

Report Synopsis

As part of this Addendum, updated ecological surveys were completed, comprising: desktop review for designated sites; Phase 1 Habitat survey (including invasive species); bat surveys (activity, tree assessment, and emergence / re-entry); badger surveys; otter surveys; habitat assessment for smooth newt; breeding birds surveys; wintering birds surveys; and, barn owl surveys.

The conclusions remain unchanged from the conclusions drawn in the Consolidated ES (2013), Consolidated ES Addendum (2015) and Technical Report 08 Ecology (2017). It was concluded in these reports that the provision of the proposed substation and the overhead line will have a minimal impact on the ecology of the line route. Extensive ecological assessment shows that with mitigation, the long-term effects on habitats, species and biodiversity will be negligible.

1. Introduction

- 1.1 This Technical Report presents an updated assessment of the potential impacts of the Tyrone - Cavan Interconnector on the natural environment and the species and habitats found there.
- 1.2 The Consolidated ES and Consolidated ES Addendum were published in 2013 and 2015 respectively and contained results of various ecological surveys conducted for the Tyrone - Cavan Interconnector. Further bat surveys were included in the submissions to the Public Inquiry (2017) (Appendix 1 Tyrone Cavan Interconnector Bat Report 2015 and Appendix 2 Emergence Re-entry Bat Surveys, 152 Trewmount Road 2016 to Technical Report 08 Ecology (2017) presented as evidence to 2015-2016 Public Inquiry).
- 1.3 This 2019 Addendum supplements the previously submitted information with a suite of updated ecological surveys conducted in 2018 and 2019. The following assessments and surveys have been updated:
 - Desk study;
 - Information to Inform Habitats Regulations Assessment (HRA);
 - Phase 1 Habitat survey;
 - Invasive species survey;
 - Bats:
 - Bat emergence / re-entry surveys;
 - Tree Assessments, comprising preliminary ground level roost assessment of trees for roosting bats with subsequent potential roost feature (PRF) inspection surveys of specific trees (tree-climbing and endoscopy); and,
 - Bat activity walked transects;
 - Badger *Meles meles* and otter *Lutra lutra* survey;
 - Habitat assessment for smooth newt *Lissotriton vulgaris*; and,
 - Birds:
 - Breeding bird survey;
 - Wintering bird survey; and,
 - Assessment of potential of trees and buildings for barn owl.

2. Previous Surveys and Assessment

- 2.1 Various baseline and updated ecological assessments and surveys have been conducted for the Tyrone - Cavan Interconnector. These surveys and their results are detailed in the Consolidated ES (2013), Consolidated ES Addendum (2015) and Technical Report 08 Ecology (2017).
- 2.2 It was concluded in these reports that the proposed substation and the overhead line will have a minimal impact on the ecology of the line route. The habitats present within the survey area are generally ecologically impoverished and of low value both intrinsically and as supporting habitats for protected fauna. The Tyrone - Cavan Interconnector avoids all designated areas and impacts upon protected species and habitats have been addressed through the provision of mitigation measures. Extensive ecological assessment shows that, with mitigation, the long-term effects on habitats, species, and biodiversity will be negligible.
- 2.3 After the 2017 Public Inquiry, the PAC published its report, paragraph 13.47 on page 140 of which states: *“...it is reasonable to conclude that the Proposed Development, either individually or cumulatively, would be unlikely to have a significant or adverse impact upon habitat, species or legally protected sites. It is consistent with prevailing law and policy.”*
- 2.4 With no known changes in the interim to either the Tyrone - Cavan Interconnector or ecological receptors, this conclusion remains valid.

3. Methods

- 3.1 Since the previous submissions, updated guidelines have been published, and relevant changes to standard methods for Phase 1 Habitat survey and bat surveys are as follows.
- 3.2 Updated guidance for Phase 1 Habitat survey was published in 2016, however the update only comprised minor revisions and did not change the approach of the survey methodology, and subsequently no change to the methodology for Phase 1 Habitat survey was required. The field survey methodology was unchanged from the Consolidated ES (2013).
- 3.3 Since the previous surveys, new guidance for bat surveys has been published (Collins, 2016). Emergence / re-entry surveys, tree assessments for roosting bats, and activity transect surveys were carried out following standard methodology in accordance with the relevant Northern Ireland Environment Agency (NIEA) Specific Requirements (NIEA, 2017) and recommendations and good practice as highlighted in Bat Surveys: Good Practice Guidelines (3rd Edition), produced by the Bat Conservation Trust (BCT) (Collins, 2016). Full details on bat survey methodology is presented in Appendix 7.3 (Bat Report).
- 3.4 Previous surveys were conducted within the corridor of the c. 34 km route, and surveys extended to a specified distance either side of the proposed centre line, depending on the nature of the survey.
- 3.5 The 2019 survey areas were altered slightly from previous surveys. For Phase 1 Habitat, badger, and otter surveys, the surveyed areas primarily focused on lands within 100 m of proposed works locations (access tracks, stringing locations etc.). This was done to target the Zone of Influence of direct impacts for mammals, and to include all habitats within and adjacent to working areas. Breeding and wintering bird surveys, and smooth newt habitat assessments were conducted in similar locations as those in the Consolidated ES (2013).
- 3.6 Due to landowner refusal, approximately 30% of the total study area, was not accessible for field survey. Where lands were inaccessible due to landowner refusal, they were surveyed (where possible) from adjacent, accessible land, from publicly accessible areas (roads, footpaths, etc.) and from aerial photography. This is in-line with the Joint Nature Conservation Committee (JNCC) guidance on surveys where land access is not possible.

