

APPENDIX 7.1 ECOLOGICAL SURVEY FOR MARSH FRITILLARY

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1 INTRODUCTION

1.1 INTRODUCTION

RPS was commissioned by Northern Ireland Electricity (NIE) Networks to undertake an Ecological Survey for Marsh Fritillary along the route of a Proposed Development to construct a 33 kV Overhead Line (OHL) and Underground Cable (UGC) from Strabane Main Sub-Station to Curraghinalt 33 kV Connection, County Tyrone. The Proposed Development is an integral part of the proposed Curraghinalt mine which is currently under consideration under planning application LA10/2017/1249/F. A full description of the Proposed Development can be found in Chapter 2 Project Description of the Environmental Statement (ES).

1.2 ECOLOGICAL SURVEY FOR MARSH FRITILLARY

The aim of the report is to provide a description of the marsh fritillary survey methods used; to provide the detailed results of marsh fritillary surveys; and to provide an interpretation of the results. The Ecological Survey for Marsh Fritillary Report has been used to inform the Ecological Impact Assessment (EclA) in Chapter 7 Terrestrial Ecology and Ornithology of the ES. The EclA identifies the impacts associated with the Proposed Development, evaluates the likely significance of effects on marsh fritillary and applies the mitigation hierarchy to avoid, reduce or offset any significant negative effects on marsh fritillary.

1.3 LEGISLATION

Marsh fritillary is protected under the Wildlife (Northern Ireland) Order 1985 (as amended). Under the Order it is illegal to intentionally or recklessly kill, injure or take a marsh fritillary butterfly or intentionally or recklessly; damage, destroy or obstruct access to any structure or place which marsh fritillary use for shelter or protection; damage or destroy anything which conceals or protects any such structure; or disturb marsh fritillary while it is occupying a structure or place which it uses for shelter or protection.

2 METHODOLOGY

2.1 STATEMENT OF AUTHORITY

The author and surveyor, David McCormick, is an Ecologist with RPS and holds a BSc (Hons) in Physical Geography and English, a MSc in Ecological Management and Conservation Biology and has over nine years of experience in the field of ecology. David has experience of ecological field survey including habitat and mammal surveys and is a protected species license holder. David is also currently an associate member of the Chartered Institute of Ecology and Environmental Management (CIEEM). David carried out the marsh fritillary habitat survey and larval web surveys in 2019.

The author and surveyor, Dave Welsh, is an Ecologist with RPS and holds a BSc (Hons) in Marine Science, a MSc in Ecological Management and Conservation Biology with over seven years of experience in conservation and three years of experience in ecological consultancy. Dave has extensive experience of habitat and mammal surveys and is a protected species licence holder. Dave is an associate member of the CIEEM and a volunteer with the Northern Ireland Bat Group and Northern Ireland Badger Group. Dave carried out the marsh fritillary larval web surveys in 2020.

The information prepared and provided is true and accurate at the time of issue of the report and has been prepared and provided in accordance with the CIEEM Code of Professional Conduct (CIEEM, 2019). We confirm that the professional judgement expressed herein is the true and bona fide opinion of our professional ecologists.

2.2 CONSULTATION

Consultation was undertaken with the Centre for Environmental Data and Recording (CEDaR) and the National Biodiversity Data Centre (NBDC) in order to identify the existence of any records of marsh fritillary within 1 km of the Proposed Development to provide historical information on the local distribution of marsh fritillary that may be present along the route of the Proposed Development and in the surrounding environment.

Butterfly Conservation Northern Ireland (BCNI) was also consulted in order to identify records within the wider landscape and determine if the project occurs within 10 km of a known marsh fritillary site. A 10km buffer is applied because it is predicted that marsh fritillary can recolonise suitable habitat from a distance of 3 to 10km (DAERA, 2017).

The information gathered during consultation with CEDaR, NBDC and BCNI is third party controlled data purchased for the purposes of this report only. RPS cannot guarantee its accuracy and cannot be held liable for any inaccuracies.

A desk study was also undertaken to review the Curraghinalt Project Environmental Statement (ES) (SRK 2017), Curraghinalt Gold Project Addendum to Environmental Statement (SRK 2019) and Curraghinalt Gold Project Second Addendum to Environmental Statement (SRK 2020) associated with the Proposed Development.

