



Further Environmental Information 2019

**MAIN TEXT
Volume 2**



Tyrone Cavan
Interconnector

The current. The future.



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Chapter 1 Introduction



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1. Introduction

1.1 Purpose of this Addendum

1. On 23rd January 2018, the Department for Infrastructure (DfI) granted two planning permissions for the Tyrone – Cavan Interconnector (O/2009/0792/F & O/2013/0214/F). This followed an extensive planning process, which commenced in 2009 when the planning application was submitted in December of that year. The Environmental Impact Assessment of the Tyrone – Cavan Interconnector was based on the¹:
 - Consolidated Environmental Statement (2013);
 - Consolidated Environmental Statement Addendum (2015); and,
 - Technical Reports and Rebuttals submitted for the 2017 Public Inquiry.
2. As the project has developed over a number of years, the names used to describe the project have also developed. For clarity, the following terms have been used:
 - The **Tyrone – Cavan Interconnector**: That portion of the proposed interconnector located in Northern Ireland being proposed by SONI; and
 - The **North - South 400 kV Interconnection Development**: That portion of the proposed interconnector located in Ireland proposed by EirGrid, which has been consented by the relevant authority in Ireland, An Bord Pleanála.
 - **The proposed interconnector**: The overall project from Turleenan to Woodland (i.e. both the SONI and EirGrid sections), including all proposed works.
3. In February 2019, the Supreme Court in Ireland² upheld planning approval for the southern section of the Interconnector (i.e. North – South 400kV Interconnection Development). However, following legal challenges to the lawfulness of the permissions in Northern Ireland, the High Court determined on 20th March 2019 that the permissions for the Tyrone – Cavan Interconnector in Northern Ireland should be quashed, due to the absence of a Minister with power to grant the permissions. The planning applications which gave rise to the permissions were remitted to the DfI for reconsideration.
4. The purpose of this Addendum is to provide additional environmental information so that the re-determination of the applications can be based on up-to-date environmental data. This 2019 Addendum builds on the previous environmental information that has already been submitted as part of the planning process and all of that information should be reviewed as part of the redeterminations.
5. The planning applications for the project remain “live” and are being redetermined by DfI. There are no changes to the design of the Tyrone – Cavan Interconnector to that previously submitted and assessed. This Addendum will outline what changes have occurred in the existing environment since the previously submitted information. This Addendum will also outline what effect (if any) this has on the environmental reports and assessment that has been previously submitted and consulted upon for the Tyrone – Cavan Interconnector.
6. The Tyrone – Cavan Interconnector has been formally submitted to DfI as two planning Applications:
 - O/2009/0792/F – the original planning application for the Tyrone – Cavan Interconnector including the substation, towers, overhead line and associated development; and,
 - O/2013/0214/F – a second application relating specifically to the works associated with the construction of the proposed overhead line and towers.

¹ All are available at: <http://www.soni.ltd.uk/the-grid/projects/tyrone-cavan/related-documents/>

² Sometimes referred to as the Republic of Ireland.

7. The Environmental Impact Assessment assesses the Tyrone – Cavan Interconnector as a whole, i.e. the contents of both planning applications in Northern Ireland. This Addendum will be formally submitted in support of both applications. The entire project (i.e. sections in Northern Ireland and Ireland) are assessed through the Joint Environmental Report and the Cumulative Impact Assessment – both contained in the Consolidated ES Addendum (2015).
8. The most recent change to Environmental Impact Assessment legislation in Northern Ireland is the introduction of the Planning (Environmental Impact Assessment) Regulations (Northern Ireland) 2017. Regulation 48 of the 2017 Regulations outlines that where there is an existing application the Environmental Impact Assessment Regulations applicable at the date of the submission of the application should be used to consider the project. Therefore, the 2009 Application (O/2009/0792/F) will continue to be assessed under the 1999 Environmental Impact Assessment Regulations³ and the 2013 application (O/2013/0214/F) will be assessed under the 2015 Environmental Impact Assessment Regulations⁴.

1.2 The Planning Appeals Commission Report

9. On 20th November 2017, The PAC reported on the Public Inquiry. A copy of the PAC Report is contained on the DfI website. Some of the main conclusions of the PAC were:

Section 2 of the PAC Report deals with Energy Policy.

- Paragraph 2.45 *“There is support for the proposed development in law, policy and guidance at European, national and regional level. There is also evidence that it enjoys cross-border government support”.*

Section 4 of the PAC Report Deals with Need for the overhead line.

- Paragraph 4.62 *“The need of the proposed IC is robust and cannot reasonably be described as “short-sighted expedience”. It is essential for the long-term security, reliability and efficiency of the NI transmission network. This conclusion applies regardless of the final agreement, or lack of one, as regards the UK’s future relationship with the EU. Delaying determination of these applications until the Brexit deal is settled, and its attendant implications assessed, could result in: the shortfall of capacity from 2020 necessitating further costly market intervention; continued inflated cost of electricity due to inefficiencies in the SEM; barriers to facilitation of renewables; market uncertainty in the I-SEM; loss of investment in power generation; and loss of investment in the wider economy. Regardless of NI’s future relationship with the EU, an affordable, sustainable and secure electricity supply will continue to be of vital importance to domestic, commercial and industrial consumers. In the absence of a viable and feasible alternative (or alternatives) that can be commissioned by the end of 2020 in order to address the predicted shortfall in power in NI, there is persuasive strategic need for the proposed development at both national and regional level”.*

10. **Section 5 of the PAC Report deals with Alternatives.**

- Paragraph 5.80 *“The proposed development has been subject of a proper, comprehensive and thorough examination of a wide-ranging selection of reasonable alternatives for achieving enhanced north-south interconnection whilst having regard to key environmental, technical and economic issues. There is no persuasive evidence to substantiate accusations of bias in the assessment of alternatives in favour of the applicants preferred option of a HVAC overhead line. The EI cannot reasonably be described as a ‘post hoc rationalisation of a decision that has already been made rather than an objective analysis that the legislation required’. The applicant’s consideration of alternatives complies with their legal obligations and, in this respect, both Policies PSU*

³ The Planning (Environmental Impact Assessment) Regulations (Northern Ireland) 1999.

⁴ The Planning (Environmental Impact Assessment) Regulations (Northern Ireland) 2015.

2 and PSU 8 of the PSRNI. There is persuasive evidence that the proposed 400kV AC overhead line is the best technical and financial solution for the proposed IC”.

11. **Section 6 of the PAC Report deals with Construction Impacts.**

- Paragraph 6.6 in respect of the construction of the substation and Policy CON 7 of the Dungannon South Tyrone Area Plan (DSTAP) which applies to protect trees the PAC found: *“There would be no significant and adverse effect on visual amenity or landscape character. The retained and newly planted trees would contribute to the overall amenities of the local countryside. Policy CON 7 of DSTAP would not be offended”.*
- Paragraph 6.8 in terms of access to the proposed substation, the PAC found: *“During the construction phase, an access off Trewmount Road and associated access road would be provided to the north-east of the buildings at No.152 Trewmount Road allowing them to be retained and used throughout (Figure 2 of the TA). Upon completion of the substation, the aforementioned buildings would be demolished, a new entrance and road would be constructed for permanent use and the temporary access would be closed. The access to serve the proposed compound during the operational phase is shown at Figure 3 of the TA, at Appendix 18A of the CES. Both accesses would incorporate the required visibility splays of 4.5m x 168m in compliance with the requirements of Development Control Advice Note 15: “Vehicular Access Standards”. Transport NI has no objections to these proposed arrangements. Provision of the temporary access, its closure and creation of the new, permanent access could be secured by conditions. On that basis, the requirements of Policy AMP 2 of PPS 3 would be met”.*
- Paragraph 6.13 confirms that the adverse construction impacts of the substation on Moy caused by the transportation of the transformers would be temporary in nature and extend to only 6 days and as such these concerns do not weigh against the proposal.
- Paragraph 6.14 confirms that the additional traffic generated to the substation site during its operation would be unlikely to compromise the safety and convenience of road users.
- Paragraph 6.18 deals with construction of the overhead line traffic and confirms that: *“The matter of the impact of traffic associated with the construction phase of the proposed overhead line development has been adequately addressed and the requirements of Policy AMP 6 of PPS 3 are fulfilled in this respect”.*
- Paragraph 6.24 deals with the impact on landowners during construction and confirms that: *“There is no persuasive evidence of the resultant sterilisation of farming land during the proposed construction phase of the towers and overhead line”.*
- Paragraph 6.27-6.32 deals with noise and vibration during the construction phase of the overhead line and confirms that noise during tower construction: *“would not give rise to likely significant impacts that would weigh against the proposal”.* No substantive objections were identified in terms of noise and vibration from transportation and construction activities such as piling.
- Paragraph 6.37 confirms in terms of loss of vegetation that *“Taking account of the cumulative impact of: the replacement of vegetation that would have to be removed for construction purposes; the amount of vegetation that would be permanently lost; the trimming as opposed to complete removal of vegetation within a 30m buffer zone either side of the proposed overhead lines; the length of the proposed overhead line route; and the generally well vegetated nature of the receiving landscape, such impacts would not have a significant impact on visual amenity, landscape character, farming activity and/or ecology”.*
- Paragraph 6.38-6.43 confirms the proposal is acceptable in terms of flood risk on the grounds that the proposal is of exceptional benefit to the regional economy and the proposed route design required the proposal to be located in part within a flood plain.
- Paragraph 6.44 confirms that: *“the proposed development would not have an unacceptable adverse impact on the pattern and function of field drainage systems. The submitted EI is persuasive that the proposals comply with the Policies FLD 3 and FLD 4 of PPS 15”.*

- Paragraph 6.45 -6.47 deal with construction impacts on watercourses. Paragraph 6.46 states: *“the proposed measures would mitigate against pollution of the water environment and there would be no likely significant impact on it ... When set, concrete, of itself is not a source of pollution. As there would be no adverse impact upon the water environment during construction, when the concrete would be wet, it follows that there would be no risk of pollution during the operational stage of the proposed development and the integrity of watercourses would not be adversely impacted upon”*.
- Paragraph 6.53 in terms of soils, geology and ground water states: *“Waste management Unit has no objections to this aspect of the proposed development. No substantive evidence in the form of a geological, soil or groundwater report was submitted to counter the applicant’s thorough EI. On this basis, there is no persuasive evidence that the proposed development would have a significant detrimental impact on soils, geology and groundwater within the application site”*.
- Paragraph 6.57 deals with contaminated land and states: *“NIEA are satisfied with the applicant’s assessment that the likelihood of the impact from contaminated land on local watercourses is not significant subject to conditions. Such provisions are made in the OCEMP. The CES has adequately addressed the matter of contaminated land. There is no persuasive evidence that there would be a likely environmental risk arising from the excavation of contaminated land”*.
- Paragraph 6.60 found impacts on air quality can be minimised though appropriate selection of haulage routes and Paragraph 6.62 found dust from construction can be mitigated through implementation of a dust management plan and as such there would be no adverse impact on air quality or to residential amenity.
- Paragraph 6.65 found no cumulative impacts and Paragraph 6.66-6.70 found no harmful transboundary impacts arising from construction.
- Paragraph 6.71 concludes: *“The extensive and comprehensive EI robustly addresses the likely range of environmental impacts associated with the proposed development’s construction stage. Subject to the implementation of identified, necessary mitigation measures, there is persuasive evidence that there would be no likely significant and adverse impacts arising from these proposed works. The same conclusion applies to the operational effects considered. On this basis, the proposal is consistent with: Policy CON 7 of the DSTAP: the relevant policies of PPS 3 and PPS 15; and the guidance set out in BS 8233:2017. Accordingly, objectors’ associated concerns do not carry determining weight”*.

12. Section 7 of the PAC Report deals with Health

- Paragraph 7.87 concludes in respect of health and EMF: *“The proposed development is compliant with the exposure limits and applicable precautionary policies. It therefore incorporates the degree of caution that is considered appropriate by government for the protection of the public. On this basis, there is no persuasive evidence for attaching determining weight to the results of individual studies or the dissenting views of other bodies and individuals over policy informed by review of scientific literature by authoritative review bodies. Save for the potential impact on honey bees, the potential impact of the proposed development on health does not weigh against the proposal. The decision on this proposed development can only be made in light of current knowledge and policy and not on the basis of speculation as to what future policy may be. This approach does not constitute ‘reckless endangerment’”*.

13. Section 8 deals with Noise and Vibration of the overhead line

- Paragraph 8.28 states in respect of Noise that: *“The RNIA [Revised Noise Impact Assessment] provides a robust analysis of the likely impact of operational noise on SRs [Sensitive Receptors]. It demonstrates that noise impact of the proposed development would not breach either of the annual average 30dB night-time or 40dB night-time guidelines for bedrooms or the average daytime guidelines of higher day-time standards of 50dB (lower) and 55dB (higher). Consequently, it would satisfy policy requirements*

contained within the SPPS [Strategic Planning Policy Statement for Northern Ireland] and the NPSNI [Noise Policy Statement for Northern Ireland] and objectors' associated concerns are not determining".

14. Section 9 of the PAC Report deals with Residential Amenity

- Paragraph 9.9 concludes in terms of residential amenity: *"By virtue of visual impact, the proposed overhead line development would harm the residential amenity of some 368 properties that lie within 500m of it and have a detrimental transboundary effect on four properties in the RoI. When seen in conjunction with the aforementioned wind turbine, it would be detrimental to the amenity of residents along Fergort Road and Listrakelt Road".*

15. Section 10 deals with Visual Amenity and Landscape Character

- Paragraph 10.13 concludes in respect of visual impact that: *"The proposed overhead line structure would meet the requirements of the SPPS and Policies PSU 8 and PSU 11 of PSRNI in so far as it has been demonstrated that all attempts have been made to minimise its visual impact on the environment and protect amenity".*
- Paragraph 10.14 concludes in relation to the substation that: *"From each of the identified viewpoints on Trewmount Road and Derrygawley Road, it would be highly visible and have a detrimental impact on the landscape for a period of up to fifteen years until the proposed landscaping, which could be secured by condition, has matured sufficiently to provide effective screening. This is a significant length of time and the proposed substation would have a significant and adverse visual impact on the landscape in this location during that period. However, given that such impacts would only be experienced close to the proposed substation it would not adversely affect landscape character within this part of LCA 47 and does not weigh against the proposals".*
- Paragraph 10.15 found cumulative impacts with the Tamnamore to Omagh line to be not significant and not harmful to the character of LCA 47.
- Paragraph 10.16 found the proposal would be detrimental when considered along with two wind turbines from View Point (VP) 6 on Moy Road and approved wind turbines seen from VPs 16, 20 27 and 28 would have localised adverse impacts on visual amenity and landscape character of LCA 66 and NIRLCA 13.
- Paragraph 10.18 states transboundary impacts would be negligible in visual impact terms.
- Paragraph 10.19 concludes that: *"There is no persuasive evidence that the applicant's EI is inadequate in scope, methodology or detail or that the required route selection/mitigation and substation selection has not been carried out. However, having considered the comprehensive suite of EI, including the applicant's statement of case, rebuttal submission and the ABC BC submission, the proposed development, both individually and cumulatively, would have a significant, localised adverse impact upon visual amenity and landscape character".*

16. Section 11 of the PAC Report deals with Cultural and Built Heritage.

- Paragraph 11.37 concludes the following in respect of cultural heritage: *"In light of our own observations on site, we are satisfied that the entirety of the EI provides a robust analysis of the potential impact of the proposed development on heritage assets. The proposed development would not have adverse impacts on the Monument in State Care, Historic Parks, Gardens or Demesnes or Listed Buildings. NED HB expressed no concerns about the proposals' likely impact on the protection of archaeological remains of regional or local importance and their settings. Notwithstanding this statutory consultee's position, for reasons set out, we consider that the proposed development would have a significant adverse impact on three Scheduled Monuments and an asset of local importance. There are no appropriate mitigation measures to reduce effects upon the setting of these heritage assets. This would potentially be, contrary to Policies*

BH 1 and BH2 of PPS 6, the associated provisions of the SPPS and Policy PSU 11 of the PSRNI.”

17. Section 12 of the PAC Report deals with Land Use and Socio-Economic Impacts

- Paragraph 12.21 concludes the following in respect of land use and socio-economic impacts: *“The submitted EI comprehensively addresses the proposed development’s likely land use and socio-economic impacts and is not deficient in these respects. There would be no significant or adverse impact arising from the proposed development on agriculture, local businesses or land values. On the other hand, benefits would accrue to the local economy during the construction phase”.*

18. Section 13 of the PAC Report deals with Natural Heritage and Ecology

- Paragraph 13.47 concludes the following in respect of Natural Heritage and Ecology: *“There is no persuasive evidence that the applicant’s EI is inadequate in scope, methodology or detail or that the required HRA has not been carried out. The issue of the proposals’ potential effect on honey bees was identified in Chapter 7 of this report. Save for this issue, based on the comprehensive suite of EI, including the applicant’s statement of case and rebuttal submission, 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. On this basis, determining weight does not attach to objectors’ associated concerns.”*

19. Section 14 of the PAC Report deals with Tourism

- Paragraph 14.36 in respect of tourism concludes that: *“The overall impact on the area’s visual amenity and landscape character might deter some visitors. However, on the basis of the comprehensive EI and consideration of its conclusions on the proposed development’s likely impact on specific tourist sites and attractions, there is no persuasive evidence that it would significantly compromise those assets’ tourism value. However, this consideration aside, there is no persuasive evidence that the proposals’ likely impact would prejudice the development of sustainable rural tourism. In this context and particular evidential basis, the objectors’ contention that a precautionary approach needs to be adopted in respect of the proposal’s impact on existing and future tourism potential, is not persuasive. The proposals are consistent with the applicable objectives and policies identified at the start of this chapter”.*

20. Section 15 of the PAC Report deals with Aviation

- Paragraph 15.7 in respect of aviation concludes: *“Objectors raised generalised concerns about the proposal’s impact on aviation, both domestic and transboundary, but did not specify what associated element of the EI they consider to be deficient. Considering these concerns in the context of the submitted EI, there is no persuasive evidence of a likely significant impact on aviation or associated prejudice to the safety of residents in the vicinity of the proposed overhead line structure on either side of the border”.*

21. Section 16 of the PAC Report deals with Conclusions and Recommendation

- Paragraph 16.17 provides the overarching conclusion of the PAC that: *“Having carried out the necessary balancing exercise required by paragraphs 3.3 and 3.4 of the SPPS and Policies PSU 2 and PSU 8 and weighed all relevant material considerations, we are satisfied that the proposals comply with them and are also consistent with Policy CTY 1 of PPS 21. There were no considerations derived from energy or planning policy that outweigh the imperative need for the proposed development. Accordingly, there are no persuasive grounds for recommending refusal of the planning applications on the basis of environmental impact and advocating that further consideration be given to partial undergrounding. In the face of IROPI [Imperative Reasons of Over-riding Public Interest]*

for the proposed development, we are satisfied that it represents the best achievable balance between environmental impacts, technical requirements and economic limitations. Therefore, it should proceed as proposed but subject to measures to mitigate some of its significant and adverse effects”.

1.3 Comments and Further Information

22. Requests for information on the planning process and comments on this report may be made to DfI Planning at: Clarence Court, 10-18 Adelaide Street, Belfast, BT2 8GB. Tel: 0300 200 7830. E-mail: planning@infrastructure-ni.gov.uk. The 2019 Addendum can be viewed at the Planning Service Headquarters (address given above) or at any of the locations listed below.
23. SONI, Armagh Information Centre, 16 Russell Street, Armagh, BT6A 9AA
Tel: 028 3752 7028
- Armagh City, Banbridge and Craigavon District Council, Council Offices, The Palace Demesne, Armagh, BT60 4EL
Tel: 028 3752 9600
- Portadown Library, Church Street, Portadown, County Armagh, BT63 3LQ
Tel No 028 3833 6122
- Dungannon Library, Market Square, Dungannon, County Tyrone, BT70 1JD
Tel: 028 8772 2952
- Mid Ulster Council, Dungannon Council Offices, Circular Rd, Dungannon, County Tyrone, BT71 6DT
Tel: 028 8772 0300
24. All the previous environmental reports for the Tyrone – Cavan Interconnector are available at: <http://www.soni.ltd.uk/the-grid/projects/tyrone-cavan/related-documents/>
25. The EIA documents, including this NTS and the Addendum, are available to download at www.soni.ltd.uk. An electronic copy of this Addendum on DVD and a hard copy of the NTS are also available free of charge, and may be obtained by contacting SONI at:
Grid Development N.I. Projects, SONI, 12 Manse Road, Belfast, BT6 9RT
Website: www.soni.ltd.uk Tel: 028 9079 4336
26. Printed and bound copies of the Addendum and EIA documents are available for £80. Should you wish to purchase a copy you can either:
(a) Write to SONI at the address above enclosing a cheque, made payable to SONI, for the appropriate amount. On receipt of this payment, the documents will be immediately dispatched, or
(b) Purchase the document directly at the SONI office in Armagh, at the address given above
27. Appointments can be made to meet with the SONI team at the Armagh Information Centre. Opening hours are 10am-4pm every Wednesday at: 16 Russell Street, Armagh, BT61 9AA. Meetings can also be arranged by appointment by phoning: 028 3752 7028 or emailing: armaghoffice@soni.ltd.uk.
28. In addition, the SONI Armagh office will be open to view or purchase a copy of the EIA documents, planning applications and to meet a member of the project team between 12 noon and 7pm during the following periods:
- Every day from Monday 5th August to Friday 9th August 2019;
 - Every day from Monday 19th August to Friday 23rd August 2019.

1.4 Contents of the 2019 Addendum

1.4.1 DfI Planning Consultation 2019

29. In March 2019, DfI Planning wrote to statutory bodies to ask if further environmental information is required for the Tyrone – Cavan Interconnector planning applications. A briefing note was appended (see Volume 3, Appendix 1.2). This had been prepared by SONI and its consultants to help identify what information was previously provided (2005 – 2017) and what changes there had been in the intervening period (2017 – June 2019). The majority of statutory consultees did not raise any issues or requests for further environmental information. Table 1.1 summarises the comments from those consultees that raised issues to DfI Planning.

Table 1.1: 2019 Consultation Comments

Date of Reply	Organisation	Consultee Comment	Summary Response
19/3/2019	Arqiva	No further environmental information required. Suggested consideration of mobile networks.	There are no potential issues between overhead lines and mobile networks and there will be no direct effects. The Tyrone - Cavan Interconnector will meet all Electromagnetic Compatibility requirements as set out by Legislation, ensuring no potential impacts. No further environmental information is required.
8/4/2019	Monaghan County Council	The following should be considered in future assessment: <ul style="list-style-type: none"> • Monaghan County Development Plan 2019 - 2025; and, • Draft Regional Spatial and Economic Strategies for both the Northern and Western Regional Assembly, and the Eastern and Midland Regional Assembly. 	The identified plans are addressed in Chapter 3 Planning and Development Context of this Addendum.
10/04/19	DAERA - Natural Environment Division (NED)	Recommends that updated surveys to current NIEA specifications are undertaken given the length of time that has elapsed since the original surveys were conducted. This is of particular importance for mobile species such as badgers and bats.	The ecological surveys have been updated and further information is provided in the Chapter 7 Ecology of this Addendum.
10/04/19	DAERA - Sea Fisheries Inspectorate	There is an active Put and Take lake in close proximity to the power line – situated at (54,25.713 and -6,43.423 (WGS84) Benburb Road, Dungannon).	There are no fishing ponds close enough to the Tyrone – Cavan Interconnector which would be affected. See Chapter 11 of this Addendum for further details.
10/04/19	DAERA - Inland Fisheries	Fishing rights to the southern bank of the Blackwater river at Irish Grid reference 283096 351090 - this may have an impact on fisheries interests in the area.	The overhead line will cross the River Blackwater at this location. The conductors will be a minimum distance of 9.0m above the ground. Further information is provided in Chapter 10 Community Amenity and Land Use chapter of this 2019 Addendum.

