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5 EMFs

5.1 Executive Summary

1. EMFs are an issue where there is very clear Government policy for the protection of the public in place. The assessment of EMFs therefore consists primarily of assessing compliance with that policy, in particular with the relevant quantitative exposure limits.
2. The proposed Tyrone – Cavan Interconnector will fully comply with the Government policy on exposure of the general public to EMFs, which is based on numerical exposure limits. The exposure limits in place in the UK as a result of Government policy, formulated in 2004 and reiterated in 2009, are those published in 1998 by the International Commission on Non-Ionizing Radiation Protection (ICNIRP)¹, applied in the terms of the 1999 European Union Recommendation². These limits take account of all the relevant scientific evidence. Such compliance meets UK Government policy for providing the appropriate level of protection for the public. Government policy, based on the scientific advice of Public Health England and its predecessors the Health Protection Agency and the National Radiological Protection Board, gives no reason on grounds of a health hazard as to why the proposed Tyrone – Cavan Interconnector should not be constructed and operated, given that it complies with the relevant exposure limits.
3. 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 limits. The fields fall with distance to the sides of the line, and the closest residential property, and all other residential properties, will be within EMF exposure limits by a large margin. No interference is expected with

¹ ICNIRP 1998, Guidelines for limiting exposure to time-varying electric, magnetic, and electromagnetic fields (up to 300 GHz). Health Physics April 1998, Volume 74, Number 4:494-522.

² Council Recommendation of 12 July 1999 (1999/519/EC) including Annexes.

implanted medical devices nor any significant impacts on agriculture, farming, animals or other wildlife.

4. The UK policies for the protection of the public, including the various Codes of Practice, in particular *“Power Lines: Demonstrating compliance with EMF public exposure guidelines. A Voluntary Code of Practice”* (Department of Energy & Climate Change, March 2012), remain in force in Northern Ireland.
5. The Strategic Planning Policy Statement (SPPS) para 6.249 advises that *“In relation to power lines current Government policy is that exposures to power-line Electro Magnet Fields (EMFs) should comply with the 1998 International Commission on Non-Ionizing Radiation Protection (ICNIRP) Guidelines. A voluntary Code of Practice Power Lines: Control of Microshocks and other indirect effects of public exposure to electric fields A Voluntary Code of Practice (DECC, July 2013) has been agreed by the Department of Energy and Climate Change, the Department of Health, the Energy Networks Association, the Welsh Government, the Scottish Government, and the Northern Ireland Executive. It sets out what is regarded as compliance with those aspects of the EMF exposure guidelines that relate to indirect effects as far as the electricity system is concerned. Further Government policies relating to EMFs from overhead power lines, advise that as a precautionary measure they should, where reasonable, have optimum phasing. This is the subject of a companion Code of Practice “Optimum phasing of high voltage double-circuit power lines”. This Code of Practice applies in England, Wales, Scotland, and Northern Ireland”*.
6. SPPS para 6.250 states *“Any proposal for the development of new power lines should comply with the 1998 International Commission on Non-Ionizing Radiation Protection (ICNIRP)”*.
7. The Applicant’s policy is that the proposed Tyrone - Cavan Interconnector must comply with Government policy on EMFs and in particular with the Government’s EMF exposure guidelines. That policy has now been identified within Northern Ireland planning policy for overhead lines. The applicant considers that compliance with Government policy on EMF exposure levels ensures the appropriate level of protection for the public from these fields.

5.2 About the Author

8. The specialist for EMFs and compliance of lines with EMF restrictions and guidelines is John Swanson. Dr Swanson holds the degrees of M.A. and D.Phil. in Physics at the University of Oxford. He has been a Research Officer and subsequently Scientific Advisor with the Central Electricity Generating Board and its successor companies The National Grid Company plc and National Grid Transco plc since 1989. He has been particularly concerned with power-frequency electric and magnetic fields and their possible environmental and health effects. He currently holds the position of EMF Scientific Advisor to both National Grid and the Energy Networks Association. He has authored or co-authored a number of scientific papers in this area and served on a number of national and international working groups or committees. He is a Fellow of the Institute of Physics and a Chartered Physicist; a Fellow of the Institution of Engineering and Technology and a Chartered Engineer; and a Fellow of the Society for Radiological Protection and a Chartered Radiation Professional.