2.3 MARSH FRITILLARY HABITAT SURVEY

The Phase 1 Habitat Survey was extended to include a marsh fritillary habitat survey which was undertaken in accordance with the Northern Ireland Environment Agency (NIEA) specific requirements for Marsh Fritillary Butterfly Surveys (NIEA, 2017) in order to identify the extent of suitable habitat for marsh fritillary along the

route of the Proposed Development. Devil's-bit scabious *Succisa pratensis*, the only known larval food plant of marsh fritillary butterfly in Northern Ireland was identified, mapped and habitat attributes such as vegetation height, frequency, abundance and land management recorded. The DAFOR scale as set out in Table 1 below was used to estimate the relative abundance of devil's-bit scabious.

Table 1: DAFOR Scale

Value	Percentage cover
Dominant	>50%
Abundant	26 - 50%
Frequent	4 - 25%
Occasional	1 - 3%
Rare	<1% or one or two scattered individuals

2.4 MARSH FRITILLARY LARVAL WEB SURVEY

A licence to survey for protected butterflies was obtained from the NIEA and a marsh fritillary larval web survey was undertaken in accordance with the NIEA specific requirements for Marsh Fritillary Butterfly Surveys (NIEA, 2017). The aim of the survey was to identify the presence of larval webs within areas where devil's-bit scabious was observed and establish the location of potential breeding colonies along the route of the Proposed Development. Marsh fritillary larval web surveys were carried out in October 2019 and again in September 2020 within the optimum period, which extends between late August and early October, when larval webs are most visible. A complete search of each area of devil's-bit scabious was carried out systematically using a walked transect, which included walking parallel lines 2 m apart searching 1 m either side of the lines, to search for and record the number of larval webs. Details of dates and meteorological conditions at the time of survey can be found below in Table 2.

Table 2: Dates & Meteorological Conditions of Marsh Fritillary Larval Web Surveys

Survey	Date	Weather Conditions
Marsh Fritillary Larval Web Survey	01/10/19	Cool, sunny with intermittent cloud – no rain
Marsh Fritillary Larval Web Survey	02/10/19	Cool, cloudy with intermittent drizzle
Marsh Fritillary Larval Web Survey	16/09/20	Cloudy, light breeze, 14-18°C
Marsh Fritillary Larval Web Survey	23/09/20	Sunny, light breeze, 10-12°C

3 RESULTS

3.1 CONSULTATION & DESK STUDY

Consultation with CEDaR and NBDC identified no historical records of marsh fritillary within 1 km of the Proposed Development. Consultation with BCNI confirmed a single record from 2010 of a marsh fritillary larval web from within the site of the Proposed Curraghinalt Project. A review of the Curraghinalt Project highlighted no evidence of marsh fritillary butterflies or larval webs recorded during ecology surveys within the site of the Curraghinalt mine (SRK 2017, 2019 & 2020).

3.2 MARSH FRITILLARY HABITAT SURVEY

The marsh fritillary habitat survey identified a total of nine locations with areas of devil's-bit scabious along the route of the Proposed Development. The results of the marsh fritillary habitat survey can be found below in Table 3. Two of these locations were excluded from any further marsh fritillary survey (Pole 2046 and Pole 2308). The habitat at Pole 2046 was considered unsuitable whilst the Proposed Development will not interact with the habitat northeast of Pole 2308. The remaining seven locations were subject to marsh fritillary larval web surveys.