Date of Reply	Organisation	Consultee Comment	Summary Response
10/04/19	DAERA - Forest Service	<p>No objections.</p> <p>A 25m buffer to the interconnector route supplied indicates 18 woodlands that feature on the draft woodland register are potentially affected. One woodland, located at (XY coordinate 280170 338512, grid reference H80183853) (site ID13891).</p>	<p>Affected woodland has been previously assessed and no further environmental information is required.</p>
01/05/2019	Mid Ulster District Council Environmental Health Department	<p><i>"It is noted from their report that there are no known material changes in respect to EMF and noise/vibration from the proposal.</i></p> <p><i>This being the case, comments contained within our consultation response dated 16th February 2017 remain unchanged and should be considered as Environmental Health's position on the proposal."</i></p>	<p>The consultee refers to a submission of 16th February 2017, which was made available to SONI and its consultants on 27th February 2017 at the Public Inquiry, shortly before an oral submission was made at the consultee at the Public Inquiry. The written and oral submissions raised some new issues, and these were addressed by SONI and its consultants at the Public Inquiry.</p> <p>The PAC considered the concerns of Mid-Ulster District Council and the responses from SONI and its consultants. In its conclusion on the noise assessment, the PAC report stated: <i>The RNIA [Residential Noise Impact Assessment] provides a robust analysis of the likely impact of operational noise on SRs [Sensitive Receptors]. It demonstrates that noise impact of the proposed development would not breach either of the annual average 30dB night-time or 40dB night-time guidelines for bedrooms or the average daytime guidelines of higher day-time standards of 50dB (lower) and 55dB (higher). Consequently, it would satisfy policy requirements contained within the SPSS [Strategic Planning Policy Statement for Northern Ireland] and the NPSNI [The Noise Policy Statement for Northern Ireland] and objectors' associated concerns are not determining."</i> Page 103, Paragraph 8.28.</p> <p>There has been no change of circumstances that would change the noise assessment that was previously carried out. No further environmental information is required.</p>

Table 1.2: 2019 Addendum Technical Assessment Status

Technical Chapter	Status
Need	Since the 2017 Public Inquiry, SONI and EirGrid have reviewed the evidence of need for the proposed interconnector and have concluded that the identified need remains, as explained in Chapter 2 of this Addendum.
Planning	The planning legislation in Northern Ireland for these applications has not changed since the previous assessment. The environmental impacts and need conclusions do not alter and as such the applications should be granted.
Alternatives	In 2018, an International Expert Commission (IEC) (commissioned by the Irish Government) published reports supporting SONI's conclusions on the preferred option. There is no change to the previously submitted assessment.
EMFs	There have been no new policy, guidance or scientific publications that changes the previous assessment.
Water Environment	There are no changes to the conclusions of the previous water environment assessment.
Soils & Geology	There are no changes to the conclusions of the previous assessment.
Ecology	The ecological surveys have been updated: Phase 1 Habitat survey (including invasive species); bat surveys (activity, tree assessment, and emergence / re-entry); and, badger, otter smooth newt, breeding birds, wintering birds, and barn owl surveys.
Noise and Vibration	There are no changes to the conclusions of the previous assessment.
Cultural Heritage	A change in mapping has revealed 19 new cultural heritage features or sites. All are of low value. These sites are not directly affected by the proposed works and are not monuments. All will have a neutral effect. Overall, this is not considered significant and it does not change the findings of the assessment of cultural heritage effects.
Landscape and Visual	Overall it has been assessed that there are no significant changes in the landscape resource of the study area. There are newly proposed or built receptors that will experience a significant visual effect. However, it has been concluded there are no changes that would alter the findings of the previous landscape and visual assessment.
Community Amenity and Land Use	There are no changes since the 2017 Public Inquiry that would change the assessment that was undertaken.
Socio-economics	A change of use (LA08/2016/0081/F) near Tower 74 was granted planning permission in 2016 - directly below the overhead line. This is on the site of a garden centre that was previously assessed in the Consolidated ES (2013). The height of the proposed equipment has been considered and there is sufficient safety clearance at all points. While there will be a significant effect on the proposed centre, the centre can be constructed as planned.
Telecommunications and Aviation Assets	There are no changes to the conclusions of the previous assessment.
Flood Risk Assessment	There are no changes to the conclusions of the previous assessment.
Transport	A review of the traffic assessment has been undertaken. This involved a review of accident traffic, a review of committed developments in the area, site surveys of all the proposed access tracks and resurvey of the traffic surveys locations in the study area. There is no change to the overall transport conclusions.
Air Quality and Climate	Since the 2017 Public Inquiry, there have been changes to air quality methodology guidance. In addition, there is a new Air Quality Management Area that covers the Armagh City, Banbridge and Craigavon Council area. These changes have been assessed and there is no change to the overall air quality and climate conclusions.
Cumulative and Interaction Impacts	An update of any interactions and impact from other projects has been undertaken. There is no change to the conclusions of the previous assessment.
Transboundary Impacts	There are no changes to the conclusions of the previous assessment.

1.4.2 Structure of the 2019 Addendum

30. The 2019 Addendum is split into four volumes:
 - Volume 1 – Non-Technical Summary;
 - Volume 2 – Main Text; and,
 - Volume 3 – Appendices; and,
 - Volume 4 – Figures.
31. Based on the consultee requests and a detailed review of current and proposed environmental standards, guidelines and legislation, the technical information will be provided in this 2019 Addendum as outlined in Table 1.2 above.
32. The 2019 Addendum Volume 2 (Main Text) contains the following Chapters:
 - Chapter 1 Introduction;
 - Chapter 2 Need;
 - Chapter 3 Planning and Development Context;
 - Chapter 4 Alternatives;
 - Chapter 5 EMFs;
 - Chapter 6 Water Environment;
 - Chapter 7 Ecology;
 - Chapter 8 Cultural Heritage;
 - Chapter 9 Landscape and Visual;
 - Chapter 10 Community Amenity and Land Use;
 - Chapter 11 Socio-economics;
 - Chapter 12 Transport;
 - Chapter 13 Air Quality and Climate;
 - Chapter 14 Cumulative and Interaction Impacts; and,
 - Chapter 15 Summary and Conclusion.
33. As identified in Table 1.2, no further environmental information is required for Soils, Geology and Groundwater, Noise and Vibration, Telecommunications and Aviation Assets, Flood Risk Assessment and Transboundary Impacts.

1.4.3 Addendum Authors

34. This Environmental Impact Assessment addendum has been prepared by suitability qualified experts in their field.

Table 1.3: Addendum Authors

Topic – Consultancy	Lead Author
Need – SONI	Mr Raymond Smyth. Full member of the Institute of Engineering and Technology. Over 30 years' experience.
Planning and Development Context – Inaltus Planning	Mr Eamonn Loughrey. Chartered Town Planner. Over 20 years' experience.
Alternatives – SONI	Mr Aidan Geoghegan. Chartered Electrical Engineer. Over 30 years' experience.
EMF – National Grid	Dr Hayley Tripp. Senior Environmental Engineer. 20 years' experience.
Water Environment – AECOM	Ms Kathryn Thorp. Regional Director. Over 20 years' experience.
Ecology – AECOM	Dr. Eleanor Ballard. Chartered Environmentalist and a full member of CIEEM. Over 20 years' experience.
Cultural Heritage – AECOM	Mrs Helen Maclean. Full Member of the Chartered Institute of Archaeologists. Over 18 years' experience.
Landscape and Visual – AECOM	Ms Karen Clifford. Qualified Landscape Architect. Over 20 years' experience.
Community Amenity and Land Use – AECOM/Con Curtin	Mr Fay Lagan. Chartered Environmentalist. Over 18 years' experience. Mr Con Curtin (B. Agrsc). 30 years' experience.
Socio-economics – AECOM	Mr Fay Lagan. Chartered Environmentalist. Over 18 years' experience.
Transport – AECOM	Mr Tim Robinson. Full member of the Chartered Institution of Highways and Transportation. Over 30 years' experience.
Air Quality and Climate – AECOM	Dr. Tom Stenhouse. Full member of the Institute of Air Quality Management and Chartered Environmentalist. Over 15 years' experience.
Cumulative and Interaction Impacts – AECOM/SONI/National Grid/Con Curtin	Mr Fay Lagan. Chartered Environmentalist. Over 18 years' experience.

Chapter 2 Need



Part funded by
EU TEN-E Initiative



Tyrone Cavan
Interconnector

The current. The future.

2. Need

2.1 Introduction

1. The Consolidated ES Addendum, section 3.3, includes a description of the transmission systems in Northern Ireland and Ireland. It also explains that at present there is only one high capacity 275kV interconnecting double circuit connecting the two systems. It explains that there is a credible risk that this circuit could be lost resulting in the separation of the two systems. Whilst there are two lower capacity 110kV circuits, these do not have the capacity or characteristics to maintain a secure connection and are designed to automatically disconnect. The Consolidated ES Addendum also explained that as a result of the above risk the level of power allowed to flow on the existing interconnector has to be restricted. This constraint has a negative impact in three areas, namely competition within the Single Electricity Market, facilitation of renewables and security of supply.
2. This addendum provides an update to the material that has already been provided in the Consolidated ES Addendum. Further information on the policy approach to need is included in Appendix 2.1.
3. The Tyrone-Cavan Interconnector is a development of long-term importance for Northern Ireland and will deliver benefits for electricity customers in three key areas:
 - **Improving competition and helping to reduce electricity prices** - by reducing existing constraints that are restricting the efficient performance of the electricity market;
 - **Facilitating the development of renewable power generation** - by enhancing the flexible exchange of power flows over a large area of the island. This will enable the integration of larger volumes of renewable power generation (especially wind powered generation) throughout the island; and
 - **Improving security of supply** - by providing a dependable high capacity link between the transmission systems of Northern Ireland and Ireland.
4. The Tyrone-Cavan Interconnector complies with European Union Directives that require enhanced electricity interconnection between EU member states and improved conditions for energy competition throughout Europe. The development of the Tyrone - Cavan Interconnector has been part funded by the EU Trans-European Networks (TEN-E) programme. Also, it is designated a project of common interest (PCI)⁵ as part of a cluster of interdependent projects, see third list of PCI projects⁶.
5. At present the project is between two Member States of the European Union. In the event of the United Kingdom leaving the European Union it is expected that the project would continue to enjoy PCI status. The PCI list is established from Regulation (EU) No 347/2013. The criteria for a PCI project are set out in Article 4. Paragraph c) (ii) confirms that the project would continue to meet the criteria as it “is located on the territory of at least one Member State and has a significant cross-border impact as set out in Annex IV.1”.
6. The project is supported by the current energy policy in Northern Ireland, as set out in the Strategic Energy Framework⁷. The Framework states on Page 6 “The second North-South electricity interconnector will be crucial for increasing opportunities for trading wholesale electricity within the Single Electricity Market, as well as transmission of wind generation”. The project is also supported by the Northern Ireland Utility Regulator.
7. The Planning Appeals Commission report states (Page 43, Paragraph 4.62): “*there is a persuasive strategic need for the proposed development at both national and regional level*”. The report further states (Page 43, Paragraph 4.62): “*Regardless of NI’s future relationship*”.

⁵ The Tyrone-Cavan Interconnector has been designated a PCI for the purposes of EU Regulation 347/2013.

⁶ <https://ec.europa.eu/energy/en/topics/infrastructure/projects-common-interest>

⁷ <https://www.economy-ni.gov.uk/sites/default/files/publications/deti/sef%202010.pdf>

with the EU, an affordable, sustainable and secure electricity supply will continue to be of vital importance to domestic, commercial and industrial consumers”.

8. The following are key elements of the "case of need" for the Tyrone-Cavan Interconnector. The demonstration of Need, which is summarised below and more fully set out within the Consolidated ES Addendum (2015).

2.2 Limitations of the Existing Interconnection

9. It has previously been explained in the Consolidated ES Addendum (2015), see Section 3.3, that with a single high capacity interconnector, there is a credible risk that the transmission systems of Northern Ireland and Ireland could become separated by a single event. The existing 275kV overhead line interconnector to Ireland is a double circuit line that is theoretically capable of a maximum power transfer of 1,500MW (Mega Watts). However, since its electrical circuits are carried, both together, on a single series of steel towers, they are exposed to the possibility of a single event (such as an electrical fault or damage) resulting in failure of both circuits at the same time and therefore causing the loss of the entire Interconnector. This would cause the electrical separation of the transmission systems of Ireland and Northern Ireland. This is sometimes referred to as a system separation event.
10. In order to avoid a system separation event causing widespread loss of electricity supplies, the transmission system operators currently have to restrict the interconnector capacity to a maximum level of 450MW⁸. In real time however, this number varies. The capability of the transmission system to remain stable following the system separation event is monitored in real time. Further measures such as constraining renewable generation are also used to maintain stability.
11. The 450MW restriction creates distortion in the electricity market between electricity generators and electricity suppliers, because it places an upper limit on the amount of electricity that can be traded between the two jurisdictions. It also causes a constraint on the volume of wind powered generation that can be accommodated by the overall electricity network, in turn creating a serious obstacle to the future development of renewable energy. Finally, it also limits the amount of generation capacity that can be shared between the two jurisdictions in assessing generation capacity adequacy.
12. Further Directive 2018/2001 On the Promotion of Use of Energy from Renewable Sources increases the target for energy consumption related to the interconnection of electricity markets. Neither the UK nor Ireland are meeting their targets: see Appendix 2.1.

2.3 Electricity Prices

13. For Northern Ireland to remain competitive and to generate growth, it is more important than ever that energy prices, including electricity prices, are as competitive as possible. The primary mechanism for achieving this objective continues to be the facilitation and encouragement of competition through market forces. Market liberalisation and competition continue to be important factors driving change across the electricity sector.
14. Competition was the major driver behind the development and implementation (in November 2007) of the Single Electricity Market on the island of Ireland. The Single Electricity Market was introduced to enable generators and electricity suppliers to compete freely across the island. It aims to keep prices at the lowest possible level by operating a competitive system that chooses the lowest priced sources of power generation at any point in time. However, since the present interconnection arrangements do not provide sufficient capacity (see

⁸ Furthermore, the capacity available for economic power flows is less than this, as some capacity must be maintained for emergency response between the two systems. In addition, there may at times be other bottlenecks (e.g. during transmission maintenance outages) in the networks that will also limit flows in either jurisdiction.

"Limitations of the Existing Interconnector" above), this results in constraints that limit the benefits that would otherwise be available.

15. By reducing the existing infrastructure constraint between both jurisdictions, the proposed interconnector would remove this constraint and would allow the all-island single electricity market to operate more efficiently, in line with its design objectives⁹. Studies previously calculated annualised benefits to the market from the delivery of the second North South interconnector, as included in Appendix 3.1 of the Consolidated ES Addendum (2015). This document reported that a range of electricity production costs and security of supply savings could be attributed to the Tyrone – Cavan Interconnector, with combined all island savings of the order of €40m-€60m per annum from 2030. More recent studies have been conducted indicating significant benefits as part of the 2018 Ten Year Network Development Plan¹⁰. These indicate a range of Socio-Economic Welfare indicator (equivalent to production cost savings, RES integration and avoided CO₂ emissions) across the three scenarios considered from €22m – €26m in 2030. The Ten Year Network Development Plan also included values for the reductions in expected energy not supplied as a result of the sharing of generation capacity. These values ranged from 162 MWhr to 2,254 MWhr depending on the scenario. Finally, the Ten Year Network Development Plan also includes results of an experimental method of monetising the security of supply improvements with results from €6m - €10m per annum by 2030.
16. The energy regulators and government departments in both Northern Ireland and Ireland have explicitly identified the need for improved electricity infrastructure, and especially a second North-South Interconnector (i.e. the proposed interconnector), as a "key enabler" for the future success of the Single Electricity Market.

2.4 Renewable Energy

17. Northern Ireland and Ireland have both made significant progress in reaching their respective renewable energy targets. Northern Ireland had previously set a non-binding target in the 2010 Strategic Energy Framework of 40% renewables by consumption by 2020. In the 12-month period from January 2018 to December 2018, 38.2% of total electricity consumption in Northern Ireland was generated from renewable sources located in Northern Ireland¹¹. Approximately 32% of consumption in Ireland is from renewable sources¹². However, it is likely that more stringent targets will be applied for reasons that will be explained below.
18. Renewable generation is dominated by wind power. In order to meet renewable targets generation from this source is given priority above conventional generation, subject to running a minimum number of conventional generators to ensure system stability. The use of renewable generation, in particular wind powered, often results in imbalances between generation and supply between the two jurisdictions. For example, there are periods whereby there may be high wind levels in the south of Ireland, but this is not the case in Northern Ireland. This has a tendency to result in periods where there is a need to transfer larger quantities of power between the jurisdictions.
19. The lack of a second north south interconnector creates the credible scenario of a system separation event and the risks associated with balancing generation and supply on the isolated systems. With high levels of wind generation, in particular whereby there is an imbalance in the level of renewables being generated between the two jurisdictions, there are increased risks that the transmission system would become unstable during a system separation event. These risks are monitored in real time and at times it is necessary to constrain (reduce) wind generation to ensure that the system would be secured to cover this event. More recently the operation of the Integrated Single Electricity Market has introduced many changes to the market mechanisms that allow generators to be scheduled more competitively. One observed change is an increased requirement for power to be exported

⁹ The key SEM Objectives are set out at <https://www.semcommittee.com/>.

¹⁰ <https://tyndp.entsoe.eu/tyndp2018/projects/projects/81>

¹¹ Taken from the NISRA website

¹² Taken from the EirGrid website.

- via the Moyle interconnector to Great Britain in situations whereby there are high levels of wind generation in the south of Ireland. In this case the Northern Ireland transmission system is at times used to export power from this generation to Great Britain. This change in use has required additional mitigation measures as documented in relation to an event in January 2019¹³.
20. In addition, the ability to reach the current levels of renewables is assisted by the relatively low minimum generation levels available from the existing portfolio of generators. In future it is possible that new generation connections may be based on larger units which also have proportionately larger minimum generation levels. There is a need to operate a minimum number of conventional generation sets in Northern Ireland. The combined effect of higher minimum generation levels and a minimum number of sets would impact on the ability to use renewables sources with a negative impact on government targets.
 21. The risk to system stability and in turn security of supply that would be incurred in the event of a system separation event is monitored in real time using specialised analysis software by the transmission system operators. At times this results in a need to reduce the outputs of renewable generation in Northern Ireland and Ireland.
 22. The total reductions in renewable generation are published on the SONI website¹⁴. The levels of real time reductions of renewable output of available renewable generation due to the lack of the Tyrone - Cavan interconnector has been increasing. The level has increased from an estimated 0.3% in 2011 (512 MW installed) to 4% in 2018 (1276 MW). Analysis of data recorded at the time of each constraint event assessed that just over half were due to the limitation in the capacity available between Ireland and Northern Ireland. In future this constraint is expected to rise as increased renewables will be required to meet decarbonisation targets.
 23. The Ireland Government has signalled its intent to establish a target of 70% of energy supplied from renewables by 2030. It is expected that in order to participate in the drive to decarbonise there will be increased targets for the development of renewable generation in Northern Ireland as well as targets for electrification of heat and transport. Relevant policies include the EU Clean Energy Package, COP21 Paris agreement, the UK governments Clean Growth Strategy and the 5th carbon budget. Further information on the possible contribution of Northern Ireland to these plans is included in the UK Government Committee on Climate Change report, titled 'Reducing Emissions in Northern Ireland, February 2019.' Since that report the UK Government has committed, through legislation, to meet a requirement of net zero greenhouse gas emissions by 2050.
 24. SONI will be consulting on a number of Future Energy Scenarios that are required for Northern Ireland to contribute to decarbonisation targets. The electrification of heat and transport will increase the overall consumption of demand. This will mean the total amount of renewable generation will also need to increase to meet the current target. Furthermore, SONI expects renewable generation targets to increase from the current 40% in particular to reflect the new commitment to achieving zero net carbon emissions.
 25. In conclusion as targets for renewable generation in both jurisdictions are increased there will also be an increasing need to address the system separation issue.

2.5 Energy Security

26. Northern Ireland has a relatively small electricity network with a limited number of power stations. It is therefore exposed to a greater risk of loss of supply than would be the case in a large and highly interconnected system with a large number of power stations which can depend upon each other for support in the event of unforeseen disturbances.
27. Due to the restrictions in the available transfer capacity of the existing interconnector, the level of security of supply support that can be provided by each system to the other is significantly

¹³ <https://www.sem-o.com/documents/general-publications/Report-on-the-Imbalance-Prices-calculated-on-24.01.2019.pdf>

¹⁴ <http://www.soni.ltd.uk/how-the-grid-works/renewables/>

- limited. Previous Generation Capacity Statements published jointly by EirGrid and SONI have highlighted how, for Northern Ireland, with this limited support, the availability of generation to meet forecast demand has been subject to significant risk.
28. It is useful to consider the security of supply position since the Consolidated Environmental Statement Addendum (2015). The Generation Capacity Statement 2014-2023 indicated that generation capacity was technically compliant with the standard up to 2023. Due to the outage of one cable on Moyle however a particular High Impact Low Probability scenario was also described. As a result of this issue SONI entered into a local reserve services contract to secure an additional 250 MW of capacity for three years from 2016 with an option to extend by a further two years.
 29. The 2015-2024, 2016-2025 and 2017-2026 Generation Capacity Statements considered that Northern Ireland generation adequacy would be in deficit from 2021, based on the assumption held at the time that a) the local reserve contract referred to above for Ballylumford B4 and B5 would be expired and the units would close and b) the Kilroot coal sets would be subject to limited running hours due to the Industrial Emissions Directive from 2021. As Belfast Power (Evermore) did not have a connection agreement it was not assumed in the studies for these Generation Capacity Statements.
 30. The Grid Code was modified in 2015 to include a clause that a generator would be required to give 36 months' notice of its intent to close. However, a process to administer this was not approved until December 2017 and was brought in to manage potential outcomes from the first auction under the Capacity Remuneration Mechanism in December 2017. This Generation plant Closure process¹⁵ changed the way generators were considered in terms of their retirement in the Generation Capacity Statement. The Generation Capacity Statement 2018-2027 would only consider the plant to be closed if a) legislation would prevent it from running or b) its plan to retire complied with the Grid Code notice period or a derogation was in place.
 31. The Generation Capacity Statement 2018-2027 reported updated information on the results of the first Capacity Market T-1 auction. Whilst some units were not successful they were included in the adequacy assessment because at the Generation Capacity Statement freeze date The Utility Regulator deemed the parties had not submitted a valid request for derogation against the notification of plant closure required under the Planning Code section of the Grid Code. This applied to Ballylumford B4 and B5 and the Kilroot coal units. It also reported that AES had invested in emission reduction technology and in addition to purchasing emission allowances through the UK Nitrogen Oxides (NO_x) trading scheme would be assumed to be fully available to the end of 2020. This document also reported that AES were investigating further emissions improvements that would allow the coal units to be fully available until the end of 2024. Finally, the Belfast Power connection was not included in the assessment as the project was not sufficiently progressed. Based on these parameters and in line with the approved methodology, the adequacy was found acceptable up to 2027 with a margin of 150MW.
 32. Since publication of the Generation Capacity Statement 2018-2027 the parties submitted a request for a derogation from the Grid Code. In parallel, with the agreement of the Utility Regulator the contract won for Ballylumford B4 was novated to Kilroot ST1. Ballylumford B4 and B5 retired in December 2018. SONI estimates that there will be a shortfall in adequacy by 2025 for medium demand and high demand scenarios. This is based on the closures of Ballylumford B4 and B5 and that the European Union Clean energy Package prohibits coal-fired generators such as Kilroot ST1 and ST2 from participating in the SEM capacity market from mid-2025. This will be addressed in the upcoming 2019 Generation Capacity Statement.
 33. Shortfalls in available sources of electricity supply would require the introduction of arrangements to prevent power system failure by switching off the electricity supply (using a rota system for selected areas) during times of peak electricity demand. This risk to security of supply is deemed unacceptable.