5.3 Policy and Guidance Informing Assessment

9. The Policy and Guidance relating to EMFs and informing this assessment are set out in detail in the Consolidated ES, Chapter 7 – EMF (pages 173-214) and is also considered in the Consolidated ES Non-Technical Summary section 6.4 (pages 27-29), the Addendum section 1.8.3.2 (page 7) and section 6.2 (page 80), and the Addendum Non-Technical Summary paragraphs 61-65 (pages 11-12).
10. There are no statutory regulations in the UK that limit the exposure of members of the public to power-frequency EMFs. Responsibility for implementing appropriate measures for the control of EMF lies with Government, who act on the scientific advice of Public Health England, formerly the Health Protection Agency (HPA), formerly the National Radiological Protection Board (NRPB). The exposure limits in place in the UK for the protection of the public as a result of Government policy, formulated in 2004 and reiterated in 2009, are those in the guidelines

published in 1998 by the International Commission on Non-Ionizing Radiation Protection (ICNIRP)³, applied in the terms of the 1999 European Union Recommendation⁴.

11. These ICNIRP guidelines recommend that the general public are not exposed to levels of EMFs able to cause a current intensity of more than two thousandths of an ampere per square metre (2 mA/m^2) within the human central nervous system. This recommendation is described as "the Basic Restriction" and broadly corresponds to the effects of an electric field of 9 kV/m or a magnetic field of 360 μT .
12. The details of the application of these limits in the UK are set out in a Code of Practice "*Power Lines: Demonstrating compliance with EMF public exposure guidelines. A Voluntary Code of Practice*" (Department of Energy and Climate Change, March 2012).
13. In addition to the exposure limits for the public, there are separate, higher, exposure limits for occupational exposure. More recent exposure guidelines published by ICNIRP in 2010 have not been brought into effect in the UK.
14. In addition to the quantitative exposure limits, there is one non-quantitative precautionary policy directly relevant to this proposed development, a policy on optimum phasing, set out in a Code of Practice "*Optimum Phasing of high voltage double-circuit Power Lines. A voluntary Code of Practice*" (Department of Energy and Climate Change, March 2012). These UK-wide policies all apply in Northern Ireland.
15. The UK policies for the protection of the public, including the various Codes of Practice, in particular "*Power Lines: Demonstrating compliance with EMF public exposure guidelines. A Voluntary Code of Practice*" (Department of Energy and Climate Change, March 2012), remain in force in Northern Ireland.

³ ICNIRP 1998, Guidelines for limiting exposure to time-varying electric, magnetic, and electromagnetic fields (up to 300 GHz). Health Physics April 1998, Volume 74, Number 4:494-522.

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16. The SPPS para 6.249 advises that *“In relation to power lines current Government policy is that exposures to power-line Electro Magnet Fields (EMFs) should comply with the 1998 International Commission on Non-Ionizing Radiation Protection (ICNIRP) Guidelines. A voluntary Code of Practice Power Lines: Control of Microshocks and other indirect effects of public exposure to electric fields A Voluntary Code of Practice (DECC, July 2013) has been agreed by the Department of Energy and Climate Change, the Department of Health, the Energy Networks Association, the Welsh Government, the Scottish Government, and the Northern Ireland Executive. It sets out what is regarded as compliance with those aspects of the EMF exposure guidelines that relate to indirect effects as far as the electricity system is concerned. Further Government policies relating to EMFs from overhead power lines, advise that as a precautionary measure they should, where reasonable, have optimum phasing. This is the subject of a companion Code of Practice ‘Optimum phasing of high voltage double-circuit power lines’. This Code of Practice applies in England, Wales, Scotland, and Northern Ireland”*.
17. SPPS para 6.250 states *“Any proposal for the development of new power lines should comply with the 1998 International Commission on Non-Ionizing Radiation Protection (ICNIRP)”*.
18. The applicant’s policy is that the proposed Tyrone - Cavan Interconnector must comply with Government policy on EMFs and in particular with the Government’s EMF exposure guidelines. That policy has now been identified within Northern Ireland planning policy for overhead lines. The applicant considers that compliance with Government policy on EMF exposure levels ensures the appropriate level of protection for the public from these fields.

