
Appendix 7.4A

Vertigo Report I



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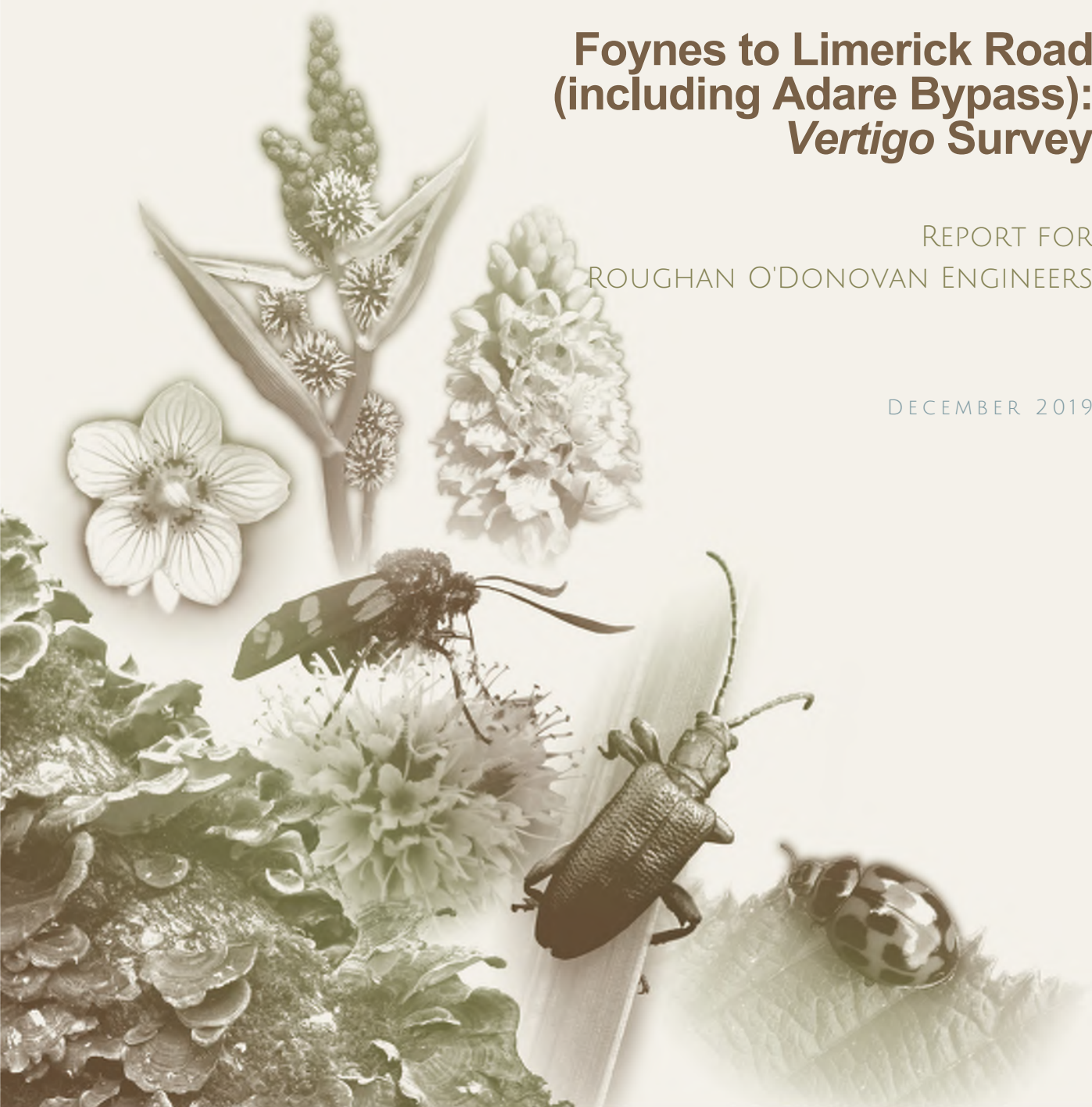
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Foynes to Limerick Road (including Adare Bypass): *Vertigo* Survey

REPORT FOR
ROUGHAN O'DONOVAN ENGINEERS

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Foynes to Limerick Road (including Adare Bypass): *Vertigo* Survey

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1 Introduction

BEC Consultants Ltd was contracted by Roughan O'Donovan Engineers to carry out a survey for the presence of the Desmoulin's whorl snail (*Vertigo moulinsiana*) at three fen sites along the route of the proposed Foynes to Limerick Road (including Adare Bypass) road development.

2 Background

2.1 Study Area

The study area for this survey comprised three fens along the CPO land-take area for the proposed road development: Ballyellinan, Lismakeery and Blossomhill, with a 50 m buffer extending out from the edge (Figure 1).

