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6 Water Environment

6.1 Executive Summary

1. An assessment of the effects of the proposed overhead line and new substation on water quality has been undertaken. The assessment has considered the construction of the new substation and installation of each tower together with any associated temporary infrastructure, such as access tracks. Potential effects which have been considered include direct physical impacts to watercourses, and silt and chemical pollution. Without adequate mitigation potential receptors may be impacted directly or via pollution that has travelled downstream. A study area of 500m (either side of the centreline of the overhead line and from the boundary of the substation) surrounding all development (temporary and permanent) has been assessed, which is sufficiently distant to ensure that all watercourses that may be directly affected are identified.

2. As a linear development, the proposed overhead line will oversail a number of surface watercourses that vary in size, importance and sensitivity. The majority of the watercourses are small unnamed streams or drains that are tributaries of the larger River Blackwater, Ballymartrim Water and River Rhone.

3. Watercourses have been physically avoided as much as is practicably possible. However, there is the potential during construction of the overhead line and substation for temporary adverse impacts on the water environment leading to short term reductions in water quality. Where works adjacent to watercourses is unavoidable, these can be effectively managed by implementing good working practices and adherence to relevant legislation and current good practice.

4. In assessing the significance of impacts careful attention has been made to the importance of the water receptors and the magnitude of any effect, taking into account the relatively small scale and duration of the works.

5. At nine locations ephemeral (or possible ephemeral) ditches may be impacted during construction works to install tower foundations, but these will be reinstated resulting in no overall effect. An ephemeral watercourse is defined as one which is occasionally dry and does not contain flow at all times. The proximity of the River Rhone to the substation

construction site means that it may be indirectly impacted by contaminated site runoff, resulting in a potential residual effect of Slight Adverse. All other effects are neutral.

6. During operation, it is predicted that there will be no permanent or long term adverse impacts from the towers or from the substation on the basis that that the drainage system will be well maintained and NIE will operate a Pollution Prevention Plan.

7. A Flood Risk Assessment (FRA) has been carried out following the guidance and requirements set out in Planning Policy Statement (PPS) 15 Planning and Flood Risk and consultation with the Rivers Agency. There are no likely significant residual flood risk effects as a result of the construction or operation of the proposed Tyrone - Cavan Interconnector. The loss of flood plain during the temporary access at the substation and towers and access tracks is not considered significant and will not result in significant impacts to or from the proposed Tyrone - Cavan Interconnector.

8. As stated in the Statement of Case for the proposed Tyrone - Cavan Interconnector, revised PPS 15 is the main policy consideration in this regard. The Consolidated ES Volume 2 Chapter 17 describes the measures that have been taken to ensure that the proposed substation development will avoid the floodplain and sets out the temporary nature of the works within the flood plain and the mitigation work that is proposed. In regard to the overhead line the Consolidated ES confirms that while a number of towers are within the Q100 flood plain the temporary loss of flood plain during construction is not significant and in operational terms the introduction of the towers will not have any impact on the flood plain.

9. As further stated in the Statement of Case, the location of towers within the flood plain is de minimis development in the overall context of the flood plain area. Rivers Agency does not oppose the proposal and the proposal is an exception listed under PPS 15 policy FLD 1 sub para (d) (page 28) being "*Development for agricultural use, transport and utilities infrastructure, which for operational reasons has to be located within the flood plain*". If the Commission or the Department were to conclude that the proposal does not cleanly meet the exception in FLD 1, the proposal complies with the rationale underpinning the exception as operational needs were part of the routeing determination. As identified in the Statement of Case, the proposal is consistent with PPS 15 policy FLD 1.

6.2 About the Authors

10. The Water Environment assessment of the proposed Tyrone - Cavan Interconnector was undertaken by AECOM. The assessment comprised two components – water quality and flood risk assessment.

11. The AECOM specialist for water quality is Ms Kathryn Thorp. Ms Thorp is an environmental scientist with over 20 years' experience working in environmental consultancy. Ms Thorp is a Regional Director in AECOM's environmental team, specialising in Environmental Impact Assessment, surface water quality assessment, environmental management/audit and has co-ordinated EIAs and prepared Environmental Statements for development schemes within a number of sectors including linear developments such as cable routes in Scotland and England and energy generation schemes. Ms Thorp has also prepared and implemented Environmental Management Plans on a number of large construction projects. She is a specialist in assessing the effects of developments on the surface water environment and was the technical lead in this field during the EIA of the proposed Tyrone - Cavan Interconnector.

12. The AECOM specialist for flood risk assessment is Peter Robinson. He is a Chartered Civil Engineer and a Fellow of the Institution of Civil Engineers with over 19 years' experience in the Water Industry and a background in Flood Risk Management. Mr Robinson is a Master of Science in Water Resource Engineering Management and a Bachelor of Engineering in Civil and Environmental Engineering. Mr Robinson has previously been involved in undertaking a number of Environmental Impact Assessments, strategic and site specific flood risk assessments across the UK for a variety of development proposals including residential and commercial development, roads and infrastructure and mining activity.

