

Freasdail Wind Farm: Reptile Mitigation



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**The Amphibians and Reptiles of Scotland: Current Research, Future Challenges. 9 June
2018, Glasgow.**



Overview

- Caledonian Conservation Ltd
 - Who we are
 - What we do
- Project
- Survey
- Mitigation
- Results
- Conclusions



Who We Are

- Established March 2010
- Ecological Consultancy
- Based near Bridge of Allan, covering all Scotland
- 5 members of staff
- 20+ Associate Ecologists



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Caledonian Conservation Ltd: what we do

- **Developments**
 - **Surveys**
 - **Ecological Impact Assessment (EclA)**
 - **Discharge of conditions**
 - **Ecological Clerk of Works (ECoW)**
 - **Post Consent Monitoring**
 - **Translocations**

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Caledonian Conservation Ltd: what we do

- Non-Governmental Organisations / Charities
 - Surveys
 - Conservation research
 - Conservation management
 - Public interpretation (TV/film, events, photos)
 - Advocacy / representation
 - Hosted Amphibian & Reptile Conservation Trust Scottish Officer & support project



Scottish Natural Heritage Dualchas Nàdair na h-Alba

History

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Scottish Natural Heritage
Dualchas Nàdair na h-Alba
2016-2017
Scottish Natural Heritage
Dualchas Nàdair na h-Alba

COMMISSIONED REPORT

Commissioned Report No. - SNH use only
Great crested newt mitigation guidelines

For further information on this report please contact:

Name of SNH Project Manager - SNH use only
Scottish Natural Heritage
Great Crested Newt
2016-2017
2016-2017
2016-2017
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This report should be signed off:

Chris C. Foster, J & Whitehurst J (ARC) 2016 - Great crested newt mitigation
guidelines - Scottish Natural Heritage Commissioned Report No. - SNH use only

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New revision to be published
Spring 2016

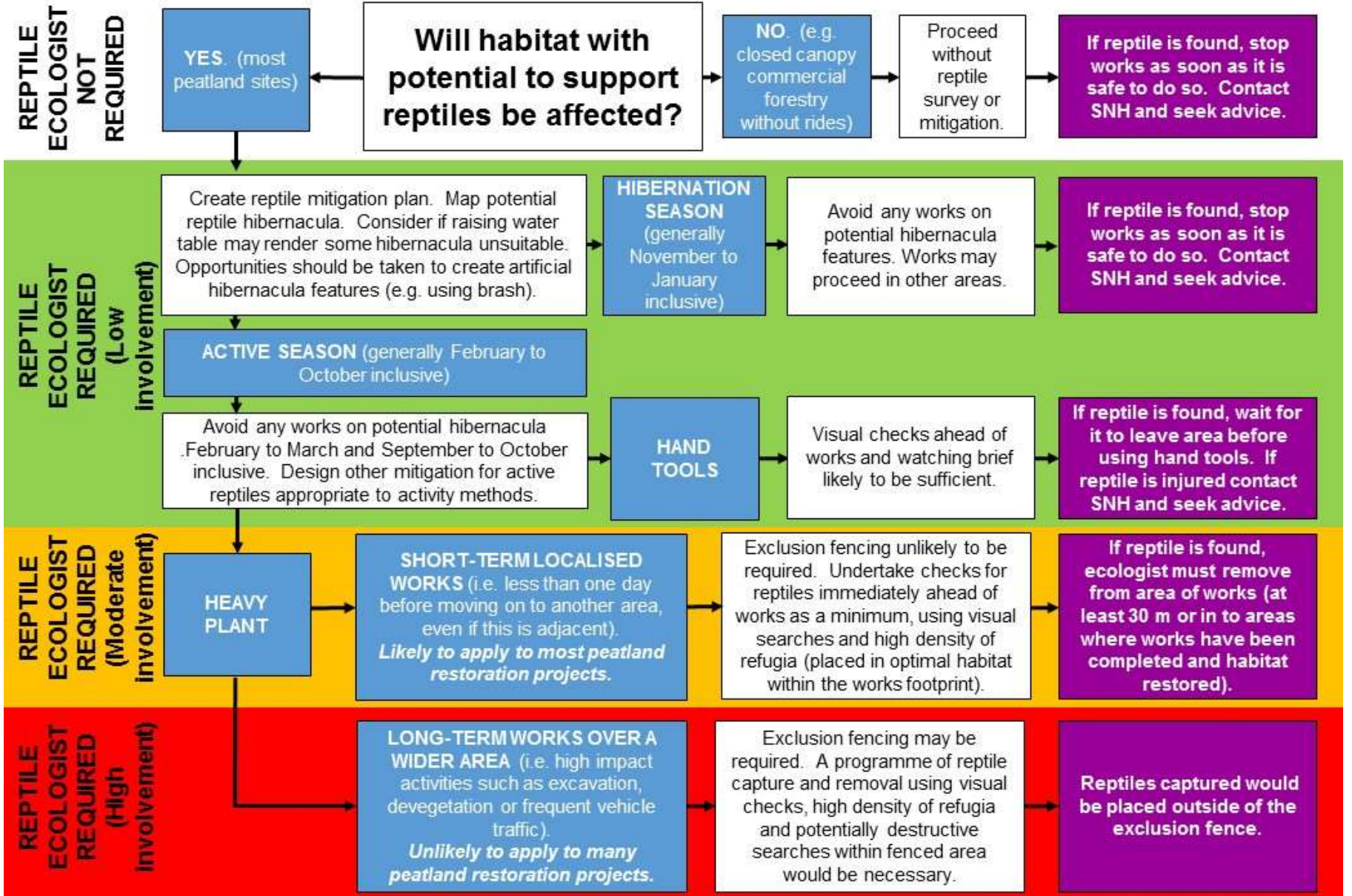
Revision by
Chris Cathrine (Caledonian
Conservation Ltd.)
Jim Foster (ARC)
Julian Whitehurst (The Sustainable
Development Company)

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The Amphibians & Reptiles of Scotland

Chris McInerny & Pete Minting



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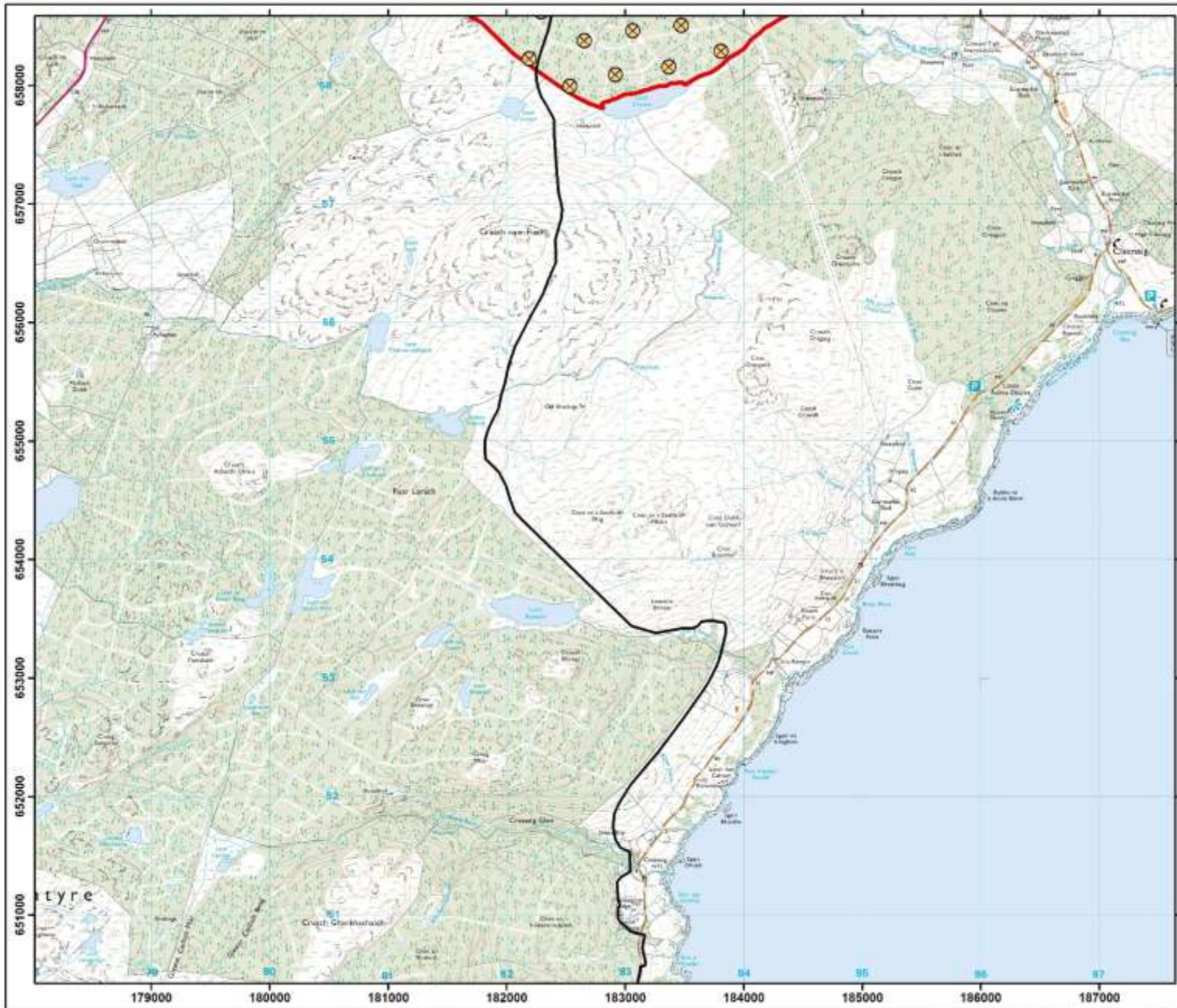