- 3.7 Ecological surveys were conducted between September 2018 and June 2019, by qualified AECOM ecologists. Surveyor experience and qualifications are presented in Appendix 7.2 of the 2019 Addendum.

3.2 Legislation and Policy Context

- 3.8 Relevant legislation and policy regarding wildlife remains largely unchanged since publication of the Consolidated ES Addendum (2015) and Technical Report 08 Ecology (2017). An outline of such legislation and policy is presented in the previously submitted documentation.
- 3.9 In May 2016, the Department of Agriculture, Rural Enterprises and Environment (DAERA) was established, as a result of local government reform in Northern Ireland. As a result, the Priority Habitats and Priority Species lists were updated. All assessments on Priority Habitats and Species have been made in reference to these lists.

4. Changes in the Existing Environment

4.1 Site of Conservation Importance

4.1.1 Sites of European and International Importance

- 4.1 No additional European sites over and above those assessed in the previous submissions have been designated.
- 4.2 European sites are detailed in the Consolidated ES (2013) and Tyrone – Cavan Interconnector Information to Inform Habitats Regulations Assessment (2015).

4.1.1.2 Sites of National Importance

- 4.3 There have been no additional sites of national importance (i.e. ASSI and NHA) designated since the previous assessment. All relevant national sites with designations for conservation are detailed in the Consolidated ES (2013).

4.1.2 Sites of Local Nature Conservation Importance

- 4.4 Further Sites of Local Nature Conservation Importance (SLNCI) were identified within 5 km of the Tyrone - Cavan Interconnector in addition to those identified in the Consolidated ES (2013). These sites are described in Table 4.1. No impacts are anticipated to any of the SLNCI, due to the local nature of SLNCI designations, and the largely non-destructive nature of the works associated with the Tyrone - Cavan Interconnector. All other SLNCI are detailed in the Consolidated ES (2013).

Table 4.1: Additional SLNCI within 5 km of the Tyrone - Cavan Interconnector.

SLNCI	Distance	Designation feature(s)
Argory Mosses	2.0 km E	Designated as a SLNCI for its raised bog.
Unnamed (N of Navan Fort SLNCI)	2.6 km E	Designated as a SLNCI for neutral grassland.
Loughnashade	2.8 km E	Designated a SLNCI for fen and neutral grassland.
Mowillian South	3.1 km E	Designated as a SLNCI for fen and grassland.
Milford cutting	3.4 km E	This Ulster Wildlife reserve is designated a SLNCI for its species-rich grassland with marsh helleborine <i>Epipactis palustris</i> and Irish whitebeam <i>Sorbus hibernica</i> .
Tynan Abbey Lake	4.5 km NW	Designated a SLNCI for its parkland, wet woodland, grassland and lake.
Knockbane bog	4.7 km NW	Designated a SLNCI for grassland.
Mullaghdrolly	4.8 km NW	Designated a SLNCI for its fen habitat.
Gentle Owens Lake	4.9 km E	The lake has been designated a SLNCI.
Tullybrick Lough	4.9 km NW	Designated a SLNCI as it is a marl lake.

4.1.3 Ancient Woodland Inventory

- 4.5 There have been no new sites added to the inventory. All Ancient / Long-established Woodland parcels in proximity to the Tyrone - Cavan Interconnector are detailed in the Consolidated ES (2013).

4.2 Habitats Regulations Assessment

- 4.6 Updated Information to Inform Habitats Regulations Assessment has been completed for the Tyrone - Cavan Interconnector. This is presented in Appendix 7.8. Whilst there have been updates in case law since the previous HRA, no changes in conclusions have been identified, and no adverse effects on the integrity of any European sites are predicted.

4.3 Phase 1 Habitats

- 4.7 Updated Phase 1 Habitat surveys were conducted, concentrating on each tower location and all associated access tracks and works locations, using the methods described in the Consolidated ES (2013). Habitats across the route of the Tyrone - Cavan Interconnector have not changed significantly since the Consolidated ES (2013).

4.3.2 Substation Site

4.3.2.1 Overview of Habitats

- 4.8 Habitats are still reflective of an agricultural system with grazed, improved grassland, much of which is rush dominated. Several boundary changes were noted. Several boundaries previously noted as hedgerows are now post and wire fencing, whilst several existing hedgerows have degraded from intact hedgerows to defunct, where they are losing basal structure possibly due to a lack of management. Quality and species composition of habitats within the proposed substation site are comparable to that of previous surveys.

- 4.9 No other changes were identified across the Tyrone - Cavan Interconnector. No additional impacts have been noted.

4.3.2.2 Northern Ireland Priority Habitats

- 4.10 As in 2013, hedgerows are the only Priority Habitat identified within the proposed substation site. Many of these hedgerows are relict features which are continuing to degrade in quality. All of the hedgerows within the proposed substation site are species-poor (i.e. less than five native woody species in a 30 m length of the central section of the hedge (Defra, 2007)).

- 4.11 No other changes to Priority Habitats were identified across the proposed substation site. No additional impacts have been noted.

4.3.3 Overhead Line Route (including all working areas)

4.3.3.1 Overview of Habitats

- 4.12 Changes in habitats were associated in changes in agricultural management. For example, changes in grassland management were noted, with several parcels of previously improved grassland becoming semi-improved due to less intense management; several arable land parcels have become improved grassland. Changes to field boundaries were noted, with some boundaries completely removed, hedgerows becoming defunct, and some new hedgerows noted in locations which were previously delimited by post and wire fencing.