6.3 Policy and Guidance Informing Assessment

13. Policy and guidance information is contained in the Consolidated ES, Chapter 8 - Water Environment (pages 217-218) and the Statement of Case that has been prepared for the proposed Tyrone – Cavan Interconnector.

6.4 Summary of Documents

14. This technical report summarises and incorporates by reference the content of the documents submitted in support of the planning applications for the proposed Tyrone - Cavan Interconnector in respect of the water environment. These documents are as follows:

- Chapter 8 of the Consolidated Environmental Statement, Water Environment (pages 215-249);
- Chapter 17 of the Consolidated Environmental Statement, Flood Risk Assessment (pages 574-581);
- Figures supporting Chapter 8 of the Consolidated Environmental Statement, contained in Volume 4 of the ES at A3 size;
- Figure 8.1 – Water Environment Overview Map;
- Figure 8.2 – Water Environment (Sheets 1 - 10);
- Figure 8.3 – WFD Classification Map;
- Figure 8.4 – Fish Directive (Consolidated) Map;
- Consolidated Environment Statement - Volume 3 Appendices Part 1 Appendix 5B Substation Drainage Technical Note;
- Consolidated Environmental Statement Volume 3 Appendices Part 3 Appendix 8B NIEA WMU Response;
- Consolidated Environmental Statement Volume 3 Appendices Part 5 – Appendix 17A Turleenan Substation Flood Risk and Surface Water Management;
- Consolidated Environmental Statement Addendum – Volume 2 – Main Text – Chapter 4.5 Planning and Development Context– Revised Planning Policy Statement 15 Planning and Flood Risk;
- Consolidated Environmental Statement Addendum – Volume 2 – Main Text – Section 5.3.2 – Cumulative Assessment – Water Environment;
- Consolidated Environmental Statement Addendum – Volume 2 – Main Text – Chapter 6.3 – Transboundary Assessment – Water Environment;
- Consolidated Environmental Statement Addendum – Volume 3 Appendices – Appendix 2.1 Joint Environmental Report – Chapter 13 – Water Environment; and,

- Consolidated Environmental Statement Addendum – Volume 3 Appendices – Appendix 9.1 – Outline Construction Environmental Management Plan (CEMP).

15. This technical report must, therefore, be read in conjunction with the Consolidated Environmental Statement and its Addendum, and not as a standalone document. An assessment of likely impacts arising from the construction and operation of the proposed Tyrone - Cavan Interconnector has been included in the Consolidated Environmental Statement. Mitigation measures are outlined in the Consolidated Environmental Statement and Addendum. Specific reference is drawn to the Consolidated Environmental Statement Addendum - Volume 2 - Main Text - Chapter 4.5 Planning and Development Context- Revised Planning Policy Statement 15 Planning and Flood Risk (page 48).

16. Groundwater issues are addressed in Technical Report 7 (Geology and Soils).

17. In a general sense all EIA documents are interrelated and, particularly with respect to the interaction of impacts, all the Environmental Statement documents are 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 Environmental Statement and its Addenda are relevant, and key, to the topic under consideration.

18. In the interest of readability these documents are not reproduced in full in this technical report.

19. Although interrelated, the assessment of water quality and flood risk potential effects are considered separately below in Section 6.6 to 6.9 of this report.

6.5 Further Environmental Information for the Purposes of the Inquiry

20. 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.

21. New information in the form of new Department of the Environment Advice notes and the following updated Construction Industry Research and Information Association (CIRIA) guidance documents are now available:

- DOE Standing Advice Note No.4 - Pollution Prevention Guidance (April 2015);
- DOE Standing Advice Note No. 5 - Sustainable Drainage Systems (April 2015);
- DOE Standing Advice Note No.11 – Discharges to the Water Environment (April 2015);
- DOE Standing Advice Note No.18 – Abstractions & Impoundments (May 2015); and
- CIRIA Environmental good practice on site guide (fourth edition) (C741) (2015);

22. The above Advice Notes and guidance will be taken into account in developing the CEMP; an outline of which is contained in the Consolidated Environmental Statement Addendum – Volume 3 Appendices – Appendix 9.1 – Outline Construction Environmental Management Plan (CEMP). The content of the Advice Notes does not have any bearing on the approach taken in the assessment or conclusions drawn in Consolidated ES or its Addendum.

6.6 Scope of Assessment

23. This is a summary of the information contained in the Consolidated ES, Chapter 8 – Water Environment (pages 216 - 217) and Consolidated ES, Chapter 17 – Flood Risk Assessment (pages 575 - 576).

6.6.1 Water Environment – Water Quality and Physical Effects

24. The assessment considers both the construction and operational phases of the proposed Tyrone - Cavan Interconnector.

25. A study area of 500m (either side of the centreline of the overhead line and from the boundary of the substation) surrounding all development (temporary and permanent) has been assessed, which is sufficiently distant to ensure that all watercourses that may be directly affected are identified.