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Project

- Client: Renewable Energy Systems (RES)
 - World leading independent renewable energy developer
- Location: Kintyre, Argyll & Bute
- Freasdail Wind Farm (11 turbines)
- Underground power line >10km long



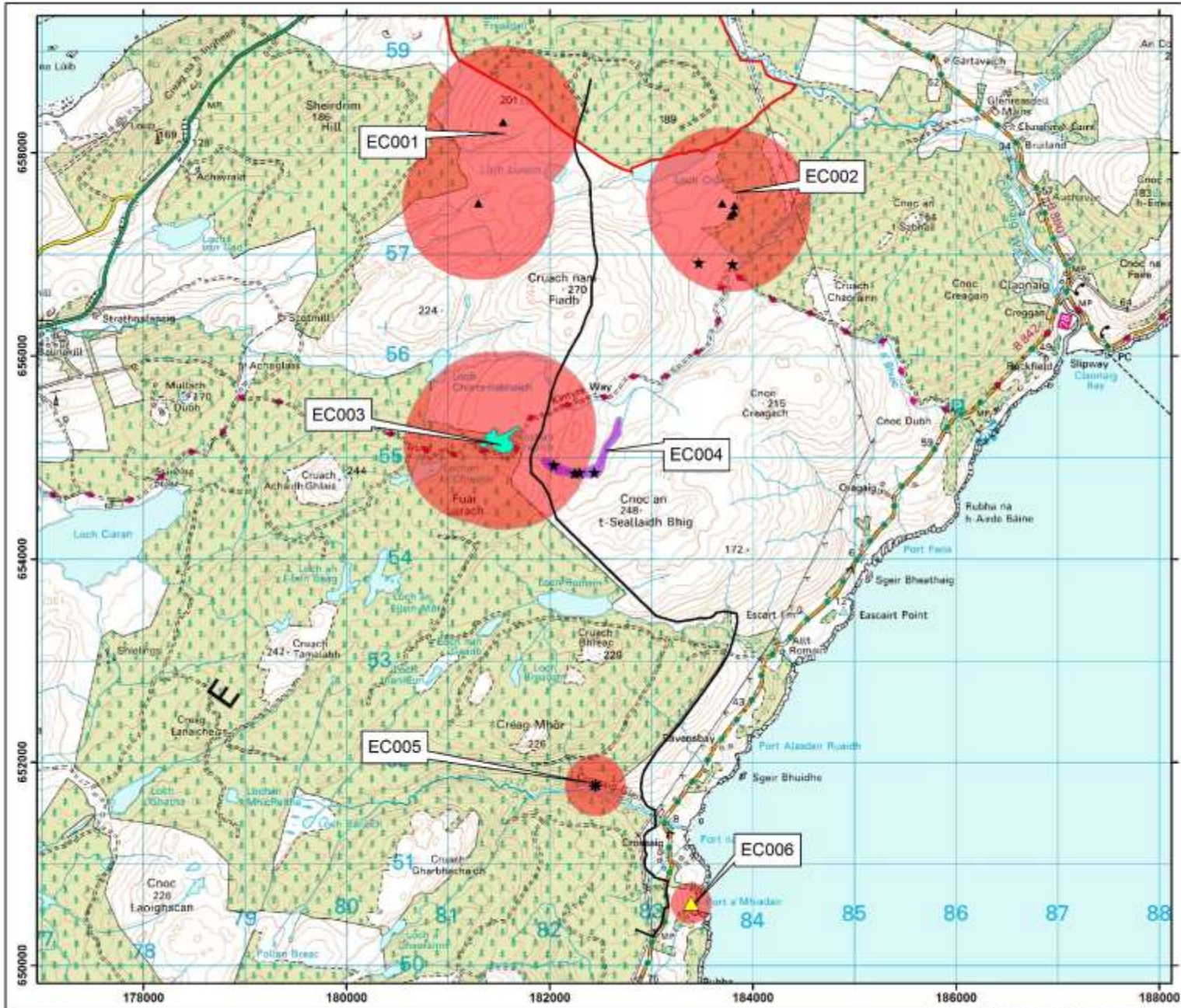
Key

— Cable route



Cable Route

**Freasdale Grid Connection
Reptile Mitigation**



- Key**
- * (black star)
 - ▲ (black triangle)
 - ▲ (yellow triangle)
 - ★ (black star)
 - (purple square)
 - (cyan square)
 - (red square) Ecological constraint buffer
 - (black line) Construction footprint
 - (red outline) Freasdale Wind Farm site boundary

Annotation allows cross-reference with text.

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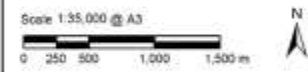
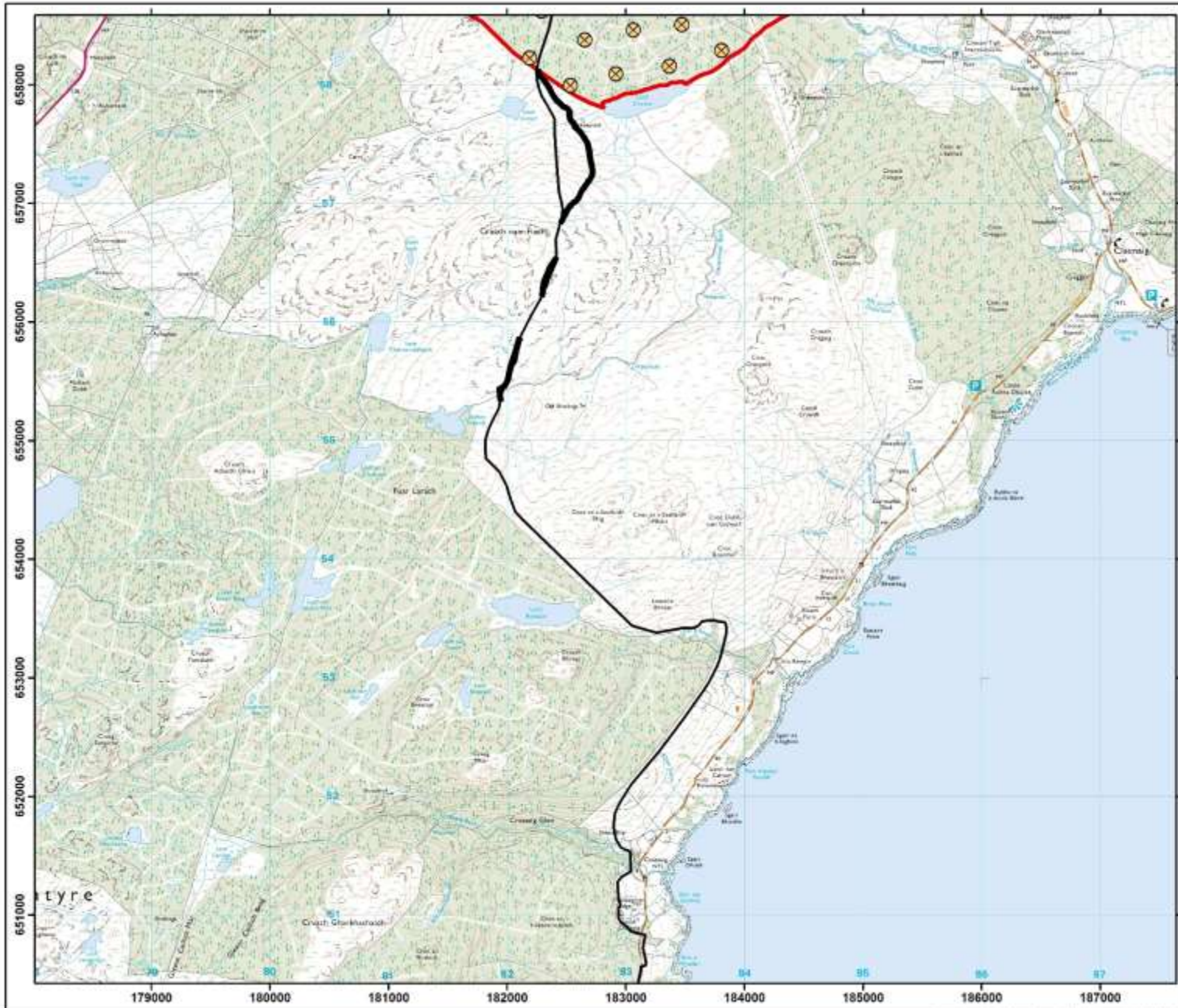


Figure 1
Ecological Constraints

Freasdale Wind Farm
Grid Connection
CC0383/CMSS1



Key

— Cable route



Cable Route

**Freasdale Grid Connection
 Reptile Mitigation**

Reptile Survey and Mitigation

- No published guidance (at the time)
- Survey:
 - habitat assessment / mapping
 - presence



Survey: Habitat Assessment

- Foraging Habitat
- Potential Hibernaculum Features
- 100m buffer of working area
- Completed in 2015, with updates in 2016 to inform route deviations