5.4 Summary of Documents

19. This technical report summarises and incorporates by reference the content of the documents submitted in support of the planning applications for the proposed development in respect of EMF. These documents are as follows:
- Consolidated ES (2013), specifically Chapter 7; and

- Consolidated ES Addendum (2015), specifically section 1.8.3.2.

20. This technical report must therefore be read in conjunction with the Consolidated ES and its Addendum, and not as a standalone document.
21. In a general sense all EIA documentation is interrelated and, particularly with respect to the interaction of impacts, all the EIA documents would be relevant. For clarity the documents the author considers to be the key documents are summarised above. The reader should form his or her own view on what documents within the Consolidated ES and its Addendum are relevant, and key, to the topic under consideration.
22. In the interest of readability these documents are not reproduced in full in this technical report.

5.5 Scope of Assessment

23. This Technical Report presents an assessment of the proposed Tyrone – Cavan Interconnector (as detailed in Chapter 5 Proposed Development of the Consolidated ES and in section 1.9 of the Addendum) in relation to electric and magnetic fields (EMFs). Electric-field strengths are measured in volts per metre (V/m) or kilovolts per metre (kV/m). Magnetic fields are usually measured in microteslas (μT).
24. There are no significant EMFs produced by the construction or eventual decommissioning of the proposed Tyrone – Cavan Interconnector, so this Technical Report is principally concerned with the operational phase. Following any decommissioning, there would be no further EMFs produced by the proposed Tyrone – Cavan Interconnector.

5.6 Consultation Responses

25. All consultation responses received prior to the publication of the Consolidated ES were scrutinised for references to EMFs. The EMF section of the Consolidated ES (Volume 2 Chapter 7) was expanded where necessary to ensure that all points raised were fully addressed. Further

details on the approach to Scoping and Consultation are provided in Consolidated ES Chapter 6.

5.7 Methodology and Surveys

26. This is a summary of the information contained in the Consolidated ES, Chapter 7 - EMF (pages 174 - 176).
27. EMFs are an issue where there is very clear Government policy for the protection of the public in place. The assessment of EMFs therefore consists primarily of assessing compliance with that policy, in particular with the relevant quantitative exposure limits.
28. The EMFs that would be produced by the overhead line part of the proposed Tyrone – Cavan Interconnector are assessed by means of calculations in accordance with the provisions of the relevant Code of Practice as detailed in the Consolidated ES Volume 2 section 7.3.1.2. These levels are then compared with the relevant exposure limits as set out in Government policy.
29. The Code of Practice provides a different method for assessing compliance of the substation part of the proposed Tyrone – Cavan Interconnector, which is explained and applied in the Consolidated ES Volume 2 section 7.3.3.2.
30. The compliance of the proposed Tyrone – Cavan Interconnector with other aspects of Government policy is considered. Extensive supporting information is provided, including a summary of the scientific evidence relating to EMFs in the Consolidated ES Volume 2 section 7.4.

5.8 Assessment Overview

31. The compliance of the proposed Tyrone – Cavan Interconnector with the relevant policies and guidelines is considered in detail in the Consolidated ES, Chapter 7 - EMF (pages 178 - 194).
32. For the proposed Tyrone – Cavan Interconnector, the peak electric field, which occurs directly underneath the proposed overhead line, will be 7.8 kV/m, and the peak magnetic field will be 47 μ T. Both of these levels are within ICNIRP limits and comply with UK Government policy.