Table 3: Marsh Fritillary Habitat Survey Results

Pole Reference	Average Vegetation Height	Grazing	Habitat Condition	Suitable Habitat
2030-2032	25cm	Yes	Occasional to frequent devil's-bit scabious across two field enclosures. Abundant in patches. Cattle grazing. Variable sward structure. Protection from strong winds. Encroaching scrub and soft rush, and poaching an issue. Plants are generally small and grazed-out. Stronger plants occur growing through vegetation avoided by cattle. Likely to deteriorate in the medium to long term in the absence of scrub and soft rush control. Some breeding potential and as such subject to larval web survey.	Yes
2046	10cm	Yes	A relatively dry acid flush community grazed by sheep. Routine rush control cutting flowers and much of the foliage. Poorly protected from strong winds. This site is considered to have negligible breeding potential. Excluded from further survey.	No
2152-2151	35cm	Yes	Frequent devil's-bit scabious amid cushions of common haircap, flat-topped bog-moss, springy turf-moss, neat feather-moss, and glittering wood-moss. Grazing is seemingly sheep only. Poorly protected from strong winds. Considered to have some breeding potential and therefore subject to larval web survey.	Yes
2160-2162	35cm	Yes	Frequent devil's-bit scabious. Site grazed by sheep. Wider field improved grassland. Reasonably protected from strong winds. Good sward structure but seemingly isolated from better habitat. Considered to have some breeding potential. Site within 10km of known Marsh Fritillary (2010) record and therefore subject to larval web survey.	Yes
2254-2255	25cm	Yes	Frequent devil's-bit scabious. Site grazed by sheep. Wider field improved grassland. Reasonably protected from strong winds. Good sward structure but seemingly isolated from better habitat. Considered to have some breeding potential. Site within 10km of known Marsh Fritillary (2010) record and therefore subject to larval web survey.	Yes
2256	40cm	No	West of Pole 2256. Frequent to abundant devil's-bit scabious. No evidence of grazing and as a consequence poor sward structure. Well protected from strong winds. The project will not interact with this habitat and as such was initially excluded from further larval web surveys. It was subsequently included following the discovery of a lone larval web between 2254 and 2255. Site within 10km of known Marsh Fritillary (2010) record.	Yes
2284	30cm	No	An abandoned field. Numerous large leafy plants. Good protection from winds. Expanding tree cover. This site is considered to have some breeding potential (isolated from better habitat). Site within 10km of known Marsh Fritillary (2010) record. Whilst the Proposed Development will not interact with this habitat, larval web survey was extended to include these small areas	Yes

Pole Reference	Average Vegetation Height	Grazing	Habitat Condition	Suitable Habitat
2287-2288	30cm	Yes	The largest area is an elongated (valley mire) fen habitat (spanning three separate enclosures) extending south to the village of Rousky. Supporting frequent or locally abundant devil's-bit scabious. East of this main area is a number of smaller pockets of devil's-bit found within the same wet fen habitat. All of these areas are subject to cattle grazing. All within 10km of a known Marsh Fritillary (2010) record. Given the combination of cattle grazing and high abundances of plants, and proximity to a known breeding site the site is considered a suitable breeding habitat and therefore subject to larval web survey.	Yes
2308	35cm	No	Northeast of 2308. Occasional to locally frequent devil's-bit scabious. Currently unmanaged marshy grassland / acid flush community. Periphery disturbed from separate site works. Larger leafy plants. This site has low to negligible breeding potential. Within 10km of known Marsh Fritillary (2010) record. The project will not interact with this habitat and as such is excluded from further survey.	Yes

3.3 MARSH FRITILLARY LARVAL WEB SURVEY

Seven locations were pooled together into four sites based on geographic location and subject to larval web surveys in early October 2019 and again in September 2020. The location of the four sites along the route of the Proposed Development and the mapped locations of devil's-bit scabious within each of the four sites is illustrated in Figures 1 to 5. Marsh fritillary larval webs were confirmed at Site 3 and Site 4 in 2019. There were no marsh fritillary larval webs confirmed within any site in 2020.

Site 1 (Poles 2030-2032)

The extent of devil's-bit scabious within Site 1 is illustrated in Figure 2. Site 1 is located within the Northern Ireland Priority Habitat (NIPH) Upland Fens & Flushes and/or Purple Moor-grass & Rush Pasture. In both field enclosures devil's-bit scabious was largely confined to saturated marshy grassland – acid flush variant. The plants were generally small, potentially in response to the impoverished conditions of the poor fen and show clear evidence of grazing. Poaching is an issue within this site. More vigorous plants were evident growing through other vegetation avoided by cattle. Sward structure is improved by virtue of cushions of moss and part browsed rush and other tussocks of vegetation. An important attribute of this site is shelter from wind by hedgerows and scrub vegetation. Conversely, scrub and soft rush are not subject to management and as such much of the habitat is in poor condition. There were no larval webs recorded within Site 1 in either 2019 or 2020.

Site 2 (Poles 2150-2051 & Poles 2160-2162)

The extent of devil's-bit scabious within Site 2 is illustrated in Figure 3. Site 2 includes an east-facing outlying pocket of devil's-bit scabious between Poles 2150 and 2151. Devil's-bit is occasional or locally frequent. Many plants are small and suppressed by other vegetation. It appears to be grazed by sheep only. The habitat has an under-grazed appearance.