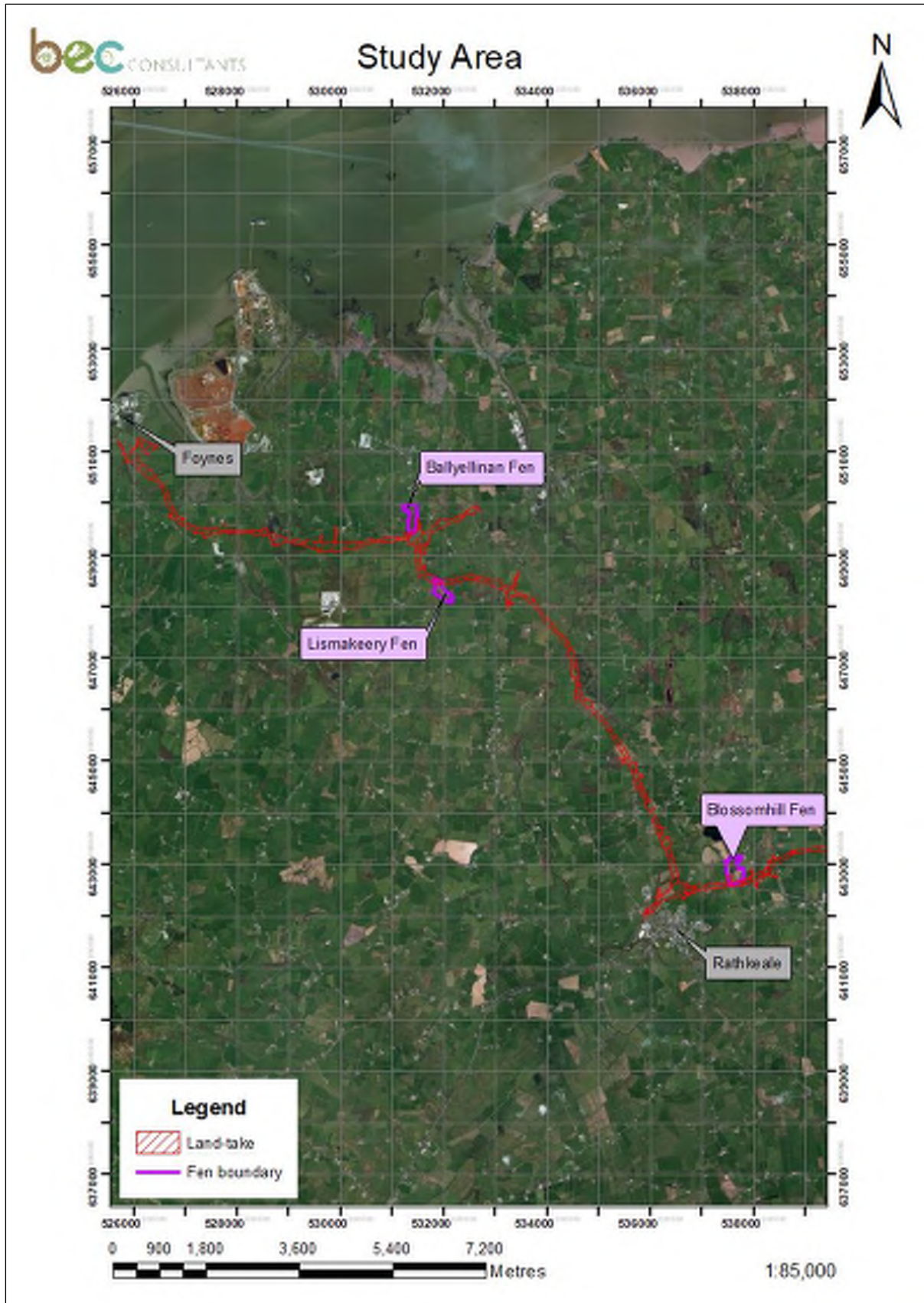


Figure 1. Map of the study area showing the locations of the three surveyed fens and the land-take of the proposed road development

2.2 Desmoulin's whorl snail (*Vertigo moulinsiana*)

Vertigo moulinsiana is a small (up to 2.7 mm tall) snail found on tall vegetation in calcareous wetland sites, including fens. It is listed under Annex II of the EU Habitats Directive (92/43/EEC) and is a Qualifying Interest in seven Special Areas of Conservation (SACs) across Ireland. The closest known population of *V. moulinsiana* to the study area is at Curragh Chase, Co. Limerick. This site is located approximately 7 km from Blossomhill, 9 km from Lismakeery and 10 km from Ballyellinan.

The overall conservation status of *V. moulinsiana* in Ireland from the last round of monitoring is Unfavourable-Inadequate with a deteriorating trend (NPWS, 2019). This is unchanged from the previous round of monitoring (NPWS, 2013). The apparent improvement from 2007 to 2013 is due to the discovery of new sites, as opposed to the recovery of lost populations (NPWS, 2013). The conservation assessment for *V. moulinsiana* is summarised in Table 1.

Table 1. Conservation assessment summary for *Vertigo moulinsiana* in Ireland (NPWS, 2013; 2019). No trend is stated for the 2019 Future prospects in NPWS (2019).

Year	Range	Population	Habitat for species	Future prospects	Overall status
2007	Bad	Bad	Inadequate	Bad	Bad
2013	Inadequate (deteriorating)	Inadequate (deteriorating)	Inadequate (deteriorating)	Inadequate (deteriorating)	Inadequate (deteriorating)
2019	Inadequate (deteriorating)	Inadequate (deteriorating)	Inadequate (deteriorating)	Inadequate	Inadequate (deteriorating)

3 Methods

The sampling methodology followed that used in the National *Vertigo* Monitoring Project (Long & Brophy, 2019). The most suitable vegetation found within the land-take or buffer area was sampled by shaking it over a white tray. At each sample location, three adjacent patches of vegetation were sampled and these were treated as a single sample. Whorl snails that were collected in the tray were transferred to labelled glass vials and returned to the laboratory for confirmation. The optimum time for carrying out *V. moulinsiana* surveys is September to November inclusive (Moorkens & Killeen, 2011).

A handheld computer and GPS (Nomad Trimble) running ArcPad 8.0 was used to navigate within the survey area and to record data in the field.

An assessment of habitat suitability for supporting *V. moulinsiana* at a given sampling point was made based on the vegetation present and the water levels at the time of survey.

Vascular plant nomenclature follows Stace (2019).

4 Results

4.1 Overview

The survey was carried out on the 12 October 2019. *Vertigo moulinsiana* was recorded at all three fens: Ballyellinan, Lismakeery and Blossomhill.