33. The question of possible health effects arising from environmental power-frequency fields has been thoroughly reviewed in recent years by a number of authoritative national and international bodies, including the NRPB, the EU's Scientific Committee on Emerging and Newly Identified Health Risks (SCENIHR), the International Agency for Research on Cancer, and the World Health Organization (WHO). The UK Government has considered carefully whether any mitigation measures are necessary in response to the possibility of health effects, and in a statement published in 2009 concluded that no precautionary measures are appropriate in relation to HV overhead lines beyond compliance with the existing exposure limits, and a policy of optimum phasing, considered below.
34. The proposed Tyrone – Cavan Interconnector will comply with the ICNIRP and EU guidelines on exposure of the general public to EMFs. Such compliance meets UK Government policy for providing the appropriate level of protection for the public. The advice of the relevant scientific authorities, endorsed by the UK Government, gives no reason on grounds of a health hazard as to why the proposed Tyrone – Cavan Interconnector should not be constructed and operated, given that it complies with the relevant exposure limits. The Consolidated ES 2013 explained the policy position on EMFs in the UK, including Northern Ireland. Since the publication of the ES, there has been no change to the policy position in the UK and to the documents establishing that position as it relates to members of the public. Certain new related documents have, however, been published and are referred to below.
35. All residential properties including, specifically, the closest residential property, will be well within EMF exposure limits. A person standing directly under the overhead line would be within the exposure limits. The Consolidated Environmental Statement Addendum 2015 Section 1.8.3.2 gives updated details of the closest properties, both already constructed and with planning consent, and confirms that they are compliant with the relevant exposure limits.
36. The magnetic field from an underground cable when standing directly over it is often higher than for the equivalent overhead line, but to the sides, the

magnetic field from the cable is always lower than for the equivalent overhead line. Government policy, as set out, for example, in National Policy Statement EN-5, is that it is not justified to place power lines underground solely on grounds of EMFs.

37. The most authoritative independent reviews of EMF science (e.g. by Public Health England and its predecessors and by the World Health Organization) are outlined in the ES and, except for the publication of the latest SCENIHR report in 2015 detailed below which does not significantly change their conclusions, no changes to the reviews have been made since the publication of the ES. There is some uncertainty in the science, but that uncertainty is already taken account of in the policies that have been set and which the proposed Tyrone – Cavan Interconnector complies with. The applicant is confident that any new scientific developments are taken account of in EMF reviews and guidelines as they arise.
38. As the proposed Tyrone – Cavan Interconnector complies with the public exposure limits, it is also compliant with the relevant occupational exposure limits, which are higher.
39. The Government policy on optimum phasing is set out in a Code of Practice “*Optimum Phasing of high voltage double-circuit Power Lines. A voluntary Code of Practice*”, Department of Energy and Climate Change 2012. It places certain requirements on the phasing of, specifically, double-circuit overhead lines. The proposed overhead line is a single-circuit line. Phasing is not a relevant concept for single-circuit lines, and the policy places no requirement to build a line as double-circuit instead of single-circuit. Therefore the proposed Tyrone – Cavan Interconnector is compliant with this policy.
40. It has been determined that there are no significant EMF impacts on farming, plants, animals, or other wildlife. There is evidence that beehives can be affected by strong electric fields. However, simple mitigation methods (such as appropriate earthing of the hive) eliminate the impact.
41. There is expected to be no impact to medical devices, such as pacemakers and hearing aids, as a result of the proposed Tyrone – Cavan

Interconnector. This has been confirmed by the Medicines and Healthcare Products Regulatory Agency, who are part of the Department of Health, and are responsible for ensuring that medical devices in the UK work and are safe.

5.9 Baseline Conditions

42. This information is contained in the Consolidated ES, Chapter 7 - EMF (page 177) and Consolidated ES Addendum (page 7).
43. EMFs occur in the natural world, and people have been exposed to them for many thousands of years. The advent of modern technology and the wider use of electricity and electrical devices have inevitably introduced changes to naturally occurring EMF patterns. Energised HV power transmission equipment is a source of power-frequency or extremely-low-frequency ("ELF") alternating EMFs, which add to (or modulate) the Earth's steady natural fields.
44. Electric-field strengths are measured in volts per metre (V/m) or kilovolts per metre (kV/m). The atmospheric electric field at ground level is normally about 100 V/m in fine weather, but may rise to many thousand volts per metre during thunderstorms. Magnetic fields are usually measured in microteslas (μT). The Earth has a natural magnetic field, which is approximately 50 μT in the island of Ireland.
45. EMFs are also produced in everyday situations by electrical wiring and electrical appliances. Domestic electrical appliances and tools can generate magnetic fields in normal use broadly comparable to those produced by transmission lines 50m away.