The core areas are located between Poles 2160 and 2162 on a west-facing slope. The habitat is largely wet dwarf shrub heath with a patchwork of soft rush and/or sharp flowered rush. The habitat supports high abundances of large, leafy devil's-bit scabious plants much of which are suppressed by an under-grazed sward (circa 40cm high). The site opens onto adjoining improved grassland. Grazing stock (sheep and cattle) may be avoiding the heath given the availability of improved grassland. Generally, poorly protected from wind with some sheltered pockets such to the north. Pole 2161 is in close proximity to the largest expanse of devil's-bit. The habitat is pictured in Plate 2. There were no larval webs recorded within Site 2 in either 2019 or 2020.

Site 3 (Poles 2254-2255 & Pole 2256)

The extent of devil's-bit scabious within Site 3 is illustrated in Figure 4. Site 3 is located within 10 km of an existing marsh fritillary record. The habitat at Pole 2254 and 2255 is former cutover-bog mapped as wet modified bog. It supports a flat, open tussocky sward (Plate 3) that supports frequent devil's-bit scabious, is grazed by sheep and is reasonably protected from strong winds. A single marsh fritillary larval web was recorded in habitat within the 80 m Working Area between Poles 2254 and 2255 in 2019. There were no larval webs recorded within Site 3 in 2020.

Following confirmation of larval webs within the site, it was decided to survey less favourable habitat west of Pole 2256 in 2019, which had a particularly high abundances of devil's-bit scabious but appeared to be abandoned and unmanaged. There were no larval webs recorded west of Pole 2256 however the habitat would provide an excellent candidate for remedial management.

Site 4 (Pole 2284 & Poles 2287-2288)

The extent of devil's-bit scabious within Site 4 is illustrated in Figure 5. Site 4 is located within 10 km of an existing marsh fritillary record. The habitat included an unmanaged outlying pocket of devil's-bit scabious north east of Pole 2284. There were no larval webs recorded north east of Pole 2284 in either 2019 or 2020 and the habitat will not be impacted by the Proposed Development.

The majority of habitat is located north of the village of Rousky and comprises a number of areas supporting frequent or locally abundant devil's-bit scabious (Plate 4). Devil's-bit scabious is largely confined to wet valley mire habitat comprising of lush carpets of sphagnum mosses with a high abundance of sharp-flowered rush and good-sized leafy devil's-bit scabious plants. Sward structure overall is good and there was evidence of extensive cattle grazing. A section of this habitat occurs between Poles 2287 and 2288 however no larval webs were recorded within the 80 m Working Area of the Proposed Project in 2019. A total of four marsh fritillary larval webs, all within 1 m of each other, were recorded beyond the 80 m Working Area in 2019 and therefore the potential exists for marsh fritillary to be present between Poles 2287 and 2288 in future years. There were no larval webs recorded within Site 4 in 2020.

4 DISCUSSION & ANALYSIS OF RESULTS

Marsh fritillary larval webs were found at two of the four sites surveyed in 2019, at Site 3 (Poles 2254-2255 & Pole 2256) and Site 4 (Pole 2284 & Poles 2287-2288). Both of these sites are within 10 km of a known marsh fritillary record (2010).

A single marsh fritillary larval web was recorded within the 80 m Working Area at Site 3. There were no larval webs recorded within the 80 m Working Area at Site 4, however there is potential for larval webs at this location in future years as larval webs were recorded within this habitat but beyond the 80 m Working Area.

These sites have some important attributes which may explain marsh fritillary presence. Where webs occur, the ground is open and sunny whilst also afforded some protection from winds with trees and linear tree and scrub features. Cattle grazing is the preferred management option for established breeding sites producing a patchwork of long and short vegetation. Sheep grazing was noted in the larger enclosure at Site 3, nonetheless, a desirable patchwork of uneven vegetation occurs as evidenced in Plate 3. Cattle grazing was confirmed throughout much of Site 4.

There were no marsh fritillary larval webs recorded in any of the sites in 2020.

Chapter 7 Terrestrial Ecology and Ornithology of the ES identifies the impacts associated with the Proposed Development, evaluates the likely significance of effects on marsh fritillary and sets out mitigation measures in relation to marsh fritillary.

5 REFERENCES

DAERA (2017) *Environmental Farming Scheme Species - Specific Advice: Managing Habitats for Marsh Fritillary*, DAERA - Department of Agriculture, Environment, and Rural Affairs, N. Ireland.