4.2 Ballyellinan

The site at Ballyellinan was identified as a Rich Fen (PF1) under the Fossitt (2000) habitat classification (mapping provided by client). The site was dominated by Great Fen-sedge (*Cladium mariscus*), with occasional Common Reed (*Phragmites australis*) scattered throughout. The eastern edge of the fen supported a band dominated by Black Bog-rush (*Schoenus nigricans*) and 'brown mosses' that are indicative of the calcareous nature of the site. The centre of the fen supported willow trees (*Salix* sp.).

Six locations within the 50 m buffer were surveyed for the presence of *V. moulinsiana* (the land-take area does not overlap with the fen): BA01-BA06. Of these, adult or juvenile *V. moulinsiana* were recorded at five sample sites (BA02-BA06), with only a single juvenile being recorded at BA06 (Table 2).

Table 2. Results of *Vertigo moulinsiana* sampling at Ballyellinan on 02/10/2019

Sample code	Positive/Negative	Adult	Juvenile	Habitat suitability
BA01	Negative	0	0	Optimal-Suboptimal
BA02	Positive	4	0	Optimal-Suboptimal
BA03	Positive	3	2	Optimal-Suboptimal
BA04	Positive	2	2	Optimal-Suboptimal
BA05	Positive	2	2	Suboptimal
BA06	Positive	0	1	Suboptimal

More detailed results are provided in Appendix I, Table A1.

A map showing the location of the sample points is presented in Appendix II, Figure A1.

The site at Ballyellinan contains extensive areas of vegetation that are suitable for supporting *V. moulinsiana*. The water levels at the time of survey were high when compared to the ideal situation for *V. moulinsiana*, but this is likely to be a temporary condition as a result of recent heavy rain. The field in the southeast corner of the site, adjacent to the road, does not have the tall vegetation required to support *V. moulinsiana*. From a review of satellite images on Google Earth, this appears to be a relatively recent occurrence due to land reclamation carried out for agriculture. While the field is still very wet, it is now dominated by grass species such as Yorkshire Fog (*Holcus lanatus*).

An estimate of the area within the fen boundary that is considered potentially suitable for supporting *V. moulinsiana* is presented in Appendix II, Figure A4 (71,887 m²). However, this is based on limited observations at the site and from aerial photograph analysis rather than a detailed site survey and so should be considered indicative only.

4.3 Lismakeery

The site at Lismakeery was identified as a Rich Fen (PF1) under the Fossitt (2000) habitat classification (mapping provided by client). The site was dominated by Black Bog-rush and Purple Moor-grass (*Molinia caerulea*), with patches of Great Fen-sedge.

Four locations within the land-take and the 50 m buffer were surveyed for the presence of *V. moulinsiana*: L01-L04. Of these, adult and juvenile *V. moulinsiana* were recorded at three sample sites (L01, L02 & L04) (Table 3).

Table 3. Results of *Vertigo moulinsiana* sampling at Lismakeery on 02/10/2019

Sample code	Positive/Negative	Adult	Juvenile	Habitat suitability
L01	Positive	2	3	Suboptimal
L02	Positive	1	2	Optimal-Suboptimal
L03	Negative	0	0	Suboptimal
L04	Positive	1	1	Suboptimal

More detailed results are provided in Appendix I, Table A1.

A map showing the location of the sample points is presented in Appendix II, Figure A2.

The site at Lismakeery contains extensive areas of vegetation that are suitable for supporting *V. moulinsiana*. The wetness levels are somewhat lower than is ideal, with the most appropriate wetness found alongside the old drains that cross the site.

An estimate of the area within the fen boundary that is considered potentially suitable for supporting *V. moulinsiana* is presented in Appendix II, Figure A5 (39,063 m²). However, this is based on limited observations at the site and from aerial photograph analysis rather than a detailed site survey and so should be considered indicative only.

4.4 Blossomhill

The site at Blossomhill comprised a small limestone lake (FL3) with surrounding reedbed (FS1) (mapping provided by client) dominated by Common Reed and Great Fen-sedge with occasional Bulrush (*Typha latifolia*), Branched Bur-reed (*Sparganium erectum*) and scattered Willow. The lake has an adjoining strip identified as rich fen (PF1).

Three locations within the 50 m buffer were surveyed for the presence of *V. moulinsiana* (the land-take area does not overlap with any suitable fen habitat): BH01-BH03. Of these, adult or juvenile *V. moulinsiana* were recorded at two sample sites (BH02-BH03) (Table 4).

Table 4. Results of *Vertigo moulinsiana* sampling at Blossomhill on 02/10/2019

Sample code	Positive/Negative	Adult	Juvenile	Habitat suitability
BH01	Negative	0	0	Unsuitable
BH02	Positive	2	1	Optimal-Suboptimal
BH03	Positive	1	1	Optimal-Suboptimal

More detailed results are provided in Appendix I, Table A1.

A map showing the location of the sample points is presented in Appendix II, Figure A3.

The vegetation suitable for supporting *V. moulinsiana* at Blossomhill appears to be limited to the lake margins. The rich fen area to the west of the lake contains virtually no suitable vegetation, with only occasional Black Bog-rush, and the soil is considered too dry. While the water levels at the positive sample points were higher than those considered ideal for *V. moulinsiana*, this is likely to be a temporary condition as a result of recent heavy rain

An estimate of the area within the fen boundary that is considered potentially suitable for supporting *V. moulinsiana* is presented in Appendix II, Figure A6 (10,266 m²). However, this is based on limited observations at the site and from aerial photograph analysis rather than a detailed site survey and so should be considered indicative only.