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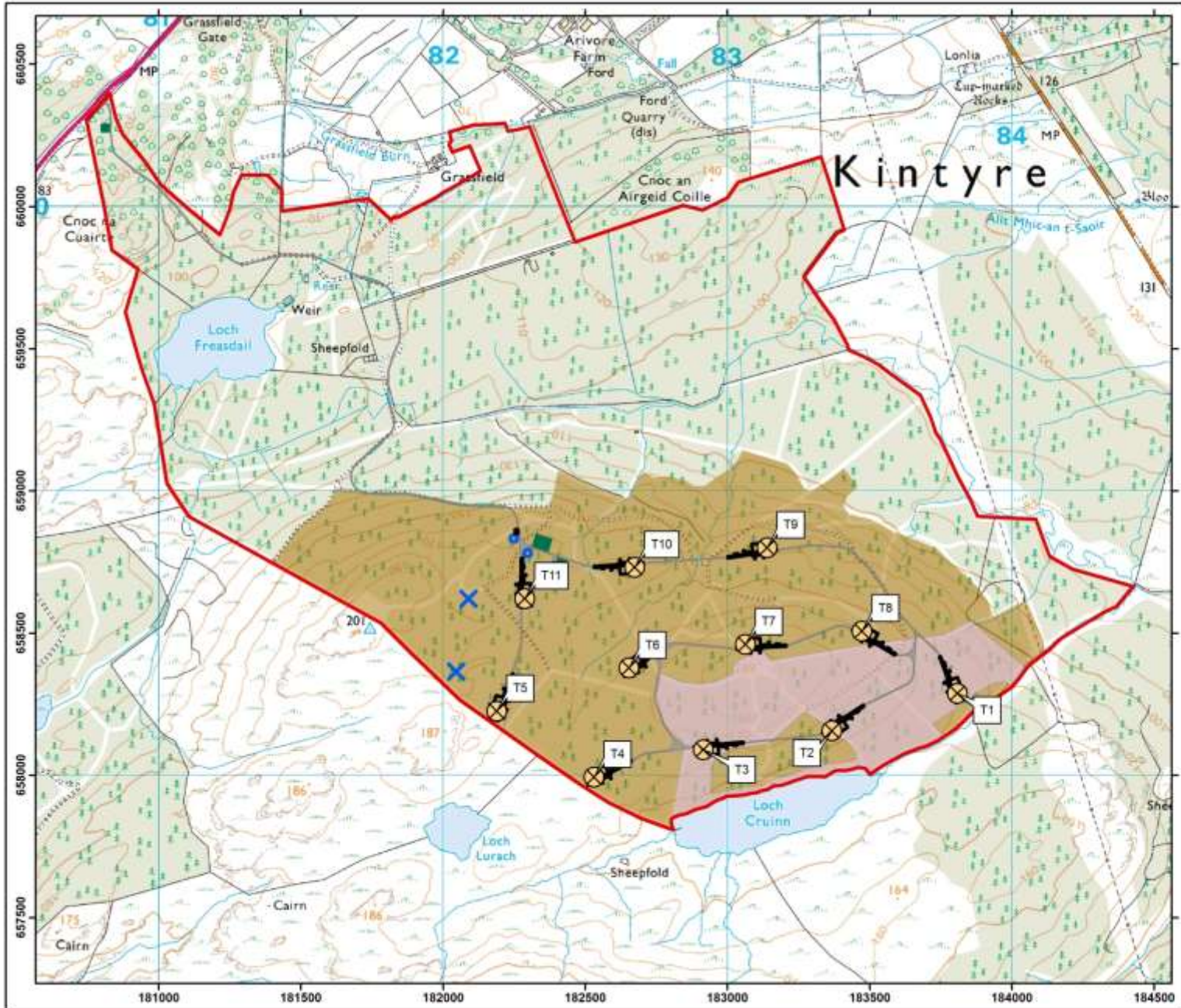


Freasdail Wind Farm Grid Connection: Reptile Mitigation



Freasdail Wind Farm Grid Connection: Reptile Mitigation



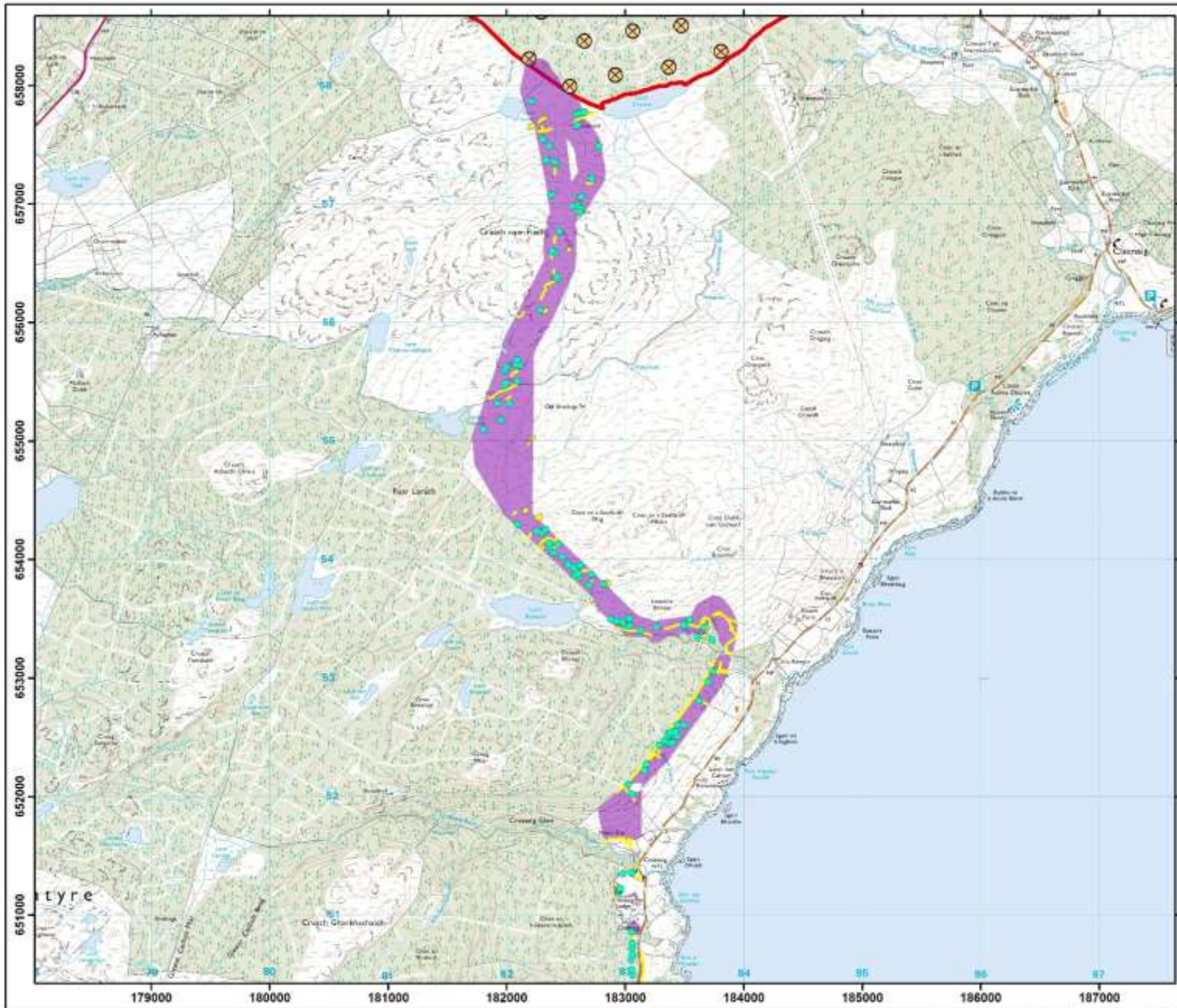


- Key**
- Suitable reptile habitat
 - X Turbine
 - Hardstanding
 - Mast
 - Track
 - Passing place
 - Structure
 - Watercourse
 - Clearfell area
 - Site boundary