DAERA (2017) *Marsh Fritillary Butterfly Surveys NIEA Specific Requirements*, Department of Environment and Rural Affairs, [online] Available at: <https://www.daera-ni.gov.uk/sites/default/files/publications/daera/marsh-fritillary-butterfly-survey-specifications.pdf>.

SRK Consulting (UK) Ltd (2017) *Environmental Statement for The Curraghinalt Mine, County Tyrone, Northern Ireland*, Unpublished.

SRK Consulting (UK) Ltd (2019) *Curraghinalt Gold Project Addendum to Environmental Statement*, Unpublished.

SRK Consulting (UK) Ltd (2020) *Curraghinalt Gold Project Second Addendum to Environmental Statement*, Unpublished.

PLATES



Plate 1: Former location of Pole 2031 (indicated by the cane and ribbon) with the suitable habitat pictured in the foreground.



Plate 2: Band of un-grazed sharp flowered rush with high abundances of devil's-bit scabious near Pole 2161.



Plate 3: Sward at Site 3 where Marsh Fritillary Larval Webs were confirmed.



Plate 4: Expansive area of fen supporting frequent and locally abundant devil's-bit scabious south towards the village of Rousky.

FIGURES

Figure 1: Overall Location of Marsh Fritillary Larval Web Sites

Figure 2: Site 1 (Keenaghan)

Figure 3: Site 2 (Glencoppogagh)

Figure 4: Site 3 (Glenforan)

Figure 5: Site 4 (Rousky)