5 Discussion

Vertigo moulinsiana was recorded at all three fen sites: Ballyellinan, Lismakeery and Blossomhill. At Ballyellinan, the species was recorded outside the land-take boundary, but within the 50 m buffer. There is an overlap of approximately 90 m² between the estimated suitable habitat area and the land-take area. This may be an artefact of the suitable habitat estimation, which was based on aerial photograph interpretation, as well as in-field observations. More precise on-site mapping would be required to clarify this.

At Lismakeery, *V. moulinsiana* was recorded both within the land-take boundary and the 50 m buffer. The land-take area overlaps with an estimated 5,860 m² of suitable habitat.

At Blossomhill, *V. moulinsiana* was recorded outside the land-take boundary, but within the 50 m buffer.

As noted, this species is listed under Annex II of the Habitats Directive and its conservation status in Ireland is Unfavourable-Inadequate with a deteriorating trend (NPWS, 2019). As well as direct loss of habitat, changes to the hydrology of *V. moulinsiana* habitat, either drying out or flooding, is a major cause of loss for this species (NPWS, 2019; JNCC, 2007; Killeen, 2003). As more land is reclaimed for agriculture or development, the area of historic wetland, suitable for supporting *V. moulinsiana* populations, is declining. For this reason, efforts should be made to avoid any significant impact on the *V. moulinsiana* habitat and populations at Ballyellinan, Lismakeery and Blossomhill.

Ensuring that there are no works, movement of vehicles or personnel, or storage of materials within the suitable habitat should be sufficient to prevent any direct impact on the *V. moulinsiana* populations at Ballyellinan and Blossomhill. It must also be ensured that there are no hydrological impacts that would affect the groundwater and surface water flows influencing the fen. Drying out or too frequent flooding would both impact negatively on the ability of the sites to support *V. moulinsiana* into the future.

The current proposed route at Lismakeery will result in the direct loss of *V. moulinsiana* habitat. It is not possible to alter the route to avoid impacting on the fen site due to other constraints identified at the route selection stage. The possibility of acquiring land to provide enhancement of the remaining *V. moulinsiana* habitat could be considered. This would require a more extensive survey of the site and, if implemented, would require a repeat survey post-construction to ensure appropriate vegetation and wetness levels have been maintained.

6 References

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Appendix I – Tables

Table A1. Results of *Vertigo moulinsiana* sampling along the route of the Foynes to Limerick Road on 02/10/2019

Site	Code	Positive/ Negative	Vegetation	Veg. class	Wetness	Habitat suitability	ITM_X	ITM_Y
Ballyellinan	BA01	Negative	<i>Cladium mariscus</i> , <i>Eupatorium cannabinum</i>	II	4	Optimal- Suboptimal	531383	649447
Ballyellinan	BA02	Positive	<i>Cladium mariscus</i>	II	5	Optimal- Suboptimal	531403	649443
Ballyellinan	BA03	Positive	<i>Cladium mariscus</i> , <i>Phragmites australis</i>	II	5	Optimal- Suboptimal	531424	649440
Ballyellinan	BA04	Positive	<i>Cladium mariscus</i> , <i>Phragmites australis</i>	II	5	Optimal- Suboptimal	531459	649633
Ballyellinan	BA05	Positive	<i>Schoenus nigricans</i> , <i>Molinia caerulea</i> , <i>Succisa pratensis</i>	III	4	Suboptimal	531469	649655
Ballyellinan	BA06	Positive	<i>Schoenus nigricans</i> , <i>Molinia caerulea</i> , <i>Succisa pratensis</i>	III	2	Suboptimal	531472	649734
Lismakeery	L01	Positive	<i>Schoenus nigricans</i> , <i>Molinia caerulea</i> , <i>Succisa pratensis</i>	III	3	Suboptimal	531863	648473
Lismakeery	L02	Positive	<i>Cladium mariscus</i> , <i>Molinia caerulea</i> , <i>Schoenus nigricans</i>	II	4	Optimal- Suboptimal	531900	648435
Lismakeery	L03	Negative	<i>Cladium mariscus</i> , <i>Lythrum salicaria</i> , <i>Molinia caerulea</i>	II	2	Suboptimal	531899	648412
Lismakeery	L04	Positive	<i>Schoenus nigricans</i> , <i>Molinia caerulea</i> , <i>Succisa pratensis</i>	III	2	Suboptimal	531879	648398
Blossomhill	BH01	Negative	<i>Molinia caerulea</i> , <i>Schoenus nigricans</i>	IV	2	Unsuitable	537544	642817
Blossomhill	BH02	Positive	<i>Cladium mariscus</i> , <i>Phragmites australis</i> , <i>Menyanthes trifoliata</i> , <i>Sparganium erectum</i>	II	5	Optimal- Suboptimal	537556	642829
Blossomhill	BH03	Positive	<i>Phragmites australis</i> , <i>Carex</i> sp.	II	5	Optimal- Suboptimal	537597	642810