Scale 1:12,500 @ A3
 0 125 250 500 m



Figure 1
Suitable Reptile Habitat
Freasdail Windfarm
CC0261/R6

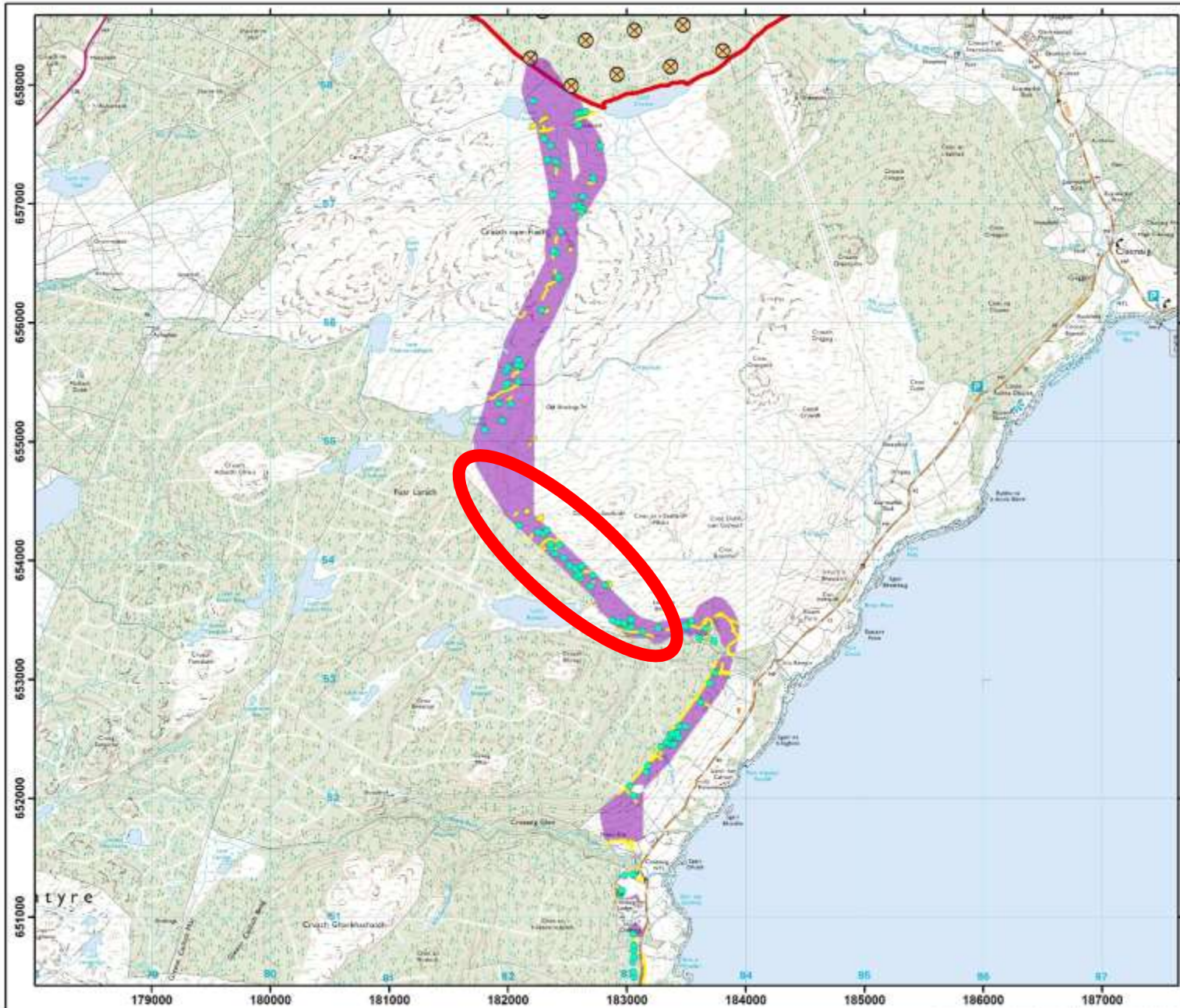


- Key**
- Potential hibernacula features
 - Potential linear hibernacula
 - Potential hibernacula patches
 - Suitable reptile habitat



Reptile Habitat

**Freasdale Grid Connection
Reptile Mitigation**



Key

- Potential hibernacula features
- Potential linear hibernacula
- Potential hibernacula patches
- Suitable reptile habitat

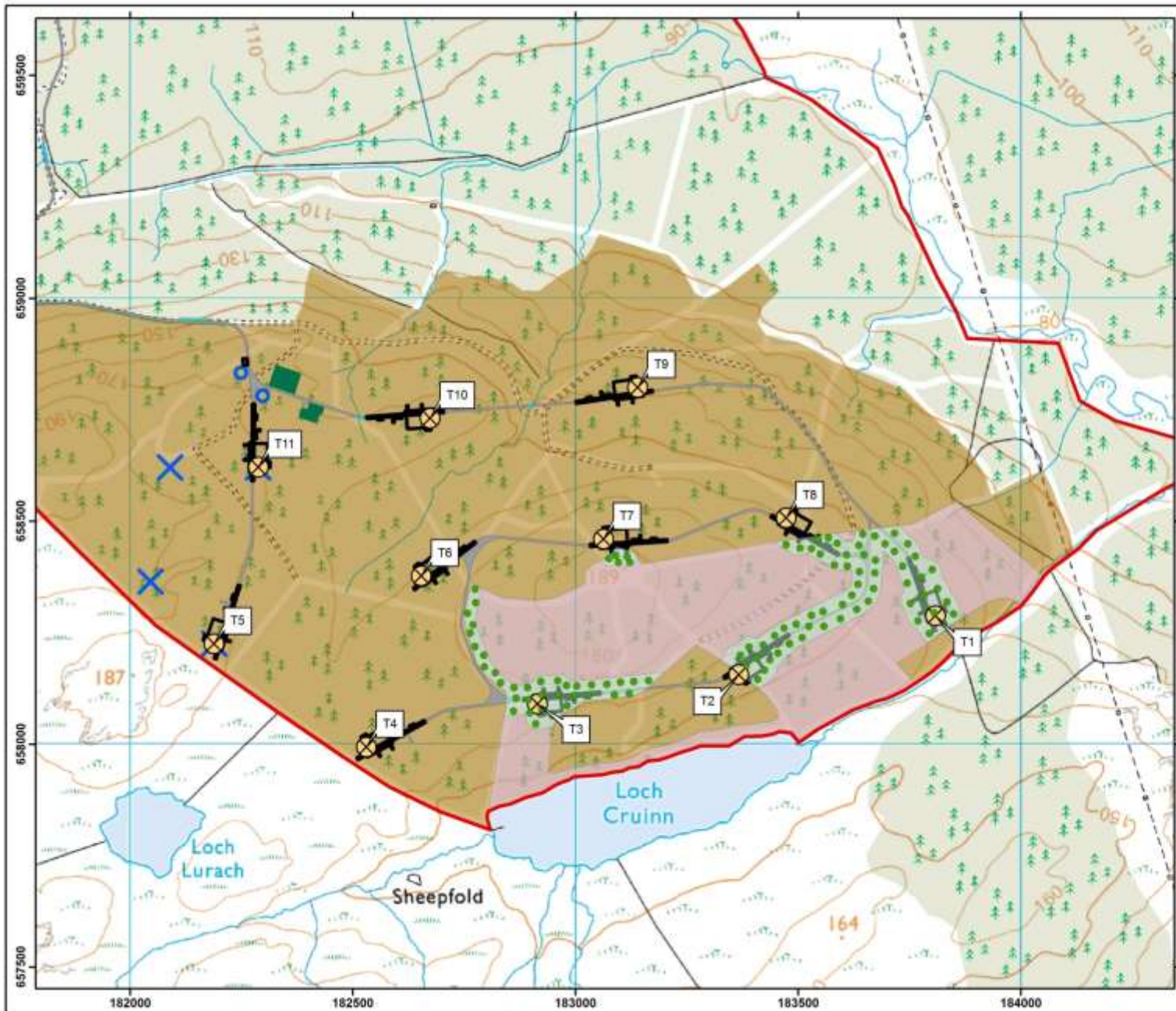


Reptile Habitat

**Freasdale Grid Connection
Reptile Mitigation**

Survey: Presence?

- Know adders and common lizards are present, with suitable habitat for slow-worms (which are known from the local area historically)
- Wind farm: relatively high impact over an extended construction period
- Grid: relatively low very short-term impact transient works



- Key**
- Reptile refugia locations
 - Reptile survey area (30m buffer)
 - Suitable reptile habitat
 - ⊗ Turbine
 - Hardstanding
 - Mast
 - Track
 - Passing place
 - Structure
 - Watercourse
 - Clearfell area
 - ▭ Site boundary

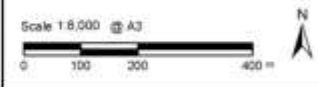


Figure 2
Reptile Survey Area
Freasdail Windfarm
CC0261/R6

Mitigation: Wind Farm

- Survey: habitat mapping & presence (visual searches & 100 refugia at density of 1/1,000m²)
- Watching brief
- ECoW checks before ground-breaking

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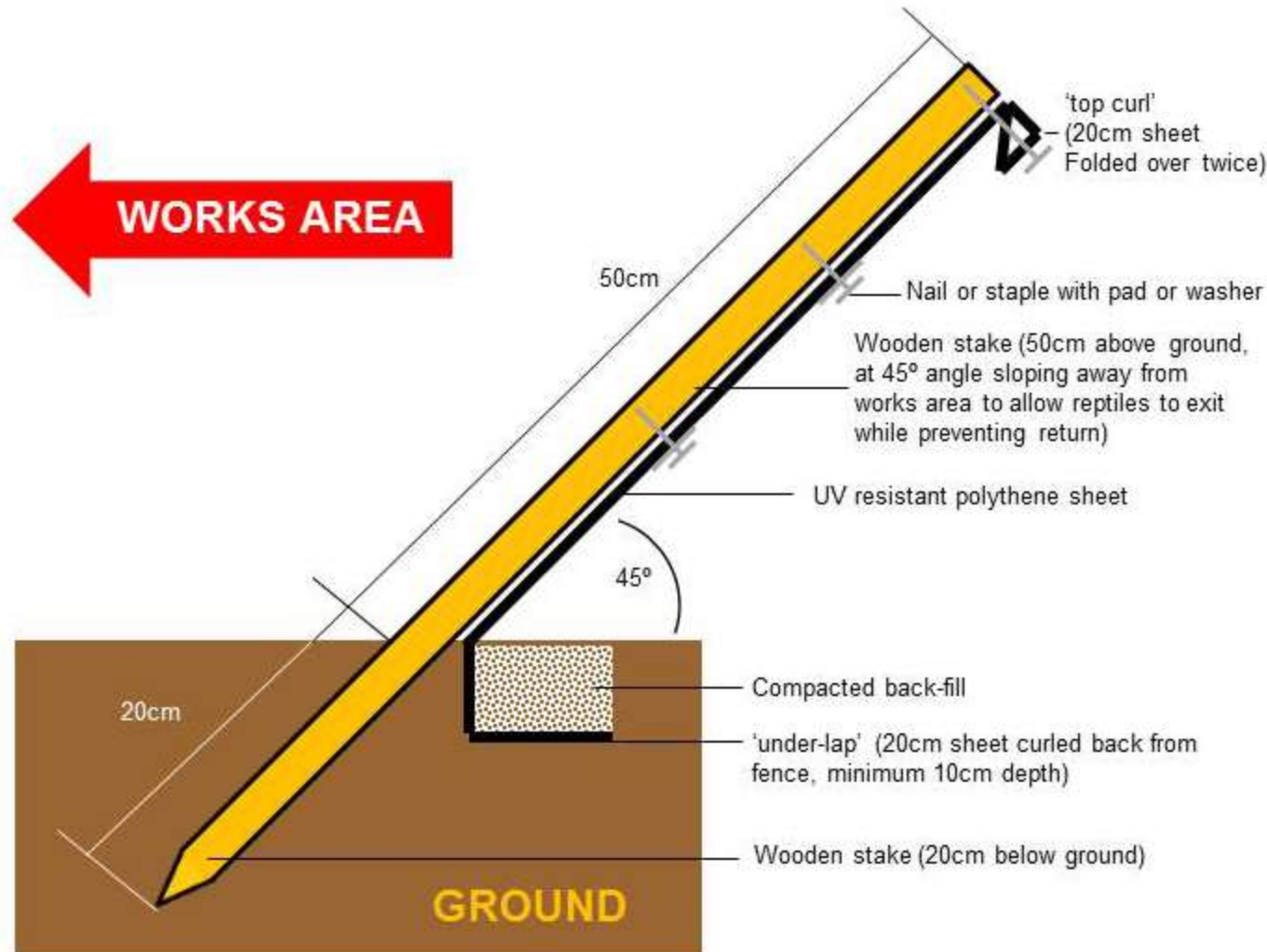