Figure 1: Overall Location of Marsh Fritillary Larval Web Sites

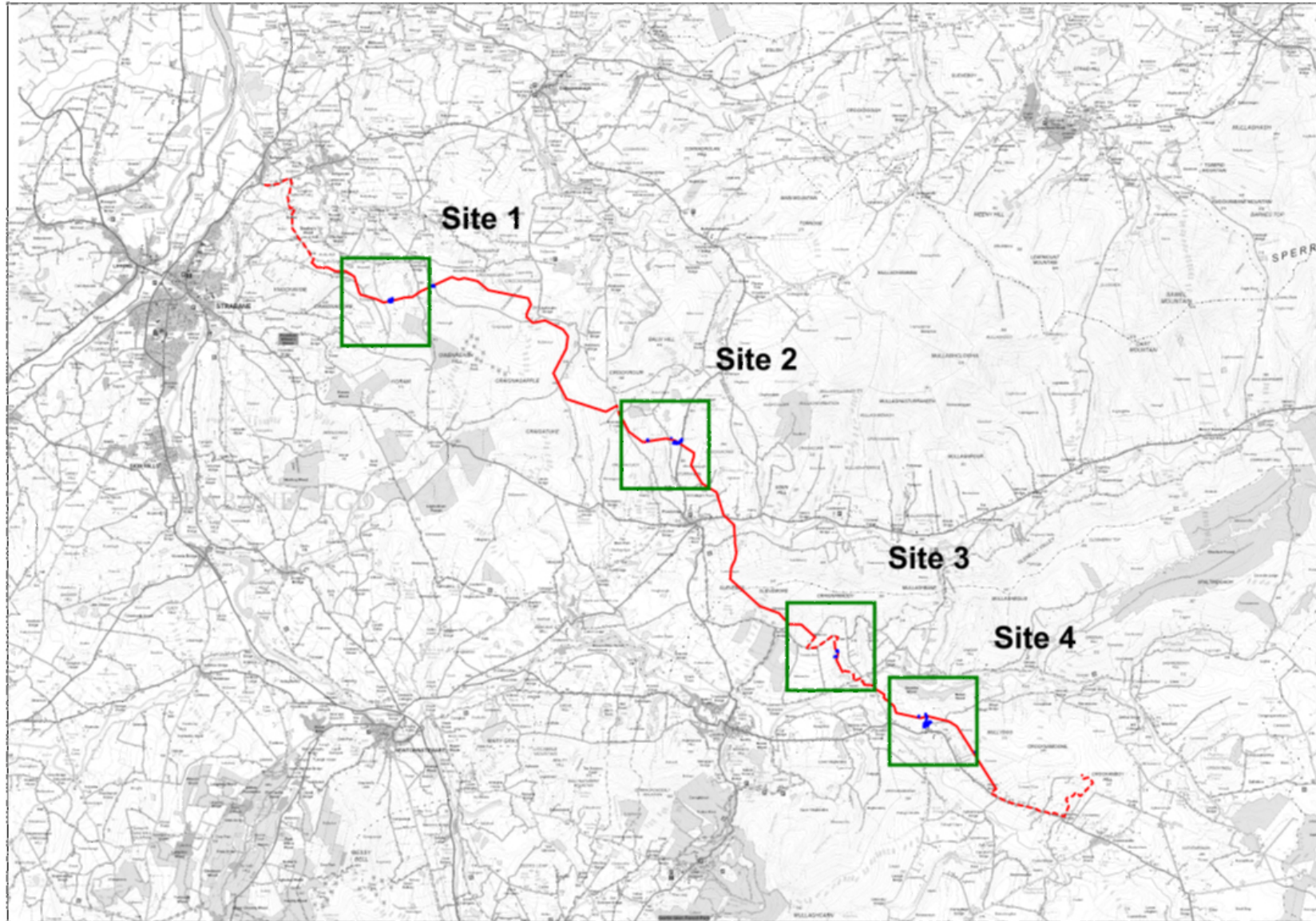


Figure 2: Site 1 (Keenaghan)