5.10 Assessment of Impacts Without Proposed Mitigation

46. This information is contained in the Consolidated ES, Chapter 7 - EMF (page 178 - 211).
47. There will be no significant effects of the proposed Tyrone – Cavan Interconnector relating to EMFs.

5.11 Proposed Mitigation

48. As the proposed Tyrone – Cavan Interconnector is compliant with Government policies for the control of EMFs, specifically with the relevant quantitative exposure limits, no additional mitigation measures are called for.

5.12 Residual Impacts With Proposed Mitigation

49. There will be no significant residual effects of the proposed Tyrone – Cavan Interconnector relating to EMFs.

5.13 Cumulative Impacts

50. This is a summary of information that is contained in Chapter 5 of the Consolidated ES Addendum (page 56). A further assessment of cumulative effects is outlined in the Joint Environmental Report for the proposed Interconnector project. This is contained in Volume 3 Appendix 2.1 of the Consolidated ES Addendum.
51. Cumulative effects can be those impacts that are interactions between assessment topics (e.g. EMF and ecology) and also additive impacts from other developments (e.g. between the proposed Tyrone - Cavan Interconnector in Northern Ireland and the North South 400kV Interconnection Development in the Republic of Ireland).
52. Potential interactions between EMFs and other assessment topics have been assessed in the technical chapter of the Consolidated ES and the Consolidated ES Addendum. Potential interactions between EMF and Ecology, Community Amenity and Land Use, Telecomms and Aviation were identified but it was concluded that there were no significant effects.
53. Because of the physics of the way EMFs combine with each other, the resultant EMFs from two sources is dominated by the stronger of the two fields, with the weaker field making only a small difference. Compliance with exposure limits can therefore be satisfactorily assessed for each source in isolation. This means that there is no significant additive effect of adding additional EMFs and no significant cumulative impact with other developments, including the proposed Tamnamore to Omagh line and the

North-South 400 kV Interconnection Development. In the Consolidated ES and separate EirGrid EIS it was concluded that the potential cumulative EMF impacts are Imperceptible.

5.14 Transboundary Impacts

54. This is a summary of information that is contained Chapter 6 of the Consolidated ES Addendum (page 80). A further assessment of transboundary effects is outlined in the Joint Environmental Report for the proposed Interconnector project. This is contained in Volume 3 Appendix 2.1 of the Consolidated ES Addendum.
55. Transboundary effects are defined as impacts that could result from the proposed Tyrone - Cavan Interconnector (located in Northern Ireland) on receptors in the Republic of Ireland.
56. Control of EMFs in both Northern Ireland and in the Republic of Ireland is based on the same exposure limits – the 1998 ICNIRP limits as adopted in the 1999 EU Recommendation. Therefore the EMFs resulting from the proposed Tyrone - Cavan Interconnector in Northern Ireland will comply with the limits in the Republic of Ireland. There will be no significant transboundary EMF impacts.

5.15 Assessment of Alternatives Considered

57. The Consolidated ES Volume 2 section 7.3.7 considered EMF aspects of key alternatives to the proposed Tyrone – Cavan Interconnector. All alternatives would be compliant with the relevant guidelines and policies. There is no basis on EMF grounds for selecting any of the alternatives over the proposed development.

5.16 Response to Third Party and Statutory Consultee Submissions

58. Between 2009 and 2012, there were approximately 6,000 third party submissions made in relation to the proposed Tyrone – Cavan Interconnector. These were reviewed and taken into account in the writing of the Consolidated ES. Following the publication of that document in 2013,

from May 2013 to May 2015, 2,957 third party submissions were made - of which 2,417 related to EMF issues. These were taken into account in the writing of the Consolidated ES Addendum.