- 4.13 Within areas which were traditionally less managed, scrub is encroaching grassland habitats, and areas of previously noted dense scrub is succeeding into woodland. Several habitat types are noted as degrading across the route corridor. Marsh / marshy grassland parcels are changing to semi-improved neutral grassland.

- 4.14 No other changes were identified across the Tyrone - Cavan Interconnector. No additional impacts have been noted.

4.3.3.2 Northern Ireland Priority Habitats

- 4.15 Previously identified Northern Ireland Priority Habitats within the study area of the overhead line route comprise fen, swamp, hedgerows, wet woodland, mixed ash woodland, and oakwood.
- 4.16 Notable changes in Priority Habitat are confined to hedgerows and fen. Changes to hedgerows across the route comprise reduction in quality (e.g. changes from intact to defunct), an increase of tree specimens (e.g. changes from hedgerow to hedgerow with trees), new hedgerows noted, and hedgerows which have been lost completely.
- 4.17 A previously noted area of fen, oversailed by the overhead line at Tower 69 is no longer considered as fen. When noted in 2013, the area was considered as drying out and degrading. The fen is now considered as marshy grassland, with species such as meadowsweet *Filipendula ulmaria* and great reedmace *Typha latifolia* dominant in the parcel, although no standing water was present during the survey. The marshy grassland surrounding the fen is now more typical of semi-improved neutral grassland.
- 4.18 No other changes to Priority Habitat were identified across the Tyrone - Cavan Interconnector. No additional impacts have been noted.

4.4 Invasive Species

- 4.19 Four species which appear on Schedule 9 of the Wildlife (Northern Ireland) Order 1985 (as amended) (the Wildlife Order) were identified as part of the habitat survey for the Tyrone - Cavan Interconnector. These species are salmonberry *Rubus spectabilis*, Japanese knotweed *Reynoutria japonica* (formerly *Fallopia japonica*), giant hogweed *Heracleum mantegazzianum*, and Himalayan balsam *Impatiens glandulifera*. Information and locations of these species are presented in Table 4.2.

Table 4.2: Invasive species noted within Tyrone - Cavan Interconnector.

Species	Reference	Description	Tower	Distance	Potential to constrain?
Salmonberry	SB01	Small area of salmonberry among boundary conifer planting. Possibly extending beneath but shaded and hard to see.	Substation	Within planting at 152 Trewmount Road, adjacent to access track.	Yes
Salmonberry	SB02	Located in woodland beside drainage ditch. In flower, c. 1m ² stand.	Substation	c. 150 m east of substation boundary.	No
Japanese knotweed	JK01	Large stand on private property. Located in the middle of amenity grassland. 1-2m tall, area of c. 6x6m.	9	c. 100 m south of access track.	No
Japanese knotweed	JK02	Located beside field of crops, looks to have been cut and burnt. No new growth noted.	30	Adjacent to access track.	Yes
Japanese knotweed	JK03	Four exposed crowns, area of c. 5x5 m, crowns large, old canes disturbed. On spoil heap, obscured by scrub and dumped branches. No new growth noted.	30	c. 100 m east of access track.	No
Japanese knotweed	JK04	Single exposed crown c. 1m ² , old canes disturbed. On spoil heap, obscured by scrub and dumped branches. No new growth noted.	30	c. 100 m east of access track.	No
Japanese knotweed	JK05	Three exposed crowns, area of c. 5x10 m, crowns large, old canes disturbed. On spoil heap, obscured by scrub and dumped branches. No new growth noted.	30	c. 100 m east of access track.	No
Japanese knotweed	JK06	Three exposed crowns, area of c. 1x3 m, crown large, old canes disturbed. On spoil heap, obscured by scrub and dumped branches. No new growth noted.	30	c. 100 m east of access track.	No

Species	Reference	Description	Tower	Distance	Potential to constrain?
Giant hogweed	GH01	Giant hogweed growing densely along the Blackwater River bank, not fully accessed.	32	Adjacent to access track.	Yes
Himalayan balsam	HB01	Himalayan balsam is spreading into field. Growing along riverbank in sporadic but dense stand.	32	C. 80 m south of Tower, but line oversails Blackwater.	Yes
Himalayan balsam	HB02	Himalayan balsam is growing right beside fence and is encroaching into field itself. Cattle-poached ground may limit growth.	32	Adjacent to access track.	Yes
Japanese knotweed	JK07	Extensive stand of new growth. Growing among the Himalayan balsam and giant hogweed. Area appears disturbed, possibly burnt.	32	c. 160 m SE of Tower location and access track.	No
Japanese knotweed	JK08	Small stand, c. 20 stems.	88	c. 200 m from access track.	No

4.20 Article 15 of the Wildlife Order states that: “if any person plants or otherwise causes to grow in the wild, plants which are included in Part II of Schedule 9, he shall be guilty of an offence”. The Wildlife Order also states that persons must take all reasonable steps and must exercise due diligence to avoid committing an offence, and whilst it is not an offence to have these species on your land, it is an offence to cause spread of species listed under Schedule 9 to new areas.

4.21 Therefore, five of these records of invasive species pose a potential constraint to the Tyrone - Cavan Interconnector, as they fall within or adjacent to working areas (e.g. access tracks). Locations of invasive species are shown in Volume 4 Figures (Figure 7.1).