¹⁵ [http://www.soni.ltd.uk/media/documents/Plant%20Closure%20Process%20\(20%20December%202017\).pdf](http://www.soni.ltd.uk/media/documents/Plant%20Closure%20Process%20(20%20December%202017).pdf)

34. The risk of loss of supply is highly relevant in the context of industrial or commercial investment decisions, and a secure energy environment will ensure the best possible economic advantage for everyone in Northern Ireland.
35. The Tyrone – Cavan Interconnector will improve generation adequacy as described in the Consolidated ES Addendum Appendix 3.1 (2015). These benefits of improved generation adequacy are reflected in the Ten Year Network Development Plan 2018 referenced as category B6, as stated previously.

2.6 Key Requirements for Additional Interconnection

36. In order to remove the limitations described above, the Tyrone-Cavan Interconnector must be designed to match the maximum power transfer capacity of the existing interconnector and must therefore provide for a power transfer capacity of 1,500MW.
37. The Tyrone-Cavan Interconnector also needs to present a high level of interconnection security. In order to achieve this, it needs to be physically separated from the existing interconnector, so that the risk of simultaneous failure due to common events will be low.
38. The Tyrone-Cavan Interconnector is required to form part of an integrated all-island electricity network. In order to work properly, the Tyrone-Cavan Interconnector must therefore be able to operate efficiently and reliably in this mode.

2.7 Legal and Regulatory Context

39. The Department for the Economy is the Government department responsible for energy affairs in Northern Ireland. It also has a role in ensuring the provision of the infrastructure that is needed for Northern Ireland's economy.
40. The Electricity (Northern Ireland) Order 1992 sets out the basic licensing regime for carrying out electricity related business activities in Northern Ireland. It places a statutory duty on SONI as a licence holder to operate and plan for the development of an efficient, co-ordinated and economical system of electricity transmission which has the long-term ability to meet reasonable demands for the transmission of electricity.
41. SONI's licence requires it to develop a mechanism for the transmission of electricity in Northern Ireland that takes account of the benefits of efficient, co-ordinated and economical systems for the transmission of electricity on the island of Ireland as a whole. It also requires the company to contribute to security of supply through adequate transmission capacity and system reliability, and to facilitate competition in the supply and generation of electricity.
42. The Utility Regulator is responsible to Government for regulating the ongoing operation of SONI and for protecting the long-term interests of customers. The Utility Regulator is, amongst other things, specifically required to promote effective competition between persons engaged in the sale or purchase of electricity through the SEM.

2.8 Implications of United Kingdom leaving European Union

43. The Tyrone - Cavan Interconnector is consistent with the legal and regulatory obligations required of SONI by Department for the Economy and by the Utility Regulator.
44. The implications of Brexit were considered by the Planning Appeals Commission in their report dated 20th November 2017. The PAC report concluded that:

“Negotiations to determine the future relationship between the UK and EU will have to decide the former’s relationship with the Internal Energy Market and will include discussion with the RoI into the arrangements for the SEM and I-SEM that would be put in place post-Brexit.”

There is no evidence that either the UK government or NI Assembly want or propose to withdraw from the SEM or I-SEM post Brexit. Indeed, the applicant and the UR provided persuasive written and oral evidence of continued political support for a SEM, the introduction of I-SEM and the recognition that an all-island electricity market is more efficient than its separate, constituent components. The uncertainty and challenging conditions that face businesses in both NI and the RoI following the decision of the UK to leave the EU and the uncertain political situation in the former, mean that strengthening the SEM in the interests of energy security and price competitiveness are now more important economic drivers.

If the SEM were not to continue, as commitment to the all-island energy market is a bilateral agreement between the two jurisdictions, there is no persuasive evidence that trading between them would be unlikely to persist. Notwithstanding this, if the SEM were to be spilt into separate electricity markets, the proposed IC would still yield similar benefits through bilateral arrangements enabling NI to purchase cheaper electricity from the RoI. The benefits of interconnection between the two jurisdictions on the island of Ireland were recognised in the construction of the existing NSIC before the formation of the modern EU. This recognition has been endorsed and strengthened by governments and the energy regulators of both jurisdictions in the intervening years through policy and legislation.

Notwithstanding, if the UK left the EU without specific agreement on electricity trading then World Trade Organisation rules would apply in accordance with Most Favoured Nation Status (MFN). Current MFN tariffs for electrical energy imported to the EU are 0%. Non-EU Members such as Norway, Turkey and Switzerland are already trading electricity with the EU and 0% tariffs apply. Therefore, even if the SEM and i-SEM were to be discontinued after Brexit, there is no persuasive evidence that the proposed IC would not be needed to trade power flows between the separate electricity markets in NI and the RoI.” (Paragraph 2.27 – 2.29, Page 17-18).

45. Circumstances have not materially changed. Both jurisdictions continue to support the continuance of the Single Electricity Market. On the UK side, the government has acknowledged a risk that the Single Electricity Market could separate, but has stated that it will take all possible measures to ensure the continuance of the single electricity market¹⁶. In Ireland, legislation recently proposed by the Irish Government to Dáil Éireann provides for additional, short-term powers to the Commission for the Regulation of Utilities to facilitate the continuing operation of the Single Electricity Market in event of a no-deal Brexit (Brexit Omnibus Bill Part 4). The SEM Committee, on 28th March 2019 issued a Notice to Industry in the event of a “no deal” Brexit. The notice advises that the SEM would continue¹⁷.
46. In conclusion the position remains essentially the same as that reported by the PAC. Both governments continue to support the continuation of the Single Electricity Market. However even in the event of a separation of the SEM bi-lateral arrangements could allow trading to be tariff free with the proposed interconnector netting similar benefits.

2.9 Conclusions

47. The need for the Tyrone – Cavan Interconnector has been established by SONI and confirmed in the Planning Appeals Commission’s report (2017). The Tyrone - Cavan Interconnector is required to help reduce electricity prices, facilitate renewables and to improve security of supply.
48. The Planning Appeals Commission report states: “*there is persuasive strategic need for the proposed development at both national and regional level*”. The report further states: “*Regardless of NI’s future relationship with the EU, an affordable, sustainable and secure*

¹⁶ <https://www.gov.uk/guidance/the-electricity-sector-and-preparing-for-eu-exit>
¹⁷ <https://www.gov.uk/government/publications/trading-electricity-if-theres-no-brex-it-deal/trading-electricity-if-theres-no-brex-it-deal>
<https://www.semcommittee.com/sites/semc/files/media-files/SEM%20Committee%20Statement%20-%20Notice%20to%20Industry%20on%20a%20%27no-deal%27%20Brexit.pdf>

electricity supply will continue to be of vital importance to domestic, commercial and industrial consumers". (Paragraph 4.62, Page 43).

49. Since the 2017 Public Inquiry, SONI and EirGrid have reviewed the need for the Tyrone - Cavan Interconnector and have concluded that the Tyrone - Cavan Interconnector is still required for the reasons stated above.
50. As set out in the benefits in the Ten-Year Network Development Plan, the Tyrone - Cavan Interconnector remains consistent with the legal and regulatory obligations required of SONI by the Department for the Economy and by the Utility Regulator. The UK and Irish Governments have indicated their commitment to the Single Electricity Market and their commitment to the Tyrone-Cavan Interconnector regardless of Brexit. At the European level, the project will continue to enjoy status as a Project of Common Interest, which also confirms the need (see Regulation (EU)347/2013 Article 4).

Chapter 3 Planning and Development Context



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3. Planning and Development Context

3.1 Planning Legislation

1. The planning legislation for these applications has not changed since the now quashed decisions for the Tyrone – Cavan Interconnector Overhead Line and the Associated Works applications were assessed. The previous decisions were issued on 23rd January 2018 and followed a comprehensive independent Public Inquiry held by the Planning Appeals Commission.
2. The legislation for determining the planning Applications remains the Planning Act (Northern Ireland) 2011 (the Act). The Department for Infrastructure (DFI) remains responsible for determining applications of Regional Significance under Section 26 of the Act.

3.2 Planning Policy Documents Reviewed

3.2.1 Overview

3. The applications were subjected to a detailed policy review in the independent Public Inquiry where all aspects of planning policy were considered and assessed.
4. The starting point for the consideration of the proposal is Section 6 (4) of the Act which states that: *“Where, in making any determination under this Act, regard is to be had to the local development plan, the determination must be in accordance with the plan, unless material considerations indicate otherwise”*. Section 45 (1) states: *“the Department, in dealing with the application must have regard to the local development plan, so far as material to the application, and to any other material considerations”*.
5. As was the case in the Public Inquiry and at the time of the issuing of the two permissions, the Local Development Plans that applied to these proposals were the Dungannon and South Tyrone Area Plan 2010 and the Armagh Area Plan 2004 and Armagh Area Plan Alteration No.1.
6. Both Plans remain the statutory Local Development Plans for the consideration of these applications.
7. It is noted that both Mid Ulster District Council and Armagh City, Banbridge and Craigavon Borough Council are in the process of preparing a new Local Development Plan for their Council Areas. However, neither has produced an adopted Plan Strategy or Local Policies Plan.

3.2.2 Mid Ulster Draft Plan Strategy

8. Mid Ulster District Council published its Preferred Options Paper on 7th November 2016. The subsequent Mid Ulster Local Development Plan Draft “Plan Strategy” was published on the 22nd February 2019 for consultation until 19th April 2019. The Draft Plan Strategy recognises the importance of the Tyrone – Cavan Interconnector. It states:

“21.4 As well as mobile and fixed data services, overhead power cables are also important in a District like Mid Ulster because they enable a good electricity network to support new and existing rural homes. There are a few significant projects planned during the plan period which will seek to improve the transmission system in and around Mid Ulster, such as the north south interconnector”.

9. The Council identifies an area of constraint for high structures, but the area of the application site is excluded from this. The proposed draft Plan Strategy includes Policy TOHS 1 which deals with high structures outside the Area of Constraint. The policy allows overhead cable

development such as the Tyrone – Cavan Interconnector. The proposed TOHS 1 policy incorporates the same general criteria as already set out in the Planning Strategy for Rural Northern Ireland (PSRNI) policies PSU 2 (Major Projects), PSU 8 (New Infrastructure) and PSU 11 (Overhead Cables). It does not add any new test that would warrant further consideration of the proposal.

10. While SONI have made representations on the draft policy¹⁸ it can be noted that the emerging policy does not introduce any new test and the Tyrone – Cavan Interconnector would comply with the policy in any event.
11. The draft Strategy also states:

“21.18 In relation to overhead cables in the rural area, these are best implemented where they follow existing landscape features such as roads, hedgerows and treelines and where they avoid running through the middle of fields where exposure to public views would be increased. Having said this, care should always be taken to ensure that no loss of biodiversity will occur due to having infrastructure located too close to existing vegetation. In relation to power lines, current government policy is that exposure to power-line Electro Magnetic Fields (EMF’s) should comply with the 1998 International Commission for Non-Ionising Radiation Protection (ICNIRP) guidelines for exposure to EMF’s”.
12. This is not policy, but explanatory text. This is a similar approach that was advocated through the PSRNI and the proposal was found to be compliant with same by the Planning Appeals Commission and the DfI.
13. The Draft Plan Strategy seeks to introduce policies that supersede Regional Policies relating to the environment that deal with protection of river corridors (Policy OS 2), protection of tourism assets (Policy TOU 1), registered historic parks, gardens and demesnes (policy HE 8), change of use or alteration of a listed building (including development affecting the setting of a listed building) (Policy HE 9), Local Landscape Policy Areas (Policy HE 16), International Designations (Policy NH 1), development in flood plains (Policy FLD 1), and artificial modification of watercourses (FLD 5). The policies are all consistent with the SPPS and representations have been made to each of these draft policies. They are draft policies and do not supersede the policies set out in Planning Policy Statements 2 Natural Heritage, Planning Policy Statement 6 Planning, Archaeology and the Built Heritage, Planning Policy Statement 15 Planning and Flood Risk and Planning Policy Statement 16 Tourism.

3.2.3 Armagh City, Banbridge and Craigavon Preferred Options Paper

14. Armagh City, Banbridge and Craigavon Borough Council published its Preferred Options Paper on 28th March 2018 and was open to consultation until 30th May 2018. The Preferred Options Paper notes (Section 7) that:

“Electricity

Our power lines, overhead cables and their associated structures provide our Borough with essential power to allow the day to day running of our homes and businesses. The provision of resilient and efficient electricity provision is therefore essential for growth of our economy and is vital for attracting investment. The current Cross-Border electricity network Interconnection is the main North-South interconnector between Tandragee and Louth, which is being used to trade electricity between the Republic of Ireland and Northern Ireland. However, to limit the occurrence of widespread power failure, the capacity of the North-South interconnector is restricted, to a level that is below demand. The proposed new North South interconnector, a second higher capacity interconnector which involves the addition of a new 400 kV overhead line, is aimed at improving the efficiency and capacity of the electricity distribution network.”

¹⁸ SONI’s consultation submission on the draft Strategy has been provided in Appendix 3.1. The author of this chapter made a separate consultation submission and it has been provided as Appendix 3.2.

15. The Council's preferred option in bringing forward its draft Plan Strategy is that it provides a criterion based policy in-line with existing policies and regional policy direction. The Preferred Options Paper states:

"The provision of a reliable and modern infrastructure, telecommunications and utilities network is not only crucial to everyday living and our quality of life, but it is also essential to support sustainable growth and encourage investment in our Borough. As this sector continues to grow, so shall the requirements and demand for further, high quality infrastructure to meet our social and economic needs. The LDP has an important role in facilitating the provision of modern and efficient infrastructure, telecommunications and utilities network whilst managing any potential negative impacts on sensitive landscapes (including any new proposed designations as considered in Key Issue ENV 4) or other built heritage and environmental assets in need of safeguarding (as referred to in Key Issues ENV 1, ENV 2, ENV 3, ENV 5 and ENV 6).

This preferred option would seek to bring forward a criteria-based approach towards infrastructure, telecommunications and utilities development that is in line with the existing planning policies in PPS 10 (Telecommunications), PPS 11 (Waste Management), PPS 21 (re. non-mains sewerage) and PSRNI (PSU 8 and 11). However, the policy wording would be updated to reflect regional direction in the SPPS and ensure that such infrastructure is developed in an efficient and effective manner, whilst keeping the environmental impact to a minimum".

16. It also states that:

"In respect of infrastructure and utilities, the preferred approach would seek to update policy wording to ensure that the development of new power lines comply with the 1998 International Commission on Non-Ionizing Radiation Protection (ICNIRP) to minimise the exposure to electric, magnetic and electromagnetic fields in order to provide protection against known adverse health impacts".

17. The Council has not produced any new policy that can be considered at this point under the emerging LDP.
18. The LDP policies of greatest relevance therefore remain those set out in the adopted Dungannon and South Tyrone Area Plan, the Armagh Area Plan and the Armagh Area Plan Alteration No.1. These policies are therefore unchanged since the Public Inquiry and the decisions taken by the DfI on 23rd January 2018.

3.2.4 Regional Policy

3.2.4.1 Northern Ireland

19. The Regional Policy context that applied at the time of the Public Inquiry and in January 2018 when the previous decisions were taken has not changed. The key Regional Policy documents remain:
- Regional Development Strategy 2035 "Building a Better Future" (DRD, March 2012);
 - Strategic Planning Policy Statement (DOE, September 2015);
 - Dungannon and South Tyrone Area Plan 2010 (DOE, 2005);
 - Armagh Area Plan 2004 (DOE, 1995);
 - Armagh Area Plan 2004 Alterations No 1: Armagh Countryside Proposals (DOE, 2001);
 - A Planning Strategy for Rural Northern Ireland (DOE, 1993);
 - PPS 2 - Natural Heritage (DOE, July 2013)
 - PPS 3 - Access, Movement and Parking (DOE, February 2005);
 - PPS 6 - Planning, Archaeology and Built Heritage (DOE, March 1999);
 - PPS 10 - Telecommunications (DOE, April 2012);

- PPS 13 - Transportation and Land Use (DRD, February 2005);
 - PPS 15 - Planning and Flood Risk (DOE, September 2014);
 - PPS 16 - Tourism (DOE, July 2013);
 - PPS 18 - Renewable Energy (DOE, August 2009);
 - PPS 18 - Renewable Energy Best Practice Guidance (August 2009);
 - Supplementary Planning Guidance Wind Energy Development in Northern Ireland's Landscaped (DOE, August 2010);
 - PPS 21 - Sustainable Development in the Countryside (DOE, June 2010);
 - DCAN 10 - Environmental Impact Assessment (DOE, 2012);
 - DCAN 15 - Vehicular Access Standards (DOE, 1999); and
 - Parking Standards (DOE, 2005).
20. These documents were all considered in the Consolidated ES (2013) and its Addendum (2015) and in the subsequent Overarching Technical Report and the Main Rebuttal Technical Report prepared for the Public Inquiry (2017). There is no need to review them in this 2019 Addendum as nothing has changed.
21. It can also be noted that the DfI produce Development Management Practice Notes. These are provided to guide users of the planning system of the relevant legislation and deals primarily with procedures as well as good practice in managing planning applications. They do not provide policy for considering applications.

3.2.4.2 Monaghan County Council Consultee Response

22. Monaghan County Council in its consultee response of 8th April 2019 stated that the assessment should consider the Monaghan County Development Plan 2019-2025 and Draft Regional Spatial and Economic Strategies for both the Northern and Western Regional Assembly, and the Eastern and Midland Regional Assembly. These documents apply to applications for permissions for development in (the Republic of) Ireland.
23. The jurisdiction for the Tyrone – Cavan Interconnector applications remains with DfI within Northern Ireland. There would be no policies in the Irish Plans and Strategies that should be given significant weight in Northern Ireland. Any designations in the Monaghan County Development Plan that impact on the assessment of the proposals such as in the landscape and visual impact assessment have been considered as part of this Addendum.

3.2.5 The Planning Appeals Commission Report

24. The Planning Appeals Commission held the Public Inquiry into the substantive issues raised by these applications in February 2017. This was the second stage of the Public Inquiry with the first stage occurring in 2016. The conclusions of the Planning Appeals Commission are set out in Chapter 1 of this Addendum.

3.2.6 The DfI Consideration

25. The DfI considered the Planning Appeals Commission Report and on 22nd January 2018 concluded that it had considered the independent report and recommendation of the Planning Appeals Commission and found no reason to depart from it. The DfI Internal Memo of 22nd January 2018 paragraph 15 found that: *“Overall the proposed development is considered to be of significant strategic importance for Northern Ireland at an International, national and*

regional level and is therefore in the wider public interest. It is recommended that planning permission be granted, subject to appropriate planning conditions”.

3.2.7 Subsequent Legal Challenge

26. Since the extensive consideration of this proposal by both the Planning Appeals Commission and the DfI there was a legal challenge of the decisions of the DfI on 12 grounds by Safe Electricity for Armagh and Tyrone (SEAT) and Mr James Woods. The decision was quashed on a single ground being the then absence of power in the civil service to take the decision. Notwithstanding the quashing, nothing in the policy context justifies any change to the conclusions reached by the Planning Appeals Commission and DfI.

3.3 Consideration of Changes as a Result of the Updated Environmental Information

27. In order to further inform the redetermination of the applications by the DfI, SONI has undertaken a full review of the environmental information submitted in support of the applications. Details of the findings are found in the relevant chapter of this Addendum. A review of this Addendum demonstrates that while there are some changes to the assessments (for example the need to assess additional dwellings being granted or built along the overhead line route) there are no changes to the conclusions regarding the environmental impacts of the Tyrone – Cavan Interconnector.
28. As such, with no change to policy, no change to the conclusions on impacts of the proposal and no change to the need for the Tyrone – Cavan Interconnector, it can be concluded that the imperative reasons of over-riding public interest for the proposal continue to outweigh any residual impacts after mitigation that the proposal may have.

3.4 Conclusions

29. There has been no policy change since the 2017 Public Inquiry and due to the fact that the Planning Appeals Commission’s recommendation (following a public inquiry) and the DfI decision all endorse the methodology and the conclusions of the environmental assessment, and find the proposal compliant with planning policy, there are no grounds to reach a different conclusion now.
30. The Tyrone – Cavan Interconnector remains of significant strategic importance for Northern Ireland at an international, national and regional level and is therefore in the wider public interest. While impacts on the environment do occur, they do not outweigh the imperative reasons of over-riding public interest in delivering this proposal.

Chapter 4 Alternatives



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4. Alternatives

4.1 Introduction

1. The Tyrone - Cavan Interconnector is required in order to address three objectives, namely the need to improve the competitiveness of the SEM; address the security of electricity supply issue within the island of Ireland; and facilitate the generation of renewable energy.
2. SONI's consideration of alternative ways of satisfying these objectives was described in the Consolidated ES (2013), its Addendum (2015) and in the Statement of Case (2017). The main alternatives considered were:
 - The "Do Nothing" alternative;
 - Alternatives to a transmission network solution; and
 - Alternative transmission technologies.

4.2 The "Do Nothing" Alternative

3. It remains the case that the "Do Nothing" alternative would not mitigate the risk of system separation and would therefore continue to constrain power flows on the existing interconnector. This alternative would not address the three identified objectives and as a result has not been considered any further.

4.3 Alternatives to a Transmission Network Solution

4. The current Generation Capacity Statement 2018 indicates that capacity is adequate up to 2027. This will be updated in Generation Capacity Statement 2019-2028 to reflect that Ballylumford B4 and B5 have now closed and that the European Union Clean Energy Package prohibits coal-fired generators such as Kilroot ST1 and ST2 from participating in the SEM Capacity Market from 2025. In these circumstances there is expected to be a generation deficit. Even if that was resolved by installing new generators and/or delaying the decommissioning of existing generators that would not resolve the inefficiencies in the single electricity market as the transmission network would remain restricted due to the fact that there is still only a single interconnector between Northern Ireland and Ireland. While this inefficiency in the single electricity market remains in place increasing the generation in Northern Ireland will result in more generators being unable to fully access the market on the island of Ireland which will in turn result in further cost being imposed on the consumer.
5. Whilst a new generator may alleviate generation adequacy issues in Northern Ireland in the short term, it would not deliver the same long-term enduring security of supply benefits to the island of Ireland that the Tyrone-Cavan Interconnector would bring. In the long term the lack of secure interconnection which is essential in maximising the level of generation security that can be shared across the island would not be addressed, nor would the facilitation of renewable generation.
6. It remains the conclusion therefore that there are no non-transmission alternatives (such as the addition of new electricity generation plant in Northern Ireland) that would address the identified needs and drivers for this project.