Mitigation: Wind Farm

- Survey: habitat mapping & presence (visual searches & 100 refugia at density of 1/1,000m²)
- Watching brief
- ECoW checks before ground-breaking
- One-way exclusion fencing
- Reduced vehicle speed in reptile areas
- Longer-term construction impacts

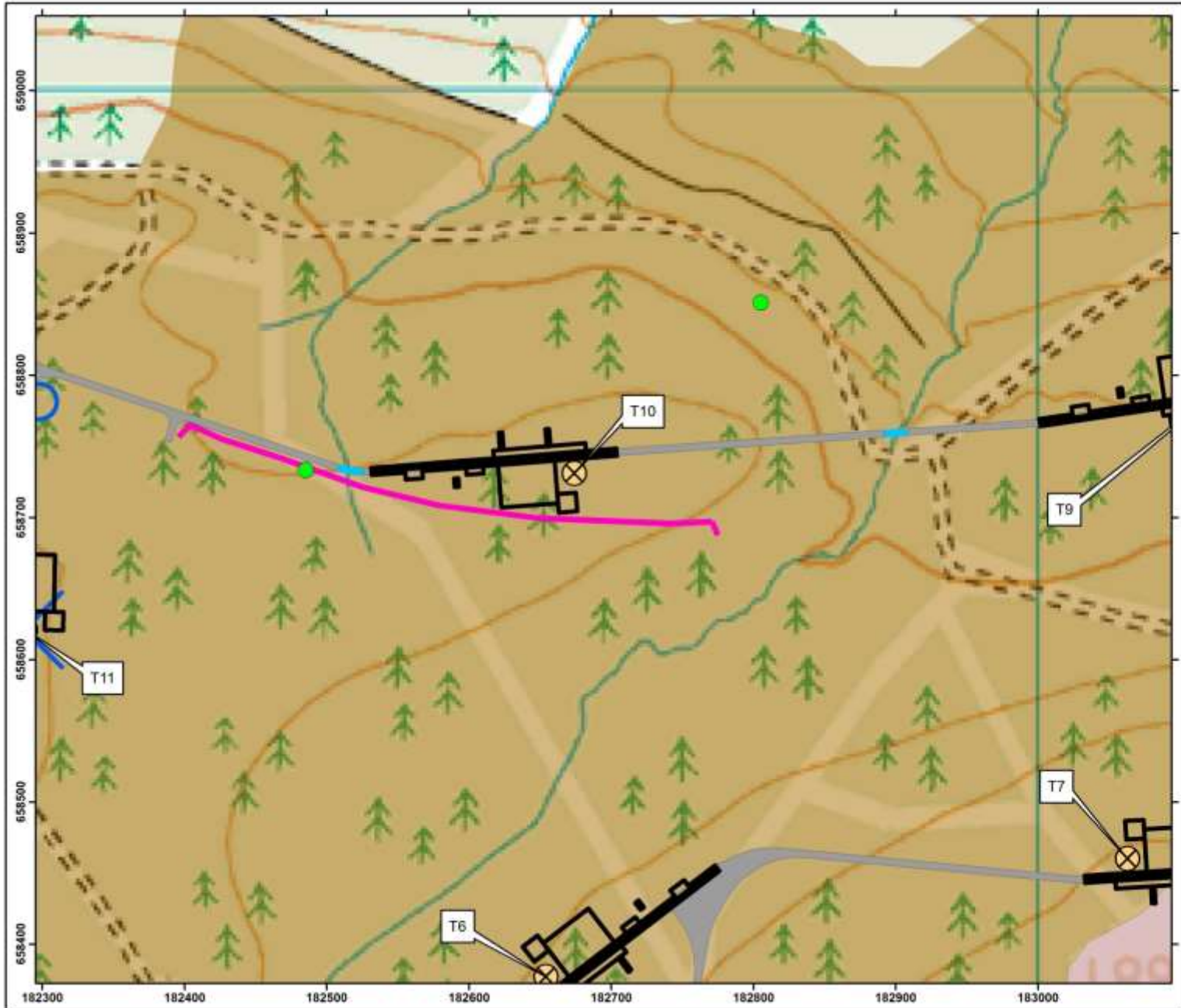
One-way reptile exclusion fencing



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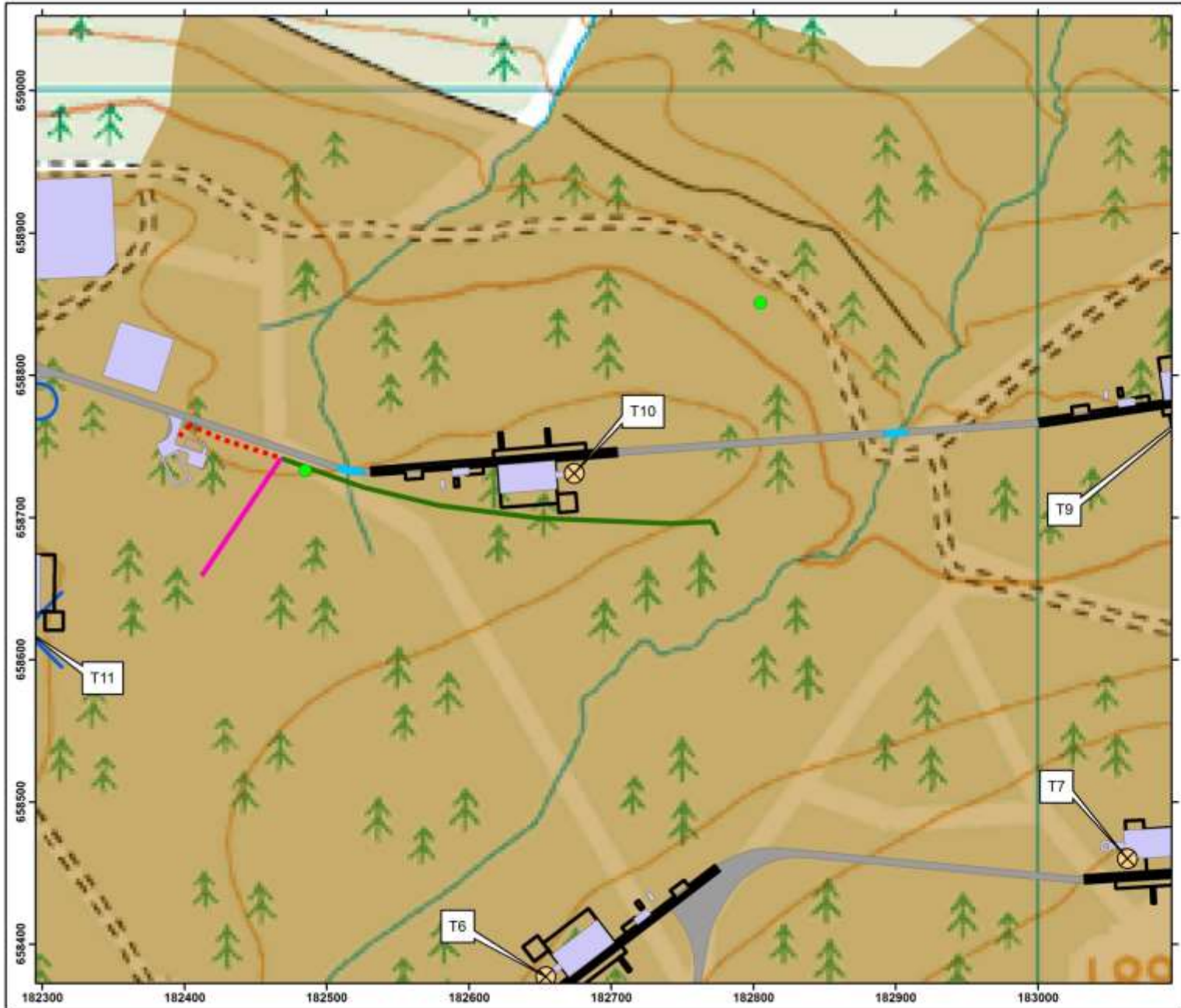




- Key**
- Common lizard
 - One-way reptile fence
 - Suitable reptile habitat
 - ⊗ Turbine
 - Handstanding
 - Mast
 - Track
 - Passing place
 - Watercourse
 - Clearfell area
 - Site boundary



Figure 1
Common Lizard Sightings & Reptile Fence
Freasdale Windfarm
CC0261/CMS6.1



- Key**
- Common lizard
 - One-way reptile fence (already installed)
 - One-way reptile fence (new - to be installed)
 - - - One-way reptile fence (to be removed to allow works)
 - ⊗ Turbine
 - Hardstanding
 - Mast
 - Infrastructure
 - Track
 - Passing place
 - Watercourse
 - Clearfell area
 - Site boundary