59. Between June 2015 and November 2016, there have been 594 third party submissions and of these 236 submissions made reference to EMF. The general issues raised by objectors relate to concern about the possibility of health effects from the power line. Many mention cancer, or childhood leukaemia, specifically; some mention various other specific illnesses. The submissions did not raise any material considerations or any issues that were not dealt within the Consolidated ES and Addendum. The issues raised by the submissions are examined, analysed and evaluated in Chapter 7 of the Consolidated ES (Volume 2) and Chapter 1 of the Consolidated ES Addendum (Volume 2).
60. The Mid Ulster District Council and Armagh City Banbridge and Craigavon Borough Council each make some observations on EMFs. Both first point out an editing error in the NTS of the Addendum, which is corrected below under "erratum".
61. Both then state that the Mid Ulster District Council and the Environmental Health Department respectively "*...has regard to the exposure limits provided by the International Commission on Non-Ionizing Radiation as cited by Public Health England and adopted by the UK Government as protective of the health of the general population*", which is supportive of the approach set out in the Consolidated ES.
62. Mid Ulster District Council then suggests that "*[i]t is recognised that public concern still exists in relation to exposure to EMF from the proposed development. Accordingly, the applicant should be encouraged to take a precautionary approach where possible and should continue to give due consideration to technical aspects such as optimal phasing, the position of the lines and other relevant matters which could be incorporated into the proposed development for the purpose of minimising EMF exposure.*" Armagh City Banbridge and Craigavon Borough Council recommends "*... that the DoE ensures that the proposed development takes account of the*

precautionary principle by the choice of route, development type and design of the line to minimise public exposure to EMF.”

63. A precautionary approach has indeed been taken to the issue of EMFs in this project, in accordance with UK policy on precautionary approaches as applied to EMFs, which specifies which precautionary measures are appropriate and which are not. The Consolidated ES sets out the precautionary approaches that apply, specifically the policy on optimum phasing, in section 7.3.2.4, and how the proposed Tyrone – Cavan Interconnector complies with these policies, in section 7.3.6.

5.17 Events since the Addendum

64. Since the publication of the Consolidated ES and its Addendum, the following environmental information has become available, and is presented to the inquiry for the purposes of the inquiry. Accordingly, and by virtue of Regulation 23(6) of the Planning (Environmental Impact Assessment) Regulations (Northern Ireland) 2015 the requirements of paragraphs (4) and (5) of the said Regulation 23 do not apply.
65. The Strategic Planning Policy Statement for Northern Ireland, September 2015, mentioned above, refers to existing UK policy and is entirely consistent with the approach set out in the Consolidated ES.
66. SCENIHR’s latest report, referred to in the Consolidated ES 2013 Volume 2 section 7.4.2.5 as being in preparation, was duly published in 2015 but does not significantly change their conclusions.
67. The EU Directive on occupational exposures, mentioned in the Consolidated ES Volume 2 section 7.3.5.2, was duly implemented in Northern Ireland by the Control of Electromagnetic Fields at Work Regulations (Northern Ireland) 2016 (S.R. 2016 No. 266), made on 4 July 2016 and came into operation on 1 August 2016, but that does not alter the assessment of this proposed Tyrone – Cavan Interconnector.
68. The Consolidated ES Volume 2 section 7.4.3.7 considered the sequence of papers published from an epidemiological study commonly referred to as the “Draper” study. Several further papers have subsequently been published

by that study but without substantially altering the overall conclusions. Likewise, multiple new scientific papers have been published relating to multiple aspects of EMFs, but without changing the overall conclusions.

