Appendix 9E

Badger Survey Report

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Derrygreenagh CCGT

Appendix 9E: CONFIDENTIAL Badger survey report

Project number: 60699676

November 2023

Delivering a better world

Quality information

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1. Introduction

1.1 Confidentially statement

This Report contains information relating to badger *Meles meles* setts in relation to the Proposed Development. Due to the sensitive nature of this information, this report, and the associated figures must be kept confidential and must not be published in the public domain. If they are published, all information pertaining to setts must be redacted.

1.2 Background

AECOM was commissioned to carry out a badger survey on behalf of Bord na Móna PLC for the Proposed Development of a Combined Cycle Gas Turbine (CCGT) unit and an Open Cycle Gas Turbine (OCGT) unit, Electricity Grid Connections including substations and associated buildings and infrastructure ('the Proposed Development') on lands within the Derrygreenagh Bog Group in Co. Offaly.

The Proposed Development comprises several individual project elements, namely the Power Plant Area, the Electricity Grid Connection, and the Gas Connection Corridor. For simplicity, the individual project elements are herein referred together as the 'Proposed Development' and their combined location as the 'Site', where relevant. Individual project elements are referred to throughout this report where relevant. Full details of the Proposed Development are presented in Chapter 5 of the EIAR (refer to EIAR Volume I).

At the time of the survey, the Planning Application Site comprised several options for the placement of the substation site, all of which were surveyed for badger (See Figure 1a and 1b).

A badger survey was previously carried out in 2008 (Mott MacDonald Pettit, 2008), with data also recorded in 2014 and 2015. Incidental records of badger evidence were identified during 2022 ecological constraints survey (Woodrow APEM Group, 2023). However, no badger setts had previously been identified within the Proposed Development site.

This report presents badger survey data collected in 2023 by AECOM. This Report should be read in conjunction with the Biodiversity Chapter of the EIAR (Chapter 9, EIAR Volume I).

1.3 Aims

The aims of the surveys and this report were to:

- Record and map any structures or places within the Survey Area which are used for shelter or protection by badger particularly those that will be directly impacted by the Proposed Development;
- Provide data on badger distribution and activity (areas used for foraging and commuting) in relation to the Proposed Development;
- Identify any constraints related to badger which may influence the design and / or implementation of the Proposed Development; and,
- Identify appropriate mitigation measures.

1.4 Quality assurance

This Report, and the field survey described within it, has been completed in accordance with the AECOM Integrated Management System (IMS). Our IMS places emphasis on professionalism, technical excellence, quality, as well as covering health, safety, environment, and sustainability management. All AECOM staff members are committed to maintaining our accreditation to those parts of BS EN ISO 9001:2015 and 14001:2015, as well as BS OHSAS 18001:2007 that are relevant to consultancy service.

2. Legislative and Policy Context

Badgers and their setts are protected under the Wildlife Acts (the Wildlife Act, 1976 and the Wildlife (Amendment) Act, 2000). Under the Wildlife Acts, badger is protected from intentional killing or injury, and their breeding or resting sites are also protected (from wilful disturbance).

The following planning policy relating to nature conservation was also considered for the Proposed Development:

- Project Ireland 2040 National Planning Framework (NPF).
- National Biodiversity Plan 2017-2021.
- Offaly County Development Plan 2021-2027.

3. Methods

3.1 Field survey

All field surveys were carried out by experienced AECOM ecologists and had regard for relevant guidance including, but not limited to, the National Road Authority's (NRA) *Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes* (NRA, 2009) and *Surveying Badgers. An Occasional Publication of the Mammal Society* (Harris *et al*., 1989).

The survey was carried out in accessible areas up to 100 m around the Proposed Development as it was at the time of Composite Plan Revision 3 (the Survey Area), however the areas under the overhead lines were not surveyed. All potential habitats (e.g. hedgerows, banks, scrub) were searched for signs of badger activity and habituation. Evidence searched for included setts, spoil heaps and bedding, guard hairs, latrines, footprints, trails, and signs of foraging activity (e.g. snuffle holes).

Where present, setts were assessed for their level of use and the number and physical description of entrances, and thus classified, where possible, into one of four types: main, annex, subsidiary, or outlier, according to the descriptions presented in Harris *et al*. (1989). These are defined in Table 3.1.

Table 3.1: Sett types and descriptions.