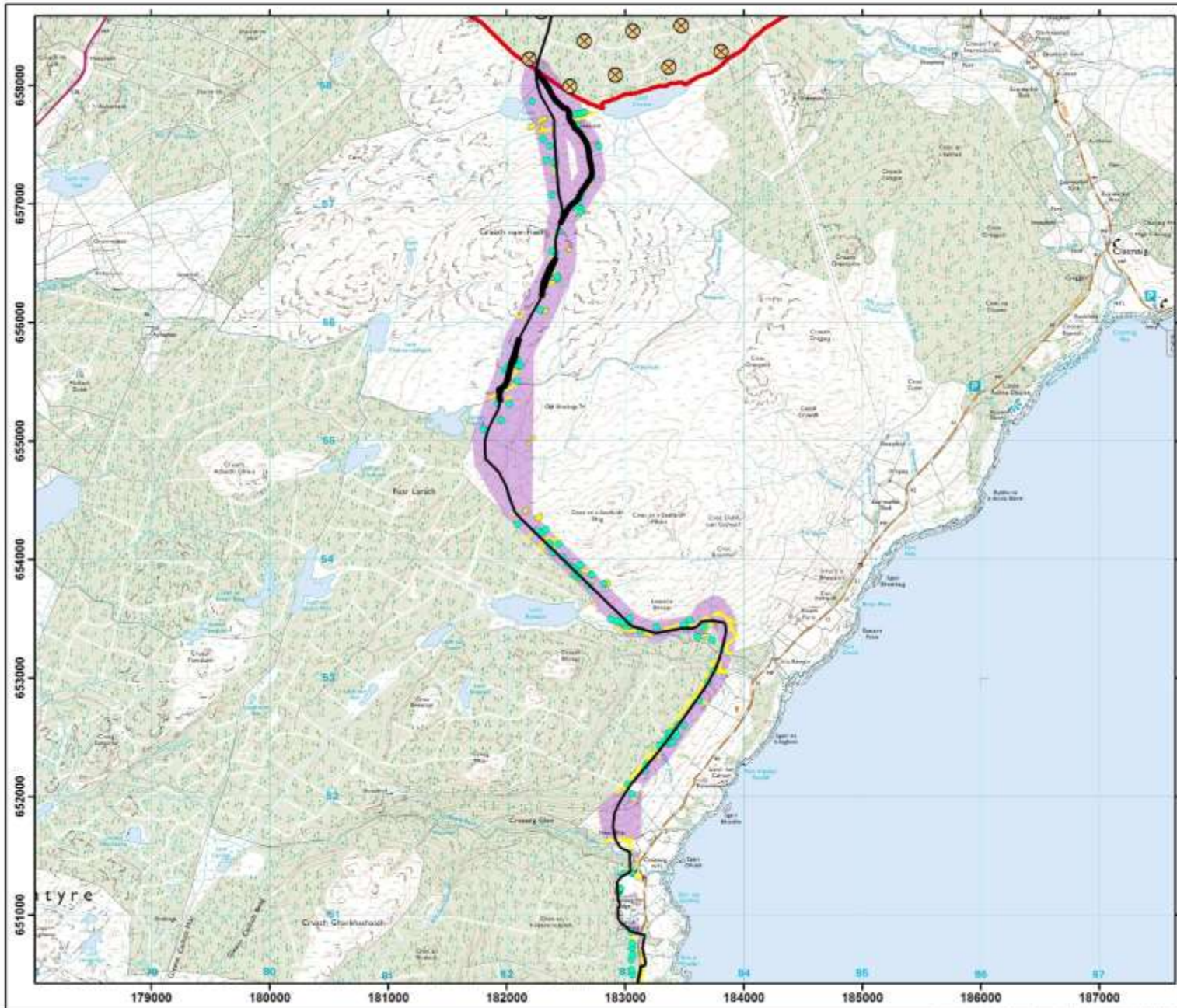
Figure 1
Common Lizard Sightings
& Revised Reptile Fence
Freasdale Windfarm
CC0261/CMS6.2

Freasdail Wind Farm: Reptile Mitigation

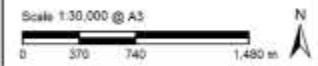
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Mitigation: Grid Connection



- Key**
- Cable route
 - Potential hibernacula features
 - Potential linear hibernacula
 - Potential hibernacula patches
 - Suitable reptile habitat



Reptile Habitat

**Freasdale Grid Connection
Reptile Mitigation**



Mitigation: Grid Connection

- >10km of exclusion fencing not practical:
 - Installation impact larger than construction impact
 - Would create huge barrier to reptiles & other species



Mitigation: Grid Connection

- Construction activities:
 - Excavation of trench
 - Laying of cable ducts
 - Reinstatement in same day
 - <200m per day

Mitigation: Grid Connection

- Microsite to avoid potential hibernacula
- Timing:
 - No destruction of potential hibernacula
September to April (if lost should be replaced)
 - Relocation of reptiles during the active
season (March to October)



Mitigation: Grid Connection

- Experienced reptile ecologist as ECoW to complete checks immediately prior to works in active season. Relocate reptiles >30m from work
- Visual searches
- Artificial refugia:
 - Roofing felt 50cm x 30cm (transport on foot over long distances on difficult terrain)
 - High density (1 per 20m² / 500 per ha = >5,000 for route)
- ECoW ensure hibernacula avoided during hibernation season



Results

- Artificial refugia were placed >2 weeks before works commenced in an area

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Results

- Artificial refugia were placed >2 weeks before works commenced in an area
- Works commenced in reptile habitat on 10/05/16 and finished on 26/10/16

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Results

- 111 days of reptile checks
- 230 reptiles observed, 168 of which were relocated

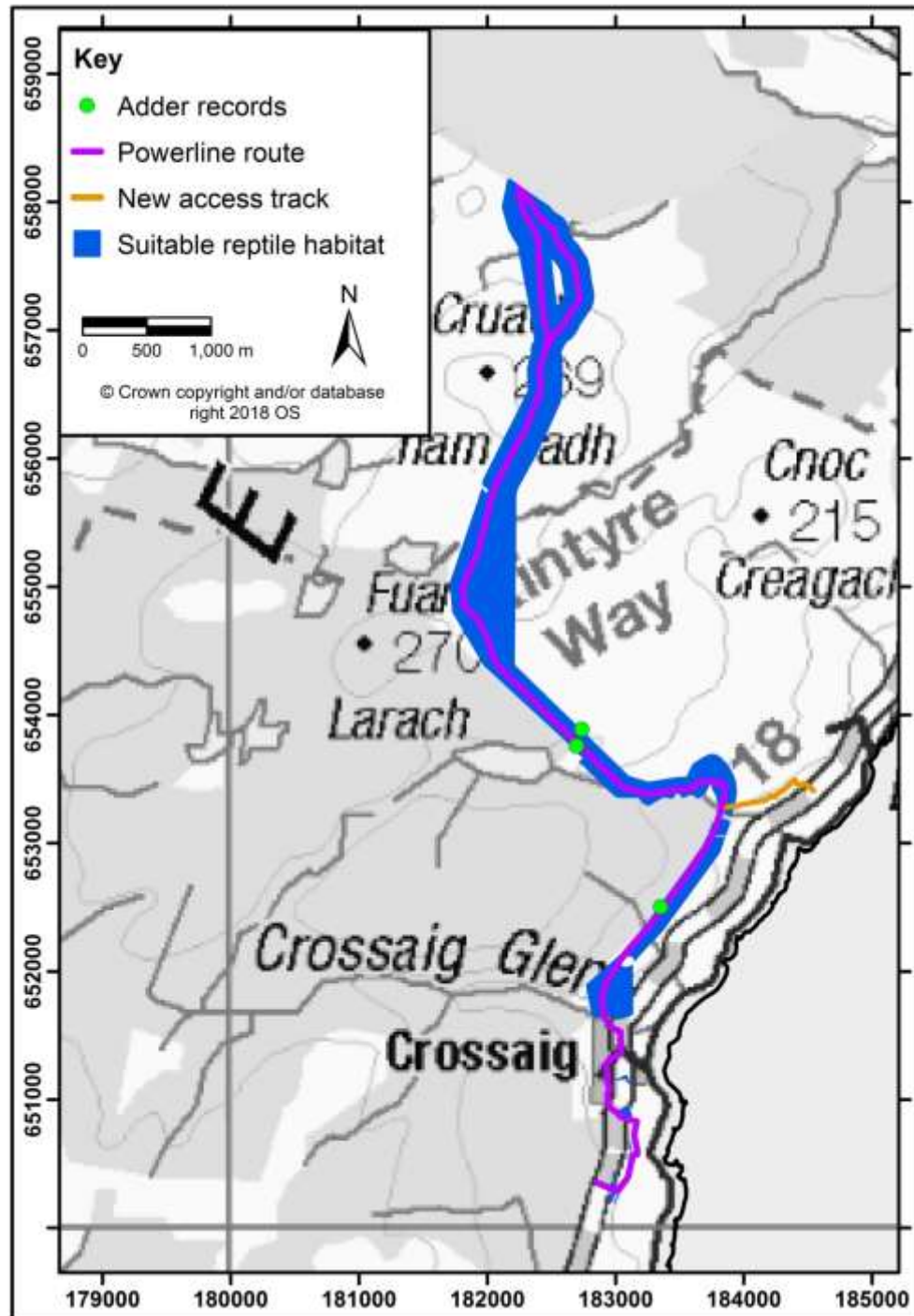
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Results

- Adders observed in area, but not affected



Results

- Adders observed in area, but not affected
- Common lizards:

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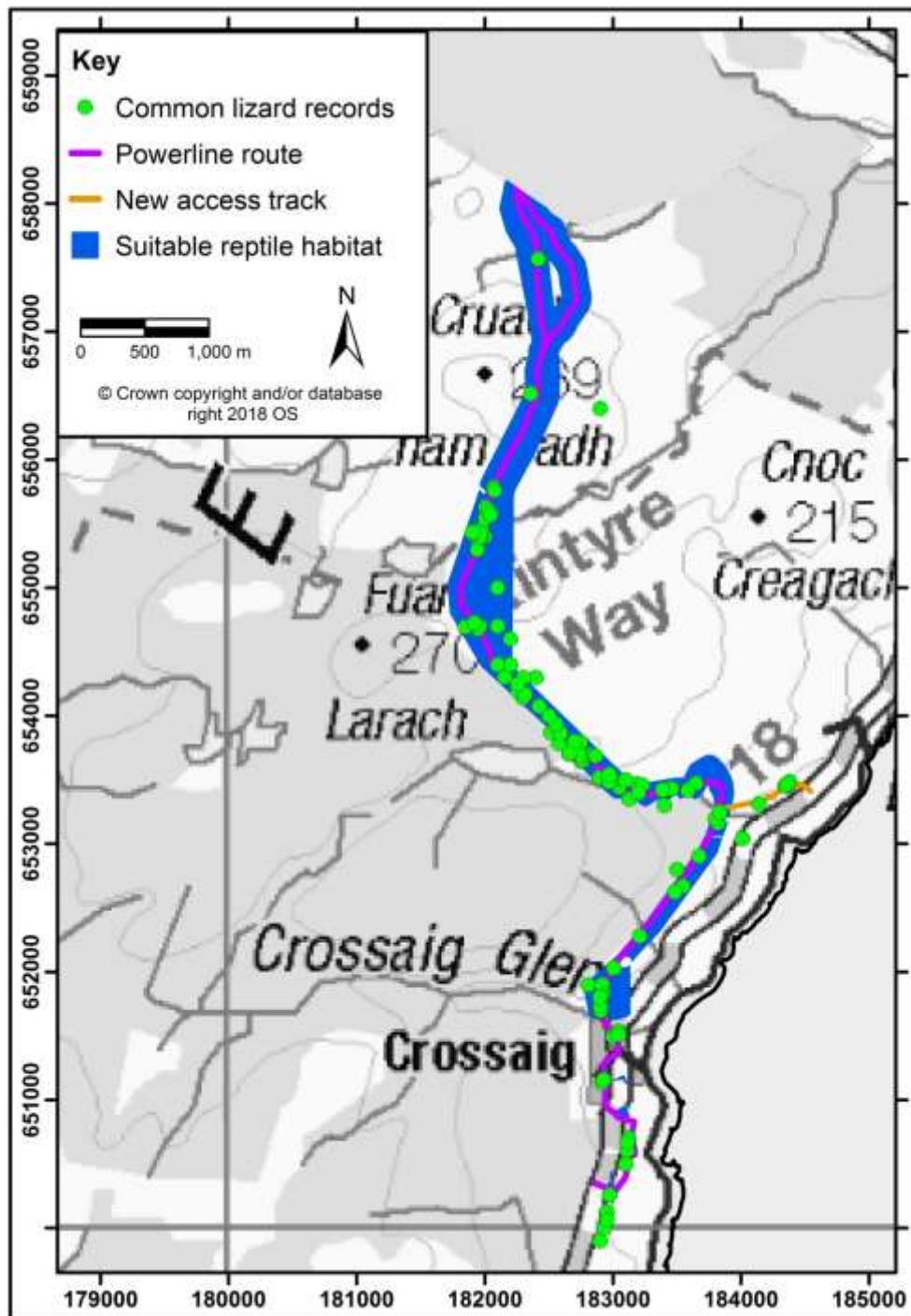
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Results

- Adders observed in area, but not affected
- Common lizards: 190 observed, 134 relocated

Results

- Adders observed in area, but not affected
- Common lizards: 190 observed, 134 relocated
- Slow-worms:

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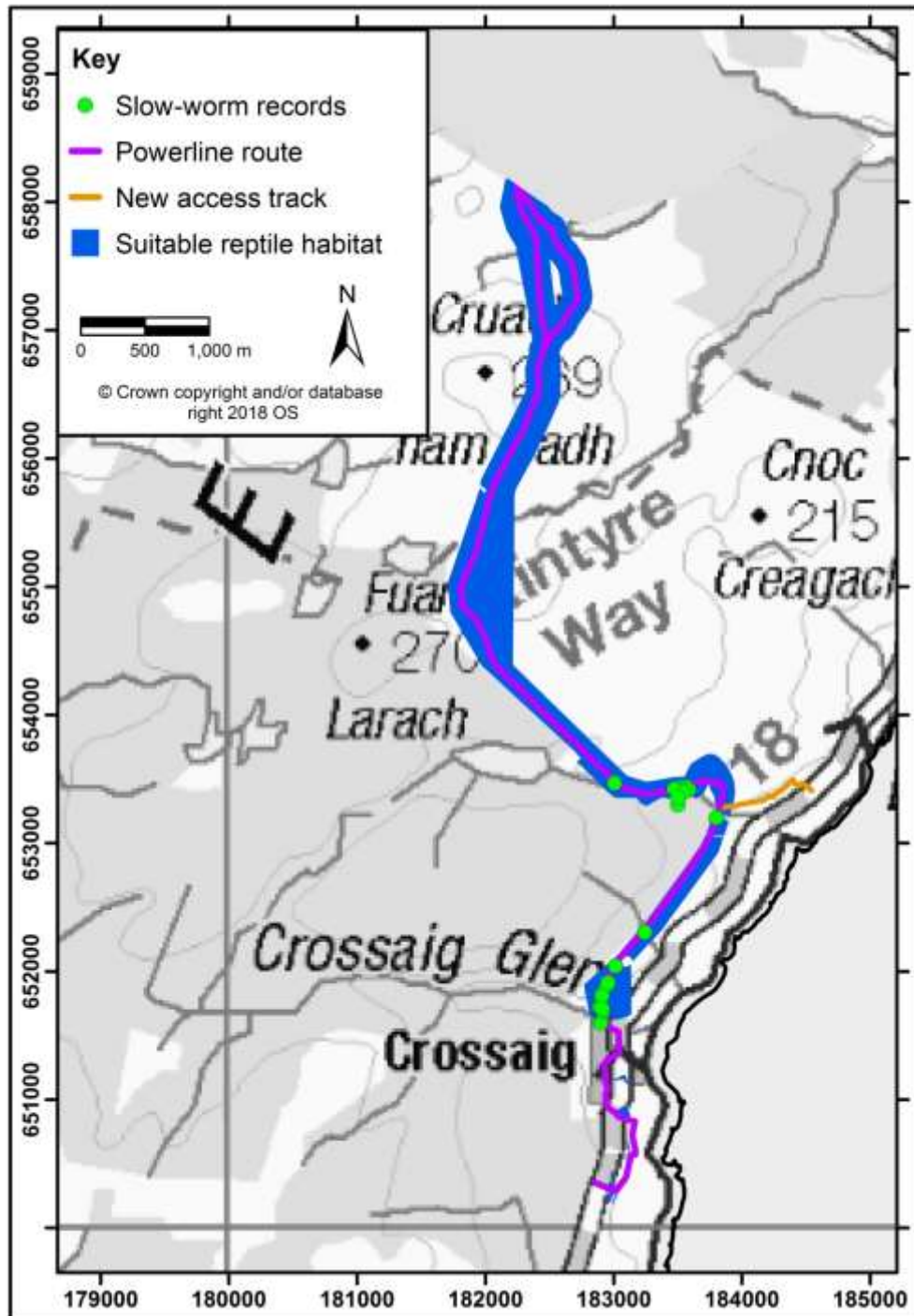
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Results

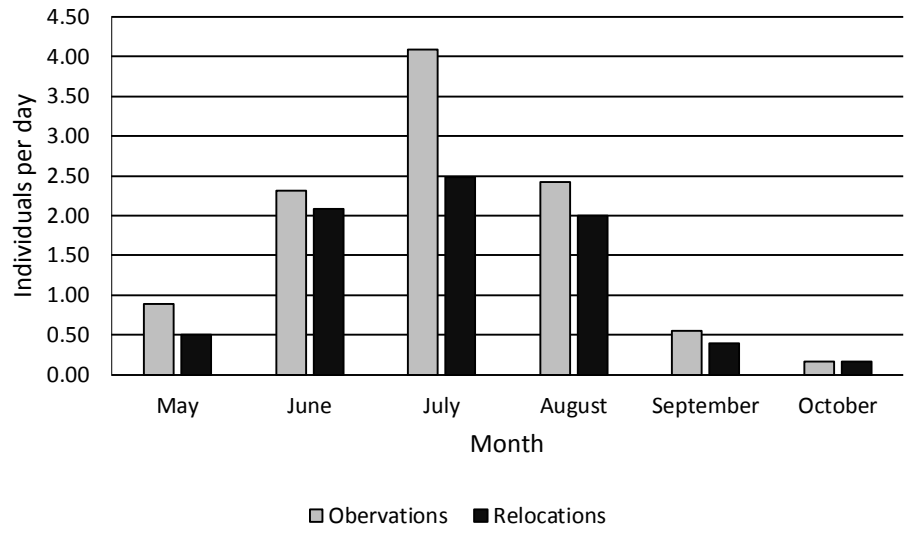
- Adders observed in area, but not affected
- Common lizards: 190 observed, 134 relocated
- Slow-worms: 35 observed, 34 relocated