6.6.2 Water Environment – Flood Risk

26. The assessment considers the development process through construction to the operation of the proposed Tyrone - Cavan Interconnector.

27. The main areas of consideration for the permanent development proposals are associated with the terrestrial interface of the development; therefore, the assessment considers the proposed Turleenan Substation and tower locations. In addition, for the construction phase, the assessment considers proposed access routes and associated temporary construction requirements.

28. The assessment process has been used to inform development of design proposals that, in turn, have been assessed to reduce flood risk to acceptable levels in accordance with guidance and policy.

6.7 Consultation Responses

29. The pre submission consultation for the assessment is presented in detail in the Consolidated ES Chapter 6 Scoping and Consultation (pages 151 - 156).

6.7.1 Water Environment – Water Quality and Physical Effects

30. The Northern Ireland Environment Agency (NIEA), Department for Agriculture and Rural Development (DARD), Rivers Agency (RA), and Department for Cultural Arts and Leisure (DCAL) and Inland Fisheries (part of DAERA) have been contacted to inform the assessment. These bodies were contacted to obtain baseline data and comments on the EIA scope. Where they have highlighted particular issues which should be taken account of in the assessments and the development of mitigation measures these have been taken into account.

6.7.2 Water Environment – Flood Risk

31. The Rivers Agency has been consulted throughout the process of the assessment. Using best available data to inform the assessment and the findings of the flood risk assessment have subsequently been provided to the Rivers Agency for review, with no adverse findings.

6.8 Methodology and Surveys

32. This is a summary of the information contained in the Consolidated ES, Chapter 8 – Water Environment (pages 215 - 222) and Consolidated ES, Chapter 17 – Flood Risk Assessment (pages 575 - 576).

6.8.1 Water Environment – Water Quality and Physical Effects

33. Current and future predicted baseline conditions were established via a desk study and consultation with relevant statutory bodies. This information was then used to assess the importance of the water features to assess the importance/sensitivity of water receptors (see section 8.2.6 of the Consolidated ES pages 218 to 221). The importance of watercourses ranges between Low and Very High according to various ecological, social and economic attributes as described in section 8.2.6 of the Consolidated Environmental Statement.

34. A qualitative assessment was undertaken considering the potential interactions between the proposed Tyrone - Cavan Interconnector and existing baseline conditions. The assessment was based on a combination of professional judgment, experience of similar developments, the requirements of relevant legislation and statutory policy, and best practice guidance.

35. To supplement the desk study, watercourse surveys were carried out. The purpose of the surveys was to identify any watercourse(s) or other water bodies that may be affected by the proposed Tyrone - Cavan Interconnector.

6.8.2 Water Environment – Flood Risk

36. The assessment of flood risk has considered two main areas, the proposed overhead tower locations and the proposed Turleenan Substation.

37. The assessment of the proposed tower locations has been carried out through site inspection, where access allows, along with a desk top assessment using flood mapping data and aerial imagery to determine the nature of flooding, extent and locations of receptors.

38. The assessment of the proposed Turleenan Substation assessment has been incorporated within the design process and considered flooding from fluvial, pluvial and groundwater sources and also considers the potential risk of flooding to the proposed

substation along with the potential for the development to increase flood risk elsewhere and the appropriate mitigation.

39. The assessment of flood risk at the proposed Turleenan Substation has been informed by data and hydraulic models made available from the Rivers Agency and site survey data, along with the design of the proposed substation.

6.9 Assessment Overview

40. This is a summary of the information contained in the Consolidated ES, Chapter 8 – Water Environment (pages 215 - 250) and Consolidated ES, Chapter 17 – Flood Risk Assessment (pages 574 - 581).

41. As a linear development, the proposed overhead line will cross a number of surface watercourses that vary in size, importance and sensitivity. The majority of the watercourses are small unnamed drains and ditches that are first and second order tributaries of the larger Blackwater River, Ballymartrim Water and River Rhone. The importance of waterbodies depends on their scale, sensitivity and rarity, and a wide range of attributes including Water Framework Directive classification, ecological value, social and economic uses. The importance of waterbodies ranges from very high to low.

42. As far as practically possible watercourses have been physically avoided by the route for the proposed overhead line. The assessment has considered potential adverse impacts on the water environment that may occur during construction including temporary deterioration of water quality from releases of fine sediment or chemical spillages, and physical effects on the morphology of watercourses. Mitigation measures as described in the Consolidated ES, Chapter 8 – Water Environment (pages 241 - 247) will be implemented during construction to avoid, reduce and minimise potential effects. Such measures will include the control of temporary site drainage during construction so as to prevent silt-laden run-off reaching watercourses. The assessment has also considered proposed access tracks some of which cross watercourses (e.g. ditches). The possible amendment to the alignment for track T40 so as to avoid a new chicken shed has also been considered and the outcomes of the appraisal of track T40 are presented in Technical Report 4.