5.17.1 Erratum

69. In terms of EMFs, the proposed Tyrone – Cavan Interconnector has been demonstrated to be fully compliant with national and European guidelines. Paragraph 64 of the Non-Technical Summary of the Consolidated ES Addendum (2015) correctly refers to the basic restrictions but incorrectly gives the numerical values for the reference levels from these guidelines instead of the basic restrictions (5 kV/m and 100 μ T instead of 9 kV/m and 360 μ T). However, this does not affect the overall assessment that the proposed Tyrone – Cavan Interconnector is fully compliant:

70. *“The calculated levels of EMFs provided above demonstrate that even the maximum field levels produced by the proposed 400 kV line, which would be produced only rarely if ever in practice, are below the EU (1999) exposure limits (basic restrictions.....”*

(Consolidated ES Addendum (2015), NTS, Volume 1, Page 11 and 12).

and

71. *“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. The fields fall with distance to the sides of the line, and the closest residential property, and all other residential properties, will be within EMF exposure guidelines by a large margin.”*

(Consolidated ES (2013), Volume 2, Chapter 7, Page 174).

5.18 Summary and Conclusions

72. This is a summary of the information contained in, principally, the Consolidated ES, Chapter 7 - EMF (page 174ff).

73. EMFs are an issue where there is very clear Government policy for the protection of the public in place. The assessment of EMFs therefore consists primarily of assessing compliance with that policy, in particular, with the relevant quantitative exposure limits.
74. The proposed Tyrone – Cavan Interconnector will fully comply with the Government policy on exposure of the general public to EMFs, which is based on numerical exposure limits. The exposure limits in place in the UK as a result of Government policy, formulated in 2004 and reiterated in 2009, are those published in 1998 by the International Commission on Non-ionizing Radiation Protection (ICNIRP), applied in the terms of the 1999 European Union Recommendation. These limits take account of all the relevant scientific evidence. Such compliance meets UK Government policy for providing the appropriate level of protection for the public. Government policy, based on the scientific advice of Public Health England and its predecessors the Health Protection Agency and the National Radiological Protection Board, establishes no reason to refuse planning permission for the proposed Tyrone – Cavan Interconnector, given that it will comply with the relevant exposure limits.
75. 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. The fields fall with distance to the sides of the line, and the closest residential property, and all other residential properties, will be within EMF exposure guidelines by a large margin. No interference is expected with implanted medical devices nor any significant impacts on agriculture or farming.
76. The UK policies for the protection of the public, including the various Codes of Practice, in particular “*Power Lines: Demonstrating compliance with EMF public exposure guidelines. A Voluntary Code of Practice*” (Department of Energy and Climate Change, March 2012), remain in force in Northern Ireland, and, through the SPPS, this policy regime is now also incorporated into Northern Irish planning policy.

77. The SPPS para 6.249 advises that *“In relation to power lines current Government policy is that exposures to power-line Electro Magnet Fields (EMFs) should comply with the 1998 International Commission on Non-Ionizing Radiation Protection (ICNIRP) Guidelines. A voluntary Code of Practice Power Lines: Control of Microshocks and other indirect effects of public exposure to electric fields A Voluntary Code of Practice (DECC, July 2013) has been agreed by the Department of Energy and Climate Change, the Department of Health, the Energy Networks Association, the Welsh Government, the Scottish Government, and the Northern Ireland Executive. It sets out what is regarded as compliance with those aspects of the EMF exposure guidelines that relate to indirect effects as far as the electricity system is concerned. Further Government policies relating to EMFs from overhead power lines, advise that as a precautionary measure they should, where reasonable, have optimum phasing. This is the subject of a companion Code of Practice “Optimum phasing of high voltage double-circuit power lines”. This Code of Practice applies in England, Wales, Scotland, and Northern Ireland”.*
78. SPPS para 6.250 states *“Any proposal for the development of new power lines should comply with the 1998 International Commission on Non-Ionizing Radiation Protection (ICNIRP)”.*
79. The applicant’s policy is that the proposed Tyrone - Cavan Interconnector must comply with Government policy on EMFs and in particular with the Government’s EMF exposure guidelines. That policy has now been adopted into Northern Ireland planning policy for overhead lines. The applicant considers that compliance with Government policy on EMF exposure levels ensures the appropriate level of protection for the public from these fields.