Sett Type	Typical Description	No. Entrances
Main sett	These are typically large setts with multiple entrances and large spoil heaps, central within a wider territory and the most likely location for the raising of cubs. Often bedding and play areas are apparent. Permanent occupation, especially throughout the winter period.	1-38 (6-7 average).
Annex sett	These setts are found within 15-150 m of the main sett, with an obvious, well-worn path connecting the two setts.	1-14 (3-4 average).
Subsidiary sett	Beyond 50 m from the main sett with no obvious, well-worn paths connected to the main sett. Multiple entrances with spoil heaps. Intermittent (seasonal) use.	1-8 (1-2 average).
Outlier sett	One or two entrance holes with small or absent spoil heaps. No obvious, well-used paths connected to the main sett and lacking signs of use in winter. Beyond 50 m from the main sett.	1-5 (1-2 average).

Source: Harris et al. (1989).

For each sett identified, information was gathered about each entrance. Information recorded included, the dimension of the entrance, tunnel direction, tunnel description (as far as visible) and any evidence of badger around the entrance. This information was used to provide an indication as to the level of use of the sett by badger. Table 3.2 indicates how entrances were classified.

Table 3.2: Sett use and descriptions.

Sett Use	Description
Well-used	Entrances are in regular use and are therefore free of debris. They may have been recently excavated.
Partially used	Debris, including leaves, twigs and other vegetation clutter the entrance to these holes, indicating they are not in regular use. The holes can be used after a minimum of clearance.
Inactive	A considerable amount of clearance is needed before these holes can be used. The holes may become so blocked that only a depression in the ground is visible where the entrance previously was.

Source: Harris et al. (1989).

3.2 Data collection

All survey data were recorded onto a mobile mapping device in the field, allowing for relatively accurate locational data to be recorded.

3.3 Survey personnel

Scott McCollum BSc (Hons) is a Consultant Ecologist who has over five years' experience in ecological consultancy. Scott has gained experience in a wide variety of ecological surveys including surveys for badger, as well as habitat surveys and associated potential for protected species, including badger. Scott has conducted badger surveys for a wide range of projects including road, railway, housing and a range of large-scale private sector developments. Scott has also carried out badger sett watching briefs as an accredited agent when works were taking place within 25 m of a badger sett, has assisted in the licensed exclusion and closure of five badger setts, and has held an NIEA licence to disturb badgers.

Paul Donaghey BSc (Hons) MSc is a Consultant Ecologist with four years' professional experience of ecological consultancy. Paul is experienced in a range of ecological surveys, including badger surveys, otter surveys, bat activity surveys, butterfly transects, Phase 1 Habitat surveys, and wintering and breeding bird surveys. Paul has carried out numerous badger surveys for both large and small infrastructure projects for a variety of different sectors including power, transport, and housing. Paul is also proficient in the use of GIS.

3.4 Limitations

The NRA has since been subsumed within the umbrella body of Transport Infrastructure Ireland (TII), however the guidance is considered of relevance to badger survey, since the original NRA guidance has not been renamed or otherwise updated since the organisational change.

The field survey was constrained by areas of inaccessibility, due to the presence of livestock and dogs in fields. The perimeters of these areas were searched where accessible. The 100 m Survey Area was reduced to 30 m in the afternoon of the 31 March, due to time available for survey. This resulted in the south-eastern part of the Proposed Development having a reduced surveyed area than the rest of the Proposed Development, however much of this area not surveyed comprised large fields not likely to contain setts. The current survey did not include the overhead line route (labelled 'B'). This area is mostly cutover bog with regenerating woodland. The cutover bog is suboptimal, for badger but there is potential habitat in the woodland areas.

Badger setts have been tentatively classified based on size, evidence, and activity, however it is worth noting that confirmation of sett classification typically requires knowledge of the location of the main sett, which was not identified within the Survey Area during survey.

No other limitations to constrain the results of this Report were identified.

4. Results

4.1 Survey conditions and effort

The badger survey was carried out on 30 and 31 March 2023 by AECOM Ecologists Scott McCollum and Paul Donaghey. Weather conditions were overcast with intermittent rain showers and good visibility. Small additions to the survey were made on 7 and 8 June 2023. The Planning Application Site was searched for badger, in addition to lands up to 100 m from the Planning Application Site. The area surveyed is presented in Figure 1.