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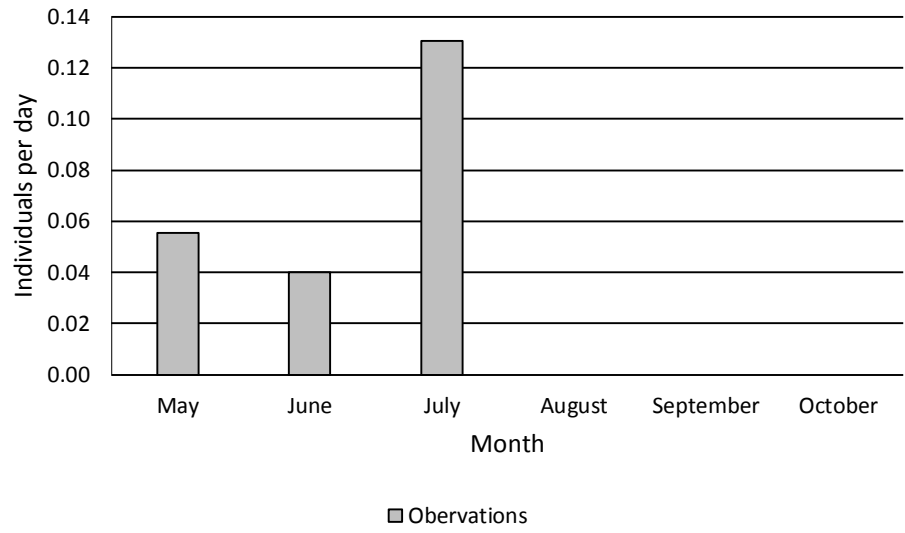
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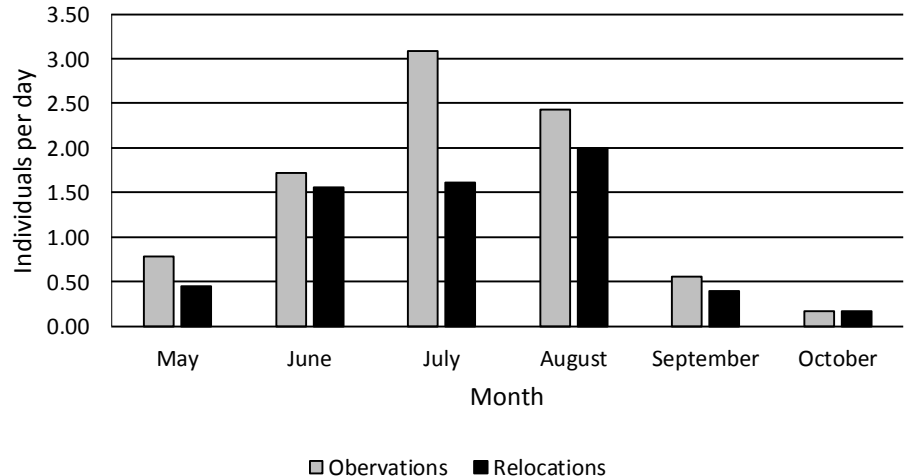
Reptiles observed and relocated per day of effort



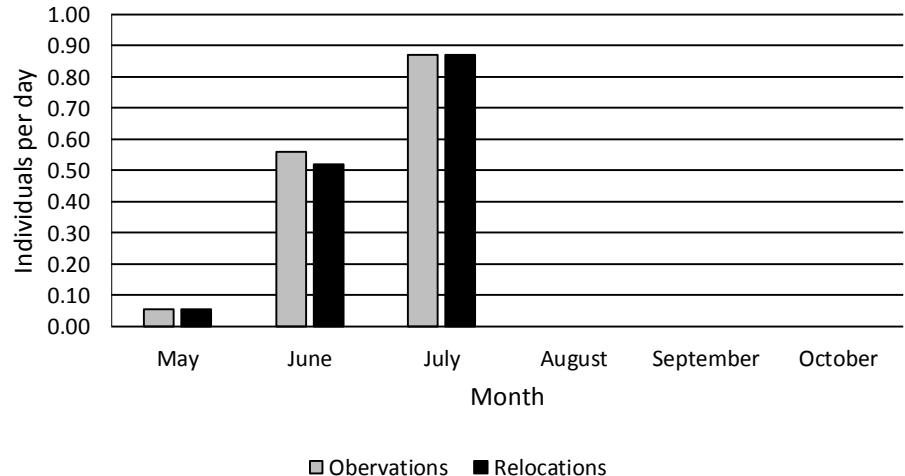
Adders observed per day of effort



Common lizards observed and relocated per day of effort



Slow-worms observed and relocated per day of effort



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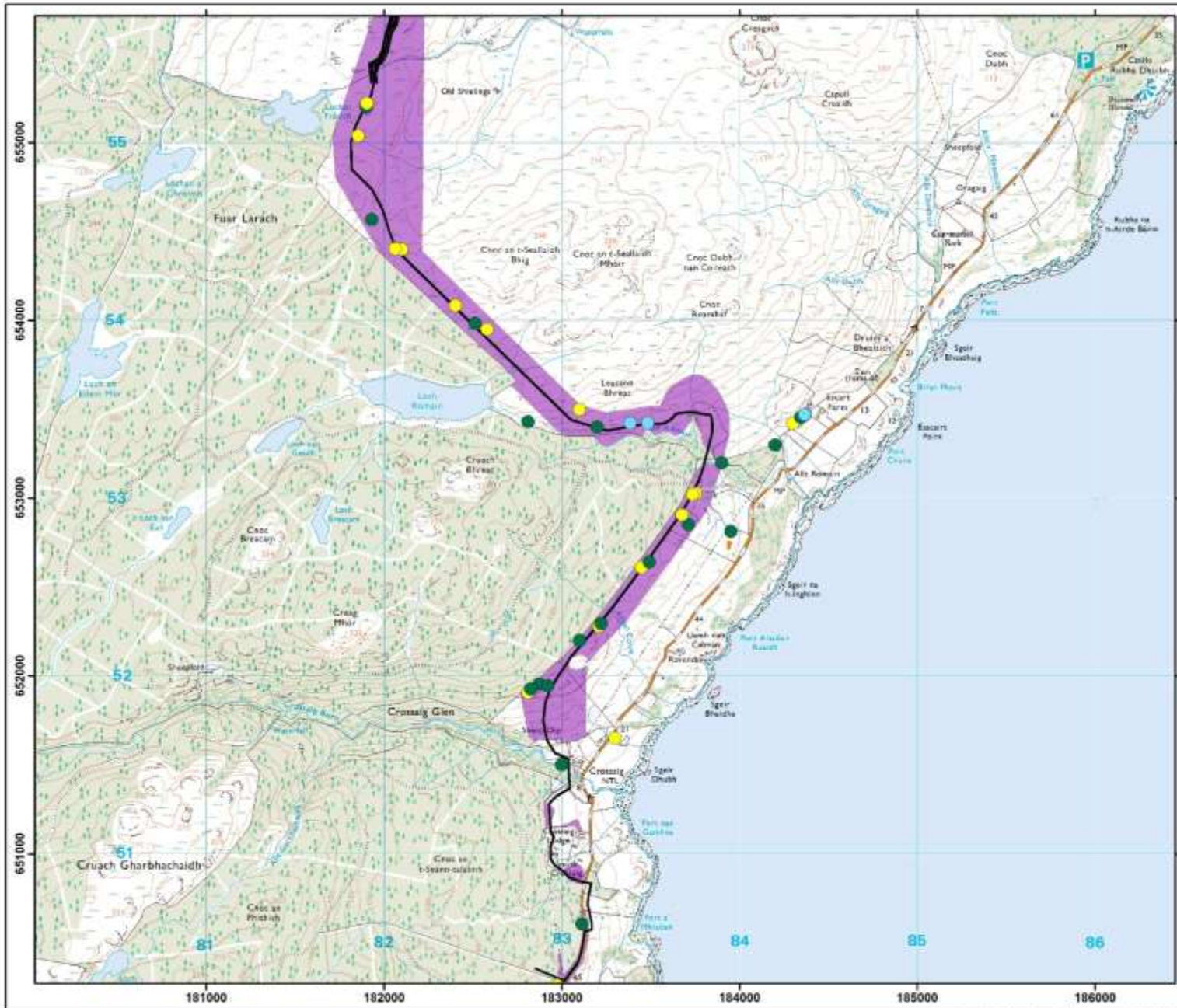
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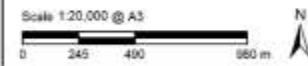
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- Key**
- Common Frog
 - Common Toad
 - Palmate Newt
 - Cable route
 - Suitable reptile habitat



Amphibians

**Freasdail Grid Connection
Reptile Mitigation**

Results

- Adders observed in area, but not affected
- Common lizards: 190 observed, 134 relocated
- Slow-worms: 35 observed, 34 relocated

- Many amphibians also relocated (common frog, common toad and palmate newt)

Results

- Adders observed in area, but not affected
- Common lizards: 190 observed, 134 relocated
- Slow-worms: 35 observed, 34 relocated

- Many amphibians also relocated (common frog, common toad and palmate newt)

- No evidence of harm or mortality

Conclusions

- Traditional mitigation (e.g. fencing) may not be practical for all projects
- Mapping habitat and avoiding key features appears to be effective mitigation to avoid impacts on adders at the Freasdail cable route
- Combination of visual searches and high density of artificial refugia to allow relocation of reptiles appears to be effective mitigation at the Freasdail cable route



Conclusions

- Prevention is the best option (design & micro-siting to avoid habitat features)
- Relocation still necessary during active season



Conclusions

- Prevention is the best option (design & micro-siting to avoid habitat features)
- Relocation still necessary during active season
- Watching brief and ECoW essential even if reptiles are considered unlikely to be present

Conclusions

- Prevention is the best option (design & micro-siting to avoid habitat features)
- Relocation still necessary during active season
- Watching brief and ECoW essential even if reptiles are considered unlikely to be present
- **Need formal published guidance...**



Amphibian and Reptile Groups of the United Kingdom
Advice Note 10
www.arguk.org

Reptile Survey and Mitigation Guidance for Peatland Habitats

Version 1, April 2018

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Cathrine, C. 2018. *ARG UK Advice Note 10: Reptile Survey and Mitigation Guidance for Peatland Habitats*. Amphibian and Reptile Groups of the United Kingdom.

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