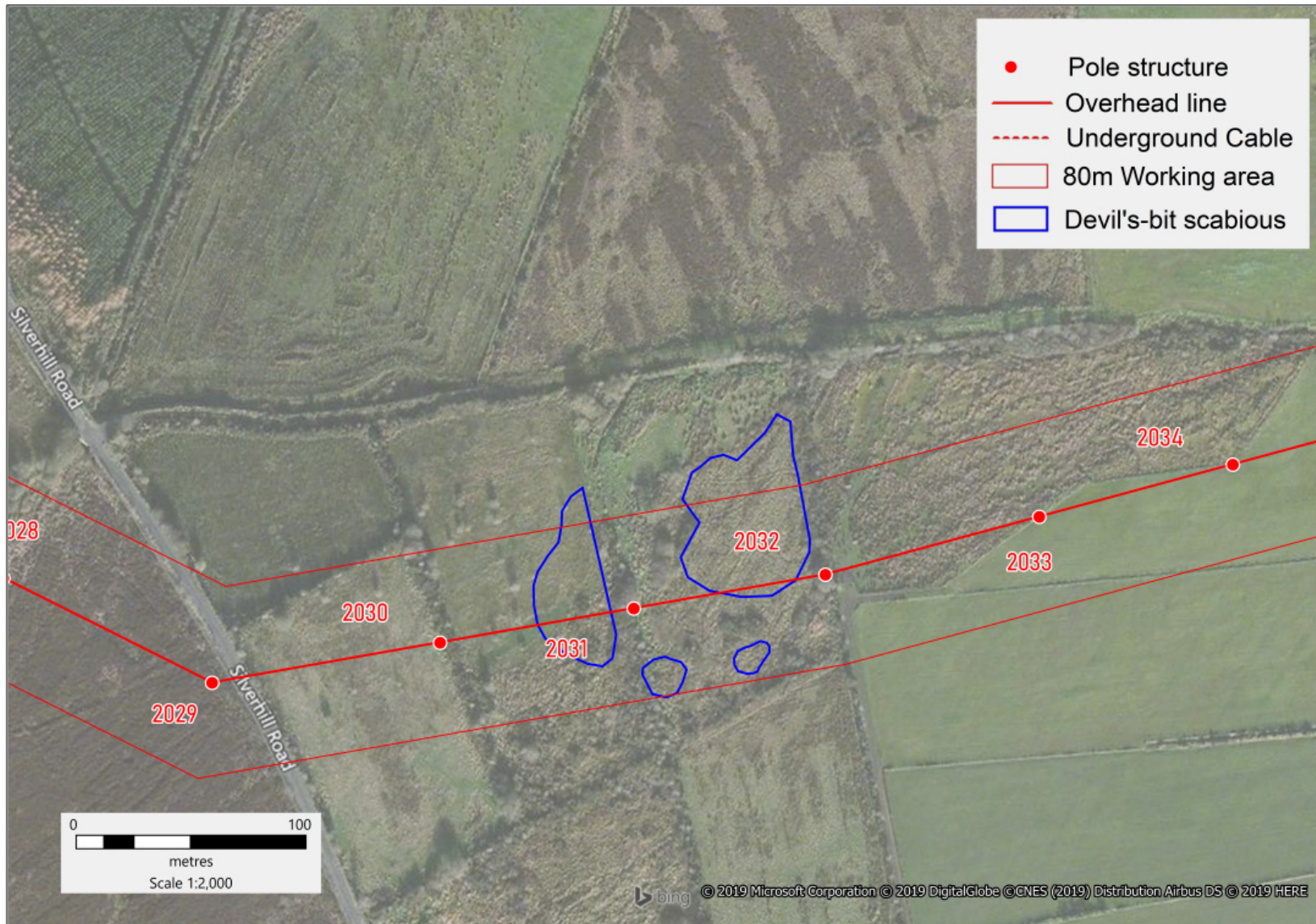


Figure 3: Site 2 (Glencoppagh)

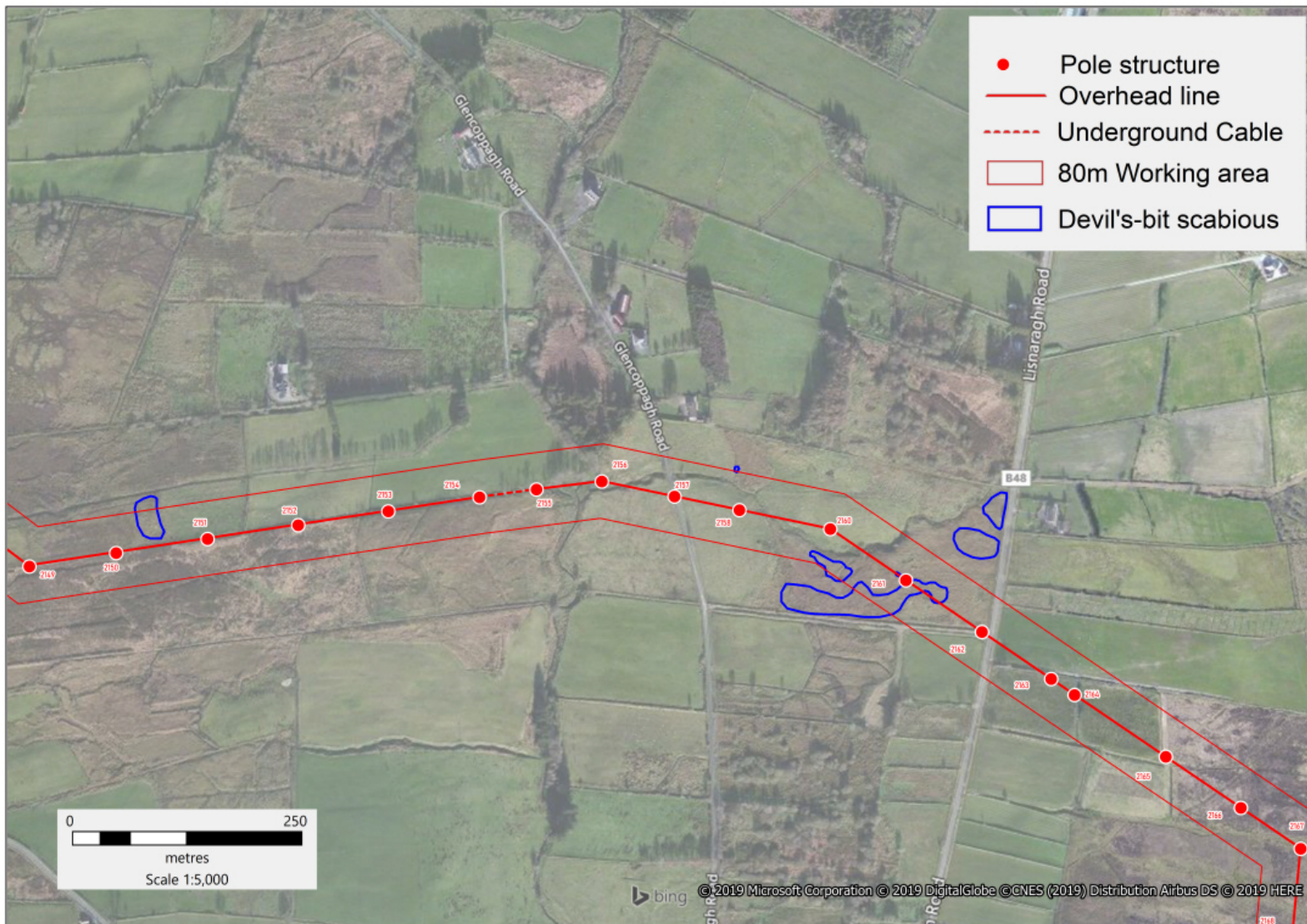


Figure 4: Site 3 (Glenforan)