4.2 Badger survey

Badger evidence was identified within the Survey Area, largely associated with agricultural habitats (e.g. hedgerows, fields). Seven setts were identified in the Survey Area. These setts are largely considered outlier with two small subsidiary setts, however, the main sett was not identified. An overview of the badger setts identified are in Table 4.1. Full badger sett details are presented in Annex A. Other badger evidence identified within the Survey Area comprised trails, push-unders, latrines, and snuffle holes. The locations of all badger evidence identified is displayed in Figure 2.

Snuffle holes, individual badger dungs, trails, and push-unders were found in the area surrounding sett BA01, particularly the fields to the south, just outside the Main Site at Derrygreenagh. Just west of this, across the R400 road is BA02, which is located beside a woodland where further trails and snuffle holes were noted. Further south-west of the Main Site, evidence of badger was less frequently recorded, in this area the railway is on an embankment raised above the surrounding bog. Snuffle holes and latrines were occasionally found on the embankment, particularly after the railway line turned south-east.

Near BA03 and BA04, trails, footprints, snuffle holes, latrines and push-unders were found in the wider agricultural environment. The trail of evidence crosses a stream and is present near the railway in this area. Infrequent evidence was found west of BA04.

Latrines, snuffle holes, and trails, often crossing boundaries such as hedgerows and streams, were found in the areas surrounding BA05, BA06 and BA07. The evidence suggests there could be more setts in the wider area at this location, in similar areas of countryside.

Table 4.1: Overview of badger setts identified.

Sett reference	Type	Description
BA01	Outlier	A disused outlier sett c. 95 m south-east of the Power Plant Area.
BA02	Outlier	A two-entrance outlier on the edge of a woodland parcel c. 51 m south-east of the Power Plant Area and substation site. Badger hair present.
BA03	Subsidiary	A four-entrance sett along a hedgerow, c.7 m north of the 400 kV substation ('1'). Evidence found includes hair, prints, fresh spoil, nearby latrines and snuffle holes.
BA04	Outlier	An active single entrance outlier in a hedgerow above a stream, c. 36 m from 400 kV substation ('1'), with a spoil, nearby snuffle holes, and trails.
BA05	Outlier	A two-entrance outlier c. 18 m from 220kV buried cable route labelled 'D' on Revision 3. Evidence included a moderate spoil heap, bedding, and small badger hair.
BA06	Outlier	A partially-used single entrance sett, c. 43 m from 220kV cable route 'D' on Revision 3.
BA07	Subsidiary	A two-entrance active sett, within substation site option '2A' on Revision 3. Evidence includes bedding, recent excavations, badger footprints, and a nearby latrine.

5. Discussion of potential impacts

5.1 Overview of badger survey

Badger evidence was identified within the Survey Area, largely associated with agricultural habitats (e.g. hedgerows, fields). Seven setts were found in total. The evidence found such as snuffle holes and trails suggest badger regularly traverse through the landscape, including some of the areas of bog.

Given the large distances between the setts, it is quite possible that the setts found could be part of several different territories, for example there could be three territories, comprising BA01 and BA02, BA03 and BA04, and BA05, BA06 and BA07. No particularly large setts were found. The majority of the setts with more than one entrance only had one active entrance with other entrances showing less use. However, two setts had enough evidence to be considered likely subsidiary setts (BA03, BA07).

5.2 Guidance on work near setts

Following NRA guidance (NRA, 2006), unless carried out under licence:

- No heavy machinery should be used within 30 m of a badger sett;
- Lighter machinery (generally wheeled vehicles) should not be used within 20 m of a sett entrance;
- Light work, such as digging by hand or scrub clearance should not take place within 10 m of sett entrances.

NRA guidance also state that during the breeding season (December to June inclusive), none of the above works should be undertaken within 50 m of active setts nor blasting or pile driving within 150 m of active setts. Work closer to active setts maybe allowed following consultation with NPWS and with appropriate mitigation in place. Licensing may be required.

5.3 Construction phase impacts

Badgers are active across the study area, with seven setts identified. Based on the current plan, (Composite Plan Layout Revision 7), setts BA05 to BA07 will not be impacted as no works are to take place in this area. Depending on the final works locations, any of the other setts could be within the Zone of Influence of significant effects, and may require either temporary or permanent closure prior to any works commencing. In the absence of mitigation, some of the options included in the Proposed Development may result in injury / mortality to badgers potentially using the setts on site.