Appendix II – Maps

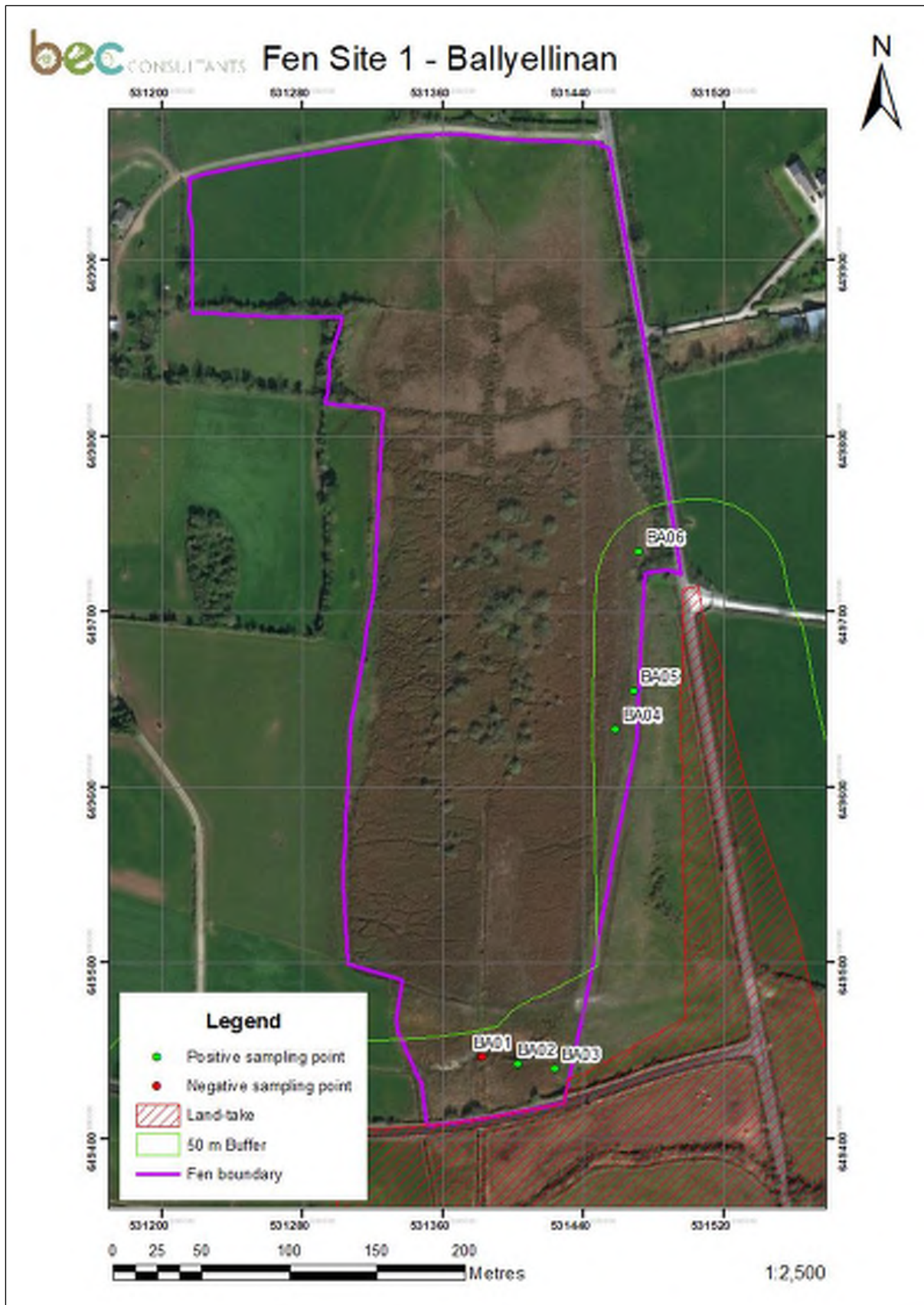


Figure A1. Map of *Vertigo moulinsiana* sample points at Ballyellinan

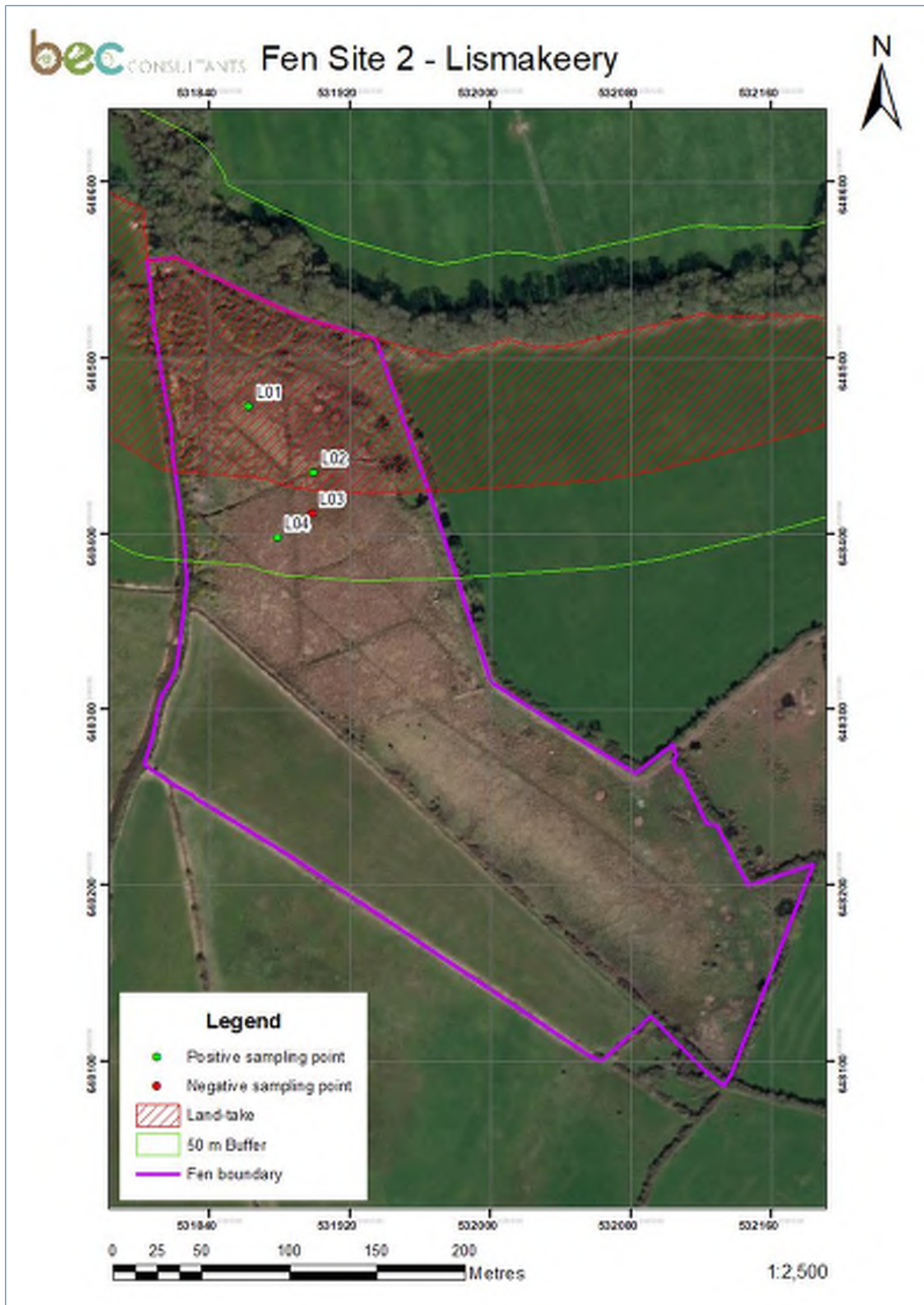