43. A Flood Risk Assessment has been carried out following the guidance and requirements set out in PPS15 and consultation with the Rivers Agency. There are no likely significant residual flood risk effects as a result of the construction or operation of the proposed Tyrone - Cavan Interconnector. The loss of flood plain during the temporary access at the substation and towers and access tracks is not considered significant and will not result in significant impacts to or from the proposed Tyrone - Cavan Interconnector.

44. The decommissioning of the proposed Tyrone – Cavan Interconnector is assessed in Chapter 1 of the Consolidated ES Addendum (page 5). The effects of decommissioning would be temporary and of a similar scale to or less than the construction phase, as described and assessed in the Consolidated ES. Similar mitigation measures as described for the construction stage in the Consolidated ES should be again implemented to ensure the minimisation or elimination of any environmental impacts.

6.10 Baseline Conditions

45. This is a summary of the information contained in the Consolidated ES, Chapter 8 – Water Environment (pages 222 - 228) and Consolidated ES, Chapter 17 – Flood Risk Assessment (pages 576 - 577).

6.10.1 Water Environment – Water Quality and Physical Effects

46. The baseline conditions include a description of the geography of the river catchments, including topography, climate and hydrology, before presenting information on the attributes of water features that are used to define their importance. The water quality information in this section also references how the watercourses within the study area are categorised under the Water Framework Directive, which includes information on ecological water quality, protected areas, fisheries and water resources. This information has been included to give an account of catchment management within the study area. A brief summary of the key features is provided below and more detail can be found in section 8.3 of the Consolidated Environmental Statement.

47. The most significant surface water feature is the River Blackwater and the majority of the study area lies within its catchment. At the northern end of the proposed overhead line, east of Benburb the River Blackwater crosses the study area from west to east, before flowing northwards and eventually draining into Lough Neagh (approximately 8km

downstream of the study area). The River Blackwater was assigned a very high level of importance in the assessment.

48. The River Rhone is located north of the substation site and flows in a south-easterly direction ultimately discharging into the River Blackwater at a confluence close to Clonteevy Bridge. The River Rhone was assigned a high level of importance in the assessment.

49. The Ballymartrim Water originates south of the A3 road and flows north along the eastern side of the proposed overhead line, within the study area, draining into the River Blackwater south of Blackwatertown. The Ballymartrim Water was assigned a very high level of importance in the assessment.

50. The Tynan River (otherwise known as the Balteagh Stream) flows in a north-westerly direction along the eastern side of the proposed overhead line before crossing the study area south of the A3. This watercourse flows into River Blackwater east of Tynan. The Tynan Water was assigned a very high level of importance in the assessment.

51. A tributary of Clontibret Stream flows in a north-westerly direction along the border between Northern Ireland and the Republic of Ireland, on the southern edge of the study area. Clontibret Stream ultimately discharges into Cor River, which then flows into the River Blackwater east of Tynan. The Clontibret Stream was assigned a medium level of importance in the assessment.

52. There are also a large number of field drains / ditches (many of which are ephemeral) and storm drains throughout the study area, predominantly along field boundaries and often within hedgerows. Where possible, these were identified and examined during watercourse surveys. The unnamed stream / field drains / ditches were assigned a low level of importance in the assessment.

53. The River Blackwater, Tynan Water, River Rhone, Ballymartrim Water and Clontibret Stream are all classified as currently being at Poor Ecological Status, with the exception of the stretch of River Blackwater from Benburb to Ballymartrim Water which is at Moderate Ecological Status. Their current ecological status is based on benthic invertebrates, macrophytes or phytobenthos, or a combination of these parameters. Good Ecological Status by 2015 is only predicted for the River Blackwater (from Benburb

to Ballymartrim Water). This is the only watercourse which was expected to achieve Good Ecological Status by the end of the first river basin planning cycle in 2015 (DAERA has not updated its assessment on if this has been achieved). The other watercourses are not likely to achieve their Water Framework Directive target until 2027.

54. The level of importance for each water receptor within the study area and the justification for their classification is compiled in Table 8.8 of the Consolidated ES (page 228).

6.10.2 Water Environment – Flood Risk

55. The overall assessment of the overhead line route has been carried out utilising the Strategic Flood Maps (NI), as produced by the Rivers Agency and available to view online, to consider the elements of proposed Tyrone - Cavan Interconnector, incorporating tower locations and working areas, access tracks and associated working areas, i.e. stringing locations. The assessment has been carried out with cognisance of relevant guidelines and scoped using professional judgement and consideration of each location and potential effect.

56. More detailed assessment techniques have been used within the Turleenan Substation Flood Risk Assessment and Surface Water Management Strategy and are detailed in Appendix 17A of the Consolidated Environmental Statement.

57. The Rivers Agency has recommended that the appropriate level of risk for future development is the Q100 event, that with a 100 year return. This is more appropriately referred to as the 1% Annual Exceedance Probability (AEP) event, i.e. there is a 1% probability that this level will be exceeded in any given year. An additional ‘freeboard’ allowance of 600mm, to accommodate climate change and uncertainties, should be added for design purposes.