The construction phase of the Proposed Development could result in the destruction of pathways between foraging grounds and setts, causing habitat fragmentation. Badgers are likely to continue to keep using these pathways even during the construction phase of the development. Without appropriate mitigation, this may lead to mortality or injury for this species, for example, if a badger becomes trapped in an open trench or excavation. Such impacts are temporary, lasting for the duration of the construction works as ground at cable routes will be restored and new paths can be formed around permanent structures. In addition, the clearance of vegetation or removal of habitats will reduce foraging habitats available to badger. Habitat loss is medium-long term impact, depending on scale of clearance / removal and whether there will be provision of new or replacement planting.

Badger may also become displaced due to lighting. As badgers are largely nocturnal, artificial lighting associated with the construction phase may disrupt established commuting routes and further sever the connectivity of established foraging areas and commuting routes.

Increased human presence in the study area, pollution, and elevated levels of noise and vibration from construction, may cause the disruption or displacement to badger commuting routes, foraging areas, and setts.

Exposure to any oils and toxic chemicals associated with the construction of the Proposed Development has the potential to cause injury to badger or pollute local water sources for badgers.

With the exception of sett destruction, which is a permanent impact, the majority of construction-phase impacts are temporary, lasting for the duration of the construction works. Badger are active year-round, hence impacts to badger may occur at any time during construction. Impacts to breeding badger would occur between December to June (inclusive). In the absence of mitigation, construction phase impacts will be significant at a County geographic scale.

5.4 Operational phase impacts

Habitat loss associated with the permanent construction of the Proposed Development will result in permanent loss of badger habitat and may result in potential fragmentation of badger habitat and pathways between foraging grounds and setts. Despite the loss of some open areas of grassland and possibly hedgerows to facilitate the Proposed Development, similar habitat will be retained surrounding the Proposed Development, and will continue to provide badger habitat. There is ample suitable habitat for badger commuting and foraging in wider environs. New artificial lighting, the provision of which is currently unclear, may disrupt badger commuting routes. Operational impacts are permanent. In the absence of mitigation, operation phase impacts will be significant at a Local (local higher) geographic scale.

6. Mitigation

6.1 General principles of mitigation

Impacts on badgers and their setts will be avoided during work for the Proposed Development. Mitigation is required to reduce the impacts to badger within the Planning Application Site. Following the mitigation hierarchy presented here is when there is potential for impacts on relevant ecological receptors is considered best practice to reduce impacts on ecological receptors.

1. Avoidance – seek options that avoid harm to ecological features (e.g. locating to an alternative site);
2. Minimisation – if avoidance is not possible, negative effects should be minimised, either through design or subsequent measures that can be guaranteed (e.g. through a condition or planning obligation);
3. Compensation – where there are significant residual negative ecological effects despite the measures proposed, these should be offset by appropriate compensatory measures e.g. by providing suitable habitats elsewhere on the wider site; and,
4. Enhancement – seek to provide net benefits for biodiversity over and above requirements for avoidance, minimisation, or compensation.

This hierarchy requires the highest level to be applied where possible. Only where this cannot reasonably be adopted should lower levels be considered.

The mitigation measures in Section 6.2 are proposed to avoid and minimise impacts to badger during the construction phase of the Proposed Development.

6.2 Mitigation measures

6.2.1 General good practice

To minimise the negative impacts to badger during the construction of the Proposed Development the following mitigation will be adhered to:

- All works will be largely restricted to daylight hours, to cause as little disturbance as possible;
- Commission of an Ecological Clerk of Works (ECoW) by the appointed Contractor to oversee and advise both contractors and site operators on mitigation implementation.

- The use of artificial lighting during the construction period will be limited and construction activities during hours of darkness will be limited. Lighting will be kept to essential locations only, with the position and direction of lighting being designed to minimise intrusion and disturbance to habitat features and corridors and their nature conservation value. Use of full cut-off lanterns will minimise light spillage onto adjacent areas. In addition, any operational phase lighting will be carefully designed in cognisance with these points;
- Drainage and attenuation ducts will restrict mammal entry, and any temporary features which are liable to entrap wildlife will either be covered or have a means of escape (e.g. mammal ladder or ramps);
- Marking a 30 m exclusion zone around each sett will help ensure the setts are not disturbed by heavy machinery or other construction work, and will ensure that contractors are aware of badger presence. There will be no construction work within the exclusion zone unless prior arrangement has been granted;
- All excavations / trenches will either be covered or fenced off at the end of each working day. If this is not practicable, a means of escape for any animal which may fall in (e.g. mammal ladder or ramps) will be provided; and,
- Water sources such as streams which may be used by badger will be safeguarded. Measures for pollution prevention will be provided in the outline Construction Environment Management Plan (oCEMP) and final CEMP for the Proposed Development.