4.5 Bats

4.22 A full report for all surveys relating to bats has been prepared and is presented in Appendix 7.3 of this 2019 Addendum.

4.23 Between September 2018 and June 2019 updated tree assessments, emergence / re-entry surveys, and activity transect surveys were carried out for the Tyrone - Cavan Interconnector. These were conducted in order to allow a comparison of activity levels between survey years, ensure that contemporary data are available for assessment, and to identify use of suitable trees and buildings identified in previous survey years for roosting bat presence / likely absence.

4.24 Although updates on the specifications and guidelines for bat surveys were published in 2016, the new guidelines largely follow the 2012 guidelines used in previous bat surveys in the Consolidated ES (2013) and the Consolidated ES Addendum (2015) and therefore surveys and implementation has remained the same across the years, and results are comparable.

4.5.2 Emergence / Re-Entry Surveys

4.25 Updated emergence / re-entry surveys were conducted on trees and buildings which were previously identified as bat roosts. Surveys were conducted on 152 Trewmount Road, a tin-roofed shed, and an alder tree (BAT1) at the substation site, and the treeline east of T60 (BAT2).

4.26 Two bat roosts, Leisler’s bat *Nyctalus leisleri* (one emerged) and soprano pipistrelle (one emerged), were reconfirmed at RL01 and RL02 respectively at 152 Trewmount Road (Volume 4 of this Addendum, Figure 7.2). No roosting bats were noted at the tin-roofed shed, whilst the alder tree (BAT1) has degraded in the time elapsed since it was last surveyed and was recategorised as Negligible. A third bat roost was reconfirmed in an ash tree east of T60, where two soprano pipistrelle *Pipistrellus pygmaeus* were noted emerging (Volume 4 of this Addendum, Figure 7.2).

4.5.3 Tree Assessments

- 4.27 In May 2019, preliminary ground level roost assessments were carried out on trees which fall within the footprint of the proposed working areas across the Tyrone - Cavan Interconnector.
- 4.28 In addition to two previously confirmed bat roosts (BAT1 and BAT2), eight trees were assessed as having Moderate or High suitability for roosting bats, therefore warranting further survey.
- 4.29 A potential roost feature (PRF) survey was subsequently conducted on these trees, using a combination of tree-climbing and endoscopy to further inspect features which were identified from ground level. This survey further assessed the PRF and allowed them to be recategorised.
- 4.30 After the PRF survey, seven of the eight trees were reassessed to have Low or Negligible suitability for roosting bats. One tree was assessed as having High suitability, however it is along an access track which is already used by agricultural machinery and is not expected to be impacted as a result of the Tyrone -Cavan Interconnector.
- 4.31 The location of the trees of High suitability and the remaining confirmed tree roost (BAT2) are displayed in Volume 4 Figures (Figure 7.1).

4.5.4 Activity Transects

- 4.32 Nineteen walked activity transects were carried out in May 2019, replicating transects previously conducted in 2009, 2010, 2012, 2013, and 2015, as reported in the Consolidated ES (2013), the Consolidated ES Addendum (2015), and the Tyrone Cavan Interconnector Bat Report 2015 (Appendix 1 of technical appendix presented as evidence to 2015-2016 Public Inquiry).
- 4.33 Bats were recorded commuting, foraging, and to a lesser extent social calling, across the route of the Tyrone - Cavan Interconnector. 243 bats were recorded, representing seven species. The most frequently encountered bat was common pipistrelle *Pipistrellus pipistrellus*, followed by soprano pipistrelle. Only one brown long-eared *Plecotus auritus*, one Natterer's bat *Myotis nattereri*, and one Daubenton's bat *Myotis daubentonii* were recorded during the transects.
- 4.34 Bat Activity Indices (BAI; bat passes per hour) were calculated to give an estimate of relative bat activity across the Tyrone - Cavan Interconnector. Overall the total BAI across all transects was 16.22. The highest BAI recorded during any one transect was 48.57, at proposed towers T62 and T63, and 41.82 on transect 6 around proposed towers T22 – T25.
- 4.35 Results gathered during the walked transects are not significantly different to the previous suite of surveys conducted in 2013 and 2015. One difference noted between 2013 – 2015 and 2019, is the marked increase of records of Nathusius' pipistrelle *Pipistrellus nathusii*.
- 4.36 Bat activity recorded during transects is displayed in Volume 4 Figures (Figure 7.3).

4.6 Badger

- 4.37 A full report for protected mammal surveys, which includes badger has been prepared and is presented in Appendix 7.4 of this 2019 Addendum.
- 4.38 Badger surveys were initially conducted in 2005 with updated surveys conducted in 2011 and 2012. The 2012 surveys identified no evidence of badger activity within 100 m of the proposed substation site, and 32 no. badger setts on lands surveyed along the proposed route. There were twelve setts identified within 100 m of proposed tower locations, six of which were considered as disused. The closest active setts were within 25 m of proposed tower locations. These were identified as a single hole outlier and a three-entrance sett.
- 4.39 The 2019 updated surveys followed the same methodology as previous surveys. There have been no changes to accepted badger survey methodology since the previous surveys.

Methodology can be viewed in the Consolidated ES (2013). Badger surveys were completed in May and June 2019.