Figure A2. Map of *Vertigo moulinsiana* sample points at Lismakeery

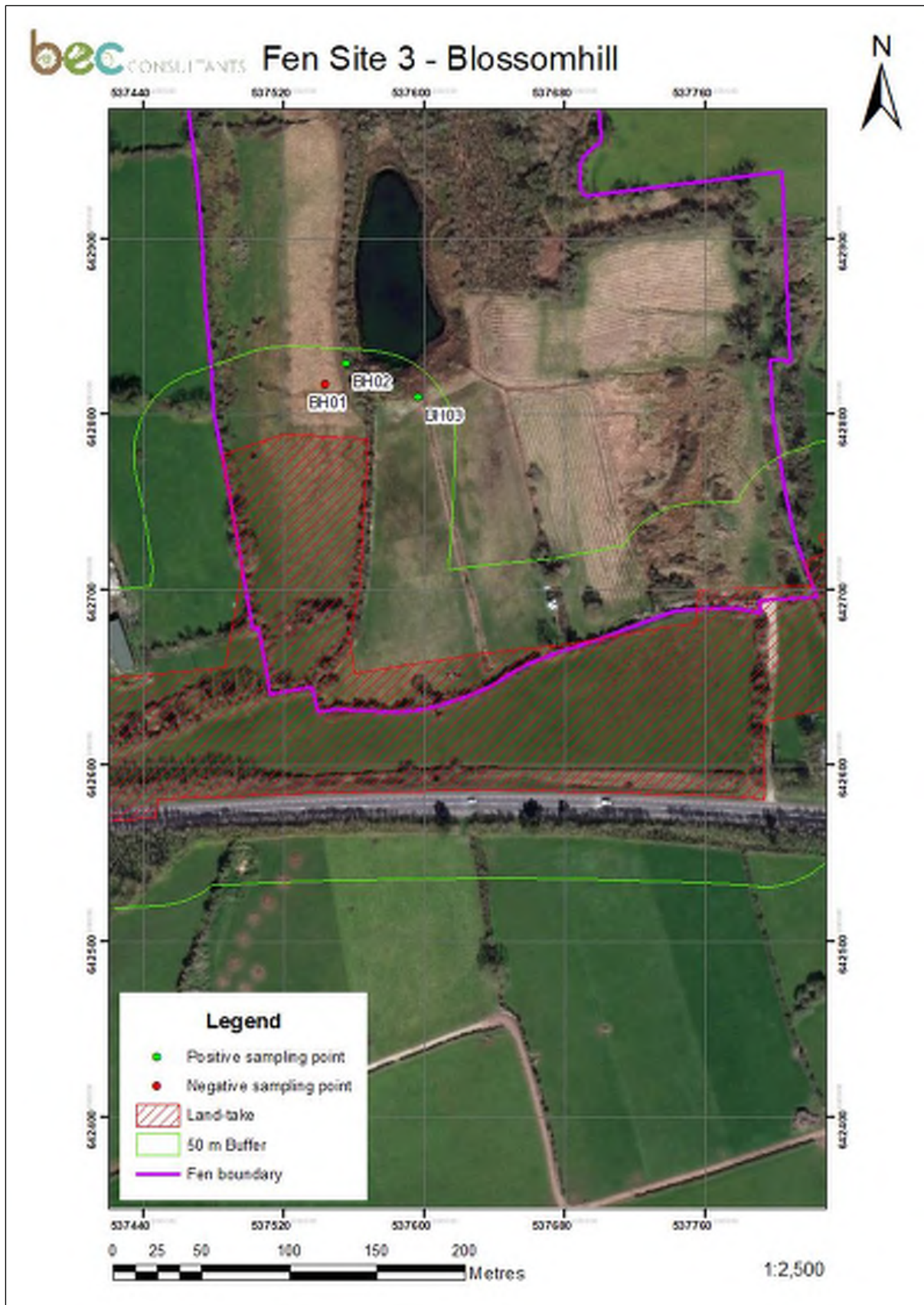


Figure A3. Map of *Vertigo