6.2.2 Preconstruction surveys

As mobile species, badger may establish new breeding and / or resting prior to construction. Therefore, preconstruction badger surveys are proposed within the zone of influence of the Proposed Development no sooner than one month prior to works commencing, to determine if any setts have become newly established since baseline surveys. These surveys will be carried out by the ECoW, who will provide advice on constraints related to additional badger setts, should they be identified.

6.2.3 Closure of setts

In some circumstances, for works to proceed the only option is to exclude and close badger setts. The removal of badgers from their setts and subsequent destruction of the setts will be conducted under NPWS licence by an experienced ecologist acting as project ECoW.

Exclusion of badgers from any active sett (level of activity to be reassessed during preconstruction survey) can only be carried out during the period of July to November (inclusive) to avoid the badger breeding season.

For active setts that require permanent closure, one-way gates will be installed on each entrance (with side proofing when needed), which will allow badger to exit but not re-enter. Each gate should be kept open for three days before being closed to allow exit but prevent re-entry. Gates should be left installed for 21 days as a minimum (including the days with the gate open) before the sett is deemed inactive. Sett destruction (under licence and supervision by the licence holder) should commence immediately after the end of the exclusion period if permanent closure is required. Badger may attempt to re-dig into the sett, and if this is successful the closure procedure will need repeated.

Disused and inactive setts can be lightly blocked with vegetation and soil, known as soft blocking. If left undisturbed for c. 5 days this sett should be destroyed immediately using a digger if permanent closure is required.

In some circumstances, a temporary exclusion which would exclude badger for a period of time until the works are complete is an option. This may start as a soft block, followed by the fixing a one-way gate to the entrance which will remain in place until the works are complete. The one-way gate is a precaution to prevent badgers starting to use this disused sett again until the works are complete.

6.2.4 Recommendations for each sett

Depending on the final site layout and construction plan, sett BA01 may require either temporary closure, or may be able to remain open for the works in their entirety. At more than 50 m away from the Planning Application Site it may be able to remain open for the works in their entirety. However, if piling is required within 150 m of this sett, BA01 will likely require temporary closure until the works are complete. This may take the form of a soft block, then under licence fixing a one-way gate to the entrance which would remain in place until the works are complete. The one-way gate is a precaution to prevent badgers starting to use the sett until the works are complete.

BA02 is over 50 m from the works and may be able to remain open for the works in their entirety. However, if plans change and the works will be closer to the sett than 50 m or there is piling work within 150 m of BA02, the sett may require temporary closure.

BA03 is, on current plans only 7 m north of works for the 400 kV substation (labelled '1'). Due to the proximity of this sett to the Proposed Development, it will require temporary closure with one-way gates for the duration of the construction works. Alternately, it could remain open if plans were changed to have no works within 50 m of the sett, or 150 m of the sett if piling was required.

BA04 is within 36 m of the proposed work for the 400 kV substation ('1'), with the tunnel direction leading further away from the Proposed Development. At 36 m from the proposed works, it is within the 50 m distance stated by the NRA guidance within which no works should take place within during the breeding season (December to June) if works are required within the breeding season, this sett should be temporarily closed, however if works are to take place in the non-breeding season we suggest this sett could remain open as it is more than 30 m away from the proposed works. If there is piling required on this substation site within 150 m of BA04, the sett may require temporary closure during the works.

BA05, BA06, and BA07 relate to non-preferred substation options and should not be impacted by the current plans. However, if the plans revert to some of the options displayed in Composite Plan Revision 3, BA05, BA06, and BA07 may become constraints, with the following recommendations.

If the 220kV buried cable route labelled 'D', displayed in Composite Plan Revision 3 is selected, BA05 would require closure. This may comprise temporary closure, as the Proposed Development is c. 18 m away from the sett. Alternately, a minor rerouting of this route further south at this point so the cable route is more than 30 m (if carried out in the non-breeding season) or 50 m (if carried out in the breeding season) from the sett entrances would resolve this issue.