58. Rivers Agency Flood mapping for the area indicates that part of the site within the applications boundary includes land identified as the 1% AEP floodplain. Early correspondence with the Rivers Agency confirmed that the appropriate 1% AEP flood level for the substation is 16.01m AOD. However, subsequent evaluation of the available model data including a hydrological review of the modelled flows concluded that the flood levels for the site are higher than those previously stated due to the assessment determining statistically higher flows. The final predicted flood levels of 16.61m AOD at

the upstream River Rhone part of the site and 16.13m AOD downstream of the site, which have no implication on the substation.

6.11 Assessment of Impacts Without Proposed Mitigation

59. This is a summary of the information contained in the Consolidated ES, Chapter 8 – Water Environment (pages 229 - 241) and Consolidated ES, Chapter 17 – Flood Risk Assessment (pages 578 - 580).

60. A summary of construction effects are outlined in Section 8.4.1.8, Table 8.10 (pages 239 - 240). During construction, there are expected to be Neutral and Slight Adverse impacts only, as shown in the table. Ballymartrim Water, which is the only watercourse with a 'Very High' water body importance, has a Neutral significance of impact within the Construction Phase.

61. At nine locations ephemeral (or possible ephemeral) ditches (ditches which are occasionally dry and do not contain flow at all times) may be impacted during construction works to install tower foundations, but these will be reinstated resulting in no overall effect. At 59 further locations there may be some localised physical modification to ephemeral ditches of low importance from the widening of field accesses, which would be neutral in the long term following reinstatement. Direct adverse effects on the unnamed drain through the proposed substation site and indirectly on the River Rhone could occur from contaminated site runoff, resulting in an effect of Slight Adverse. However, any impacts will be of short term deterioration with no long lasting effects. All other construction phase effects are predicted to be neutral.

62. It was proposed in the Consolidated ES (Chapter 15 of Volume 2, page 566) that, subject to consultations with the owner/operator, a range of possible mitigation measures could be undertaken to minimise the impacts to the bioremediation area. It was identified that if alternative mitigation measures proved not to be feasible or could not be agreed, tankering effluent off site, as was utilised for the previous treatment regime at the premises, would be required and / or reasonable compensation agreed.

63. In attempting to assess the impacts to the bioremediation area, the applicant has attempted to gain permission to survey the area in question. This was refused by the landowner – the bioremediation area is part of the 3% of land where access was refused

by the relevant landowner during the course of the preparation of the Consolidated ES. The remaining 97% of the application sites in respect of which access has been granted by landowners is shown on Figure 10.1 of Volume 4 of the Consolidated ES. It is a requirement of the Planning (Environmental Impact Assessment) Regulations (Northern Ireland) 2015 (and previous iterations) that "*an indication of any difficulties*" encountered in preparing the EIA be included in the Environmental Statement (Schedule 4, Part 1). The denial of land access was acknowledged as a difficulty in the Consolidated ES. Additionally, the information required to fully inform the assessment of the impacts on the bioremediation area was outlined in Chapter 15 of Volume 2 of the Consolidated ES. This information includes "*the nature of the effluent material, the rate of production from the facility, rate of discharge and the current condition of the treatment system*" (page 566, Section 15.5 Mitigation Measures, paragraph 104).

64. Whilst land access has not been provided by the owner/ operator, it is known that the bioremediation area is operated under a Consent to Discharge Effluent (No. 344/07). This Consent controls the volume of discharge per day and per hectare per year. The Consent also specifies weather conditions when there may be no discharge and specifies water quality standards for the waterway downstream of the area. It is known from the Consent that the maximum rate of discharge is 120m^3 per day over the entire 12.9 ha of the bioremediation area. The loss of land within the bioremediation area will be circa just 1 ha during construction.

65. Given the owner/operator's failure to allow land access, the Applicant now proposes as part of this application and by way of mitigation to tanker off the effluent and agree reasonable compensation with the landowner accordingly. The residual effect of the proposal to use tankers as a mitigation measure has been assessed as being of major adverse significance. This level of significance has been determined to be appropriate because of the uncertainty arising from the inability to gain access to the bioremediation area and in such circumstances it was determined that a conservative assessment should be applied. There will be no significant water quality impact downstream of the treatment area.

66. Once constructed, the risk of pollution is greatly reduced as each tower is a passive structure on the landscape that will not impact watercourses. However, the potential for

adverse effects remains from the operation of the Turleenan Substation. To mitigate the risk from diffuse urban runoff and chemical spillages four layers of mitigation will be provided as described in Consolidated Environmental Statement Volume 3 Appendices – Appendix 17A Turleenan Substation Flood Risk and Surface Water Management and Appendix 9.1 of the Consolidated ES Addendum – Outline CEMP.

67. A summary of operational effects are outlined in Section 8.4.2.2, Table 8.11 (page 241) of the Consolidated ES. During operation, there are expected to be Neutral and Slight Beneficial impacts only, as shown in the table. Slight Beneficial impacts are expected as a result of reinstatement of ephemeral drainage ditches and reinstatement of ditches temporarily culverted for widened field accesses. Confirmatory surveys will be undertaken prior to construction to record information about the current form, so that ditches can be reinstated accordingly with environmental enhancement.