4.6.2 Substation Site

- 4.40 One badger trail and push through was identified within the substation site. No other badger evidence was identified within the substation site.
- 4.41 Badger evidence is displayed in Confidential Figure 7.1, which is being provided directly to the Natural Environment Division (NED).

4.6.3 Overhead Line Route (including all working areas)

- 4.42 In total, 40 no. badger setts were identified within the specified survey area. Two setts are considered to be main setts, and a further sett is considered either a main or annexe sett.
- 4.43 Setts identified in 2012 were revisited in 2019. Many of these were reclassified as rabbit holes, and several appear to no longer exist. Seven were relocated.
- 4.44 Additional evidence of badger including footprints, latrines and mammal trails were also identified across the specified survey area. Species attribution of some mammal trails was difficult to determine due to the presence of livestock and interference by humans.
- 4.45 There are 26 badger setts which lie within 100 m of towers and access tracks of the Tyrone – Cavan Interconnector and may be impacted in the absence of mitigation. DAERA advise that badger setts have a 25 m protection zone around each entrance, or in the case of blasting or piling, 100 m. Of the 26, 17 badger setts lie within 100 m of tower locations and these may be impacted depending on the nature of the tower construction (i.e. if piling is required). No impacts in addition to those in previously submitted reports would arise in relation to badgers.
- 4.46 The majority of these are outlier setts, however two main setts (B08 and B20) lie with 100 m of tower locations. Further details are contained within the badger report in Appendix 7.4.
- 4.47 The exact locations of badger setts are not reported here in order to prevent persecution and disturbance of this protected species, or damage to their setts. Information regarding locations of badger evidence is displayed in Confidential Figure 7.1, which is being provided directly to NED.

4.7 Otter

- 4.48 A full report for protected mammal surveys, which includes otter, has been prepared and is presented in Appendix 7.4 of this 2019 Addendum.
- 4.49 Watercourses that cross or are in proximity to the Tyrone - Cavan Interconnector were examined for evidence of use by otters in 2005-2008 and again in 2012. The 2012 surveys identified no evidence of otter.
- 4.50 The 2019 updated surveys followed the same methodology as previous surveys. There have been no changes to accepted otter survey methodology since the previous surveys. Methodology can be viewed in the Consolidated ES (2013). Otter surveys were completed in May and June 2019.
- 4.51 The 2019 surveys identified two potential holt locations and old otter spraints. Evidence was restricted to one area, within several small streams between T67 and T68. Information regarding locations of otter evidence is displayed in Volume 4 Figures (Figure 7.1).
- 4.52 Due to continuous unsafe conditions, e.g. flow rate, high water levels, or the presence of dense stands of giant hogweed, the Blackwater River was not fully surveyed despite numerous attempts in May and June to gain access to the water. The banks of the river were walked as far as possible, and no evidence of otter was identified. Additionally, whilst otters are known to be present in this river (CEDaR provided 11 records of otter from the Blackwater River and local tributaries within 500 m of the proposed overhead line), the topography of the unassessed reach, i.e. moderately flat banks with few mature trees, renders the presence of

otter structures unlikely. It is considered unlikely that the limited access to the river significantly affected the results and subsequent assessment.

4.8 Smooth Newt

- 4.53 A full report for smooth newt survey has been prepared and is presented in Appendix 7.5 of this 2019 Addendum.
- 4.54 Eight sites previously identified for their potential to host smooth newt (2013 and 2015) were reassessed, following an adapted version of the Habitat Suitability Index (HSI) assessment for great crested newts, to ascertain their potential to support the aquatic life stages of smooth newt.
- 4.55 There have been no changes to accepted smooth newt habitat assessment methods since the previous surveys. Smooth newt habitat assessments were carried out in April and May 2019.
- 4.56 Ranges of HSI scores are used to define pond suitability whereby:
- < 0.5 = Poor
 - 0.5 – 0.59 = Below Average
 - 0.6 – 0.69 = Average
 - 0.7 – 0.79 = Good
 - > 0.8 = Excellent
- 4.57 None of the eight sites were considered suitable to host populations of smooth newt. In 2013 and 2015, Site 3 (located 160 m east of T13) was considered to be of Average suitability to host smooth newt and was surveyed for presence / likely absence of smooth newt. However, during the current habitat assessment, whilst containing suitable terrestrial habitat for the species, Site 3 contained no standing water, and therefore was not given an HSI score, and subsequently was not surveyed for presence / likely absence of smooth newt. No smooth newt were identified during the habitat assessments.
- 4.58 The full results of the HSI assessment are given in Appendix 7.5 and pond locations are shown in Volume 4 Figures (Figure 7.1).

4.9 Birds

4.9.1 Breeding Birds

- 4.59 A full report for breeding bird surveys has been prepared and is presented in Appendix 7.6.
- 4.60 Previous breeding bird surveys were carried out in 2005, 2006, 2008, 2011, and 2012. The number of species noted varied between years, ranging from 42 to 50, and species composition was largely similar among years. Birds were well-dispersed across the Tyrone - Cavan Interconnector.
- 4.61 An updated Red and Amber list of breeding Birds of Conservation Concern in Ireland (BoCCI) (2014-2019) was published in 2013. Results of breeding bird surveys were assessed against this updated list.
- 4.62 The 2019 updated surveys followed the same methodology as previous surveys. There have been no changes to accepted breeding bird survey methodology since the previous surveys. Methodology can be viewed in the Consolidated ES (2013). Breeding bird surveys were completed in May 2019.
- 4.63 A total of 45 species were recorded during breeding bird surveys in 2019; this included four species that have not previously been recorded along the route. Fifteen species that have previously been recorded were not noted during the 2019 survey.