Sett BA06 is 43 m from the 220kV buried cable route 'D', in Composite Plan Revision 3 and was considered partially-used during the March 2023 survey. If there is no increase in badger activity at this sett, it may be able to remain open for the duration of the works. If the sett becomes active, it may require temporary closure if works occur during the breeding season.

For substation site (option 2A), in the Composite Plan Revision 3, BA07 would require permanent closure as it is in the centre of this substation site option.

The recommendations are summarised in Table 6.1.

Table 6.1 Recommendations for each sett

Sett reference	Distance from works	Relevant options	Recommendations
BA01	95 m	Power Plant Area	Remain open. Temporary closure if piling within 150 m.
BA02	51 m	Power Plant Area	Remain open. Temporary closure if piling within 150 m.
BA03	7 m	400 kV substation ('1')	Temporary closure

Sett reference	Distance from works	Relevant options	Recommendations
BA04	36 m	400 kV substation ('1')	Remain open if works in non-breeding season. Temporary closure if piling within 150 m or working in breeding season.
BA05	18 m	220kV buried cable route 'D' on Composite Plan Revision 3	None on current design choice Temporary closure. Minor reroute of cable.
BA06	43 m	220kV buried cable route 'D' on Composite Plan Revision 3	None on current design choice No increase in badger activity – remain open. Becomes active – temporary closure.
BA07	Within	Substation site (option 2A).	None on current design choice Permanent closure.

6.2.5 Habitat loss, fragmentation, and compensation

For the 200 kV buried cable, habitats will be reinstated after the cable is in place, so none will be permanently lost. The major losses of habitat will occur for the substation sites, which will result in the loss of improved agricultural grassland and hedgerows, and the Power Plant Area, where amenity grassland and trees may be lost.

The construction of the non-preferred substation option 2A may be the most disruptive as it would likely result in the loss of the sett (BA07), the hedgerow, and culverting the adjacent stream.

Mitigation for habitat loss at the Power Plant Area and substations will include replacement planting of trees and hedgerows which will enhance habitat for badger. Maintaining badger commuting corridors between setts and foraging ground within the study area and wider landscape is important, and planting will ensure safe, sheltered, commuting routes for badger, and opportunities for sett creation in the long term.

6.2.6 Lighting

Both during construction and post development, lighting designs will minimise light spill to habitat features and concentrate artificial light only where required. Apart from areas of the Main Site near buildings, the Planning Application Site is currently unlit. Lighting for the Proposed Development will not illuminate any habitat features (i.e. woodland, hedgerows) or badger setts. Where lighting is installed as a result of the Proposed Development, the following generic recommendations are proposed:

- Lighting will be minimised wherever possible in terms of number of lights and the power of the lights (lux level). LED lighting should be used where possible. Using powerful lighting on wildlife corridors can, for some species, effectively sever connectivity;
- Light spill will be minimised on linear features (e.g. woodland, treelines), particularly those which are commuting routes, and badger setts;
- Directional lighting, facing and located away from the surrounding vegetation should be used. This avoidance is particularly relevant to any mature trees on or adjacent to the site. Column heights should be carefully considered to minimise light spill and specific lenses or accessories such as baffles, hoods, or louvres can be used to further reduce light spill and direct light only where it is required; and,
- Lighting should be turned off when not in use except to meet the minimum requirements for Health and Safety. Security lighting should be set on motion-sensors and short timers (e.g. one minute).

7. Residual impacts

With the implementation of the proposed mitigation measures, residual impacts for badger will be significant in the short to medium term at Local (higher) level geographic scale of significance.

8. Summary

Badger survey for the Proposed Development of CCGT and OCGT units and associated infrastructure at Derrygreenagh in March 2023 found five outlier and two subsidiary setts, as well as other evidence such as trails, push-unders, latrines, and snuffle holes.

Potential impacts as a result of the Proposed Development include disturbance, displacement, injury, and mortality to badger, as a result of sett destruction, habitat loss, lighting, pollution, human disturbance, and construction works. However, the number of setts will be impacted will depend on the final design of the Proposed Development, which is unknown at this time. In the absence of mitigation, impacts will likely be significant at County geographic scale of significance.