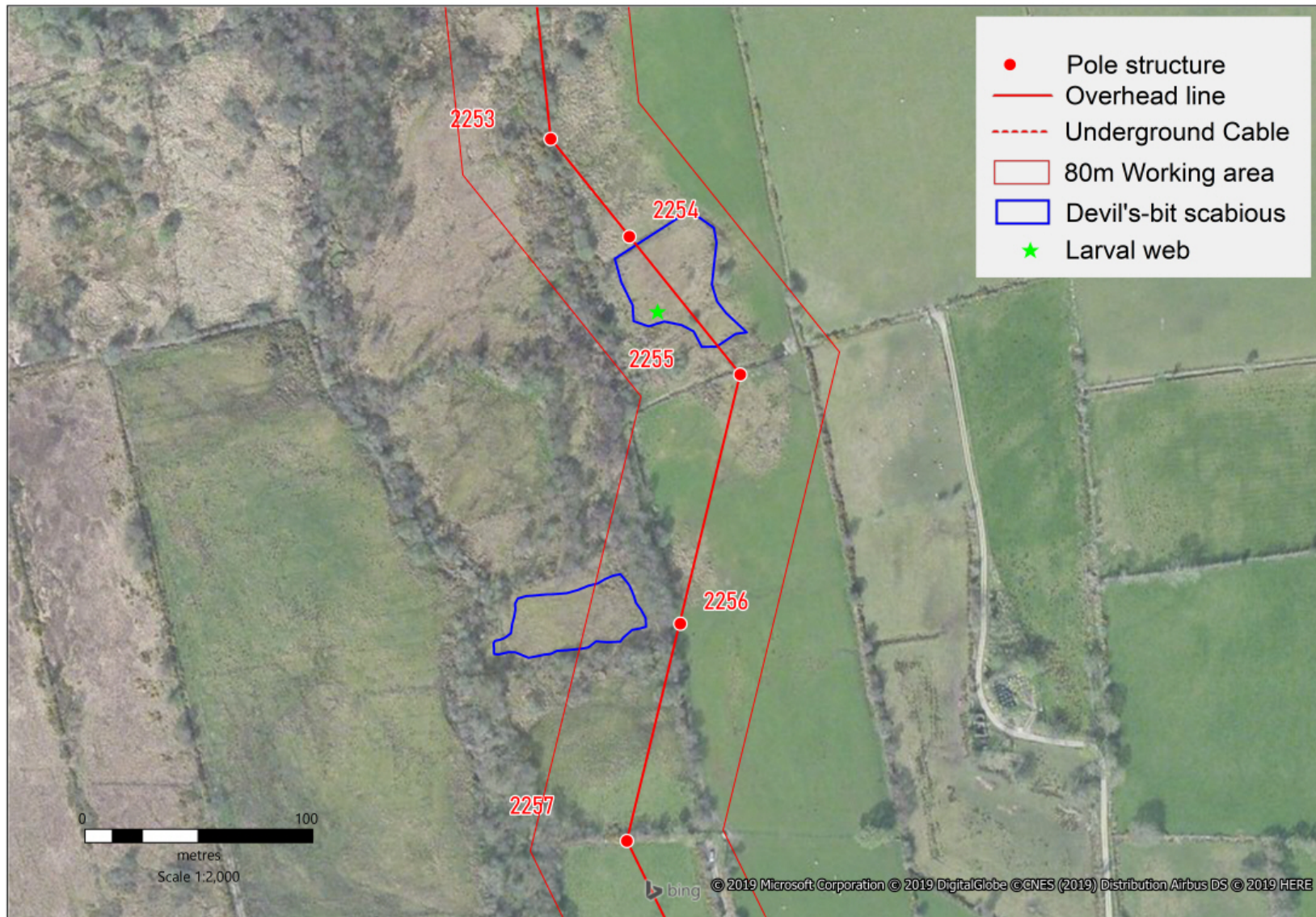


Figure 5: Site 4 (Rousky)