- 4.64 Nine Northern Ireland Priority Species were recorded to be breeding along the route of the Tyrone - Cavan Interconnector. These are all widespread and locally common species, although a few species e.g. grasshopper warbler and reed bunting are restricted to more specialised habitats.
- 4.65 Forty-one species were noted displaying breeding behaviour. Thirteen species listed as being of Conservation Concern for breeding in Ireland were recorded along the route. Eleven of these species were recorded displaying breeding behaviours, and of these eleven, one species is Red listed and ten are Amber listed. All other breeding individuals identified during survey are Green listed.
- 4.66 Bird communities were not significantly different from those identified in previous surveys, as were densities of likely breeding populations for most species.

4.9.2 Wintering Birds

- 4.67 An updated report for wintering bird surveys has been prepared and is presented in Appendix 7.7.
- 4.68 A corridor along the route of the Tyrone - Cavan Interconnector, including lands extending 500 m from the route and lands along the Blackwater River valley was previously surveyed for whooper swans *Cygnus cygnus* on eleven occasions over the winter months of 2006 – 2007, 2007 – 2008 and 2008 – 2009. The threefold question that the study set out to answer was answered clearly: that the route of the Tyrone - Cavan Interconnector did not sever routes between roosting locations and daily feeding areas; no regular crossing of the line was recorded, especially at the Blackwater River area; and with the exception of the Clonbeg area (adjacent to the substation site, where birds were flying north – south from that area), there were no birds regularly feeding in the vicinity of the route, nor were there known historical feeding areas.
- 4.69 An updated Red and Amber list of wintering Birds of Conservation Concern in Ireland (2014-2019) was published in 2013. Results of wintering bird surveys were assessed against this updated list.
- 4.70 The updated results from the 2018 / 2019 survey period further affirms the conclusions of the existing body of work in relation to the wintering birds in the study area. No new suitable sites for feeding or commuting whooper swans within the vicinity of the proposed route were identified.
- 4.71 Other wintering birds recorded during wintering bird surveys comprise mute swan *Cygnus olor*, lapwing *Vanellus vanellus*, black-headed gull *Chroicocephalus ridibundus* and greylag goose *Anser anser*, although these species were noted more than 5 km from the Tyrone - Cavan Interconnector. No new wintering bird species were identified.

4.9.3 Barn Owl

- 4.72 Two buildings in proximity to the overhead line and working areas were identified as having potential for barn owl. These are located west of T79 and associated access track, and east of T81 and associated access track.
- 4.73 These buildings were visually assessed externally, and where accessible, internally (e.g. through open windows). Building access is not considered as a constraint. No evidence of barn owl was noted in any building. Static recorders were placed within the buildings from sunset on 23 May 2019 until the following morning. No evidence of barn owl (i.e. screeches) was recorded.
- 4.74 No barn owls were noted either during building inspections or incidentally during dusk bat activity surveys. In addition, there are no known barn owl nest sites in the immediate vicinity of the Tyrone - Cavan Interconnector.

4.10 Other Taxa

4.10.1 Irish Hare

4.75 Hare were incidentally noted at several locations along the Tyrone - Cavan Interconnector during Phase 1 Habitat, bird and badger surveys, however confirmation on this species was not possible due to the distances at which they were observed. Both Irish hare *Lepus timidus hibernicus* and brown hare *Lepus europaeus* are known to occur along the route of the Tyrone - Cavan Interconnector. Irish hare is a Northern Ireland Priority Species.

4.10.2 Invertebrates

4.76 A holly blue *Celastrina argiolus* was incidentally noted c.70 m southeast of T55, at the fringe of woodland habitat. Holly blue is protected under Schedule 5 of the Wildlife Order in Northern Ireland.

4.77 Holly blue habitat comprises parks, churchyards, hedgerows and woodland rides, where food plants are present.

5. Potential Impacts

5.1 Potential impacts are assessed using the methods given in the Consolidated ES (2013), and where appropriate, the Consolidated ES Addendum (2015) and Technical Report 08 Ecology (2017).

5.2 Sites of Conservation Importance

5.2.1 Sites of European and International Importance

5.2 No impacts in addition to those in the previously submitted reports are expected to European sites.

5.2.2 Sites of National Importance

5.3 No impacts in addition to those in the previously submitted reports are expected to sites of national importance.

5.2.3 Sites of Local Nature Conservation Importance

5.4 Although ten further SLNCI were identified within 5 km of the Tyrone - Cavan Interconnector in the desk study, it is considered that there will be no impact on them.

5.5 No impacts are expected to any of the SLNCI, due to the local nature of SLNCI designations, and the largely non-destructive nature of the works associated with the Tyrone - Cavan Interconnector.

5.6 No impacts in addition to those in previously submitted reports are expected to SLNCI.

5.2.4 Ancient Woodland Inventory

5.7 No impacts in addition to those in the previously submitted reports are expected to sites of Ancient / Long-established woodland.

5.3 Phase 1 Habitats

5.3.1 Substation Site

5.8 In the absence of mitigation, potential impacts to Priority Habitats were previously considered to be of minor negative significance (Consolidated ES (2013)). No impacts in addition to those in previously submitted reports are expected to habitats, including Priority Habitats at the substation site.