4.4 Alternative Transmission Technologies and Methods

7. The only option that satisfies all of the identified needs is a transmission technology option that involves the development of a second high-capacity interconnector between Northern Ireland and Ireland.
8. Technology options incorporating overhead line, underground cable and submarine cable were evaluated in the Consolidated ES (2013) and in its Addendum (2015) and it was concluded that the preferred option for the Tyrone – Cavan Interconnector is a single circuit 400 kV overhead line for its entire length.
9. There have not been any significant advances in transmission technology, or changes in methods or changes in comparative costs in the interim that would alter this conclusion.
10. This new conclusion is supported by the findings of the Independent study (2018)¹⁹ to examine the technical feasibility and cost of undergrounding the North-South Interconnector, an update by the International Expert Commission (IEC) that was appointed by the Government of Ireland.
11. The IEC was first appointed in 2011 and was requested to review the case for, and cost of undergrounding all or part of the North – South 400 kV Interconnection Development In Ireland. The first report by the IEC was published in early 2012. A brief summary of its findings can be found in Table 10.2 of the Consolidated Environmental Statement Addendum (2015). The findings of the first IEC report informed the conclusion of the Consolidated ES (2013) and its Addendum (2015) that the preferred technical option for the Interconnector is a single circuit 400 kV overhead line.
12. In December 2016 planning consent was granted for the part of the proposed interconnector located in Ireland. Following which, in early 2017, both Dáil Éireann and Seanad Éireann passed motions calling: “*on the Government to commission an independent report to examine the feasibility and cost of putting the interconnector underground and to ensure no further work is done on the interconnector until that analysis and a full community consultation are completed*”.
13. In response the Government reconvened the IEC and requested that among other things it:
 - review international literature, recent technology developments, international projects, and cost data in relation to overhead and underground high voltage power lines;
 - consult with the Minister, the Commission for Energy Regulation, EirGrid, the ESB, the North East Pylon Pressure Campaign, the County Monaghan Anti Pylon Committee and other bodies as deemed necessary;
 - examine the technical merits and construction and operation costs of the proposed project;
 - examine the technical feasibility and cost of an underground alternative to the North-South Interconnector which will include technical considerations in the context of the electricity networks of Ireland and Northern Ireland operating effectively as a single system thus increasing the benefits that are derived from the Single Electricity Market, and which will have regard, insofar as possible, to the potential underground route types (e.g. along roadway, cross-country, etc.) for the North-South Interconnector;
14. As part of its stakeholder consultation process the IEC was required to consult with EirGrid, SONI’s counterpart in Ireland. In response EirGrid prepared a document called “Outline and Update of EirGrid’s Consideration of the Transmission Technology Options as Presented to the Independent Expert Group”, see copy at Appendix 4.1 of this Addendum.
15. EirGrid submitted this document to the IEC in December 2017. The document replicates and updates the joint analysis undertaken by SONI and EirGrid presented in Chapter 10 of the Consolidated Environmental Statement Addendum (2015) and in Technical Report No. 2 of the Statement of Case (2017). The updated information is presented in the document in

¹⁹ <https://www.dccae.gov.ie/en-ie/energy/publications/Pages/Independent-Studies-in-relation-to-the-North-South-Interconnector-project.aspx>

Appendix 4.1 of this Addendum in text boxes so that it is clearly distinguishable from what went before. The updated information primarily relates to the latest advances in underground cable technology, the latest information on comparative costs based on actual projects from around Europe and the latest information on the usage of underground cable technology in Europe and around the world.

16. Based on the updated information in the EirGrid document it is SONI's conclusion that:
 - There have not been any significant advances in underground cable technology in recent years that would alter SONI's conclusion that a 400 kV AC overhead line is the preferred technical option for implementing the Tyrone – Cavan Interconnector;
 - Experience with HVDC schemes in China confirms that there is a very real risk of mal-operation of the control system of the HVDC option. Due to the scale and importance of the proposed North-South Interconnector this presents a considerable risk for all-island system security and stability; and
 - The cost difference between the underground cable option and the overhead line option is not reducing; the underground cable option remains hundreds of millions of pounds more expensive than the overhead line option.
17. The IEC Report (second report) was published in April 2018. Its *“overall finding is that, from a techno-economic point of view, an AC overhead line is the most beneficial way of meeting the need for enhanced power transfer capability between the Republic of Ireland and Northern Ireland”*. This supports SONI's conclusion that the preferred option for the Tyrone – Cavan Interconnector is a single circuit 400 kV overhead line.
18. On the issue of costs, the IEC found that the underground cable option would cost €450 million more than the overhead line option. The main reason for this cost difference is the very expensive terminals (High Voltage Direct Current converter stations) that are required in the case of the underground cable option. The IEC estimated the cost of an underground cable terminal at €200 million. Two would be required, one located at Turleenan in Northern Ireland and the other at Woodland in Ireland.
19. The cost of developing the Tyrone – Cavan Interconnector will be paid by electricity customers via their electricity bills. Electricity customers in Northern Ireland will only pay for the infrastructure that is located in Northern Ireland while electricity customers in Ireland will pay for the infrastructure located in that jurisdiction. In preparing their cost estimates the IEC looked at the overall Tyrone – Cavan Interconnector as a single project and did not consider how the additional €450 million required for the underground cable option would be shared between the two jurisdictions. In the context of this update however this is relevant and of significance.
20. Applying the rates used by the IEC in the estimates for its cost comparison of options (Refer Table 6 in the 2018 IEC Report) suggests that electricity customers in Northern Ireland would pay a disproportionately greater (considering that there are less customers in Northern Ireland than there are in Ireland) amount of the increased cost should underground cable be selected as the preferred option. This can be seen in the Tables below, where the increase in cost is shared, almost on a 50:50 basis by the customers in the two jurisdictions.

Table 4.1 Cost Comparison for Proposed Interconnector (Refer Table 6 in the 2018 IEC Report)

Concept	Length km	Terminal s M€	Line / Cable M€/km	Cable Total M€	Total M€	Cost Difference M€
400 kV AC overhead line 1 X 1400 MW	140	20 ¹	1.5 ¹	210	230	450
2 X 700 MW VSC HVDC with UG Cable	140	400	2	280	680	

NOTE 1: In Table 6 of the IEC report a cost per km rate for the 400 kV overhead line option is not provided nor is a cost for the terminals for the 400 kV overhead line option however it is assumed based on the preceding text that their estimate for the two overhead line terminals is €20 million and from this it was deduced that their rate for the overhead line is €1.5 million per km.

Table 4.2 Cost Comparison for the Part Located in Northern Ireland based on Rates in the 2018 IEC Report

Concept	Length km	Terminal s M€	Line / Cable M€/km	Cable Total M€	Total M€	Cost Difference M€	Cost Difference as a percentage of €450 million
400 kV AC overhead line 1 X 1400 MW	35	10	1.5	52.5	62.5	207.5	46%
2 X 700 MW VSC HVDC with UG Cable	35	200	2	70	270		

Table 4.3 Cost Comparison for the Part Located in Ireland based on Rates in the 2018 IEC Report

Concept	Length km	Terminal s M€	Line / Cable M€/km	Cable Total M€	Total M€	Cost Difference M€	Cost Difference as a percentage of €450 million
400 kV AC overhead line 1 X 1400 MW	105	10	1.5	157.5	167.5	242.5	54%
2 X 700 MW VSC HVDC with UG Cable	105	200	2	210	410		

21. Finally, this consideration of alternative transmission technologies has been jointly undertaken by SONI and EirGrid. Planning consent has been granted for the part of the overall development located in Ireland. That decision was challenged in the High Court in Dublin and one of the grounds of challenge was that EirGrid's (and by implication SONI's) consideration of alternative technologies was deficient on numerous grounds. The judge however strongly disagreed and at paragraph 183 of his judgment stated that "[i]t is difficult in the confines of a

judgment to do justice to the extensive consideration of alternatives that has been undertaken by EirGrid, as assessed thereafter by the inspector. Suffice it for the court to note that in its consideration of alternatives, EirGrid has clearly gone above what the EIA Directive requires.”

4.5 Conclusion

22. Since the completion of the 2017 Public Inquiry, SONI and EirGrid have reviewed the assessment of alternatives included in the environmental information previously submitted. In December 2016, planning consent was granted for the part of the proposed interconnector located in Ireland. Soon after, the Irish Government reconvened the International Expert Commission (IEC) and requested that among other things it consult on and examine undergrounding. In April 2018, the IEC published its report, which concluded that: *“from a techno-economic point of view, an AC overhead line is the most beneficial way of meeting the need for enhanced power transfer capability between the Republic of Ireland and Northern Ireland”*. The IEC found that the underground cable option would cost €450 million more than the overhead line option.
23. This 2018 IEC report was in-line with earlier reports by the IEC, which have been previously addressed in the planning submissions for this project. The IEC’s reports support SONI’s conclusion that the preferred option for the Tyrone – Cavan Interconnector is a single circuit 400 kV overhead line.
24. There is no change to the previously submitted assessment of alternatives that the proposed technology, design and location represent the best overall options amongst the many alternatives considered throughout the development process.

Chapter 5 EMFs



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5. EMFs

5.1 Introduction

1. This 2019 Addendum summarises any changes or updates to the content, assessment and conclusions of the documents submitted in support of the planning applications for the Tyrone – Cavan Interconnector in respect of Electro Magnetic Fields (EMF). These documents are as follows:
 - Consolidated ES (2013), Chapter 7;
 - Consolidated ES Addendum (2015), Chapter 1, Section 1.8.3.2; and
 - Public Inquiry Technical Report 05: EMFs (2017).
2. Public Inquiry Technical Report 05: EMFs 2017, details changes since the publication of the 2015 Consolidated ES Addendum. Since the publication of this document there have been no further updates to the EMF policies and guidelines that apply.

5.2 Additional Studies

3. The Consolidated ES, Section 7.4.3.7 considered the sequence of papers published from an epidemiological study commonly referred to as the “Draper” study. A further paper (Swanson & Bunch, 2018)²⁰ has subsequently been published by the authors of that study, reanalysing the same data but at finer distance intervals. Previously, the Draper group (Draper et al., 2014)²¹ demonstrated an elevated risk in childhood leukaemia in the 1960s and 1970s. This study found that the elevated risk observed in the 1960s and 1970s did not fall monotonically with distance from the power line but had a maximum at 100–200 m. This peak in risk does not correspond to where the maximum magnetic fields are observed from overhead lines (i.e. closest to the overhead line). The authors concluded:

“This weakens the evidence that any elevated risks are related to magnetic fields, and slightly strengthens the evidence for a possible effect involving residential mobility or other socioeconomic factors.”

5.3 Madden Road Activity Centre

4. Since the submission of the planning application for the Tyrone – Cavan Interconnector, an additional approved planning application was identified. The planning consent is for the change of use from a garden centre to an outdoor activity centre at Madden Road, near to Tower 74. The overhead line oversails the area of the proposed outdoor activity centre, which is currently on the site of a garden centre. This was previously assessed in the Consolidated ES (2013), Chapter 14.
5. As detailed in the Consolidated ES (2013), Chapter 7 and the Consolidated ES Addendum (2015) and Public Inquiry Technical Reports (2017), in relation to EMF there is very clear Government policy for the protection of the public. The assessment of EMF therefore consists primarily of assessing compliance with that policy, in particular, with the relevant quantitative exposure limits, namely 360 μ T for magnetic fields and 9000 V/m for electric fields. The Consolidated ES (2013), Section 7.3.3 documents the Tyrone – Cavan Interconnector’s compliance with the guidelines and policies under worst case conductor clearance conditions.
6. The Tyrone – Cavan Interconnector fully complies with the numerical exposure limits of International Commission on Non-Ionizing Radiation Protection (ICNIRP) 1998 as

²⁰ Swanson J. & Bunch K.J. (2018) Reanalysis of risks of childhood leukaemia with distance from overhead power lines in the UK. J. Radiol. Prot. 38 N30–N35 (6pp)

²¹ Bunch KJ, Keegan TJ, Swanson J, Vincent TJ, Murphy MFG (2014) Residential distance at birth from overhead high-voltage powerlines: childhood cancer risk in Britain 1962-2008 Br J Cancer. 2014 Mar 4;110(5):1402-8

demonstrated in the Consolidated ES (2013), Section 7.3.3. The requirements for demonstrating compliance with exposure limits given the theoretical maximum electric and magnetic field to ensure the entire route is compliant. However, electric and magnetic fields this high would rarely be encountered, as clearance is higher than the minimum in most instances and the power flows are often below the designed maximum, resulting in lower fields.

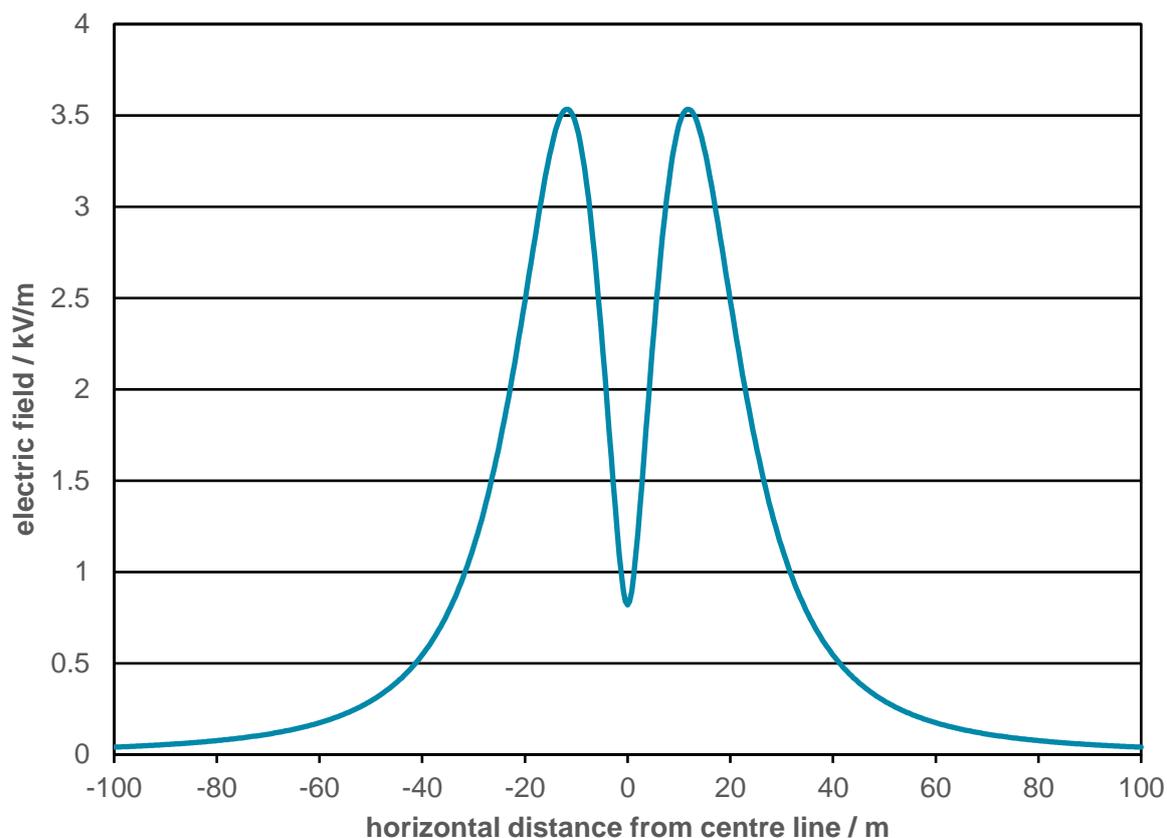
7. To assess the potential impact of indirect effects on the proposed outdoor activity centre, which only result from the electric field, the minimum design clearance for the span over the site was calculated, as this directly relates to the electric field strength. There will be no effects (direct or indirect) from magnetic fields. The minimum clearance of the conductors over the site to ground was 15m, however this increases further with proximity to Tower 74.
8. Calculations are undertaken for the maximum electric field, the line is capable of producing at the proposed outdoor activity centre site under the conditions specified in the Code of Practice²², as documented in the Consolidated ES (2013), Section 7.3.1.2. Calculations were performed based on nominal voltage, 400 kV, and a minimum conductor to ground clearance of 15m. It was determined that the proposed outdoor activity centre can be operated under the overhead line within the levels stated in the Code of Practice. Table 5.1 shows the calculated electric fields for the minimum clearance conditions of the span between Towers 74 and 75, directly under the centre of the line, at 25m, 50m and 100m lateral clearance from the centre of the line.

Table 5.1: Predicted electric field values from proposed 400kV line the span oversailing the Proposed Madden Road Activity Centre

Exposure characteristics	Electric field strength kV/m
Peak Value	3.5
Under centre-line	0.8
25m from centre-line	1.7
50m from centre-line	0.3
100m from centre-line	0.04

²² DECC 2012. Demonstrating compliance with EMF public exposure guidelines: voluntary code of practice.

Illustration 7.1: Electric field strength underneath the proposed 400kV overhead line at 15m conductor to ground clearance



5.4 Conclusions

9. There have been no publications or studies which would change the previous EMF assessment for the Tyrone – Cavan Interconnector.
10. The Tyrone – Cavan Interconnector will fully comply with the Government policy on exposure of the general public to EMF, which is based on numerical exposure limits for electric and magnetic fields. The proposed overhead line complies with the public exposure limits at all places underneath it, not just beyond some specified minimum distance. A person standing directly under the overhead line would be within the exposure guidelines.
11. In 2016, planning permission was granted for the change of use from a garden centre to an activity centre directly below the proposed overhead line. The garden centre was assessed in the Consolidated ES (2013). At the time of writing (June 2019), construction on the activity centre has not yet commenced.
12. As the proposed outdoor activity centre is directly below the overhead line and has vertical elements, the potential of EMF effects was assessed. There will be no effect on the centre of users in terms of the EMF exposure or other EMF impacts. The proposed overhead line will be at least 15m above ground level at the proposed outdoor activity centre and will operate within the relevant Code of Practice.

Chapter 6 Water Environment



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6. Water Environment

6.1 Introduction

1. This chapter provides a review of the status of information that informed the Water Environment assessment as contained within the Tyrone - Cavan Interconnector Consolidated ES (2013) and subsequent publications. This review has been undertaken in order to establish whether any changes would be deemed significant and thus require an updated assessment of impacts upon the water environment.

6.2 Methodology

6.2.1 Consultation

2. A statutory and non-statutory consultation was undertaken as part of the Environmental Impact Assessment associated with the Consolidated ES (2013). The responses relevant to the assessment of impacts upon the Water Environment are included in their unabridged form in Appendix 6A of that report and remain valid.
3. Post publication of the Consolidated ES (2013), the Department for Infrastructure (DfI) contacted the key stakeholders with an interest in the water environment to establish whether any further information would be required as part of the Environmental Impact Assessment Addendum (2019) to the Consolidated ES (2013). A summary of the responses to this consultation are set out in Chapter 1 of this 2019 Addendum.
4. Whilst this re-evaluation of the assessment into potential impacts upon the water environment is cognisant of the changes in legislation in relation to the WFD and associated updates to the River Basin Management Plan (RBMP), the consultation received from NIEA – Water Management Unit (the statutory body responsible for the delivery of the RBMP), notes no requirement for further environmental information.
5. The Water Framework Directive (WFD) requires that River Basin Management Plans (RBMP) are reviewed and updated every 6 years. Since publication of the Consolidated ES (2013), the former Department of Environment (DoE) published its 2nd cycle draft Plans for public consultation between December 2014 and June 2015 and published the new Plans in December 2015.
6. From a legislative perspective, the operation and construction of the Tyrone – Cavan Interconnector has considered the potential for non-conformance with the EU WFD (2000/60/EC), as amended by Directives 2008/105/EC, 2013/39/EU and 2014/101/EU, which established a new integrated approach to the protection of the water environment. The Directive is now transposed in Northern Ireland through the Water Environment (Water Framework Directive) Regulations (Northern Ireland) 2017. Directive 2013/39/EU is transposed through The Water Framework Directive (Classification, Priority Substances and Shellfish Waters) Regulations (Northern Ireland) 2015. All of the above legislation was made and in operation at time of publication of the PAC Report.

6.2.2 Baseline Data Collection

7. In light of the information detailed above, the baseline data collection was reviewed and included:
 - Review of latest Ordnance Survey Northern Ireland (OSNI) maps and aerial photography in order to re-evaluate the locations of surface water bodies within the study area;

- Review of the 2nd RBMP for the Neagh Bann International River District (IRBD) (NIEA, December 2015);
- Review of the River Blackwater Local Management Area Action Plan 2009 - 2015 (NIEA March 2012) (and the Blackwater Water Management Unit (WMU) Action Plan for the Clontibret Stream, which is a crossborder waterbody) which includes WFD Action Plans for the River Rhone, River Blackwater, Ballymartrim Water, Tynan Water and Clontibret Stream;
- Review of the reasons for status of the water bodies within the River Blackwater LMA;
- Review of the River Blackwater Local Management Area Action Plan and Update; and,
- A review of the protected areas and sensitive fisheries within the study area.

6.3 Changes in the Existing Environment

8. This review has been limited to those aspects that are within the existing water environment that have changed since publication of the Consolidated ES (2013). Unless otherwise stated, the baseline conditions (i.e. topography, climate, surface hydrology), as set out in the Consolidated ES (2013), Chapter 8, Section 8.3 remain valid.

6.3.2 Water Quality – Water Framework Directive

9. As noted previously, the WFD classification of waterbodies within the study area have been reclassified in line with the latest RBMP (2015). These are summarised in Table 6.1.

Table 6.1: WFD Surface Waterbody Status, Risk and Objectives 2015

Watercourse	2015 WFD Status	If not at good status, the reason for not achieving good status	2021 objective
River Rhone (Dungannon) Waterbody ID: UKGBNI1NB030307036	Moderate	Due to benthic invertebrates, phytobenthos and macrophytes (all moderate)	Good
River Blackwater (Argory) Waterbody ID: UKGBNI1NB030308203	Poor	Due to benthic invertebrates (moderate), phytobenthos (moderate), fish (poor) and dissolved oxygen (moderate)	Good
River Blackwater (Benburb) Waterbody ID: UKGBNI1NB030307043	Good	N/A	Good
Ballymartrim Water Waterbody ID: UKGBNI1NB030307045	Poor	Due to benthic invertebrates (poor) and dissolved oxygen (moderate)	Moderate
Tynan River Waterbody ID: UKGBNI1NB030308236	Moderate	Due to benthic invertebrates (moderate) and soluble reactive phosphorous (moderate)	Good
Clontibret Stream Waterbody ID: UKGBNI1NB030308202	Poor	No information provided by DAERA	Good

Source: <https://apps.d.era-ni.gov.uk/RiverBasinViewer/>

10. When compared to Table 8.5 of the Consolidated ES (2013), it is evident that from implementation of the 1st RBMP cycle, the condition of the water environment within the study area has shown improvement. On this basis, it is evident that the programme of measures to improve or prevent the deterioration of water bodies within the study area have resulted in conformance with the WFD 2000/60/EC [as amended] objectives as transposed into national legislation via The Water Environment (Water Framework Directive) Regulations (Northern Ireland) 2017.

6.3.3 Protected Areas and Fisheries

11. The WFD requires that a register of protected areas be identified to help ensure that the management of relevant water bodies is geared towards achieving protected area objectives. Protected areas are identified as those requiring special protection under existing National or European legislation, either to protect their surface water or groundwater, or to conserve habitats or species that directly depend on those waters. The purpose of the protected area register is to bring all EC water-related legislation under one umbrella.
12. Whilst there has been no change to the Protected Areas within the study area as detailed within Table 8.6 of the Consolidated ES (2013), all waters designated under the Fish Directive (consolidated) 2006/44/EC (now revoked) are included as or within water bodies under the WFD and placed on the Protected Areas register. Water quality standards and monitoring requirements to ensure the protection of coarse and game fisheries are covered by the standards and procedures of the WFD.