moulinsiana* sample points at Blossomhill

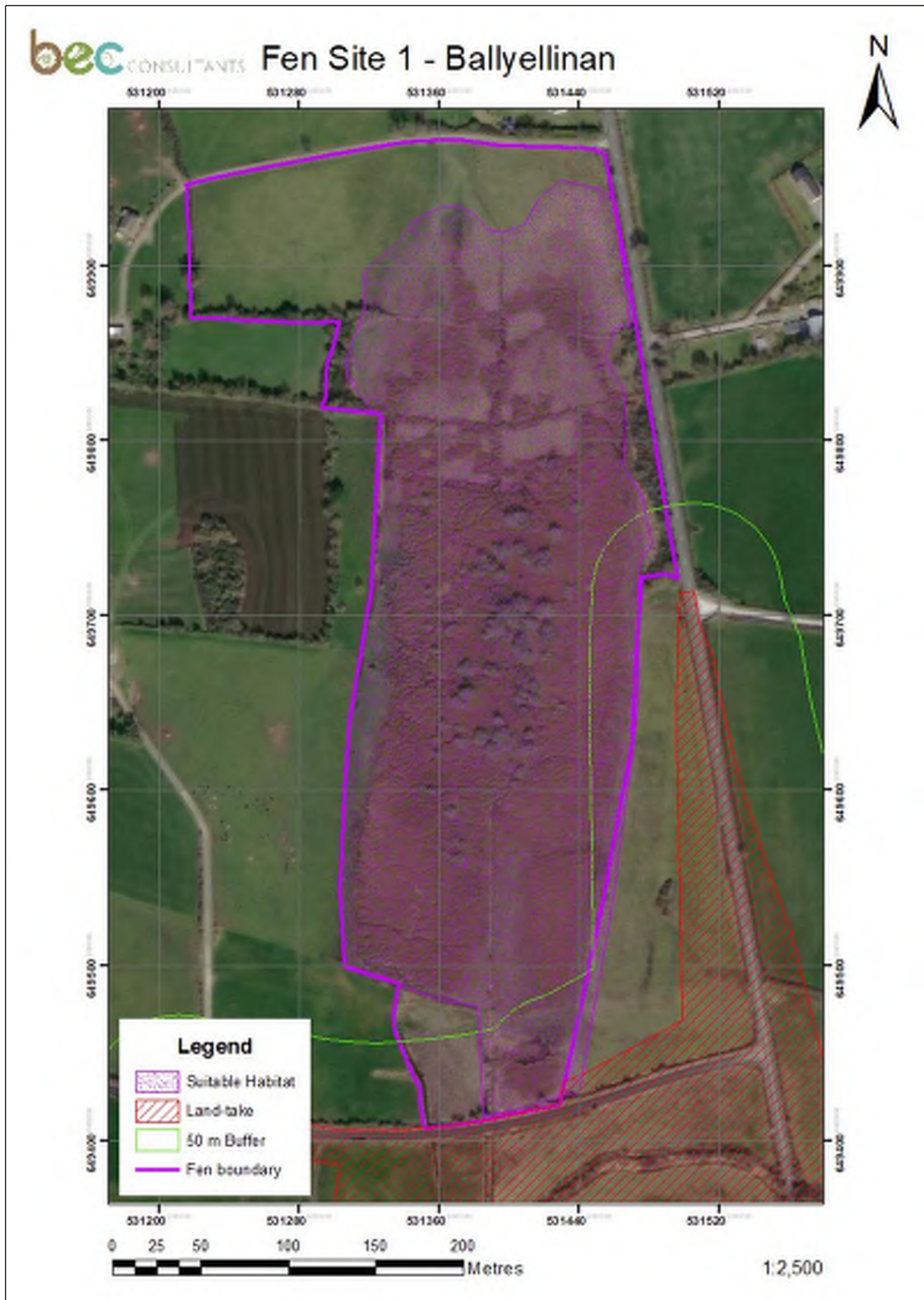


Figure A4. Map of estimated suitable *Vertigo moulinsiana* habitat at Ballyellinan