5.3.2 Overhead Line Route (including all working areas)

- 5.9 In the absence of mitigation, potential impacts to Priority Habitats were previously considered to be of minor negative significance (Consolidated ES (2013)). No impacts in addition to those in previously submitted reports are anticipated to habitats along the overhead line route. This includes all working areas (e.g. access tracks, ancillary locations).

5.4 Invasive Species

- 5.10 Four species on Schedule 9 Part II of the Wildlife Order were identified. Salmonberry was noted within the substation site, whilst Japanese knotweed, giant hogweed and Himalayan balsam were noted along the overhead line route, close to proposed access tracks for T30 and T32. In the absence of mitigation, works associated with the Tyrone - Cavan Interconnector may cause invasive species to spread.
- 5.11 Plant movement, increases in traffic, access on and off site during construction, and other construction activities, such as soil stripping, earth movement, and vegetation clearance, may result in the spread of invasive species which are known to be present at several locations within the planning application boundaries of the Tyrone - Cavan Interconnector.
- 5.12 Japanese knotweed, present along the Blackwater River and close to access tracks at T30, may radiate up to 7 m laterally from the parent plant, hence 7 m around stands is the possible risk area for spreading such species.
- 5.13 Seeds of giant hogweed and Himalayan balsam may also be projected up to 7 m away from the parent plant and can persist in the top 10 cm or so of the soil bank.
- 5.14 Salmonberry is a rhizomatous, perennial shrub. The root stock can live at least ten years and clones more than one hundred years. The small seeds have deep dormancy and may remain in the soil for many years.
- 5.15 The physical spread of invasive species could potentially occur as a short-term event, lasting during the length of the construction period, however impacts of invasive species themselves on habitats may be medium to long-term, depending on the implementation and success of control measures.
- 5.16 Impacts of invasive species on habitat include outcompeting of native flora, resulting in negative impacts to local biodiversity. Impacts could be of minor negative significance.

5.5 Badger

- 5.17 There are 26 badger setts which lie within 100 m of the Tyrone - Cavan Interconnector and may be impacted in the absence of mitigation. Badger and their setts are protected under Schedule 5 of the Wildlife Order, and the NIEA advise that badger setts have a 25 m protection zone around each entrance, or where additional ground preparation is required (piling), 100 m protection zone. As outlined in Chapter 5 of the Consolidated ES, piling could be required at the proposed towers and substation location.
- 5.18 There are no badger setts within 25 m of tower locations. The 17 badger setts which lie within 100 m of tower locations, depending on the nature of the tower construction (i.e. if piling is required) may be impacted. Piling could be required at the tower locations and substation site. Should piling be required within 100 m of a sett, the mitigation measures for badger in this document and the previously submitted documents, will be used to minimise impacts.
- 5.19 In the absence of mitigation, potential impacts to badger were previously considered to be of negligible significance (Consolidated ES (2013)). No impacts in addition to those in previously submitted reports are anticipated to badger.

5.6 Otter

- 5.20 Two potential otter holts were noted between T67 and T68. These have been classified as potential holts due to a lack of otter evidence (i.e. spraints) at the entrance, however, otter spraints were noted close to these potential holts.

- 5.21 Otter are assumed present in the Blackwater River catchment. Notwithstanding the oversail of the river and guarding location, the closest tower location to the unassessed reach is c. 98 m, and the closest access track is c. 30 m. Moreover, the height of the water over an extended period also indicates that holts would unlikely exist here.
- 5.22 Otter and their holts are protected under Schedule 5 of the Wildlife Order, and the NIEA advises that otter holts require a 30 m protection zone. Natal dens require a protection zone of 150 m; however, these are not considered natal dens due to their open location. The potential holts lie more than 30 m away from the planning application boundaries, and more than 150 m from the closest tower location.
- 5.23 As described in Chapter 5 of the Consolidated ES (2013), there are no intrusive works proposed within 30m of the Blackwater. The proposed stringing works over the river have been previously described and will not involve groundworks. It is considered that the nature of habitats in the vicinity of the Blackwater River preclude the occurrence of natal dens, as natal dens are in secluded areas, particularly woodland, where there is good cover, protection from disturbance and potential predators, and away from areas of flooding / high water levels.
- 5.24 No impacts are expected to otter due to the nature of the works and the absence of suitable habitat at the crossing point of the overhead line.
- 5.25 In the absence of mitigation, potential impacts to otter were previously considered to be of negligible significance (Consolidated ES (2013)). No impacts in addition to those in previously submitted reports are expected to otter.

5.7 Smooth Newt

- 5.26 In the absence of mitigation, potential impacts to smooth newt were previously considered to be of negligible significance (Consolidated ES (2013) and Consolidated ES Addendum (2015)). No impacts in addition to those in previously submitted reports are expected to smooth newt.

5.8 Birds

5.8.1 Breeding Birds

- 5.27 In the absence of mitigation, potential impacts to breeding birds were previously considered to be of negligible significance (Consolidated ES (2013)). No impacts in addition to those in previously submitted reports are expected to breeding birds.

5.8.2 Wintering Birds

- 5.28 In the absence of mitigation, potential impacts to wintering birds were previously considered to be of minor negative significance (Consolidated ES (2013)). No impacts in addition to those in previously submitted reports are expected to wintering birds.

5.8.3 Barn Owl

- 5.29 In the absence of mitigation, potential impacts to barn owl were previously considered to be of negligible significance (Consolidated ES (2013)). No impacts in addition to those in the Consolidated ES (2013) are expected to barn owl.