6.3.4 Importance of Surface Water Features

13. In light of the reclassification of water bodies associated with the 2nd RBMP for the Neagh Bann IRBD, there is deemed to be no change in the importance of the water features/attributes within the study area. Whilst clear improvements have been made in terms of water quality, the protected area status of the River Blackwater, River Rhone, Ballymartrim Water and Tynan Water/Balteagh Stream continue to justify a high or very high importance of these water bodies, which aligns with the original assessment, as set out in the Consolidated ES (2013).
14. In terms of surface water features such as the tributary of the Clontibret Stream and a range of unnamed streams and field drains throughout the study area, the status of these remains unchanged from the Consolidated ES (2013).

6.4 Potential Impacts

15. There have been no changes to the proposed design. Consequently, in the context of changes to the existing water environment and relevant legislation as set out above, there is no reason to conclude that the potential effects of the Tyrone – Cavan Interconnector, as reported in the Consolidated ES (2013) will have changed and thus there is no need to subject these to a re-evaluation as part of this review.

6.5 Mitigation Measures

16. There have been updates to industry standard best practice guidance documentation, such as the ongoing review plan for Pollution Prevention Guidance (PPGs), replacing them with a new guidance series, Guidance for Pollution Prevention (GPPs). GPPs provide environmental good practice guidance for the whole UK, and environmental regulatory guidance directly to Northern Ireland.
17. Best practice drainage management will be implemented throughout the development process by the Contractor. This will be undertaken in-line with the framework of mitigation measures presented in the Outline CEMP for the project. This was published in the Consolidated ES Addendum (2015).

6.6 Residual Impacts

18. No changes are expected to potential impacts (including duration) and the value of receptors, as set out in the Consolidated ES (2013) will also not change. Furthermore, mitigation measures will be implemented as per current industry standard practice and guidance, therefore **no change** to the residual impacts associated with the Tyrone – Cavan Interconnector is predicted.

6.7 Conclusions

19. A review has been undertaken in order to establish whether any changes would be deemed significant and thus require an updated assessment of impacts upon the water environment.
20. Since the publication of the previous water environmental assessment, there have been updates to the published water quality data for waterbodies in the area and relevant legislation. Generally, conditions of the water environment within the study area have shown improvement from previously published data.
21. In addition, there have been updates to the environmental good practice guidance for the whole UK, and environmental regulatory guidance directly related to Northern Ireland. These documents will be taken into account during the construction stage, however there are no changes to the mitigation measures previously proposed.
22. There are no changes to the Water Environment assessment that would result in any change to the conclusions made in the previously published reports.

Chapter 7 Ecology



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7. Ecology

7.1 Introduction

1. This Chapter presents an updated assessment of the potential impacts of the Tyrone – Cavan Interconnector on the natural environment and the species and habitats found there. Further information can be found in the technical appendices of this report (Volume 3, Appendices 7.1 – 7.9). 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 following a request from DAERA (Natural Environment Division (NED)):
 - Desk study;
 - Information to Inform Habitats Regulations Assessment;
 - Phase 1 Habitat survey;
 - Invasive species survey;
 - Bats;
 - Badger and otter survey;
 - Habitat assessment for smooth newt; and,
 - Birds.

7.2 Potential Impacts

2. 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).
3. No impacts in addition to those in the previously submitted reports would arise in relation to European sites, national sites, Sites of Local Nature Conservation Importance (SLNCI), or sites of Ancient / Long-established Woodland. An updated 'Information to Inform Habitats Regulations Assessment' is provided in Volume 3 (Appendix 7.8) of this Addendum.
4. No impacts in addition to those in previously submitted reports would arise in relation to habitats.
5. Four invasive species (Schedule 9) plants were identified. Salmonberry was noted within the substation site, whilst Japanese knotweed, giant hogweed, and Himalayan balsam were noted along the overhead line route, principally associated with access tracks or watercourses. In the absence of mitigation, works associated with the Tyrone – Cavan Interconnector may cause invasive species to spread. 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.
6. 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.
7. Two potential otter holts were noted between Towers 67 and 68. These have been classified as potential due to a lack of otter evidence (i.e. spraints) at their entrance, however, otter spraints were noted close to these potential holts. The potential holts lie more than 30 m away from the Tyrone – Cavan Interconnector, and more than 110 m from the closest tower location

- and c. 30 m from the closest access track. No impacts in addition to those in previously submitted reports would arise in relation to otters.
8. No impacts in addition to those in previously submitted reports would arise in relation to smooth newt.
 9. No impacts to breeding bird, wintering birds or barn owl, in addition to those in previously submitted reports would arise in relation to breeding birds.
 10. No additional roosts have been confirmed as a result of emergence / re-entry surveys, however one previously known roost (alder tree at substation site) has since collapsed and is now considered as having Negligible suitability for roosting bats. No impacts in addition to those in previously submitted reports would arise in relation to roosting bats.
 11. Holly blue is a protected butterfly species, and was noted c. 70 m southeast of T55, along a woodland fringe. 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.
 12. No impacts in addition to those identified in previously submitted reports would arise in relation to invertebrates which are protected or Priority Species.

7.3 Mitigation Measures

13. No mitigation measures further to those prescribed in previously submitted reports are recommended.

7.4 Residual Impacts

14. The residual impacts on designated sites, habitats, and protected species are considered unchanged from the previously submitted reports. The residual effects of invasive species after implementation of mitigation measures are considered to be **negligible**.

7.5 Conclusions

15. In preparation for this 2019 Addendum, DAERA (NED) requested that further ecological surveys be completed. Since the 2017 Public Inquiry, there have been no significant changes to the guidance or legislation relating to ecological assessment.
16. In 2018 and 2019, updated ecological surveys were completed. Updates were carried out for: desktop review for designated sites; Phase 1 Habitat survey (including invasive species); bat surveys (activity, tree assessment, and emergence / re-entry); and, badger, otter smooth newt, breeding birds, wintering birds, and barn owl surveys.
17. 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 has shown that with mitigation the long-term effects on habitats, species and biodiversity will be **negligible**.

Chapter 8 Cultural Heritage



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8. Cultural Heritage

8.1 Introduction

1. This chapter of the addendum details the potential impacts on archaeology and cultural heritage resulting from the Tyrone – Cavan Interconnector. A previous assessment was undertaken, with results compiled in the supporting Consolidated ES (2013). This was followed by an addendum to the Consolidated Environmental Statement (2015), and further information to support the Public Inquiry (2017). The current assessment included a review of the route to check the existing conditions.

8.2 Changes in the Existing Environment

2. There have been updates in how historical mapping is presented since the last review was completed. A review of historical mapping undertaken during the preparation of the 2019 Addendum document identified a total of an additional 19 assets (Appendix 8.1). The additional assets recorded all have the prefix A and are shown in Volume 4 (Figures) of this Addendum.
3. The majority of the newly identified assets date to the post-medieval period and are linked to settlement and agricultural activity. These include five wells (**A2**, **A3** and **A6-A8**), and a number of miscellaneous structures (**A4**, **A5**, **A9-A12** & **A15-A19**). Other assets relate to the regions infrastructure and industry and include the line of a former railway (**A13**), and a gravel quarry (**A1**).
4. The assets recorded are all characteristic of the post-medieval landscape, with historic mapping depicting the area through which the route passes dominated by agriculture. This form of land use remains dominant today.
5. A review of designated assets in the wider 5km study area did not reveal any additional sites.

8.3 Potential Impacts

6. None of the additional 19 assets identified as part of this addendum are located within the footprint of the towers and consequently they will not be affected by the scheme. There are no significant effects caused by changes to their settings.

8.4 Mitigation Measures

7. Original mitigation measures recommended as part of the Consolidated ES (2013) can be found in section 12.5 of the Consolidated ES (2013). This states that all mitigation will be agreed prior to commencement of works with the Historic Environment Division (formerly NIEA) and archaeological works will be carried out by an appropriate archaeologist, but that mitigation will include an archaeological watching brief in areas where stripping is required.

8.5 Residual Impacts

8. There are no residual effects.

8.6 Conclusions

9. A review of recorded archaeological sites on national data sets did not reveal any new assets but a review of historic mapping identified 19 additional features or sites. These sites are not directly affected by the proposed works and are not monuments recorded on the data sets held by HED. The sites were all associated with post-medieval settlement and land-use. No impacts are predicted on the newly identified assets, as they all fall outside of the footprint of the proposed works. Therefore, the conclusions of the previous assessment remain unchanged.

Chapter 9 Landscape and Visual



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9. Landscape and Visual

9.1 Introduction

1. This chapter provides an update, where necessary, of the landscape and visual effects of the Tyrone – Cavan Interconnector considered against the baseline at the time of writing (May 2019); and to verify the findings of the previous landscape and visual assessment contained in the previously published reports. Further details are provided in the technical appendices 9.1 – 9.2 of this 2019 Addendum and associated Figures in Volume 4. This chapter should be read in conjunction with Technical Appendix 9.1 of this Addendum.

9.2 Update to the LVIA Methodology

2. This LVIA addendum adopts current best practice guidance – the Landscape Institute and Institute of Environmental Assessment (2013) ‘Guidelines for Landscape and Visual Impact Assessment 3rd Edition’ (GLVIA3). The methodology used for this LVIA Addendum, including a summary of the pertinent changes in approach and principles of landscape and visual impact assessment contained in GLVIA3, is provided at Appendix 9.2 of this Addendum.
3. The Landscape Institute released the following guidance ahead of the publication of the third edition of the GLVIA3 in April 2013:

“GLVIA3 will replace the current [2002] second edition (GLVIA2; the Blue Book). In general terms the approach and methodologies in the new edition are the same. The main difference is that GLVIA3 places greater emphasis on professional judgement and less emphasis on a formulaic approach [AECOM emphasis].”²³
4. GLVIA3 does not fundamentally depart from the previous edition. As a consequence, the LVIA of the previously published reports was conducted using principles and practices that are, in general, aligned with GLVIA3.
5. The methodology used for this LVIA Addendum, including a summary of the pertinent changes in approach and principles of landscape and visual impact assessment contained in GLVIA3, is provided at Appendix 9.1 of this Addendum.

9.3 Changes in the Existing Environment

6. Fieldwork was undertaken in May 2019 by chartered and qualified AECOM landscape architects to review the existing baseline landscape and visual environment and assess the extent of any change since the 2013 Consolidated ES. Site verification visits were also undertaken in the lead up to the 2017 Public Inquiry.
7. The site work included walking and driving (as appropriate) paths, publicly accessible areas and roads within the study area. Fieldwork was undertaken in good weather conditions with good visibility.
8. Baseline photography from each of the 34 no. viewpoint locations included in the previously published reports was retaken in April 2019. The updated viewpoint photography is provided in Volume 4 (Figures) of this 2019 Addendum.
9. The reassessment of the landscape baseline through desktop and fieldwork survey conducted in May 2019 has confirmed that there has been no material change to the overall landscape character of the study area. This conclusion is supported by Appendix 9.1 – 9.2 of this 2019

²³ <https://www.landscapeinstitute.org/news/landscape-institute-issues-guidance-on-transition-to-glvia3/> [accessed 29/04/19]

Addendum. The descriptions of these landscape character areas and their sensitivity reported in the previously published reports therefore remain an accurate baseline.

10. No change to the landscape or visual resource within the study area was recorded that would suggest that there has been any material alteration to the baseline for the designated landscapes, or their sensitivity to change, which therefore remains as stated in the previously published reports.
11. The range of receptors within the study area is represented by the 34 viewpoint locations included in the previously published reports. The change to settlements, Transport Corridors or Paths within the study area is not of sufficient extent that it would merit revision to the baseline description or sensitivity of these receptors.
12. The previously published reports considered residential properties within 500m either side of the line route, which is referred to as the 'detailed study area'. In total 427 individual properties were assessed. On the basis of the desktop and fieldwork survey conducted in May 2019, supported by Volume 4 Figures 9.2.1-34 (Baseline Photography (2019) and the findings presented in Appendix 9.1 the changes to the landscape and / or visual resource within the study area is not considered to result in a material alteration to the baseline for these visual receptors, or their sensitivity to change, which therefore remains as stated in the previously published reports.
13. As part of this LVIA Addendum, a desktop review of planning applications within the 500m detailed study area submitted between February 22nd 2017 and March 30th 2019 was undertaken. In total, 20 new individual residential receptors have been identified, see Table 9.1 below and Volume 4 (Figures) showing their locations.

Table 9.1: Updated Individual Property Baseline (2019)

Individual Property Reference	Nature of Receptor
H45-2019	Dwelling and detached garage
H46-2019	Two storey dwelling (constructed)
H44-2019	Farm dwelling and garage
G43-2019	Dwelling house and detached garage
G44-2019	Single storey dwelling house (constructed)
E63-2019	Dwelling and garage
E62-2019	Dwelling with detached garage
E61-2019	Farm dwelling and garage
D37-2019	Dwelling and garage
D36-2019	Dwelling and detached garage (note: D11+ demolished and replaced with cabin dwelling)
C67-2019	Replacement dwelling (constructed)
C68-2019	Dwelling and detached garage (constructed)
C69-2019	Farm dwelling
C70-2019	Dwelling (constructed)
C71-2019	Conversion of forge building to single story dwelling
A28-2019	Dwelling and detached garage
A27-2019	Dwelling
A26-2019	Infill dwelling and garage
J64-2019	Dwelling and garage
J63-2019	Dwelling and garage

14. Fieldwork surveys were undertaken in May 2019 to verify the visual resource of the study area. Baseline panoramic photography was re-taken from each of the 34 viewpoints. Through a combination of desktop assessment and fieldwork survey the following changes were identified.
15. From six viewpoints, 6, 8, 12, 13, 15 and 18, a material change to the baseline was recorded which was considered likely to result in an alteration to the findings of the assessment in relation to effects on the visual amenity of receptors at these locations. Refer to Appendix 9.1, Table 9-2 Updated Baseline Assessment of Representative Viewpoint for a more details on these changes. In the Consolidated ES (2013), when assessed under the previous methodology of GLVIA2, the six viewpoints were assessed to be of Medium to High sensitivity. Under GLVIA3 (the current assessment), these viewpoints have low to medium value, high susceptibility to change and medium visual sensitivity
16. From 10 viewpoints, 2, 3, 5, 7, 9, 10, 17, 19, 20 and 34, the alteration to the visual baseline was judged to be limited (overall, taking into account viewpoints with both an 'A' and 'B' panorama²⁴), often as a result of the introduction of a new small scale, or distant feature(s), such that there would be no change to the previously published reports in relation to likely effects on the visual amenity of receptors at these locations.
17. For the remaining 18 viewpoints the change to the baseline was judged to be negligible, for example the continued growth and / or management of vegetation and would not affect the findings of the previously published reports.

9.3.2 Individual Residential Properties

18. This 2019 Addendum identifies 20 additional individual residential properties within the 500m detailed study area which are either in planning or constructed.
19. The location of these receptors is shown in Volume 4 (Figures) of this Addendum (Sheets 1-21). For clarity, these receptors have been given the suffix '-2019'. Of the 20, 12 of the properties will experience a significant adverse effect because of the noticeable change in the view. An updated description of the potential effects on these receptors is provided in Technical Appendix 9.1, Table 9 3 Updated Assessment of Individual Residential Properties.
20. Eight properties would experience a **Moderate Adverse** visual effect due to the change in views, which is considered significant. The four properties that will experience a **Major Adverse** effect are A27-2019, A28-2019, C68-2019 and E61-2019. For the remaining 8 new individual residential receptors, the residual level of effect would be **Minor Adverse**.

9.3.3 Representative Viewpoint Locations

21. The review of the visual baseline confirms that there has been a material change to the baseline within 6 of the 34 representative viewpoint locations: Viewpoints 6, 8, 12, 13, 15 and 18.
22. There is no change to the design of the Tyrone - Cavan Interconnector, or the mitigation measures as assessed in the previously published reports. All mitigation is embedded in the Tyrone - Cavan Interconnector and there is no additional mitigation.
23. A material change to the baseline conditions was identified during fieldwork surveys in May 2019 at 6 of the 34 representative viewpoint locations assessed as part of the previously published reports. The reassessment of these viewpoints has identified that there would be a change to the assessment findings reported in the previously published reports at 3 locations: Viewpoints 12, 15 and 18. An updated description of the potential effects at these viewpoint locations is provided in Technical Appendix 9.1, Tables 9.6, 9.8 and 9.9.

²⁴ For viewpoints 10, 20, 21, 23 and 26 both an 'A' and 'B' panorama are presented

24. At Viewpoints 15 and 18, the changes to the baseline conditions would result in a reduction in the residual level of visual effect to **Minor Adverse** during both construction and operation years 1 and 15, such that these receptors would not experience significant effects.
25. At Viewpoint 12 receptors would not experience a change in the residual level of effect during construction, which would remain **Moderate Adverse**, as reported in the 2013 Consolidated ES (p.499-500, para 671); however, during operation years 1 and 15 the residual level of effect would be reduced to **Minor Adverse** (not significant).

9.4 Conclusions

26. Landscape architects undertook field surveys of the study area in order to assess the extent of the changes. For the majority of the LVIA study area there has been negligible change to the baseline conditions reported in the previous assessment. Consequently, this LVIA Addendum finds that there has been no change to the sensitivity or significance of effects in respect to landscape character and landscape designations.
27. The field surveys and review of planning applications identified the newly proposed or constructed residential properties. A small number of new individual residential properties have been identified within the 500m study area. Of these, only 12 are deemed to experience significant effects. This is to be expected, given their proximity to the Tyrone - Cavan Interconnector, and having regard to the nature of the visual amenity and views in these locations. This is consistent with the pattern of significant effects identified for individual residential properties in the previously published reports.
28. In 2013 Consolidated ES, 34 viewpoints were identified and agreed with what are now DFI and DAERA. These 34 viewpoints were chosen as being representative of the experience of different types of receptor within the study area. In April 2019, the viewpoint photography was retaken and along with the field surveys, the extent of changes in the landscape was determined.
29. Material changes to baseline conditions in 6 of the 34 representative viewpoint locations were identified. A reassessment of these viewpoint locations identified that in only 3 of these cases - Viewpoints 12, 15 and 18 - would the baseline change be sufficient to alter the findings of the previous assessment. Because of the changes in the study area, it has been determined that receptors at these locations would experience reduced visual effects from what was previously assessed.
30. It has been assessed that there are no significant changes in the landscape resource of the study area. In terms of visual effects, there are proposed or built individual residential receptors that will experience a significant visual effect.
31. It has been concluded there are no changes that would significantly alter the findings and conclusions of the previous landscape and visual assessment. As stated in the 2013 Consolidated ES:

“The landscape assessment indicates that there would be significant adverse impacts upon the landscape of some parts of the study area. There would also be significant adverse effects on the visual amenity afforded from many locations from within the immediate area following the line route. However it is considered that the landscape and visual resource of the wider study area would not deteriorate to a significant degree and the overall impact upon landscape and visual amenity in general is therefore restricted to those receptors/areas within close proximity to the towers and overhead line.”

Chapter 10 Community Amenity and Land Use



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10. Community Amenity and Land Use

10.1 Introduction

1. This chapter considers whether any recent changes in the baseline Community Amenity and Land Use environment require amendments to be made to the previously submitted impact assessment.

10.2 Methodology

10.2.1 Agricultural Land

2. The methodology for the Land Use assessment for this Addendum (2019) includes;
 - Road side surveys in May 2019 to determine visible signs of land use changes (e.g. new agricultural developments, changes in cropping / land use);
 - Re-examination of the DAERA statistics for Northern Ireland to determine if there have been any changes in the baseline environment in County Tyrone and County Armagh. The latest agricultural census data published by DAERA is dated June 2017. The most recent disease statistics published by DAERA is dated December 2018 for tuberculosis in cattle and December 2016 for brucellosis in cattle;
 - Re-examination of the Health and Safety statistics and publications in relation to farming near overhead lines;
 - Examination of recent agricultural policy and farm agri-environmental schemes to determine any potential changes which might impact on the original assessment; and
 - Consultation with SONI land owner liaison staff in May 2019 in relation to land ownership and management changes since 2013 and changes in farm enterprises.

10.2.2 Residential, Commercial and Community Facilities

3. This assessment reviewed any changes in terms of new community facilities of significance within 2km of the centreline of Tyrone – Cavan Interconnector. Any new significant community facilities within the wider 5km were noted. This part of the assessment was carried out using the latest publications available in 2019, aerial mapping and any other relevant online sources.
4. This assessment conducted a detailed review of any new planning applications received or approved by the local councils from 22nd February 2017 (post the Tyrone Cavan Interconnector Public Inquiry) until April 2019.
5. The impact assessment methodology will follow the guidance outlined in the 2013 Consolidated ES, Chapter 14, Section 14.2.2. The overall significance criteria are shown in Table 10.1 below.

6.

Table 10.1: Significance of Impacts to Residential, Commercial and Community Facilities

Impact Significance	Criteria
Major Adverse	Large scale impacts on community amenities, and/or where there is an obvious view of the line with potential to cause significant impact on community activity. Major closure of roads during construction requiring significant diversions.
Moderate Adverse	Small scale impacts community amenities, but a large number of people or activities will be affected; or where the line's visibility could have a possible detrimental effect on community activity or other users or where the extent of impacts on community activities or resources is large scale but only a small number of people or activities will be affected. Long term closure of roads during construction requiring small diversions.
Minor Adverse	Small scale impacts on community amenities likely to affect a limited number of people or activities; or where the line would be unlikely to be visible or would be visible at a distance. Temporary closures of roads during construction or minimal diversion.
Negligible	Where no impacts are predicted or where the line would not be visible or not otherwise have an effect.

10.3 Changes in the Existing Environment

10.3.1 Changes in Land Use

7. The 2017 Agricultural Statistic report on the DAERA-NI website shows that, in Northern Ireland, there was a small increase in the number of beef and sheep enterprises, rising from 77.5% of farmers in 2012 to 79% in 2017. There is a corresponding decrease in 'Other' enterprises. This is reflected for Armagh and Tyrone where the combined statistics²⁵ show that the number of beef and sheep enterprises have increased from 78% in 2012 to 80% in 2017 and 'Other' enterprises reduced from 8% to 6.5% in the same period. The number of dairy farmers has remained the same between 2012 and 2017, however, the number of dairy cows has increased by 10% from 285,400 to 315,000 which indicates dairy farms are increasing in size. This is reflected for Armagh and Tyrone where the number of dairy farms has remained the same over this period but cow numbers have increased by 13%.
8. Tuberculosis levels in cattle rose from 5.5% of herds in County Armagh and 4.8% of herds in County Tyrone in the 5 years up to 2012 to 8.4% and 8.1% respectively for these two counties in the 5 years up to 2018. The levels for Northern Ireland were 5.8% (2012) and 8.1% (2018). The average 5-year incidence of Brucellosis along the Tyrone – Cavan Interconnector was 0.9% of herds up to 2012 and 0.07% up to 2016.
9. Following observations along the proposed overhead line and discussions with NIE land owner liaison officers, it was noted that while there is no change in the area of agricultural land within the Land Use study area the number of land parcels along the Tyrone – Cavan Interconnector has reduced due to some land parcels being merged as a result of land transfers. In 2013 there were 181 land parcels within 50m of the outer conductors. In 2019 there were 178 after land parcels 044, 081 and 136 were merged with 045, 082 and 135.
10. Also, the number and area of dairy farmers along the Tyrone – Cavan Interconnector has increased mainly due to existing dairy farmers renting additional land or taking possession of land parcels within the study area²⁶. In 2013 there were 12 dairy land parcels along the Tyrone

²⁵ The Tyrone – Cavan OHL will cross Armagh for 70% of its length and Tyrone for 30% - therefore the combined statistics for both counties are derived by multiplying the results for Armagh by 0.7 and the results for Tyrone by 0.3.