68. During the operational phase, each tower will become a passive feature on the landscape in terms of surface water quality (i.e. they will not exert any physical effect on watercourses or result in any discharges). Routine maintenance of vegetation and the tower will be required. These activities will not require the use of heavy plant or equipment, and the site can be accessed by a 4 x 4 vehicle or on foot. Therefore, once installed and operational, the towers will not result in any deterioration of water quality or have any long term adverse impact on the morphology of any watercourse. Thus, no significant long term effects on the water environment are predicted.

69. During operation it is predicted that there will be no permanent or long term adverse impacts from the towers, nor from the substation given that the drainage system will be maintained in accordance with the operational Environmental Management Plan and the operates a suitable Pollution Prevention Plan. These Plans will be prepared within the framework of measures as outlined in the Consolidated ES (e.g. how the attenuation pond will be maintained as described in Chapter 5) and outline CEMP (Appendix 9.1 of the Consolidated ES Addendum).

70. The proposed Tyrone - Cavan Interconnector is considered to be compliant with the objectives of Water Framework Directive for designated water bodies within the study area.

71. The proposed Turleenan substation could impact on both the Blackwater River and the River Rhone. Reductions in surface water quality could result particularly during the construction period; however, mitigation will be put in place to ensure that effects are not significant. Increased surface runoff rates and volumes are predicted to result from the increase in hard standing. To ensure that this does not exacerbate existing flood risk, a Sustainable Drainage System will be installed which will attenuate, treat and discharge runoff at an equivalent undeveloped site rate. With the effective implementation of mitigation, effects have been assessed to be not significant.

72. The proposed substation will be located to remain above the 1% Annual Exceedance Probability or "once in 100 years" flood level. The proposed applications boundary of the site of the substation includes land that is identified as being within the 1% Annual Exceedance Probability floodplain. However, the design of the substation has been carried out to ensure that the area of permanent development, incorporating the compound and access road, is out of the 1% Annual Exceedance Probability floodplain and the area within the 1% Annual Exceedance Probability floodplain is only to be used for additional drainage, landscaping and planting. A Flood Risk Assessment for the proposed site has been carried out in accordance with the guidance and requirements set out in the Department of the Environment's[1] (DoE) Planning Policy Statement 15 (which deals with flood risk issues) and in consultation with the Rivers Agency and the DoE. There is no significant impact to or from flooding. This assessment has been reviewed and confirmed by the Rivers Agency as being appropriate.

73. Proposed tower foundations will affect surface and groundwater flow by locally changing runoff flow paths. However, in the context of the existing hydrological patterns, this is considered to be negligible as the effects will be minor and localised to very close proximity of the tower bases.

74. Whilst a number of towers will be located in areas that are identified within the 1% Annual Exceedance Probability flood level as shown on the Rivers Agency Flood Maps, the nature of the development has been assessed and the potential for the towers being affected by flooding or affecting existing flood risk is considered to be not significant, due

[1] Now Department for Infrastructure.

to the effect upon flood levels being minor and localised and there being no vulnerable receptors to flood risk in close proximity to the tower locations

6.12 Proposed Mitigation

75. This is a summary of the information contained in the Consolidated ES, Chapter 8 – Water Environment (pages 241 - 247) and Consolidated ES, Chapter 17 – Flood Risk Assessment (page 580).

76. Mitigation measures will be implemented during construction and operation to avoid, minimise and reduce potential adverse impacts to watercourses or the risk of an impact (i.e. from spillages). Under the terms of the contract, the Contractor will be required to implement the mitigation measures set out in the Consolidated ES. The principal vehicle to do this will be via a CEMP – an outline of which is enclosed in Consolidated ES Addendum Appendix 9.1 Outline CEMP. This will also require the preparation of and implementation of a Silt Management Plan and water quality monitoring. The proposed mitigation measures follow recognised good practice for protection of the water environment and include CIRIA[2] and DAERA[3] Pollution Prevention Guidelines. The Contract for the construction of the proposed Tyrone – Cavan Interconnector will require the Contractor to comply with the CEMP. The working areas proposed for the towers and the substation have been adequately sized so as to ensure that pollution control measures can be accommodated within the planning applications boundaries. With these mitigation measures in place, the construction effects are assessed to be minimal.

77. In order to mitigate potential significant impacts during the construction phase, all works associated with the construction of both Turleenan substation and the proposed overhead line will be undertaken with due regard to the good practice guidance such as Pollution Prevention Guideline (PPG) documents, produced by the DOE, and other good practice guidance such as that published by CIRIA referred to in section 6.5 above.

78. Appropriate consents will be required for works affecting watercourses and construction work will need to comply with any conditions imposed. Applications for appropriate permits will be made following detailed design and development of the temporary works.

[2] Construction Industry Research and Information Association.
[3] Department of Agriculture, Environment and Rural Affairs, formerly Department of the Environment.