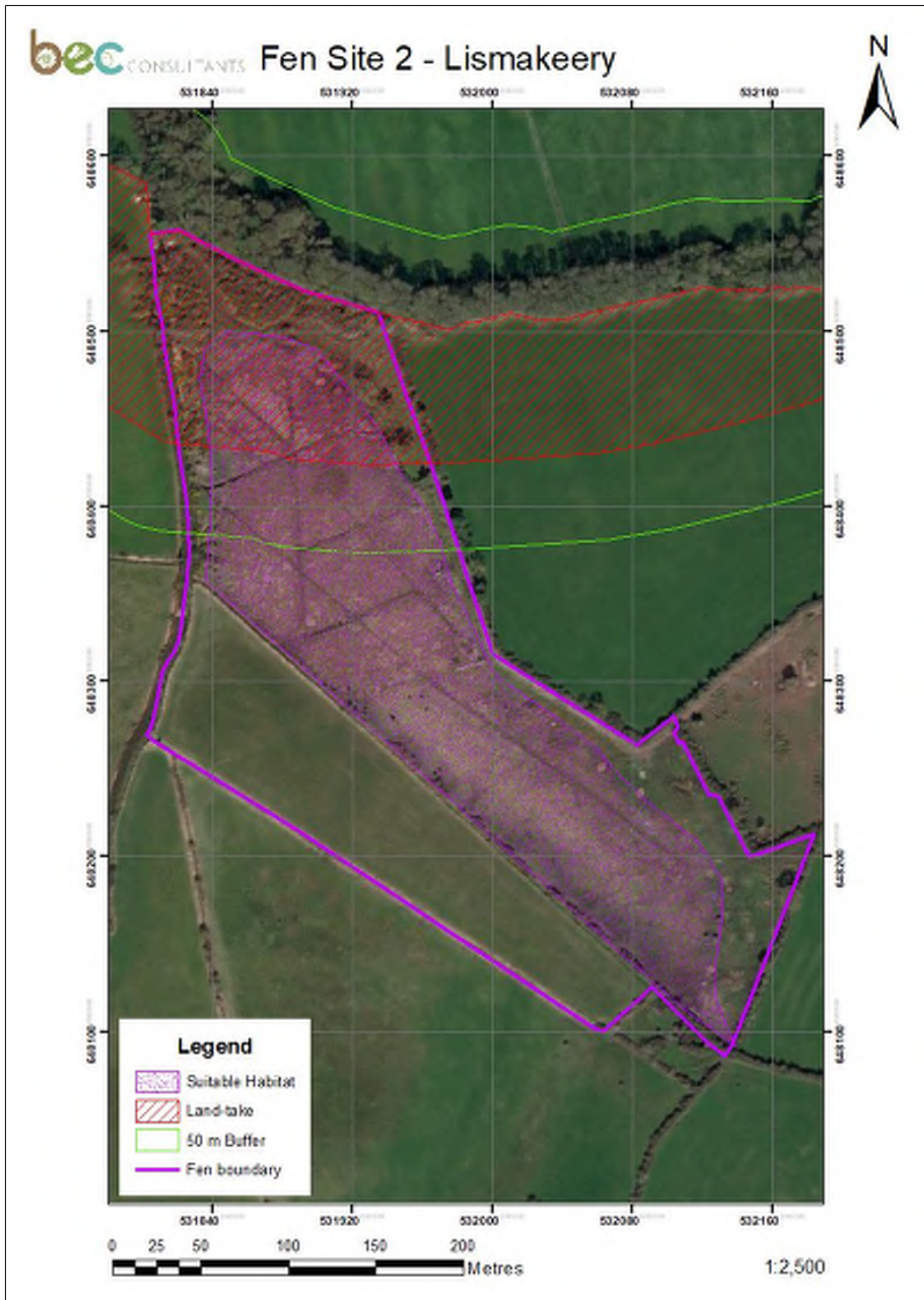


Figure A5. Map of estimated suitable *Vertigo moulinsiana* habitat at Lismakeery

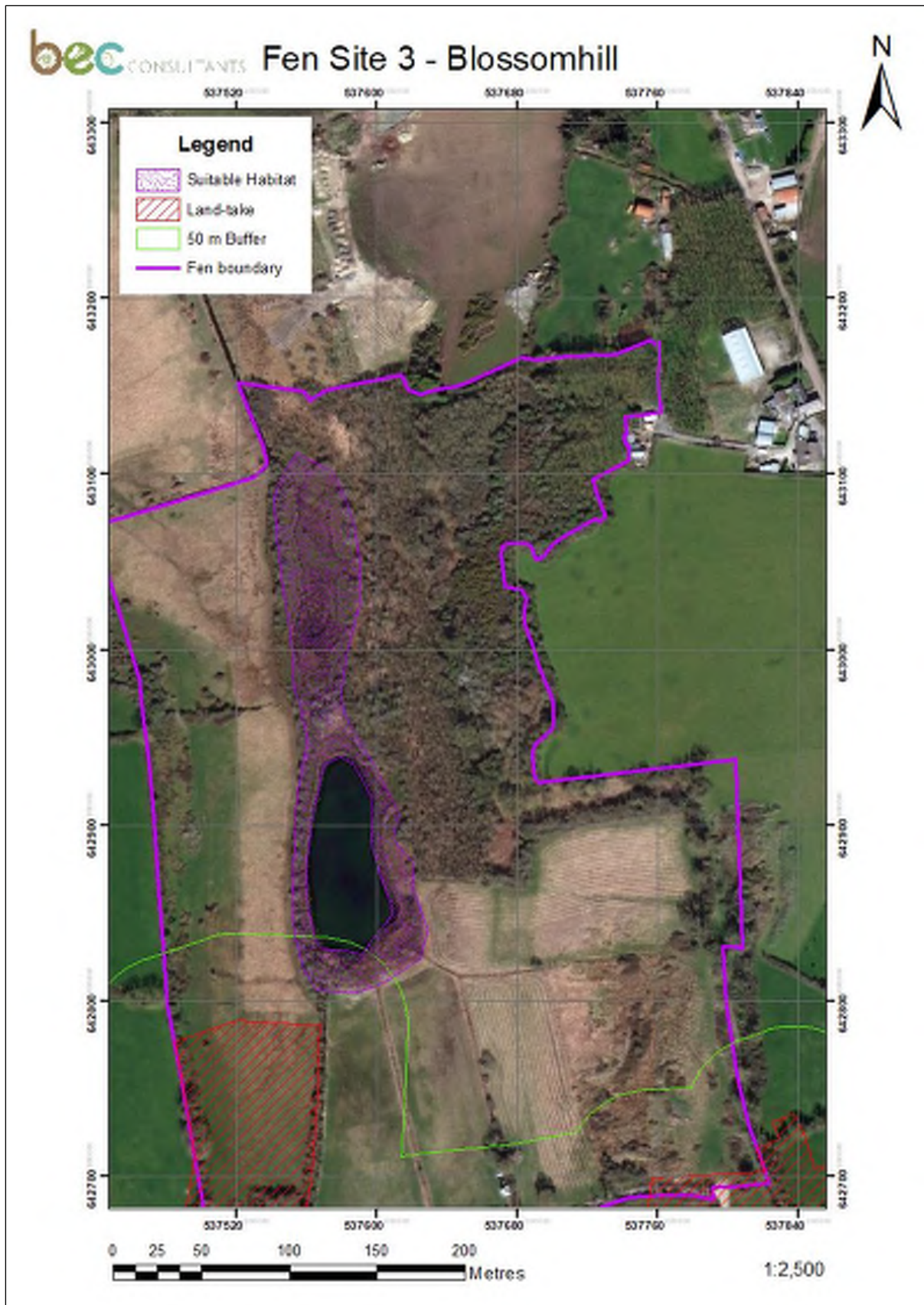


Figure A6. Map of estimated suitable *Vertigo moulinsiana* habitat at Blossomhill



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