²⁶ The study area is comprised of land parcels that are located within 50m of the outer conductors as illustrated in Figure 14.10 sheets 1 – 10 of the Consolidated ES (2013).

- Cavan Interconnector and in 2019 there are 19 dairy land parcels (land parcels 037, 039, 070, 120, 130, 131 and 135 are additional dairy land parcels). This reflects a similar trend in Northern Ireland. These changes are summarised in Table 10.2 below. Minor changes were noted in the areas of tillage and grassland.

Table 10.2: Summary of changes in farm enterprises between 2013 and 2019.

Enterprise	2013	2019
Number of land parcels within study area	181	178
Dairy	12	19
Beef & sheep	155	146
Tillage	9	8
Other – willow	1	1
- orchard	2	2
- equine	1	1
- commercial forestry	1	1
Number of very high sensitivity	4 (2%)	4 (2%)
Number of high sensitivity	13 ²⁷ (7%)	21 (12%)
Number of low – medium sensitivity	164 (91%)	153 (86%)

11. The change in sensitivity is due to the additional seven dairy land parcels and increase in sensitivity of land parcel Ref No 056 resulting from the increase in the scale of the chicken enterprise as outlined below.

10.3.2 Updated Committed Developments - Land Use

12. On land parcel 056, four new chicken sheds were constructed since 2013 and the nearest shed is approximately 80m from the centreline of the Tyrone – Cavan Interconnector. Other than the chicken sheds in 056 no new agricultural structural developments were noted along the route of the Tyrone – Cavan Interconnector as part of this Addendum (2019).
13. The Consolidated ES (2013) assessed four planned chicken sheds²⁸ in land parcels 045, 090, 100 and 1085. None of these sheds have been constructed and the assessment of impact remains unchanged.
14. There is one change to LCT-007²⁹ (within Ireland) where permission has been granted to construct two chicken houses at a distance of approximately 1.36km (planning boundary) south of T102. There is also permission for a new chicken house in land parcel LCT-011 located in County Monaghan 2.2km south east of Tower 102³⁰.

10.3.3 Changes in Agricultural and Health & Safety Policy

15. In 2015, the Single Farm Payment Scheme and Less Favoured Area Compensation Allowance Scheme referred to in the Consolidated ES (2013) were replaced by the Basic Payment Scheme and Areas of Natural Constraint Scheme. These two later schemes are still operational in 2019 and unlikely to change until the next Common Agricultural Policy agreement.
16. The Countryside Management Scheme which was funded from 2007 to 2013. Since 2018 this scheme is replaced by the Environmental Farming Scheme (EFS) which is a similar agri-environmental options scheme.

²⁷ One orchard & grass land parcel plus 12 dairy land parcels

²⁸ Planning references O/2009/0804/F, O/2009/0805/F, O/2009/0807/F and M/2008/0143/F

²⁹ Lemgare, County Monaghan Planning Ref No 17177

³⁰ Lisdrumgormly, Co Monaghan Planning Ref No 18316

17. There have been no new Health and Safety guidance documents or regulations written in relation to farming and overhead lines since 2013.

10.3.4 Residential, Commercial and Community Facilities

18. There are no new known community facilities within 2km of the Tyrone – Cavan Interconnector.
19. Angling is assessed within the Consolidated ES, Chapter 14, Section 14.3.2. The River Blackwater, upstream of Blackwatertown Bridge, facilitates Trout and Salmon fishing from 1st March to 31st October as highlighted by DAERA Inland Fisheries in their consultation response of 10/04/19 (Chapter 1). This 2.5km stretch of the River Blackwater permits fly fishing, worm and spinning fishing with restrictions in place on the size of any catch.
20. This area where the overhead Power Line (Tyrone – Cavan Interconnector) crosses the River Blackwater is permitted for angling but is within private ownership.

10.3.5 Updated Planning Permissions Search 2019

21. The updated planning search in 2019 revealed two planning permissions relevant to this assessment. These are outlined below. The full list of planning permissions relevant to the Cumulative Assessment is outlined in Chapter 14.
22. In terms of community facilities, a planning permission was granted (LA08/2017/1492/O) for the replacement of Drumacavan Gospel Hall at 9 Hanslough Road, Middletown on 15th January 2018. This proposed development is 183m from the Tyrone – Cavan Interconnector (centreline).
23. Permission was also granted for a proposed change of use for an outdoor activity centre (LA08/2016/0081/F) at Madden Road, near to Tower 74 (LA08/2016/0081/F). The application was made in January 2016 and approved in August 2016. The details of this planning application are outlined and assessed within Chapter 11 – Socio-Economics of this Addendum. There is a commercial planning permission (O/2011/0337/F) for the retention and regularisation of an established scrap metal recycling facility (Molloy Metals) at 185 Monaghan Road, Armagh which was granted on the 09/08/2018. The planning permission is 291m from the Tyrone – Cavan Interconnector (centreline).

10.3.6 Haulage Route Consideration

24. No new community facilities have been identified as part of this Addendum (2019) which are located along the haulage routes identified in the Consolidated ES Addendum (2015), Chapter 7.

10.4 Potential Impacts

10.4.1 Agricultural Land

25. The increased incidence of Tuberculosis (TB) in herds along the Tyrone – Cavan Interconnector route highlights the requirement for robust mitigation measures in relation to biosecurity on farms. Having assessed the increased level of TB and the existing mitigation proposals as set out in the Consolidated ES (2013), Chapter 14, Section 14.6.1, Point 7, there is no additional impact.
26. The increased number of dairy land parcels along the Tyrone – Cavan Interconnector increases the potential for construction disruption because dairy farms are more sensitive to disturbance than beef and sheep farms due to the number of daily animal movements. There is also the potential for increased residual impacts due to the sensitivity of the dairy enterprise. Having assessed individually the potential impacts on the additional seven dairy land parcels and the existing mitigation proposals in the Consolidated ES (2013) there is no additional impact due to the additional dairy enterprises.

27. The agricultural policy changes and changes in agri-environmental schemes will not change the effects on the land parcels along the Tyrone - Cavan Interconnector. There are no new health and safety guidelines or regulations pertaining to farming and overhead lines since the Consolidated ES (2013) was published in 2013 and the Public Inquiry was held in 2017.
28. The four new chicken houses constructed in land parcel 056 since 2013 increase the sensitivity of this land parcel from medium to high. These chicken houses have been constructed more than 80m from the proposed conductors and therefore the impacts will be imperceptible. Appendix 14 A of the Consolidated ES (2013) assesses a potential high pre mitigation magnitude of impact due to the potential disease risk to the chicken enterprise. However, with mitigation any impacts are considered imperceptible and therefore there is no change in the existing impact appraisal.
29. The two new chicken houses proposed within LCT-007 in Ireland will increase the sensitivity of this land parcel from medium to high. However, at a distance of approximately 190m from the proposed conductors there is no increase in impact.
30. The new chicken house proposed within LCT-011 at a distance of approximately 120m from the proposed conductors will not result in an increased impact on this very high sensitivity land parcel.

10.4.2 Residential, Commercial and Community Facilities

31. There will be no new significant impacts to any community facilities (in construction or operation) within 2km. The assessment of residential, commercial and community facilities therefore remains unchanged from the Consolidated ES (2013), Chapter 14 and Public Inquiry Technical Report 12 (2017).
32. The closest community facility to the Tyrone – Cavan Interconnector remains the garden centre which is in part oversailed by the proposed overhead line (near to Tower 74). As stated in the Consolidated ES (2013), there will be a temporary moderate adverse impact to the garden centre during construction. During operation, there will be no physical impacts to the garden centre below the line and normal operations will not be impacted because of the height of the proposed overhead line above ground level (minimum safety clearance from the line is required as per NIE guidelines, Energy Networks Association, 2016).
33. There are no new impacts to other activities such as road bowling and racing activities during the construction and operational phases of the Tyrone – Cavan Interconnector.
34. There are no new impacts to cycle routes or walking routes during the construction and operational phases of the Tyrone – Cavan Interconnector.

10.4.2.2 Angling Activities

35. DAERA Inland Fisheries in their consultation response of 10/04/19 highlighted that there may be some impacts to fishing interests in the area in which the proposed overhead line crosses the River Blackwater.
36. The proposed overhead line will be a minimum of 9m above the ground and industry standard guidance (Energy Networks Association, 2016) proposes a 30m setback from all overhead lines for angling activities as outlined below:

“Anglers must not fish within the default exclusion distance of 30 metres of overhead electric power lines that cross or run parallel to the water unless the local angling club has carried out a suitable and sufficient risk assessment that has justified a variation of this distance (greater or smaller). This distance must be measured from the outer conductor at 90 degrees to the direction of the line”.
37. The significance of impact of angling at this location is minor adverse in construction and within the operational phase of the Tyrone – Cavan Interconnector and therefore is not significant.

10.4.3 Extant Planning Permissions

38. There will be no significant impacts on the replacement of Drumacavanver Gospel Hall (LA08/2017/1492/O) and the upgrade works proposed for Molloy Metals (O/2011/0337/F) (both granted in 2018) due to their distance from the Tyrone – Cavan Interconnector (183m & 291m respectively).
39. Therefore, the significance of impact remains the same - temporary moderate adverse impacts (Low Magnitude) resulting from construction works at the adjacent towers and through the stringing operation.
40. In terms of the operational phase – impacts to extant planning permissions for this assessment remain the same as those assessed in the Consolidated ES (2013), Chapter 14 and Public Inquiry Technical Report 12 (2017).

10.4.4 Haulage Route Consideration

41. There are no changes to the haulage route assessment with respect to any new community facilities or planning permissions being affected so the assessment remains unchanged from the Consolidated ES Addendum (2015), Chapter 7.

10.5 Mitigation Measures

10.5.1 Agricultural Land Mitigation Measures

42. Having considered the changes in the baseline environment there is no requirement for any additional mitigation measures to those already set out in Section 14.6 of the Consolidated ES (2013).

10.5.2 Residential, Commercial and Community Facilities Mitigation Measures

43. Mitigation measures outlined in Chapter 14, Section 14.5.2 of the Consolidated ES (2013) are unchanged and still apply for the Tyrone – Cavan Interconnector. Mitigation measures outlined in the Consolidated ES (2013), Chapter 5 and Chapter 18 still apply. Mitigation measures within Appendix 9.1 (Outline Construction Environmental Management Plan) of the Consolidated ES Addendum (2015) also still apply.
44. Any angling activities taking place upstream of the Blackwatertown Bridge (at the proposed overhead line crossing point within the 2.5km stretch) will take place 30m away upstream or downstream of the Tyrone – Cavan Interconnector. This will ensure best practice guidance is adhered to with respect to the Energy Networks Angling Guidance of 2016.

10.5.3 Extant Planning Permissions Mitigation Measures

45. No additional mitigation measures are required for any new planning permissions identified in this assessment. As stated in the Consolidated ES (2013), Chapter 14, Section 14.5.4, Paragraph 80 – “*All general construction phase mitigation measures presented in Chapter 5 and the Outline Construction Environmental Management Plan will be implemented and will help to minimise impacts to...planning permissions*”.

10.5.4 Haulage Route Consideration

46. No additional mitigation measures from those already set out in Chapter 7 of the Consolidated ES Addendum (2015) and Public Inquiry Technical Report 12 (2017) will be required during construction or operation of the Tyrone – Cavan Interconnector.

10.6 Residual Impacts

10.6.1 Agricultural Land

47. Having considered the changes in the baseline environment there are **no significant changes** in residual impacts.

10.6.2 Residential, Commercial and Community Facilities

48. The residual impacts outlined in the Consolidated ES (2013), Chapter 14, Section 14.6.2 remain as temporary moderate adverse overall in terms of disruption due to construction on public roads, access tracks, journey times and impacts to the garden centre. During operation, there will be **no new significant impacts**.
49. In terms of angling, with mitigation the residual impact remains **minor adverse** due to the recommended 30m setback from all overhead lines as recommended by best practice guidance provided by the Energy Networks Association in 2016.

10.6.3 Extant Planning Permissions

50. This chapter has assessed both the replacement of Drumacranver Gospel Hall and the proposed upgrade works to the Molloy Metals site. There will be no significant impacts on the Tyrone – Cavan Interconnector as a result of these proposed developments. In terms of extant planning permissions, the previous assessment within the Consolidated ES (2013) and as outlined within Technical Report 12 (2017) remains unchanged without any additional impacts. The assessment of extant planning permissions for this assessment will remain unchanged from the Consolidated ES (2013) and Public Inquiry Technical Report 12 (2017).

10.6.4 Haulage Route Consideration

51. There will be no new significant impacts along the proposed haulage route for the Tyrone – Cavan Interconnector. The impacts assessed as part of Chapter 7 of the Consolidated ES Addendum (2015) and Technical Report 12 remains unchanged.

10.7 Conclusions

52. In terms of land use, there are no changes since the 2017 Public Inquiry that would alter the overall conclusions of the assessment that was undertaken.
53. There will also be no new significant impacts to the Tyrone – Cavan Interconnector as a result of any new community or commercial facilities.
54. As outlined and assessed in the Consolidated ES (2013) and Public Inquiry Technical Report 12 (2017), the outdoor activity centre will be oversailed (close to Tower 74) in part by the proposed overhead line, which will have a temporary moderate adverse impact during construction.
55. There is no change to the operational phase impacts with respect to the four planning permissions identified in the Consolidated ES (2013) Chapter 14, Section 14.6.4 and the Public Inquiry Technical Report (2017).
56. The outdoor activity centre and its impacts are fully assessed within Chapter 11 (Socio-Economics) of this Addendum (2019).
57. Two planning permissions which are relevant to this assessment have been identified. These are the replacement of Drumacranver Gospel Hall and the upgrade works to Molloy Metals. Both of these proposed planning permissions will not result in any significant impacts to the Tyrone – Cavan Interconnector due to their distance.
58. Angling activities upstream of Blackwatertown Bridge at the proposed overhead line crossing area will be subject to a 30m setback as outlined in the best practice guidance for all overhead lines. This will be a minor adverse residual impact and thus will not be significant.

Chapter 11 Socio- economics



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11. Socio-Economics

11.1 Introduction

1. This Chapter presents an assessment of the Tyrone – Cavan Interconnector in relation to updates in the Socio-economic environment since the Public Inquiry in 2017.

11.2 Methodology

2. A desktop review was undertaken to identify any new tourism enterprises and assess the potential impact on these facilities.
3. The latest tourism data (2019) was obtained from Tourism Northern Ireland and Northern Ireland Statistics and Research Agency to establish a baseline for tourism in the area. The baseline information was used to establish the location and uses of new tourism sites in proximity to the Tyrone – Cavan Interconnector, thereby providing an indication of the tourism value of the study area.
4. Previous demographic data for settlements within 2km of the substation site boundary and the centreline of the overhead line was obtained from the 2011 Census. The next census is scheduled to take place in 2021. The demographic data for settlements remains the same and no update is required.
5. In assessing the economic impacts of the Tyrone – Cavan Interconnector, the previous information gathered the likely employment and capital spend during construction and operation of the Tyrone – Cavan Interconnector from SONI has not changed and an update was not required. However, there is an approved change of use planning permission (LA08/2016/0081/F) for proposed new business/commercial units as identified on the planning portal during the 2019 planning application search³¹.
6. The impact assessment methodology will follow the guidance outlined in Section 15.2.5 of the Consolidated ES. The overall significance criteria are shown in Table 11.1.

Table 11.1 Significance Criteria for Assessing Socio – Economic Impacts

Significance	Criteria
Major Adverse	Large scale impacts on activities or resources, and/or where there is an obvious view of the Tyrone – Cavan Interconnector with potential to cause significant impact on economic activity.
Moderate Adverse	Small scale impacts on activities or resources, but a large number of people or activities will be affected; or where the Tyrone – Cavan Interconnector's visibility could have a possible detrimental effect on activity, resources, employees or other users or where the extent of impacts on activities or resources is large scale but only a small number of people or activities will be affected.
Minor Adverse	Small scale impacts on activities or resources likely to affect a limited number of people or activities; or where the Tyrone – Cavan Interconnector would be unlikely to be visible or would be at a distance.

³¹ Department for Infrastructure (2019) Planning Portal, available online at, <https://www.planningni.gov.uk>

11.3 Changes in the Existing Environment

11.3.1 Tourism Northern Ireland

7. Previous tourism data was obtained from 2012. Tourism NI (2019)³² have more recent data from 2015-2017 for each Local Government District (LGD). Those relevant to the study area are detailed below.

11.3.1.2 Armagh City, Banbridge and Craigavon LGD Fact Card 2015-2017

8. The following is a summary of Tourism NI's LGD Report that contains key data on overnight trips, nights and spend, reason for visit and origin of visitors for Armagh City, Banbridge and Craigavon LGD:
- 4266 tourism jobs in 2015 – 6% of total employee jobs;
 - 1.9m visits to visitor attractions in 2017;
 - Kinnego Marina and Lough Neagh Discovery Centre were the most popular visitor attractions in 2017 (excluding country parks, parks, forests and gardens);
 - The majority of overnight trips in 2015-2017 were attributed to the domestic and GB markets (41%). This LGD attracted the third highest proportion of overnight European Trips (10%); and,
 - This LGD attracted the lowest proportion of overnight holiday trips (19%) and the highest proportion of overnight visiting friends/relatives' trips (72%) of all the LGDs.

Table 11.2: Trips, Nights and Spend for Armagh City, Banbridge and Craigavon Local Government District 2015-2017

Trips, Nights & Spend	2015	2016	2017	2017 v 2016	2017 % of NI
Trips	149,782	144,952	228,595	+58%	5%
Nights	563,238	726,296	780,583	+7%	5%
Spend	£22.5m	£25.6m	£32.4	+27%	3%
Average length of stay	3.8	5.0	3.4	N/A	
Average spend per trip	£150	£176	£142	N/A	
Average spend per night	£40	£35	£41	N/A	

11.3.2 Mid Ulster LGD Fact Card 2015-2017

9. The following is a summary of Tourism NI's LGD Report that contains key data on overnight trips, nights and spend, reason for visit and origin of visitors for Mid Ulster LGD:
- 3489 tourism jobs in 2015 – 7% of total employee jobs;
 - 1.2m visits to visitor attractions in 2017;
 - Ballyronan Marina and Burnavon Arts and Cultural Centre were the most popular visitor attractions in 2017 (excluding country parks, parks, forests and gardens).
 - The majority of overnight trips can be attributed to the domestic (42%) and GB (33%) markets;
 - This LGD attracted the fourth lowest proportion of overnight holiday trips and the second highest proportion of visiting friends/relatives trips of all the LGDs; and,

³² Tourism Northern Ireland (2019), Local Government District Tourism Statistics, available online at: <https://tourismni.com/facts-and-figures/tourism-performance-statistics/local-government-district-tourism-statistics>

- Mid Ulster LGD has the second lowest number of guesthouse, guest accommodation, and bed and breakfast of all the LGDs and the lowest hotel room occupancy of all the LGDs.

Table 11.3: Trips, Nights and Spend for Mid Ulster Local Government District 2015-2017

Trips, Nights & Spend	2015	2016	2017	2017 v 2016	2017 % of NI
Trips	156,252	178,480	136,626	-23%	3%
Nights	614,960	713,357	528,468	-26%	3%
Spend	£22.4m	£30.3m	£20.1m	-33%	2%
Average length of stay	3.9	4.0	3.9	N/A	
Average spend per trip	£143	£170	£147	N/A	
Average spend per night	£36	£42	£38	N/A	

11.3.3 Economic Activity

10. A review of the planning applications in the area has been completed by reviewing the online Planning Portal. A planning application (LA08/2016/0081/F) was made in January 2016 for change of use from a garden centre to an outdoor activity centre at Madden Road, near to Tower 74 and was approved in August 2016. The garden centre was previously assessed in the Consolidated ES (2013) and the change of use to an activity centre covers the same area as was previously assessed.
11. The proposed change of use is on the site of the garden centre that is assessed in the Consolidated ES (2013), Chapter 14 and the applicant is the same landowner. The landowner has been consulted by NIE/SONI on several occasions since 2009.

11.4 Potential Impacts

12. No significant impacts to visitor numbers or spending would arise in relation as a result of the construction and operation stages of Tyrone – Cavan Interconnector.
13. The updated data from Tourism NI for the study area has been reviewed and would not change the previous assessment. There may be temporary construction impacts arising from visual impacts, noise and traffic. These impacts are short term, and minor in significance.
14. The planning application boundaries for the Tyrone – Cavan Interconnector would not need to be amended because of the proposed change of use. If the outdoor activity centre is constructed as consented, there will be impacts due to:
 - disruption during the stringing operation of the construction phase;
 - disruption during the construction of Tower 74;
 - the permanent oversailing of the overhead line over the activity centre;
 - noise impacts from the overhead line and tower; and,
 - clearance of proposed vegetation under the overhead line to be 2m and to scalloped to the sides of the conductors.
15. The site of the outdoor activity centre will be crossed by a 100m length of the overhead line. Tower 74 is located in the field immediately to the south of the site. Tower 74 is a 30-degree

- angle tower at 27m tall. The minimum height between the conductors and the ground at this location is 15m.
16. A nylon pilot line will be walked between angle towers along the route of the proposed overhead line. The nylon pilot line will be laid over the ground and then over guarding locations to avoid roads (like the Madden Road). The nylon pilot line will be passed over the top of hedgerows and minor watercourses and plastic sheets will be laid over vegetation to ensure it does not become entangled.
 17. The walking of the nylon pilot line will take approximately one day for longer sections between angle towers and less for closer angle towers. Once established and under close inspection, the nylon pilot line will be pulled taut and off the ground. It will then be used to pull a steel pilot line to be pulled between the angle towers. It is likely that this affected area of the outdoor activity centre would need to be fenced off during this construction activity.
 18. Vegetation clearance would be undertaken with vegetation under the overhead line being trimmed to a maximum height of 2m. Vegetation either side of the overhead line would be trimmed to a maximum of 30m either side of the overhead line to ensure safety clearance with the line.
 19. In terms of the proposed change of use, the overhead line will oversail the proposed duck pond, a wild flower bank, a number of walkways and landscaped areas, climbing wall activity, and a proposed zip line.
 20. There is not a detailed project description available of the proposed change of use, but it is stated in the planning report from Armagh City, Banbridge and Craigavon Borough Council (July 2016) that the "*highest structure is approx 6.5m*" (page 4 of 9 and again stated on page 5 of 9). The minimum height between the conductors and the ground at this location is 15m. This would leave a clearance of 8.5m between any play equipment and the conductors.
 21. The impact to the activity centre, if constructed, is likely to be moderate adverse, which the same effect as the previous assessment for the site in the Consolidated ES (2013).
 22. NIE/SONI has informed the landowner of the impact to this land many times since 2009. The current planning applications of the Tyrone-Cavan Interconnector were lodged in 2009 and 2013 and the application for the proposed change of use was lodged in 2016.
 23. It is noted that a letter of objection to the Tyrone-Cavan Interconnector in the name of the landowner was submitted to the Department of the Environment (DoE) (now Department of Infrastructure) (Reference Number 3017) and dated 17/11/2015). The letter made no reference to the effects on the proposed activity centre in the objection letter.
 24. While there is likely to be a moderate adverse effect on the outdoor activity centre, the centre could safely operate under the overhead line.
 25. If the outdoor activity centre is not constructed, there will be no new significant impacts to socio-economics and the assessment would remain unchanged from the Consolidated ES and Public Inquiry Technical Report 14.
 26. The minimum height between the conductors and the ground at this location is 15m. This would leave a clearance of 8.5m between any play equipment and the conductors. The height of the proposed equipment has been considered and there is sufficient safety clearance at all points.
 27. An updated assessment of the haulage route assessment for the transformers to the Turleenan substation is presented in Volume 3, Appendix 11.1 of this Addendum. The conclusions from the previous assessment in the Consolidated ES Addendum.