All consents, permits and licences will be in place prior to commencement of any works at the relevant site. This array of controls goes beyond planning control, and provides an extra layer of protection and reassurance in terms of environmental impacts.

79. Site specific mitigation principles for Silt Management, Spillage Management, Access Tracks, Restoration of Ephemeral Ditches and Rolling Construction are contained in Section 8.5.1.4 (pages 243-247) of the Consolidated Environmental Statement.

80. In terms of mitigation in the Operational Phase – NIE Networks will operate the substation in accordance with a standard operational Environmental Management Plan which will be taken into account when the CEMP is finalised, which will include pollution prevention measures and a plan for emergency response prepared in accordance with PPG 21. The operational Environmental Management Plan will be prepared within the framework of measures as outlined in the Consolidated ES (e.g. how the attenuation pond will be maintained as described in Chapter 5) and outline CEMP (Appendix 9.1 of the Consolidated ES Addendum).

81. Routine maintenance work of the towers and the overhead line will be carried out in accordance with the operational Environmental Management Plan making reference to relevant best practice at the time of the works. In particular, any works above main rivers will need consent under Schedule 6 of the Drainage (Northern Ireland) Order 1973, and this will likely include protection to prevent items falling into the water.

6.13 Residual Impacts With Proposed Mitigation

82. This is a summary of the information contained in the Consolidated ES, Chapter 8 – Water Environment (pages 248 - 249) and Consolidated ES, Chapter 17 – Flood Risk Assessment (page 580).

6.13.1 Water Environment – Water Quality and Physical Effects

83. During operation it is predicted that there will be no permanent or long term adverse impacts from the towers or from the substation given that the drainage system will be well maintained and NIE Networks will operate a Pollution Prevention Plan.

84. At nine locations ephemeral (or possible ephemeral) ditches may be impacted during construction works to install tower foundations, but these will be reinstated resulting in no

overall effect. The proximity of the River Rhone to the proposed substation construction site means that it may be indirectly impacted by contaminated site runoff, resulting in an effect of Slight Adverse; however any impacts will be of short term deterioration with no long lasting effects. All other effects are neutral.

85. The residual effect to the bioremediation area, taking into account the tankering mitigation measures, is assessed as being of major adverse significance. There will be no significant water quality impact downstream of the treatment area.

86. As explained in section 8.6 of the Consolidated Environmental Statement the proposed development is considered to be compliant with the objectives of WFD designated water bodies within the study area. The WFD is concerned with non-temporary long term impacts at the water body level. The impact assessment presented in Section 8.4 demonstrates that the proposed development will not have any direct, non-construction related adverse effects on any WFD water body (i.e. there will be no new crossing structures, outfalls, abstractions or diversions etc.). Access track 62SL crosses the Ballymartrim River, but there is no need for any bridge improvements. Indirectly, treated surface water runoff will ultimately discharge into the River Rhone via a small drainage ditch, but the risk is low and the scale of any potential effect small and not relevant at the water body level. There is the potential for some temporary construction effects with mitigation taken into account (minor adverse on the River Rhone – see Table 8.11), but these will not be of sufficient magnitude to compromise the achievement of WFD objectives at the water body level, and in any case will be short term when viewed in the context of the five year planning cycles. Since the same robust mitigation will be applied to each site any potential cumulative effects can also be effectively mitigated (see Section 8.5). Thus, there is no potential for deterioration of ecological status, failure to improve, non-compliance with proposed NIEA mitigation measures, or the failure of adjacent water bodies to meet their targets. Therefore, it is considered that the proposed development is compliant with the objectives of the WFD.

6.14 Cumulative Impacts

87. This is a summary of information that is contained in Chapter 5 – Cumulative Impact Assessment (pages 56 – 57, 76-77) of the Consolidated ES Addendum. A further

assessment of cumulative effects is outlined in the Joint Environmental Report for the proposed Interconnector project (i.e. the project in Northern Ireland and Ireland). This is contained in Volume 3 Appendix 2.1 of the Consolidated ES Addendum.

88. There are no likely significant cumulative water environment or flood risk effects. A cumulative impact assessment has been undertaken of the proposed Tyrone - Cavan Interconnector and other identified developments, both individually and cumulatively (i.e. all projects assessed together). Cumulative impacts are predicted to be Imperceptible.

6.15 Transboundary Impacts

89. This is a summary of information that is contained in Chapter 6 – Transboundary Impact Assessment (pages 81, 86) the Consolidated ES Addendum. 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.

90. A tributary of the Clontibret Stream originates south of the border, flowing along it for a short stretch close to tower 102, before flowing through the Republic of Ireland for a few kilometres before returning back into Northern Ireland and ultimately the River Blackwater. No direct or indirect effects to this stream will occur as a consequence of the proposed Tyrone - Cavan Interconnector. There will be no significant transboundary effects on the surface water environment as a result of the Tyrone - Cavan Interconnector. As discussed within Chapter 18 (Flood Risk) of the Consolidated ES, there are no significant effects identified within the assessment and, hence, no anticipated transboundary effects.