5.9 Bats

5.9.1 Roosting Bats

- 5.30 No additional roosts have been confirmed as a result of emergence / re-entry surveys, however one previously known roost (alder tree BAT1 at substation site) has since collapsed and is now considered as having Negligible suitability for roosting bats.
- 5.31 An additional tree with High roosting suitability (along the access track east of T43) was identified. However due to the positioning of the suitable PRF, which is facing away from the access track, it is considered that there will be negligible impact to this potential roost.

- 5.32 In the absence of mitigation, potential impacts to bats were previously considered to be of minor negative significance (Consolidated ES (2013) and Consolidated ES Addendum (2015)). No impacts in addition to those in previously submitted reports are expected to roosting bats.

5.9.2 Bat Activity

- 5.33 In the absence of mitigation, potential impacts to bats were previously considered to be of minor negative significance (Consolidated ES (2013) and Consolidated ES Addendum (2015)). No impacts in addition to those in previously submitted reports are expected to roosting bats.

5.10 Other Taxa

5.10.1 Irish Hare

- 5.34 In the absence of mitigation, potential impacts to Irish hare were previously considered to be of negligible significance (Consolidated ES (2013)). No impacts in addition to those identified in previously submitted reports are anticipated to Irish hare.

5.10.2 Invertebrates

- 5.35 Holly blue is a protected butterfly species, and was noted c. 70 m southeast of T55, along a woodland fringe. Larval food plants are predominantly holly *Ilex aquifolium* and ivy *Hedera helix*, whilst adults feed primarily on bramble *Rubus fruticosus* agg., bugle *Ajuga reptans*, forget-me-not *Myosotis* spp., holly and ivy. Improved grassland habitats within the immediate tower location are not considered suitable for the species, and as such the Tyrone - Cavan Interconnector is considered to have a negligible impact on this species.
- 5.36 In the absence of mitigation, potential impacts to invertebrates were previously considered to be of minor negative significance (Consolidated ES (2013)). No impacts in addition to those identified in previously submitted reports are expected to invertebrates which are protected or Priority Species.

6. Mitigation Measures

6.1 Designated Sites

- 6.1 No mitigation measures for designated sites further to those prescribed in previously submitted reports are recommended.

6.2 Habitats and Species

6.2.1 Invasive Species

- 6.2 Salmonberry, Japanese knotweed, giant hogweed, and Himalayan balsam are all invasive species listed under Schedule 9 Part II under Article 15 of the Wildlife Order. Article 15 of the Wildlife Order states that “if any person plants or otherwise causes to grow in the wild, plants which are included in Part II of Schedule 9, he shall be guilty of an offence”. The Wildlife Order also states that persons must take all reasonable steps and must exercise due diligence to avoid committing an offence.
- 6.3 Steps for prevention of spread of the species must be implemented during construction and operation phases of the Tyrone - Cavan Interconnector. The Outline Construction Environment Management Plan (Outline CEMP 2015) will be finalised prior to works commencing to take account of the invasive species in order to mitigate potential negative impacts.

6.2.2 Badger

- 6.4 Badger is a nationally protected species and is susceptible to impacts from development such as disturbance or direct impacts on their places of refuge. They are therefore a material consideration during the planning process.
- 6.5 No setts lie within 25 m of a tower. The 17 badger setts which lie within 100 m of tower locations and if there are impacts associated with tower construction, the mitigation measures previously proposed are still relevant, depending on the nature of the tower construction (i.e. if piling is required) may be impacted. Mitigation prescribed in previously submitted reports is still relevant. Mitigation measures for badger are provided in Table 10.32, Section 10.6, Chapter 10 of the Consolidated ES (2013). No further mitigation measures for badger further to those prescribed in previously submitted reports are recommended.

7. Residual Impacts

7.1 Designated Sites

- 7.1 The residual impacts on designated sites are considered unchanged from the previously submitted reports. After implementation of mitigation measures residual effects are considered negligible.

7.2 Habitats and Species

- 7.2 The residual impacts on habitats and species are considered unchanged from the previously submitted reports. After implementation of mitigation measures residual effects are considered negligible.

7.2.2 Invasive Species

- 7.3 The residual effects of invasive species after implementation of mitigation measures are considered to be negligible.

8. Conclusions

- 8.1 In preparation for this 2019 Addendum, DAERA (NED) requested that further ecological surveys be completed to update the assessment of the Tyrone - Cavan Interconnector. Since the 2017 Public Inquiry, there have been no significant changes to the guidance or legislation relating to ecological assessment.
- 8.2 In 2018 and 2019, updated ecological surveys were completed, comprising: desktop review for designated sites; Phase 1 Habitat survey (including invasive species); bat surveys (activity, tree assessment, and emergence / re-entry); badger surveys; otter surveys; habitat assessment for smooth newt; breeding birds surveys; wintering birds surveys; and, barn owl surveys.
- 8.3 The assessment of the impacts of the Tyrone - Cavan Interconnector on the ecological environment remains comparable to that undertaken for the previously submitted reports.
- 8.4 The conclusions remain unchanged from the conclusions drawn in the Consolidated ES (2013), Consolidated ES Addendum (2015) and Technical Report 08 Ecology (2017). It was concluded in these reports that the provision of the proposed substation and the overhead line will have a minimal impact on the ecology of the line route. Extensive ecological assessment shows that with mitigation, the long-term effects on habitats, species and biodiversity will be negligible.

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