11.5 Mitigation Measures

28. All general construction phase mitigation measures presented in the previous Consolidated ES and the Outline Construction Environmental Management Plan (Appendix 16.1 of the Consolidated ES Addendum) will be implemented.

11.6 Residual Impacts

29. No new significant impacts to visitor numbers or spending would arise as a result of the construction and operation of the Tyrone – Cavan Interconnector.
30. There will be a positive impact during construction relating to employment opportunities as part of the construction of the Tyrone – Cavan Interconnector.
31. During the construction phase, with the implementation of the proposed mitigation measures, there will be a temporary **moderate adverse** impact to the outdoor activity centre. During operation, there is likely to be a moderate adverse effect on the outdoor activity centre. This is the same effect as was on the site as a garden centre. This was assessed in Chapter 15 of the Consolidated ES (2013). Therefore, the assessment of the effect on the site is unchanged.

11.7 Conclusions

32. A desktop review was undertaken to identify any new tourism enterprises and assess the potential impact on these facilities. The latest tourism data (2017) was obtained from Tourism Northern Ireland and Northern Ireland Statistics and Research Agency to establish a baseline for tourism in the area. The baseline information was used to establish the location and uses of new tourism sites in proximity to the Tyrone –Cavan Interconnector, thereby providing an indication of the tourism value of the study area.
33. In assessing the economic impacts of the Tyrone –Cavan Interconnector, the previous information gathered on the likely employment and capital spend during construction and operation of the Tyrone – Cavan Interconnector from SONI has not changed and an update was not required.
34. During the construction phase, with the implementation of the proposed mitigation measures, there will overall be a temporary moderate adverse impact to the proposed outdoor activity centre. During operation, there is likely to be a significant adverse effect on the activity centre, however, the centre would safely operate under the overhead line. This is the same effect as was on the site as a garden centre. This was assessed in Chapter 15 of the Consolidated ES (2013). Therefore, the assessment of the effect on the site is unchanged.

Chapter 12 Transport



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12. Transport

12.1 Introduction

1. This chapter outlines any changes or updates to the content, assessment and conclusions of the documents for the Tyrone – Cavan Interconnector in respect of transportation.

12.2 Methodology

2. The scope of the assessment was determined using the Institute of Environmental Management and Assessment (IEMA) Guidelines and the potential traffic effect of the development was assessed by the following approach:
 - Consultations were undertaken with the Department for Infrastructure (Roads) (formerly Roads Service) to establish their requirements for the traffic assessment;
 - A review of appropriate guidance and policy was undertaken;
 - The delivery / haul routes for construction vehicles were reviewed in order to assess the nature of the road network and determine the effect on road layout, improvements and the overall suitability in accommodating the expected vehicles;
 - The study area for the assessment relates to the routes used for the transportation of construction and maintenance traffic to/from the tower and substation sites.
 - Traffic flow data was acquired and reviewed to assess the traffic conditions and composition along the access routes;
 - An outline construction programme and activity schedule were developed to predict the traffic that would be generated during the construction of the development;
 - Recognised national assessment guidelines were used as a base for the analysis of the data and significance of effects;
 - An appropriate mitigation strategy was prepared to ensure that any potential traffic effects are kept to a minimum; and,
 - The operational/maintenance traffic effects were then reviewed to establish the residual effect on the local road network.

12.3 Changes in the Existing Environment

12.3.1 Access Points

3. Site visits have been undertaken in May 2019 to all access points to the Tyrone - Cavan Interconnector to check the status since the last assessments in 2013, 2015, 2016 and 2017.
4. A total of seventeen of the access points have been altered, as shown in Appendix 12.1. However, in all but one case the changes either have no detrimental effect, or, substantially benefit the construction of the scheme as they have involved the widening of the gateway/access or the addition of further hard-standing material within the mouth of the access.
5. At one access track, AT19, concrete animal feeding troughs have been observed inside the gate. However, the structures are not on permanent footings and therefore are movable, to allow temporary access.
6. In conclusion, all access points are still viable.

12.3.2 Traffic Data

12.3.2.1 Traffic Census Data

7. The Annual Traffic Census has been consulted for relevant data for six sites within the study area for the period 2013-2017. Traffic census data is currently not available for 2017-2019 as it has not yet been published. The sites include:
 - Site 417 – A29 Keady Road;
 - Site 424 – A3 Monaghan Road;
 - Site 428 – B3 Derrynoose Road;
 - Site 440 – A29 Moy Road;
 - Site 442 – A3 Monaghan Road; and,
 - Site 606 – A29 Armagh Road.
8. The census data collated is shown in Appendix 12.2. The data shows the annual average daily traffic levels have decreased between 2013 and 2017 at all sites except for site No. 440 A29 Moy Road which has showed a per annum growth rate of 0.96% between 2013 and 2016.
9. In the previous assessment, negative traffic growth was reported for the period 2006-2010 for all six of the sites. Low National Road Traffic Forecast (NRTF) traffic growth was used to calculate forecast traffic flows to provide a robust assessment i.e. a worst case scenario in terms of traffic forecasts and also to allow for traffic associated with committed developments within the study area.
10. The use of low NRTF is considered to provide a robust assessment, on the basis of the trends in traffic flows between 2013 and 2017.

12.3.2.2 Surveyed Traffic Count Data

11. Base traffic flow data was previously obtained from a series of Automated Traffic Counters (ATCs) installed at 42 No. sites within the study area in May 2012 and January 2013. In addition, further traffic surveys were undertaken at six of the sites in October 2016, to verify the robustness of the previous surveys prior to the public inquiry.
12. All 42 No. sites have been re-surveyed in May 2019 (see Appendix 12.3).
13. The survey data has shown the average weekday daily traffic flows have increased by varying degrees at the majority of the sites. At seven of the sites flows have decreased from those recorded in 2012/2013. The flows recorded have varied from -1174 (Monaghan Road 6180 in 2012 and 5006 in 2019 i.e. a reduction in traffic flows) to +678 (Battleford Road 2432 in 2012 and 3110 in 2019 i.e. an increase in traffic flows).
14. The largest changes are on the A, B and C roads where the impacts are less pronounced and the impact of the development traffic actually reduces. On the unclassified roads the changes are much less and overall the impacts are considered to be of the same order as the previous assessment.

12.3.3 Development Traffic

15. The construction methodology remains unchanged therefore the amount of development traffic remains unchanged.

12.3.4 Traffic Collision Data

16. Traffic collision data has been updated and reviewed. The data for the last three years available (at the time of writing) has been collated for the study area, between 2015 and 2017. Data for year 2018 is yet to be published.

17. The accident data included in the Transport Assessment dated 22 May 2013 included traffic collision statistics for years 2008, 2009, and 2010.
18. For 2015 – 2017 the following collisions were recorded:
 - 2015 – 5 collisions with 2 serious injuries
 - 2016 – 6 collisions with 4 serious injuries; and
 - 2017 – 10 collisions with 3 serious injuries.
19. The collision statistics have shown overall that there has been no notable change in the nature of collisions from those recorded in the previous submissions.
20. It is noted there is an increase in 2017 and one location has been identified, where three traffic collisions have occurred at the same location; at the Moy Road / Old Moy Road priority junction where two accidents occurred in 2016 with two slight injuries on both occasions and one accident in 2017 with also two slight injuries.
21. The junction is located 500 metres north of access track AT8-9. Given the increased traffic levels are temporary and there are mitigation measures to minimise the effects (specific note of this junction will be made in the Construction Traffic Management Plan) the magnitude of these effects is still regarded as low.

12.3.5 Committed Developments

22. A review of planning data has been undertaken to identify other developments that have been granted planning permission between February 2017 and April 2019. These are identified in Table 14.2, Chapter 14 of this 2019 Addendum.
23. The committed developments are considered to have no significance in terms of traffic generation as they constitute amendments to current businesses, single dwellings, replacement buildings/dwellings or farm buildings.

12.3.6 Depot and Supplier Details

24. As stated in the Consolidated ES, it is intended to use NIE Networks' existing depot at Carn Industrial Estate, Craigavon, as the depot for the construction of the Tyrone - Cavan Interconnector. The depot will be used to store construction vehicles and equipment. This includes all the steel required to build the towers.
25. As before, stone and concrete, will go directly from the source to the construction sites, and will be sourced from suppliers by the contractor.
26. Licensed landfill sites will be used to dispose of waste spoil from the construction. The landfills previously identified are no longer open or are near their end of life. Three new landfill sites have been identified, Crosshill Landfill Site, near Crumlin, Mullaghglass Landfill Site near Lisburn and Cottonmount Landfill Site near Mallusk.
27. The new landfill sites identified can all be immediately accessed via A and B routes, as was the case for the previously identified sites. Therefore, the haul routes are suitable for the types and volumes of traffic generated by the Tyrone - Cavan Interconnector.

12.3.7 Year of Opening

28. The construction phase is now anticipated to start in 2021. The construction methodology is unchanged and therefore the construction will take a period of 3 years and will be completed in 2023.

12.4 Potential Impacts

12.4.1 Access Points

29. The concrete feeding troughs currently located inside the gate of access track AT19 will need to be temporarily relocated to allow Tower 19 to be constructed. The relocation of the troughs could be easily undertaken by the construction vehicles to be on site.

12.4.2 Link Analysis

30. As per Transport Assessment Guidelines notes, the significance of a traffic impact not only depends on the percentage increase of traffic but also the available capacity. As a way of assessing the impacts of the temporary traffic generated by the construction traffic (the post construction traffic impacts are considered negligible) Congestion Reference Flows (CRF) have been examined. The CRF of a link is an estimate of AADT flow at which the carriageway is likely to be congested in the peak periods on an average day. For the purposes of calculating the CRF, congestion is defined as the situation when the hourly traffic demand exceeds the maximum sustainable hourly throughput of the link.
31. The maximum predicted flows on each of the roads which experience a higher than 10% impact have been recalculated for when the construction starts i.e. 2021, as shown in Appendix 12.4.
32. Overall the analysis has shown that every road on the network can accommodate the temporary level of development traffic predicted over the construction period.

12.4.3 Landfill Changes

33. The new landfill sites to be used for the construction of the scheme have been changed. However, as before they can all be immediately accessed via A and B routes. For the purposes of this aspect of the Transport Assessment all these routes are suitable for the types and volumes of traffic generated by the Tyrone – Cavan Interconnector.

12.5 Mitigation Measures

34. The assessment has identified that no mitigation measures over and above that which were previously proposed are required i.e. an appropriate traffic management plan and suitable liaison with DFI Roads.

12.6 Residual Impacts

35. As before, the residual traffic and transport effects are temporary for construction related traffic and negligible for operational traffic, and therefore have been assessed as having an impact of negligible significance.

12.7 Conclusions

36. As part of the 2019 Addendum, a review of the traffic assessment was undertaken. This involved a review of accident traffic, a review of committed developments in the area, site surveys of all the proposed access tracks and resurvey of the traffic surveys locations in the study area.
37. There are no new committed developments or changes to the access points for the Tyrone-Cavan Interconnector that would change the previous traffic assessment. The latest available accident statistics for the study area do not show any significant change in road safety or conditions.

38. As the traffic flows recorded in 2019 have increased at the majority of the surveyed roads, the calculated development traffic impacts in 2021 (year of construction commencing) have reduced at the majority of sites. The traffic impacts at seven of the surveyed sites have increased slightly. Overall however the analysis has shown that every road on the network can accommodate the temporary level of development traffic predicted over the construction period.
39. Since the previous assessment, a number of landfills have changed their status and alternative locations have been identified. New landfill sites are to be used for the construction of the scheme, however, as before, they can all be immediately accessed via A and B routes. For the purposes of this aspect of the Transport Assessment all these routes are suitable for the types and volumes of traffic generated by the Tyrone - Cavan Interconnector.
40. The previous traffic assessment concluded that with the implementation of mitigation measures such as an appropriate traffic management plan and suitable liaison with DFI Roads, the residual traffic and transport effects are temporary and have been assessed as having an impact of negligible significance. There is no change to that conclusion.

Chapter 13 Air Quality and Climate



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13. Air Quality and Climate

13.1 Introduction

1. This chapter of the Addendum updates the Air Quality and Climate assessment for the project as previously assessed in the Consolidated ES Addendum (2015), Chapter 9.
2. Where inputs to the assessment have changed since its submission, these are discussed, and the relevant elements of the assessment updated to reflect current conditions, policy and guidance.

13.2 Methodology

Since the submission of the Consolidated ES Addendum (2015) some of the policy and guidance used and referred to in that assessment have been updated. This is summarised in Table 13.1.

Table 13.1: Changes in Policy and Guidance

Policy/Guidance Document Referred to in the Consolidated ES Addendum (2015)	Amended Policy and Replacement/Additional Guidance Documents Referred to in this 2019 Addendum	Key Change
IAQM Guidance (IAQM, 2012) on the Assessment of the Impacts of Construction on Air Quality and the Determination of their Significance ³³	IAQM Guidance (IAQM, 2016) on the Assessment of Dust from Demolition and Construction, Version 1.1 ³⁴	Consolidated method of assessment but based on the same approach.
IAQM Guidance (IAQM, 2014) on the Assessment of Dust from Demolition and Construction, Version 1 ³⁵		

³³ Institute of Air Quality Management (IAQM) (2012), Guidance on the Assessment of the Impacts of Construction on Air Quality and the Determination of their Significance

³⁴ Institute of Air Quality Management (IAQM) (2016), Guidance on the Assessment of Dust from Demolition and Construction, Version 1.1

³⁵ Institute of Air Quality Management (IAQM) (2014), Guidance on the Assessment of Dust from Demolition and Construction

Policy/Guidance Document Referred to in the Consolidated ES Addendum (2015)	Amended Policy and Replacement/Additional Guidance Documents Referred to in this 2019 Addendum	Key Change
Environmental Protection UK Development Control: Planning for Air Quality (2010 Update) (EPUK, 2010)	IAQM and Environmental Protection UK, Land-Use Planning & Development Control: Planning for Air Quality, Version 1.2 (IAQM & EPUK, 2017)	<p>Updated method intended for use in England and Wales, but with the following comment: <i>“This guidance could be adapted for use in the Scottish and/ or Northern Ireland planning systems, because it is considered that the general principles of air quality assessment set out herein are applicable in all parts of the United Kingdom.”</i></p> <p>Main change in guidance relating to this 2019 Addendum is the updated screening criteria for the need to model road traffic emissions.</p> <p>The Environmental Protection UK guidance (EPUK, 2010)³⁶ stated that a quantitative construction phase assessment of potential emissions from vehicles should only be undertaken for, ‘large, long term construction sites that would generate large Heavy Goods Vehicle (HGV) (>3.5 tonnes) flows (>200 movements per day) over a period of a year or more’, on any given road link.</p> <p>The current IAQM and Environmental Protection UK guidance (IAQM & EPUK, 2017) states that a quantitative assessment of potential emissions from vehicles should be undertaken where average daily 2-way Light Duty Vehicle (<3.5 tonnes in weight) movements increase by 500 or more outside of an AQMA, or 100 or more within or adjacent to an AQMA, and/or Heavy Duty Vehicle (>3.5 tonnes in weight) movements increase by 100 or more outside of an AQMA, or 25 or more within or adjacent to an AQMA, on any given road link.</p>
The Environment (Northern Ireland) Order 2002	The Air Quality (Amendment, etc.) Regulations (Northern Ireland) 2018	Changes relating to industrial emissions, the consideration of natural pollution sources, and the consideration of re-suspended particulates following the treatment of roads during winter.
The Air Quality Standards Regulations (Northern Ireland) 2010		None of which affect the air quality assessment as submitted in the Consolidated ES Addendum (2015).

- There has been no change to climate change legislation and guidance listed in the Consolidated ES Addendum (2015), Chapter 9.

13.3 Changes in the Existing Environment

- Since the submission of the Consolidated ES Addendum (2015), more recent data on the existing environment and baseline air quality conditions is available. This is summarised below.

³⁶ Environmental Protection UK (EPUK) (2010), Development Control: Planning for Air Quality (2010 Update)

13.3.1 Sensitive Receptors

5. There is no notable change to the dust sensitive receptors from what was considered in the air quality assessment as submitted in the Consolidated ES Addendum (2015).
6. There are now air quality sensitive human receptors within 200m of roads to be used by the Tyrone - Cavan Interconnector construction traffic that are in an AQMA (Air Quality Management Area). Armagh City, Banbridge and Craigavon Borough Council declared the whole borough an AQMA in 2018 as described below. These receptors are in addition to those already identified within the AQMAs declared by Mid Ulster, and the air quality sensitive ecological receptors, as reported in the Consolidated ES Addendum (2015).

13.3.2 Local Air Quality Management

7. In 2018, Armagh City, Banbridge and Craigavon Borough Council declared its entire Borough an AQMA in recognition of the Borough-wide, region-wide and cross-border road traffic source of nitrogen dioxide (Armagh City, Banbridge and Craigavon Borough Council, 2018)³⁷. Previously, and at the time of the Consolidated ES Addendum (2015), the Council had declared two specific AQMA locations, both within Armagh City Centre and remote from the Tyrone - Cavan Interconnector³⁸.
8. Despite the whole borough now being designated as an AQMA, recent air quality monitoring data gathered by the Council suggests that exceedances of an air quality objective value were identified at only three locations (Railway Street and Green Park Terrace in Armagh, and Mill Street in Tandragee), which are geographically remote from the Tyrone - Cavan Interconnector.
9. Mid Ulster Council currently have three AQMAs declared within their administrative area, at urban locations in Magherafelt, Dungannon and Moy (Mid Ulster District Council, 2017)³⁹. The proposed haul routes for traffic accessing some of the tower construction sites (see the Consolidated ES (2013), Chapter 18) and the Haulage Assessment in the Consolidated ES Addendum (2015) will pass through the AQMAs in Dungannon and Moy.

13.3.3 Background Pollutant Concentrations

10. Since the submission of the Consolidated ES Addendum in 2015, The Department for Environment, Food and Rural Affairs (referred to as Defra) have updated their projections of background pollutant concentrations (Defra, 2019).
11. Modelled estimations of background air quality concentrations are currently provided by Defra (2019) for each 1 km square in the UK, for each year between 2017 and 2030. Estimated background concentrations for the grid square containing the Turleenan substation (97500, 516500) for 2014 based on a previous Defra background pollutant concentration dataset, as reported in the Consolidated ES Addendum (2015), and for 2017 (the base year of the current dataset) are provided in Table 13.2. The data reported in the Consolidated ES Addendum (2015) was downloaded in April 2014⁴⁰, and the data from the current dataset were downloaded in May 2019⁴¹.

³⁷ Armagh City, Banbridge and Craigavon Borough Council (2018), 2018 Updating and Screening Assessment

³⁸ Armagh City and District Council (now part of ABC Borough Council) (2013) Air Quality Progress Report

³⁹ Mid Ulster District Council (2017), 2017 Air Quality Progress Report

⁴⁰ Defra (2014), Air Quality Archive <http://www.defra.gov.uk/environment/quality/air/air-quality/laqm/>

⁴¹ Defra (2019), Air Quality Archive <http://www.defra.gov.uk/environment/quality/air/air-quality/laqm/>

Table 13.2: Defra Estimated Background Pollutant Concentration Data (2014 & 2017)

Grid Square	Pollutant	Annual Mean Concentration ($\mu\text{g}/\text{m}^3$) 2014 (as reported in the Consolidated ES Addendum (2015))	Annual Mean Concentration ($\mu\text{g}/\text{m}^3$) 2017 (based on current background datasets)
97500, 516500	NO _x	4.9	5.3
	NO ₂	3.8	4.2
	PM ₁₀	10.3	8.4
	PM _{2.5}	6.4	5.0

12. The data in Table 13.2 are reflect conditions at rural locations that are representative of the route of the Tyrone – Cavan Interconnector, and generally similar to the area around the proposed substation. The annual mean concentrations estimated by Defra were very low and well below the annual mean objectives. The differences between 2014 and 2017 should not be considered to be notable.

13.4 Potential Impacts

13. The potential impacts from construction dust are unchanged from those reported in the Consolidated ES Addendum (2015), as the nature of the works proposed remains unchanged, as does the sensitivity of the area.
14. The potential impacts from construction road traffic emissions also remain unchanged from those reported in the Consolidated ES Addendum (2015), which stated the maximum number of HGV movements being 48 as a daily maximum. The number of annual daily average HGV movements over each construction year will be much lower than this daily maximum, less than 25 (twenty-five) 2-way movements on any road link used by construction traffic. This remains below the value given in current guidance (IAQM, 2017) to suggest that a quantitative assessment of road traffic emissions impact is likely to be required, even within an AQMA.
15. The updates to relevant guidance and the Air Quality Regulations, and the declaration of the new AQMA by Armagh City, Banbridge and Craigavon Borough Council, which have occurred since the Consolidated ES Addendum (2015), do not alter the impacts from those reported in that previous submission.
16. The same level of mitigation is required to control dust emissions during construction to the extent that any impacts will not be significant, and the number of daily average vehicle movements during the construction phase remains below the value listed in current guidance (IAQM, 2017)⁴² to suggest that a significant effect could potentially occur, both within and outside of an AQMA.

13.5 Mitigation Measures

17. The mitigation measures listed in the air quality assessment as submitted in the Consolidated ES Addendum (2015) were considered standard best practice at the time of that assessment. Those measures remain standard best practice now and no further mitigation measures are considered necessary.

⁴² Institute of Air Quality Management (IAQM) and Environmental Protection UK (EPUK) (2017), Land-Use Planning & Development Control: Planning for Air Quality, Version 1.2

13.6 Residual Impacts

18. The residual impacts remain **unchanged** to those reported in the air quality assessment as submitted in the Consolidated ES Addendum (2015).
19. With the implementation of the standard best practice mitigation throughout the construction works, emissions associated with construction dust and construction-related vehicles will not have a significant effect on local air quality.
20. The Tyrone – Cavan Interconnector will have climate change effects during the construction phase, due to the emission of greenhouse gases. However, these emissions are unlikely to be significant over the operational lifetime of the Tyrone – Cavan Interconnector. During the operational phase, the development as a whole is intended to improve the uptake of renewable energy generation.

13.7 Conclusions

21. The air quality and climate assessment for the Tyrone – Cavan Interconnector has been reviewed to take account of changes since the Consolidated ES Addendum was submitted in 2015.
22. Air quality and climate legislation and assessment guidance have been updated since the publication of the Consolidated ES Addendum (2015). The revised documents have been reviewed and it has been determined that there are no resulting changes to the findings of the previous air quality assessment.
23. In 2018, Armagh City, Banbridge and Craigavon Borough Council declared the whole borough an AQMA. Roads in this area will be used by construction traffic. However, it is considered that the linear nature of the Tyrone - Cavan Interconnector and the temporary nature of the limited number of additional HGVs on the construction routes means that there will be no significant effect.
24. There is no change to the previous assessment, assuming standard best practice mitigation measures are applied throughout the works. In summary, the Tyrone – Cavan Interconnector will not result in any significant air quality and climate effects.