Proposed mitigation comprises appointment of an ECoW, general good practice for safeguarding badger during construction, preconstruction surveys, licensed closure of badger setts, and habitat replacement. With the implementation of the proposed mitigation measures, residual impacts for badger will be significant at Local (higher) level.

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Figures

Annex A Badger Sett Details

Sett reference / type	Entrance reference	Description	Distance from Proposed Development	Photograph
BA01 Outlier	a	This entrance is 38 cm wide and 32 cm high, with the tunnel direction south-west. A moderate sized old spoil heap, with leaf litter at the entrance. The tunnel drops and bends to right after c. 1 m, it looks like it may continue further but this was not confirmed. No badger evidence was found, and the tunnel appears disused. Two collapsed entrances were found nearby.	95 m south east of the Power Plant Area.	
BA02 Outlier	a	An active entrance 23 cm high and 34 cm wide, with a large spoil heap. The tunnel direction is south-west. Badger hair was found, and clear paths lead away from the sett. This entrance is located close to the fence, with trails leading into the field and woodland.	51 m south east of substation site (labelled '2').	
	b	Initially a wide entrance, but narrowing to 20 cm wide, 15 cm high. Rabbit hair was identified, but no other evidence was found, suggesting the entrance is currently used by badger. May not be used by badger but recorded due to its proximity to entrance a, and due to having suitable dimensions.	71 m south of the substation site (labelled '2').	
BA03 Subsidiary	a	This active, well-used entrance to a subsidiary is 20 cm high, and 43 cm wide. The sett has recent excavations and clear path leading from the sett. Badger hairs were present. There is a large spoil heap beside the stream, some of which looks fresh. The tunnel direction is north.	8 m north of 400 kV substation (labelled '1').	

Sett reference / type	Entrance reference	Description	Distance from Proposed Development	Photograph
	b	A partially-used entrance with a moderate spoil heap above the stream, with badger prints. Large amount of badger hair was identified. Clear paths leading away from the sett. The entrance is 30 cm wide, and 20 cm high.	7 m north of 400 kV substation (labelled '1').	
	c	A partially-used entrance in the hedgerow above the stream. The tunnel direction is north. The entrance is 20 cm high and 40 cm wide. The entrance appeared to have had some recent activity, however older debris could be found further inside.	13 m north of 400 kV substation. (labelled '1').	
	d	A partially-used entrance with a small spoil heap. The entrance is 30 cm wide and 20 cm high, and the tunnel direction is south. The spoil looks fresh but older inside the tunnel. Clear paths lead away from the sett.	10 m north of 400 kV substation (labelled '1').	
BA04 Outlier	a	An active outlier sett, c. 40 cm wide and c. 20 cm high. The tunnel direction was north. A spoil heap falls away to the stream. Clear paths lead away from the sett. It is in a hedgerow above the stream, which makes surveyor access difficult. There may be more than one entrance but this is concealed by the hedgerow.	36 m west of 400 kV substation. (labelled '1').	
BA05 Outlier	a	An active entrance to an outlier sett, 35 cm wide and 25 cm high. It had a moderate spoil heap, and bedding was observed. A small badger hair was found. The tunnel direction is southwest.	18 m north of 220kV buried cable route 'D'. Not current prefered option	

Sett reference / type	Entrance reference	Description	Distance from Proposed Development	Photograph
	b	A disused entrance, 20 cm wide and 20 cm high. No specific badger evidence was identified. May not be in use by badger, but recorded as a precaution given the proximity to entrance a.	18 m north of 220kV buried cable route 'D'. **Not current prefered option**	
BA06 Outlier	a	An outlier sett with an entrance 20 cm wide and 20 cm high, with a small spoil heap. No other badger evidence identified, this sett is considered partially-used.	43 m northeast of 220kV buried cable route 'D'. **Not current prefered option**	
BA07 Subsidiary	a	An active entrance to an outlier sett 25 cm wide and 25 cm high. The tunnel direction is north. This entrance has bedding, recent excavations, and badger footprints. A large spoil heap falls away into the stream. A badger trail towards the stream had a large latrine on it.	Within substation site (option '2A'). **Not current prefered option**	
	b	A partially-used entrance, 20 cm wide and 20 cm high. The tunnel direction is south-west. The entrance had no spoil or other specific badger evidence.	Within substation site (option '2A'). **Not current prefered option**	

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