6.16 Response to Third Party and Statutory Consultee Submissions

91. 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, approximately 2,957 third party submissions were made - none of which specifically related to flood risk or the water

environment. In general, all submissions were considered and taken into account in the writing of the Consolidated ES Addendum.

92. Between May 2015 and November 2016, there have been approximately 594 third party submissions and none of these made specific reference to flood risk or the water environment.

93. In terms of the statutory consultees NIEA (now part of DAERA and DfC) responded on surface water quality. NIEA stated that it was "*content"* with the information provided and had no objection subject to the following condition: "*Water Management Unit requests that the principal contractor submits a detailed Construction Method Statement (CMS) for our agreement eight weeks prior to works commencing onsite. The CMS will be required to include all necessary pollution prevention measures to protect groundwater and all other elements of the water environment."* This condition will be complied with.

6.17 Events since the Addendum

94. 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.

95. Since the Addendum, new information in the form of new Department of the Environment Advice notes and updated Construction Industry Research and Information Association (CIRIA) guidance documents are now available. The content of the Advice Notes and CIRIA documents does not have any bearing on the approach taken in the assessment or conclusions drawn in Consolidated ES.

96. As outlined in the Statement of Case and in Construction Technical Report (No. 4), alternative access is required to Tower 40 because of the construction of a chicken shed. Two alternative access tracks are described and assessed in the Construction Technical Report (No. 4). An assessment in terms of water environment for the alternative access tracks is included in that Technical Report.

97. Confirmatory aerial surveys of the entire proposed Tyrone – Cavan Interconnector (proposed substation area and 500m either side of the overhead line centreline, which includes the proposed access tracks) were undertaken in October 2016. This photography was reviewed in terms of the water baseline conditions and nothing of note was detected.

6.18 Summary and Conclusions

98. This is a summary of the information contained in the Consolidated ES, Chapter 8 – Water Environment (page 215 to 250) and Consolidated ES, Chapter 17 – Flood Risk Assessment (pages 574, 580 - 581).

99. The proposed overhead line will cross a number of surface watercourses that vary in size, importance and sensitivity. The majority of the watercourses are small unnamed streams or drains that are tributaries of the larger River Blackwater, Ballymartrim Water and River Rhone.

100. Watercourses have been physically avoided as much as is practicably possible. However, there is the potential during construction of the overhead line and substation for temporary adverse impacts on the water environment leading to short term reductions in water quality. Where works adjacent to watercourses is unavoidable, these can be effectively managed by implementing the mitigation described in section 8.5 of the Consolidated ES, pages 241 to 247.

101. In assessing the significance of impacts careful attention has been made to the importance of the water receptors and the magnitude of any effect, taking into account the relatively small scale and duration of the works.

102. At nine locations ephemeral (or possible ephemeral) ditches may be impacted during construction works to install tower foundations, but these will be reinstated resulting in no overall effect. The proximity of the River Rhone to the substation construction site means that it may be indirectly impacted by contaminated site runoff, resulting in an effect of Slight Adverse. All other effects are neutral.

103. During operation, it is predicted that there will be no permanent or long term adverse impacts from the towers, or from the substation on the basis that that the drainage

system will be well maintained and the contractor will operate a Pollution Prevention Plan.

104. A Flood Risk Assessment has been carried out following the guidance and requirements set out in PPS15 and consultation with the Rivers Agency. There are no likely significant residual flood risk effects as a result of the construction or operation of the proposed Tyrone - Cavan Interconnector. The loss of flood plain during the temporary access at the substation and towers and access tracks is not considered significant and will not result in significant impacts to or from the proposed Tyrone - Cavan Interconnector.

105. As stated in the Statement of Case for the proposed Tyrone - Cavan Interconnector - revised PPS 15 Planning and Flood Risk is the main policy consideration in this regard[4]. The Consolidated ES Volume 2 Chapter 17 describes the measures that have been taken to ensure that the proposed substation development will avoid the floodplain and sets out the temporary nature of the works within the flood plain and the mitigation work that is proposed. In regard to the overhead line the Consolidated ES confirms that while a number of towers are within the Q100 flood plain the temporary loss of flood plain during construction is not significant and in operational terms the introduction of the towers will not have any impact on the flood plain.

106. As further stated in the Statement of Case, the location of towers within the flood plain is de minimis development in the overall context of the flood plain area. Rivers Agency does not oppose the proposal and the proposal is an exception listed under PPS 15 policy FLD 1 sub para (d) (page 28) being "*Development for agricultural use, transport and utilities infrastructure, which for operational reasons has to be located within the flood plain*". If the Commission or the Department were to conclude that the proposal does not cleanly meet the exception in FLD 1, the proposal complies with the rationale underpinning the exception as operational needs were part of the routeing determination. As identified in the Statement of Case, the proposal is consistent with PPS 15 policy FLD 1.

[4] SPPS para 6.99-6.132 do not make material changes to PPS 15.