Chapter 14 Cumulative and Interaction Impacts



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14. Cumulative and Interaction Impacts

14.1 Introduction

1. This chapter assesses the likely significant cumulative effects of the Tyrone - Cavan Interconnector with other developments and provides a summary of interacting effects of the Tyrone - Cavan Interconnector between assessment topic areas.
2. Cumulative effects result from multiple impacts on receptors and resources. They can occur over time and can be interactive, additive, and/or synergistic in nature. Cumulative effects can also be considered as impacts resulting from "*incremental changes caused by other past, present or reasonably foreseeable actions together with the project.*" (European Commission 1999⁴³).
3. Cumulative effects are considered in the following ways:
 - Multiple effects from the development, and from different developments, upon the same resource;
 - Incremental effects arising from a number of small actions; and,
 - Consideration of direct effects and any indirect, secondary, cumulative, short, medium and long-term, permanent and temporary, positive and negative effects of the Tyrone - Cavan Interconnector.
4. This Section is structured as follows:
 - Methodology - how the cumulative effects have been identified, and approach to assessment;
 - Assessment of Cumulative Environmental Effects - an assessment of likely significant cumulative effects; and,
 - Conclusions - a summary section.

14.2 Methodology

14.2.1 Overview

5. The assessment of cumulative effects has been undertaken with regard to "*Development Control Advice Note (DCAN 10) Environmental Impact Assessment*" (Department of the Environment [DOE] 2012⁴⁴), "*Department for Communities and Local Government, Planning Act 2008: Guidance on the Pre-Application Process*" (March 2015)⁴⁵ and the European Commission (1999) "*Guidelines for the Assessment of Indirect and Cumulative Impacts as well as Impact Interactions*"⁴⁶.
6. In the absence of specific guidelines for the assessment of cumulative effects of electricity interconnector developments, guidelines for other linear infrastructure developments have also been consulted. This has included the Design Manual for Roads and Bridges (DMRB) (2008).
7. There are two types of cumulative effects in Environmental Impact Assessment. These are:
 - Cumulative impacts from a single development (i.e. interaction of impacts); and

⁴³ European Commission. 1999. Guidelines for the Assessment of Indirect and Cumulative Impacts as well as Impact Interactions.

⁴⁴https://www.planningni.gov.uk/index/policy/planning_statements_and_supplementary_planning_guidance/dcans/dcan10_revised.htm

⁴⁵<https://www.gov.uk/government/publications/guidance-on-the-pre-application-process-for-major-infrastructure-projects>

⁴⁶<http://ec.europa.eu/environment/archives/eia/eia-studies-and-reports/pdf/guidel.pdf>

- Cumulative impacts from other developments (i.e. impacts from other developments in combination with the impacts of the Tyrone - Cavan Interconnector).

14.2.2 Cumulative Impacts from a Single Development (Interactions)

8. These effects are typically interactive. The interaction of impacts arises from the “*combined action of a number of different environmental topic-specific impacts upon a single receptor/resource*” (DMRB 2008⁴⁷). For example, the removal of trees can have landscape, visual and ecological effects, or an individual residential receptor can be affected by noise and visual impacts. Cumulative effects can also arise from different types of impact within a single topic on a receptor, such as the cumulative visual impact of vegetation removal and erection of an electricity tower on a single receptor.
9. These interactions are outlined in the previous assessment in the Consolidated ES Addendum (2015), Chapter 5. The information in this 2019 Addendum does not change the interaction assessments as previously identified.

14.2.3 Cumulative Impacts from Other Developments

14.2.3.1 Overview

10. Cumulative effects may arise from the “*combined effects of a number of other developments, in combination with the development being assessed, on a single receptor/resource*” (DMRB 2008). This can include multiple impacts of the same or similar type from a number of developments upon the same receptor/resource.
11. For the purposes of the Tyrone - Cavan Interconnector, the categories of other developments included in the cumulative effect assessment has been taken to include any approved and still implementable planning applications with the potential for significant cumulative effects with the Tyrone - Cavan Interconnector. This excludes those previously assessed in the Consolidated ES Addendum (2015), Chapter 5.

14.2.3.2 Significance of Effects

12. The cumulative effects of other developments with the Tyrone - Cavan Interconnector are assessed against the significance criteria outlined in Table 14.1. These effects are determined from the potential impacts identified in the individual assessments. Mitigation measures are identified if required, and where relevant, residual impacts assessed.

Table 14.1: Determining Significance of Cumulative Effects

Significance	Effects
Major	Additional changes, due to relationship with other developments, substantially affecting the elements therein. For example, a major impact is likely when a receptor of high sensitivity is affected by a high magnitude of additional change.
Moderate	Additional change, due to relationship with other developments, affecting, to a lesser degree or the elements therein. For example, a moderate impact is likely when a receptor of medium sensitivity is affected by a medium magnitude of additional change.
Minor	Slight additional change, due to relationship with other developments. For example, a minor impact is likely when a receptor of low sensitivity is affected by a small magnitude of additional change.
Imperceptible	No or minimal perceptible additional change, due to relationship with other developments.

⁴⁷ Design Manual for Roads and Bridges. 2008. Volume 11, Section 2, Part 5: HA 205/08 Assessment and Management of Environmental Effects.
Available at: <http://www.dft.gov.uk/ha/standards/dmrb/vol11/section2/ha20508.pdf>

14.3 Assessment of Cumulative Environmental Effects from Other Developments

13. Information on planning applications and permissions currently in the planning system and planning permissions granted until April 2019 was obtained from the websites of the Department for Infrastructure and Monaghan County Council. A review of all planning applications with the potential for cumulative impacts with the Tyrone - Cavan Interconnector was undertaken.
14. Projects to be included within the cumulative assessment were selected based on the following scoping criteria:
- Nature of the project - developments with large vertical structures as part of their development were selected because of the potential for cumulative effects with the proposed towers. In addition, other developments with significant impacts, or which required an Environmental Impact Assessment, were considered;
 - Distance - developments further from the Tyrone - Cavan Interconnector were scoped out because of distance and the diminishing potential for significant cumulative effects; and,
 - Scale - developments which are large scale were considered because of the potential for cumulative effects during the construction or operational phases.
15. Based on the scoping selection process, it was determined the following projects as shown in Table 14.2 below should be further considered within the cumulative assessment (NB this is in addition to those projects outlined in the Consolidated ES Addendum, Volume 2, Chapter 5, Section 5.2.3.

Table 14.2 Commitment Developments

Ref	Planning Application Number	Date Approved	Details of Application (Summary)	Address	Distance to Centreline (m)
1	LA09/2019/0290/F	Under Consideration	Extension of existing silo shed.	Farm at 76 Rhone Road Drummond Dungannon	284
2	O/2011/0337/F	09/08/2018	Retention and regularisation of established scrap metal recycling facility.	Molloy Metals and Mercedes Motor Parts 185 Monaghan Road Armagh	301
3	17177 (Monaghan County Council)	05/09/2017	2 No Poultry Sheds and associated works.	Lengare, Clontibret, Co. Monaghan	198
4	18316 (Monaghan County Council)	10/12/2018	1 No Poultry Sheds and associated works.	Lengare & Lisdrumgormly, Clontibret, Co. Monaghan	545
5	LA08/2016/1328/F	04/04/2017	400mm diameter underground gas main approximately 80 km in length.	Linear project from approximately Portadown to Enniskillen	550m to substation and 680m to the closest point of the centreline

16. It is accepted that the ever-evolving nature of the 'human environment' results in planning applications being submitted and updated. The Environmental Impact Assessment team has sought to keep aware of such changes through regular checks of submitted planning applications and site visits. The assessment is based on data up to April 2019.
17. An appraisal of projects 1- 4 in the above table has been undertaken and it has been determined that there will be imperceptible cumulative effects (not significant). This is due to the distance and scale of the other developments.
18. The Gas to the West project (Ref 5) is a new gas pipe project which will bring gas to homes and businesses in the west of Northern Ireland. Running approximately 80 km from an existing gas pipeline near Portadown, it will run to the north of the Tyrone – Cavan Interconnector without directly crossing the project. The closest point of the pipeline will be 550m to the proposed substation and 680m to the closest point of the centreline of the overhead line. At the time of writing, construction works are ongoing but will be completed in advance of the construction period of the Tyrone – Cavan Interconnector. The Environmental Statement for the Gas to the West project states that the affected land will be reinstated after construction with no significant effects. It is considered that there will be no cumulative effects between the Tyrone – Cavan Interconnector and Gas to West project (not significant).

14.4 Conclusions

19. There are no new interactions or other development which would change the previous cumulative assessment⁴⁸. A review of the planning websites for Northern Ireland and Monaghan has shown a number of new developments. However, these projects have been assessed and it has been determined that there are imperceptible cumulative effects (not significant). The findings of the previous assessment have, therefore, not changed.

⁴⁸ Consolidated ES Addendum (2015), Volume 2, Chapter 5.

Chapter 15 Summary and Conclusion



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15. Summary and Conclusion

15.1 Introduction

1. Following the February 2017 Public Inquiry, the PAC issued its report to the DfI in November 2017 recommending the approval of the Tyrone – Cavan Interconnector.
2. Paragraph 16.17 of the PAC’s report states: “...*there are no persuasive grounds for recommending refusal of the planning applications on the basis of environmental impact and advocating that further consideration be given to partial undergrounding. In the face of IROPI [Imperative Reasons of Over-riding Public Interest] for the proposed development, we are satisfied that it represents the best achievable balance between environmental impacts, technical requirements and economic limitations. Therefore, it should proceed as proposed but subject to measures to mitigate some of its significant and adverse effects*”.
3. The DfI granted planning permissions for the Tyrone – Cavan Interconnector in January 2018.
4. Following legal challenges to the lawfulness of the permissions in Northern Ireland, the High Court determined in March 2019 that the permissions for the Tyrone – Cavan Interconnector in Northern Ireland should be quashed, due to the absence of a Minister with power to grant the permissions. The planning applications which gave rise to the permissions were remitted to the DfI for reconsideration.
5. The purpose of this Addendum is to provide additional environmental information so that the re-determination of the applications can be based on up-to-date environmental data. This 2019 Addendum builds on the previous environmental information that has already been submitted as part of the planning process and all of that information should be reviewed as part of the redeterminations.
6. In March 2019, DfI Planning wrote to statutory bodies to ask if further environmental information is required for the Tyrone – Cavan Interconnector planning applications. Based on the consultee requests and a detailed review of current and proposed environmental standards, guidelines and legislation, the technical information will be provided in this 2019 Addendum.

15.2 Need

7. The need for the Tyrone – Cavan Interconnector has been established by SONI and confirmed in the Planning Appeals Commission’s report (2017). The Tyrone - Cavan Interconnector is required to help reduce electricity prices, facilitate renewables and to improve security of supply.
8. The Planning Appeals Commission report states: “*there is persuasive strategic need for the proposed development at both national and regional level*”. The report further states: “*Regardless of NI’s future relationship with the EU, an affordable, sustainable and secure electricity supply will continue to be of vital importance to domestic, commercial and industrial consumers*”. (Paragraph 4.62, Page 43).
9. Since the 2017 Public Inquiry, SONI and EirGrid have reviewed the need for the Tyrone - Cavan Interconnector and have concluded that the Tyrone - Cavan Interconnector is still required for the reasons stated above.
10. As set out in the Ten-Year Network Development Plan, the Tyrone - Cavan Interconnector remains consistent with the legal and regulatory obligations required of SONI by the Department for the Economy and by the Utility Regulator. The UK and Irish Governments have indicated their commitment to the single electricity market and their commitment to the Tyrone-Cavan Interconnector regardless of Brexit. At the European level, the project will

continue to enjoy status as a Project of Common Interest, which also confirms the need (see Regulation (EU)347/2013 Article 4).

15.3 Planning and Development Context

11. There has been no policy change since the 2017 Public Inquiry and due to the fact that the Planning Appeals Commission's recommendation (following a public inquiry) and the DfI decision all endorse the methodology and the conclusions of the environmental assessment, and find the proposal compliant with planning policy, there are no grounds to reach a different conclusion now.
12. The Tyrone – Cavan Interconnector remains of significant strategic importance for Northern Ireland at an international, national and regional level and is therefore in the wider public interest. While impacts on the environment do occur, they do not outweigh the imperative reasons of over-riding public interest in delivering this proposal.

15.4 Alternatives

13. Since the completion of the 2017 Public Inquiry, SONI and EirGrid have reviewed the assessment of alternatives included in the environmental information previously submitted. In December 2016, planning consent was granted for the part of the proposed interconnector located in Ireland. Soon after, the Irish Government reconvened the International Expert Commission (IEC) and requested that among other things it consult on and examine undergrounding. In April 2018, the IEC published its report, which concluded that: *“from a techno-economic point of view, an AC overhead line is the most beneficial way of meeting the need for enhanced power transfer capability between the Republic of Ireland and Northern Ireland”*. The IEC found that the underground cable option would cost €450 million more than the overhead line option.
14. This 2018 IEC report was in-line with earlier reports by the IEC, which have been previously addressed in the planning submissions for this project. The IEC's reports support SONI's conclusion that the preferred option for the Tyrone – Cavan Interconnector is a single circuit 400 kV overhead line.
15. There is no change to the previously submitted assessment of alternatives that the proposed technology, design and location represent the best overall options amongst the many alternatives considered throughout the development process.

15.5 EMFs

16. There have been no publications or studies which would change the previous EMF assessment for the Tyrone – Cavan Interconnector.
17. The Tyrone – Cavan Interconnector will fully comply with the Government policy on exposure of the general public to EMF, which is based on numerical exposure limits for electric and magnetic fields. The proposed overhead line complies with the public exposure limits at all places underneath it, not just beyond some specified minimum distance. A person standing directly under the overhead line would be within the exposure guidelines.
18. In 2016, planning permission was granted for the change of use from a garden centre to an activity centre directly below the proposed overhead line. The garden centre was assessed in the Consolidated ES (2013). At the time of writing (June 2019), construction on the activity centre has not yet commenced.
19. As the proposed outdoor activity centre is directly below the overhead line and has vertical elements, the potential of EMF effects was assessed. There will be no effect on the centre of users in terms of the EMF exposure or other EMF impacts. The proposed overhead line will

be at least 15m above ground level at the proposed outdoor activity centre and will operate within the relevant Code of Practice.

15.6 Water Environment

20. A review has been undertaken in order to establish whether any changes would be deemed significant and thus require an updated assessment of impacts upon the water environment.
21. Since the publication of the previous water environmental assessment, there have been updates to the published water quality data for waterbodies in the area and relevant legislation. Generally, conditions of the water environment within the study area have shown improvement from previously published data.
22. In addition, there have been updates to the environmental good practice guidance for the whole UK, and environmental regulatory guidance directly related to Northern Ireland. These documents will be taken into account during the construction stage, however there are no significant changes to the mitigation measures previously proposed.
23. There are no changes to the Water Environment assessment that would result in any change to the conclusions made in the previously published reports.

15.7 Ecology

24. In preparation for this 2019 Addendum, DAERA (NED) requested that further ecological surveys be completed. Since the 2017 Public Inquiry, there have been no significant changes to the guidance or legislation relating to ecological assessment.
25. In 2018 and 2019, updated ecological surveys were completed. Updates were carried out for: desktop review for designated sites; Phase 1 Habitat survey (including invasive species); bat surveys (activity, tree assessment, and emergence / re-entry); and, badger, otter smooth newt, breeding birds, wintering birds, and barn owl surveys.
26. 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 has shown that with mitigation the long-term effects on habitats, species and biodiversity will be negligible.

15.8 Cultural Heritage

27. A review of recorded archaeological sites on national data sets did not reveal any new assets but a review of historic mapping identified 19 additional features or sites. These sites are not directly affected by the proposed works and are not monuments recorded on the data sets held by HED. The sites were all associated with post-medieval settlement and land-use. No impacts are predicted on the newly identified assets, as they all fall outside of the footprint of the proposed works. Therefore, the conclusions of the previous assessment remain unchanged.

15.9 Landscape and Visual

28. Landscape architects undertook field surveys of the study area in order to assess the extent of the changes. For the majority of the LVIA study area there has been negligible change to the baseline conditions reported in the previous assessment. Consequently, this LVIA

Addendum finds that there has been no change to the sensitivity or significance of effects in respect to landscape character and landscape designations.

29. The field surveys and review of planning applications identified the newly proposed or constructed residential properties. A small number of new individual residential properties have been identified within the 500m study area. Of these, only 12 are deemed to experience significant effects. This is to be expected, given their proximity to the Tyrone - Cavan Interconnector, and having regard to the nature of the visual amenity and views in these locations. This is consistent with the pattern of significant effects identified for individual residential properties in the previously published reports.
30. In 2013 Consolidated ES, 34 viewpoints were identified and agreed with what are now DFI and DAERA. These 34 viewpoints were chosen as being representative of the experience of different types of receptor within the study area. In April 2019, the viewpoint photography was retaken and along with the field surveys, the extent of changes in the landscape was determined.
31. Material changes to baseline conditions in 6 of the 34 representative viewpoint locations were identified. A reassessment of these viewpoint locations identified that in only 3 of these cases - Viewpoints 12, 15 and 18 - would the baseline change be sufficient to alter the findings of the previous assessment. Because of the changes in the study area, it has been determined that receptors at these locations would experience reduced visual effects from what was previously assessed.
32. It has been assessed that there are no significant changes in the landscape resource of the study area. In terms of visual effects, there are proposed or built individual residential receptors that will experience a significant visual effect.
33. It has been concluded there are no changes that would significantly alter the findings and conclusions of the previous landscape and visual assessment. As stated in the 2013 Consolidated ES:

“The landscape assessment indicates that there would be significant adverse impacts upon the landscape of some parts of the study area. There would also be significant adverse effects on the visual amenity afforded from many locations from within the immediate area following the line route. However, it is considered that the landscape and visual resource of the wider study area would not deteriorate to a significant degree and the overall impact upon landscape and visual amenity in general is therefore restricted to those receptors/areas within close proximity to the towers and overhead line.”

15.10 Community Amenity and Land Use

34. In terms of land use, there are no changes since the 2017 Public Inquiry that would alter the overall conclusions of the assessment that was undertaken.
35. There will also be no new significant impacts to the Tyrone – Cavan Interconnector as a result of any new community or commercial facilities.
36. As outlined and assessed in the Consolidated ES (2013) and Public Inquiry Technical Report 12 (2017), the outdoor activity centre will be oversailed (close to Tower 74) in part by the proposed overhead line, which will have a temporary moderate adverse impact during construction.
37. There is no change to the operational phase impacts with respect to the four planning permissions identified in the Consolidated ES (2013) Chapter 14, Section 14.6.4 and the Public Inquiry Technical Report (2017).
38. The outdoor activity centre and its impacts are fully assessed within Chapter 11 (Socio-Economics) of this Addendum (2019).

39. Two planning permissions which are relevant to this assessment have been identified. These are the replacement of Drumacacnver Gospel Hall and the upgrade works to Molloy Metals. Both of these proposed planning permissions will not result in any significant impacts to the Tyrone – Cavan Interconnector due to their distance.
40. Angling activities upstream of Blackwatertown Bridge at the proposed overhead line crossing area will be subject to a 30m setback as outlined in the best practice guidance for all overhead lines. This will be a minor adverse residual impact and thus will not be significant.

15.11 Socio – economics

41. A desktop review was undertaken to identify any new tourism enterprises and assess the potential impact on these facilities. The latest tourism data (2017) was obtained from Tourism Northern Ireland and Northern Ireland Statistics and Research Agency to establish a baseline for tourism in the area. The baseline information was used to establish the location and uses of new tourism sites in proximity to the Tyrone –Cavan Interconnector, thereby providing an indication of the tourism value of the study area.
42. In assessing the economic impacts of the Tyrone –Cavan Interconnector, the previous information gathered on the likely employment and capital spend during construction and operation of the Tyrone – Cavan Interconnector from SONI has not changed and an update was not required.
43. During the construction phase, with the implementation of the proposed mitigation measures, there will overall be a temporary moderate adverse impact to the proposed outdoor activity centre. During operation, there is likely to be a significant adverse effect on the activity centre, however, the centre would safely operate under the overhead line. This is the same effect as was on the site as a garden centre. This was assessed in Chapter 15 of the Consolidated ES (2013). Therefore, the assessment of the effect on the site is unchanged.

15.12 Transport

44. As part of the 2019 Addendum, a review of the traffic assessment was undertaken. This involved a review of accident traffic, a review of committed developments in the area, site surveys of all the proposed access tracks and resurvey of the traffic surveys locations in the study area.
45. There are no new committed developments or changes to the access points for the Tyrone-Cavan Interconnector that would change the previous traffic assessment. The latest available accident statistics for the study area do not show any significant change in road safety or conditions.
46. As the traffic flows recorded in 2019 have increased at the majority of the surveyed roads, the calculated development traffic impacts in 2021 (year of construction commencing) have reduced at the majority of sites. The traffic impacts at seven of the surveyed sites have increased slightly. Overall however the analysis has shown that every road on the network can accommodate the temporary level of development traffic predicted over the construction period.
47. Since the previous assessment, a number of landfills have changed their status and alternative locations have been identified. New landfill sites are to be used for the construction of the scheme, however, as before, they can all be immediately accessed via A and B routes. For the purposes of this aspect of the Transport Assessment all these routes are suitable for the types and volumes of traffic generated by the Tyrone - Cavan Interconnector.
48. The previous traffic assessment concluded that with the implementation of mitigation measures such as an appropriate traffic management plan and suitable liaison with DFI Roads, the residual traffic and transport effects are temporary and have been assessed as having an impact of negligible significance. There is no change to that conclusion.

15.13 Air Quality and Climate

49. The air quality and climate assessment for the Tyrone – Cavan Interconnector has been reviewed to take account of changes since the Consolidated ES Addendum was submitted in 2015.
50. Air quality and climate legislation and assessment guidance have been updated since the publication of the Consolidated ES Addendum (2015). The revised documents have been reviewed and it has been determined that there are no resulting changes to the findings of the previous air quality assessment.
51. In 2018, Armagh City, Banbridge and Craigavon Borough Council declared the whole borough an AQMA. Roads in this area will be used by construction traffic. However, it is considered that the linear nature of the Tyrone - Cavan Interconnector and the temporary nature of the limited number of additional HGVs on the construction routes means that there will be no significant effect.
52. Despite changes in air quality and climate legislation and guidance and the declaration of a new AQMA, there is no change to the previous assessment, assuming standard best practice mitigation measures are applied throughout the works. In summary, the Tyrone – Cavan Interconnector will not result in any significant air quality and climate effects.

15.14 Cumulative and Interaction Impacts

53. There are no new interactions or other development which would change the previous cumulative assessment⁴⁹. A review of the planning websites for Northern Ireland and Monaghan has shown a number of new developments. However, these projects have been assessed and it has been determined that there are imperceptible cumulative effects (not significant). The findings of the previous assessment have, therefore, not changed.

15.15 Overall Conclusions

54. A thorough and detailed update of the environment assessment has been completed as part of this 2019 Addendum. This Addendum builds on the assessment work which has been ongoing from 2007 for the Tyrone – Cavan Interconnector. It provides the DfI with up-to-date information on any changes in the study area and in terms of legislation, policy and guidelines. In summary, there are no changes that would amend the conclusions of the previously submitted reports.

⁴⁹ Consolidated ES Addendum (2015), Volume 2, Chapter 5.

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