodplant abundance were also assessed across the Site, providing context for population viability.

2.5 Limitations

- 2.5.1 Biological records are a snapshot of available data and may be incomplete or spatially biased toward better-surveyed locations. Absence of records does not confirm absence. However, extensive habitat information was gathered during the UK Habitat Assessment in May/June 2025, and suitable habitat for marsh fritillary butterflies is considered restricted to the Larval Web Survey Area (see Appendix A, Figure 1), which was the only field parcel where devil's-bit scabious was recorded.
- 2.5.2 The field surveyed for larval webs had been cut recently at the time of survey, which reduced the visibility of devil's-bit scabious in the sward. However, sufficient time had passed that the basal rosette of plants had re-sprouted, and the leaves were visible in the surrounding, brown grass stubble. To avoid the survey being constrained by the reduced visibility of the larval food plants due to the cut, the surveyor increased the density of transects across the field to increase the likelihood of encounter.



3 Results

3.1 Desk Study

- 3.1.1 No records of marsh fritillary were returned by WWBIC for the past ten years. A historic record from 1905 was returned the location supplied was a 4-figure grid reference, and therefore the exact location of the known population is unknown, however the central point of that reference is approximately 3.3 km north from the central grid reference of the Site.

3.2 Habitat Suitability Assessment

- 3.2.1 The wider Survey Area contained several fields of purple moor grass and rush pasture (see Appendix A, Figure 2), but the majority did not support the larval foodplant, devil's-bit scabious, and were therefore considered unsuitable for marsh fritillary. Management across these areas varied, but most were grazed.
- 3.2.2 One field of purple moor grass and rush pasture within the Site did contain devil's-bit scabious (see Appendix D, Photograph 1 and 2), although this was limited to scattered patches across the southern and eastern parts of the field. The locations of these are illustrated on Appendix A, Figure 2. The field is managed for silage, resulting in a uniform sward structure with limited variation in vegetation height. This management practice reduces the suitability of the habitat for larval development, as optimal conditions for marsh fritillary require a mosaic of vegetation structure that provides both shelter and access to foodplants.
- 3.2.3 The Site is located within an area of low to moderate intensity mixed farmland, with a well-developed hedgerow network providing structural connectivity across the landscape. Areas of suitable purple moor grass and rush pasture are regularly scattered throughout the local area. The closest patch of potential habitat lies immediately across the road from the Site to the north. However, as this lies outside of the Survey Area, no access was possible to this field to check for the presence of devil's-bit scabious. The nearest patch outside the Site that was checked lies approximately 100 m to the south-east, but as noted above, was found to contain no devil's-bit scabious and is therefore unsuitable for marsh fritillary (see Appendix D, Photograph 3).
- 3.2.4 Overall, while small quantities of the larval foodplant are present within the Site, habitat condition and management including grazing and timing of hay/silage cuts, significantly limit suitability for marsh fritillary. However, the wider landscape retains a network of purple moor grass and rush pasture fields, some of which may provide suitable conditions for supporting the species.

3.3 Larval Web Survey

- 3.3.1 Within the field that was surveyed, no larval webs were recorded. Each individual patch of devil's-bit scabious represented multiple plants, with the largest patch covering approximately 4 square metres (see Appendix D, Photograph 1).
- 3.3.2 See Appendix A, Figure 2 for locations of devil's bit scabious recorded.



4 Summary and Conclusion

- 4.1.1 One field within the Site and wider Survey Area was considered suitable for marsh fritillary during the Habitat Suitability Assessment.
- 4.1.2 At the landscape scale, purple moor grass and rush pasture occurs frequently in the surrounding farmland, and suitable habitat is present within dispersal range. The Site may therefore form part of a wider habitat network, but in its current condition is considered to be of negligible to low potential value for marsh fritillary.
- 4.1.3 No larval webs were identified during the larval web survey indicating that marsh fritillary was not present within the Site at the time of survey. While small patches of devil's-bit scabious were recorded, the overall extent of the foodplant was very limited, and habitat structure was constrained by silage cutting. The uniform sward and scattered distribution of foodplants reduce the likelihood that the Site could support a viable breeding population.



5 References

UK Butterfly Monitoring Scheme (UKBMS)(undated). Ng2: Monitoring Marsh Fritillary Larval Webs Available at:
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<http://www.legislation.gov.uk/ukpga/1981/69> [Accessed September 2025].

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<https://www.legislation.gov.uk/uksi/2017/1012/contents/made> [Accessed September 2025].

Environment (Wales) Act 2016. Available at:
<https://www.legislation.gov.uk/anaw/2016/3/contents/enacted> [Accessed September 2025].

Stantec (2025) Protected Species Walkover, Llandyfaelog, Carmarthenshire.



Appendix A Figures

Figure 1 Site and Survey Area



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Figure 2 Marsh Fritillary Survey Results



Appendix B Legislation

B.1.1 Please note that this legal information is a summary and intended for general guidance only. The original legal documents should be consulted for definitive information. Web addresses providing access to the full text of these documents are given in Section 5 References.

B.1.2 The marsh fritillary butterfly is a fully protected species in Wales under several key pieces of legislation

Wildlife and Countryside Act 1981 (as amended)

B.1.3 The marsh fritillary is listed under Schedule 5, granting it full protection, which includes prohibitions on:

- Intentional killing, injuring, or taking.
- Possession or control (live or dead).
- Damage or destruction of any place used for shelter or protection.
- Disturbance while occupying such a place.
- Obstruction of access to such places.

Environment (Wales) Act 2016

B.1.4 The marsh fritillary is listed as a Species of Principal Importance (SPI) under Section 7, which requires public authorities to maintain and enhance biodiversity and promote ecosystem resilience. This listing guides planning decisions and conservation priorities.

Conservation of Habitats and Species Regulations 2017 (as amended)

B.1.5 The marsh fritillary butterfly is protected under the Conservation of Habitats and Species Regulations 2017 through its listing in Annex II of the EU Habitats Directive, which is transposed into UK law via these Regulations. As it is listed on Annex II, sites supporting its populations may be designated as Special Areas of Conservation (SACs).



Appendix C Ng2: Monitoring Marsh Fritillary Larval Webs



Appendix D Photographs



Photograph 1: Patch of devil's-bit scabious within cut sward



Photograph 2: Suitable purple moor grass and rush pasture field during June



Photograph 3: Nearby area of purple moor grass and rush pasture that does not support devil's-bit scabious